NI43-101 Technical Report and Mineral Resource Estimate

Tuvatu Gold Project, Viti Levu, Republic of Fiji

Issued in accordance with the requirements of National Instrument 43-101
"Standards of Disclosure for Mineral Projects" of the Canadian Securities Administrators

For: Lion One Metals Limited

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Tuvatu Gold Project, Viti Levu, Republic of Fiji

1.0 SUMMARY

1.1 Introduction

Lion One Metals Limited (Lion One) is developing and exploiting the Tuvatu Mine, a high-grade, narrow-vein gold deposit located in the upper reaches of the Sabeto River Valley, approximately 24 km northeast of the city of Nadi on the west coast of Viti Levu, Republic of Fiji.

Global Mineral Resource Services (GMRS) has been retained by Lion One Metals Limited to prepare a Technical Report, including an updated mineral resource estimate (MRE) in accordance with National Instrument (NI) 43-101. This report is being prepared to support public disclosure of the contained mineral resource and of the current state of the Project.

1.2 Property Tenure

The Property is comprised of four Special Prospecting Licences (SPL), with a total area of 20,170.5 ha, held as to 100% by Lion One Limited, a subsidiary of Lion One Metals Limited. A Special Mining Lease, 384.5 ha in area, covering the Tuvatu Mine, was granted to Lion One on January 22, 2015, and remains in good standing until February 28, 2035

1.3 Accessibility

Nadi is the closest town and is serviced by daily international flights. The Property is accessed from Nadi by Sabeto Road. A network of local roads and tracks provide good access to most of the Property area. During the wet season from November to March, creeks may be impassable for some days and in wet weather, four-wheel drive vehicles are required to access the tenements. Creeks and adjacent areas are generally thickly vegetated; spurs and ridges are dominated by open grasslands.

1.4 History

Documented mineral exploration on the Property began during the early part of the 20th century with prospecting in the upper reaches of the Sabeto River and has continued intermittently since that time. Much of the exploration that took place during the 1970s and 1980s was directed to the search for porphyry copper mineralization.

In 2007, following the closure of the Vatukoula Gold Mine, Emperor Gold Mining Company Limited sold its Fijian assets, including the Tuvatu Property, to Westech Gold Pty Ltd and Red Lion Management Ltd. Licenses covering the Property were reissued in the name of Lion One by the Fijian Government. Subsequently, American Eagle Resources gained control of Lion One, the holder of the Project. Lion One is the product of the reverse takeover in January 2011 of X-Tal by American Eagle Resources.

1.5 Geology

The oldest unit in the Tuvatu Property area is the Nadele Breccia (26-12 Ma), part of the basaltic sequence of the Wainamala Group.

Sabeto Volcanics (5.5 to 4.8 Ma) unconformably overlie the Nadele Breccia and represent the basal unit of the Korroimavua Volcanic Group. High ridges and cliffs emphasize this gradation due to the greater resistance of the Sabeto Volcanics to weathering.

The Navilawa Monzonite intrudes the Nadele Breccia and Sabeto volcanics and is dated at 4.85 Ma. The overall intrusive complex is elongated in a northeast orientation. Late small intrusive stocks and dykes, dominantly composed of micromonzonite, intrude monzonite and the Sabeto volcanics, and strike dominantly N-S to NE-SW. The Navilawa Monzonite is the host of nearly all mineral occurrences within the Property.

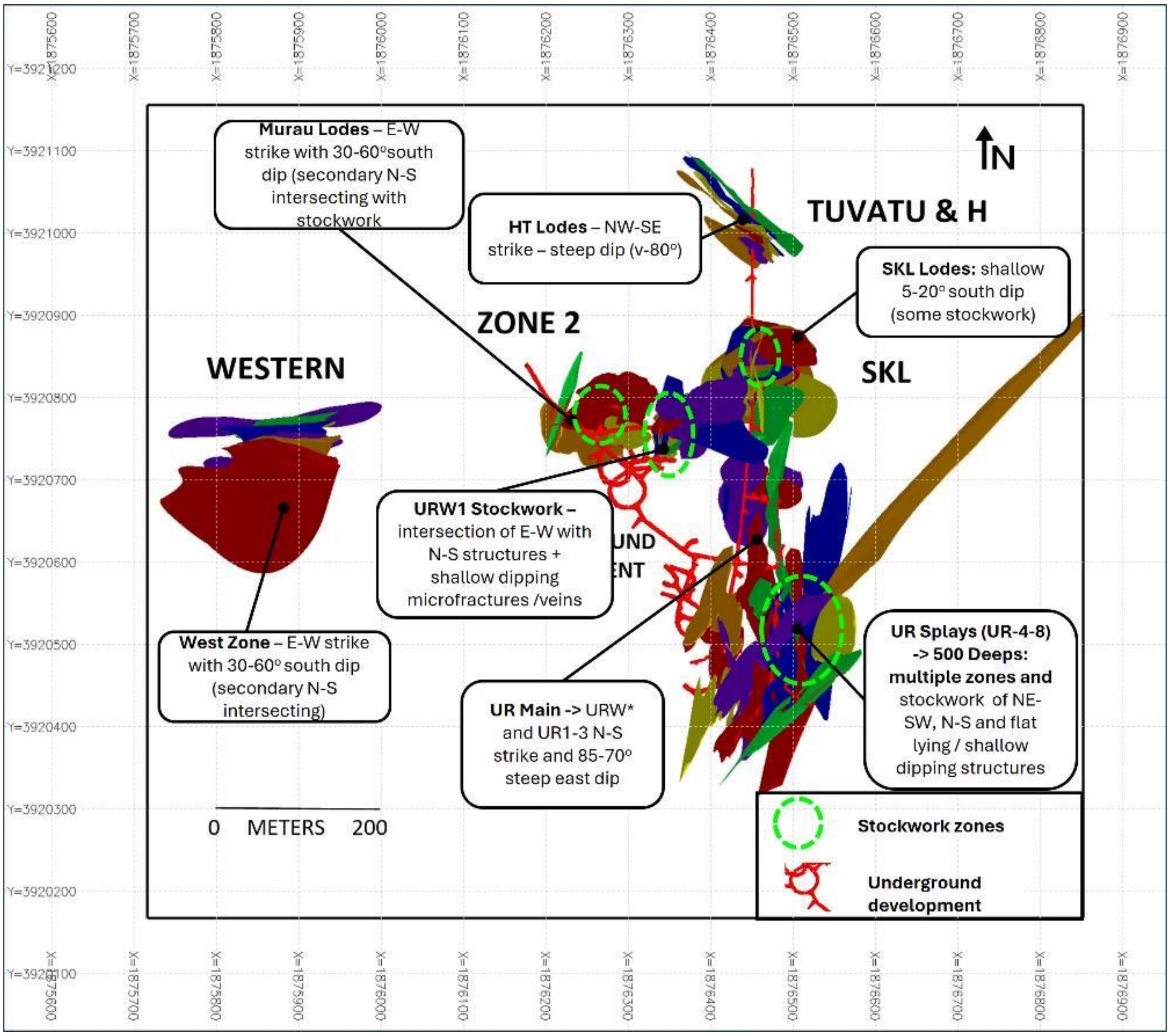
1.6 Mineralization

Tuvatu is an alkalic hosted gold deposit. Mineralization is structurally controlled and occurs as sets and networks of narrow veins, cracks, and vein breccias, with individual structures generally ranging from 1 to 200 mm in width. Sets of veins are commonly up to 5 m wide with blow out zones up to 20m wide forming at the intersection of multiple structures.

Mineralization at Tuvatu has been confirmed over a north–south strike length of more than 900 m and from surface to depths more than 1000m. Mineralization is confined to structural zones consisting of veins and veinlets of quartz-potassium feldspar-carbonate. Sulphide content is generally low, but a typical association includes minor components of pyrite-arsenopyrite-galena-sphalerite-bornite- tellurides-roscoelite. Gold generally occurs as fine-grained free gold.

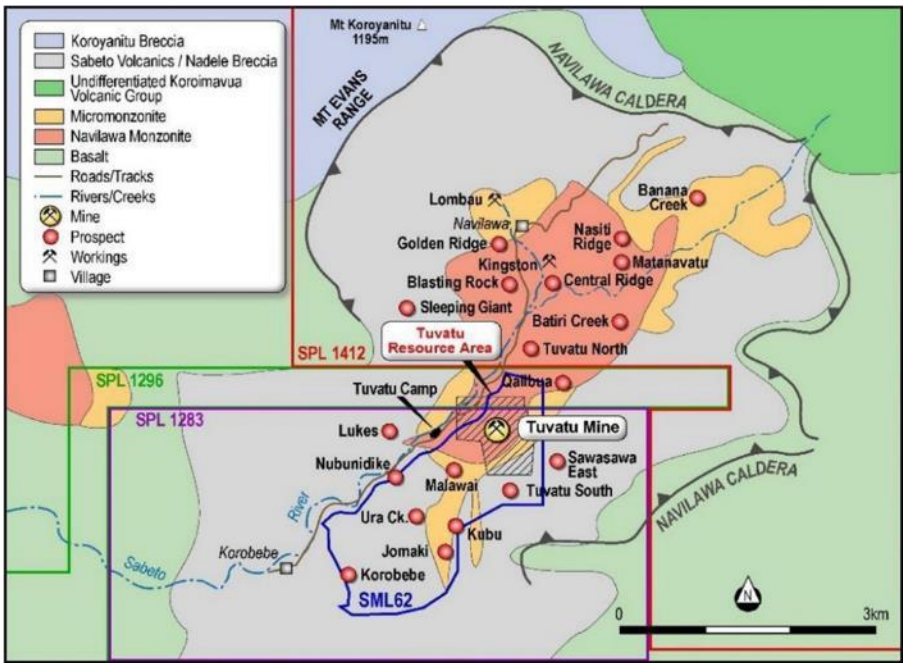
As currently understood, the Tuvatu deposit is comprised of 69 individual veins or stockwork zones that are shown in Figure 1.1.

Figure 1.1 Tuvatu Mine Principal Veins and Stockworks



In addition to the Tuvatu Mine, the Property contains numerous gold and copper occurrences that have been explored to various degrees by previous operators and are currently being evaluated and explored by Lion One. Figure 1.2 shows the more important of these exploration targets.

Figure 1.2 Tuvatu Exploration Targets



1.7 Exploration

Following work by previous owners, Lion One commenced exploration at Tuvatu in 2011 and since then has conducted continuous exploration of both of the Tuvatu deposit and the wider property. In 2019, the Company was awarded the exploration license (SPL1512) covering most of the Navilawa Caldera.

1.8 Drilling

Lion One began drilling in 2012, both within the main deposit and select regional targets. Table 1.1 summarizes the type and quantity of drilling that has taken place since 2012. In total more than 135,000 m of drilling have been completed during this period.

Table 1.1 Summary of 2012-2020 Drilling

2012 to 2024 Drilling	Number of Holes	Number of Meters
Surface DDHs	345	102,560
Underground DDHs	40	10,327
Grade Control holes	190	20,476
Geotechnical diamond holes	6	883
Metallurgical holes	7	1,127
Total	**588**	**135,373**

1.9 Sample Preparation and Analysis

Lion One drill core is logged and sampled on site at Tuvatu by Lion One staff. Prior to 2019, core samples were delivered from the mine site to the ALS Minerals sample preparation facility in Suva before being shipped to the ALS assay lab in Brisbane, Australia. Since December 2019, drill samples have been processed by Lion One at their own laboratory in Nadi.

ALS assayed for gold by fire assay with a 30 g charge and AAS finish. Lion One has continued the ALS procedure. Samples with gold grades greater than 3 g/t are re-assayed. Silver, arsenic, copper, iron, lead, selenium, tellurium, vanadium, and zinc are routinely analyzed by a three-acid digestion and inductively coupled plasma optical emission spectroscopy finish. Samples returning an assay value greater than 0.5 g/t Au or 0.5% Cu, Pb, or Zn are sent to ALS Minerals in Townsville, Australia for check analysis where analyses are carried out using fire assay with an AA finish (ALS code Au-AA26). Samples that return grades greater than 10 g/t Au by Au-AA26 are re-analyzed by gravimetric method (ALS code Au-GRA22). High base metal samples are also fire assayed providing a check of gold analysis below 0.5 g/t Au.

1.10 Mineral Processing and Metallurgical Testing

Since 1997, extensive test work has been conducted on samples collected from the Property including mineralogy studies, comminution tests, gold and silver recovery tests, cyanide destruction tests, tailing filtration, rheology, and process-related parameter determination tests. These tests have been the basis for the design, operation and testing with the Pilot Plant. The gold and silver recovery methods tested in the labs include gravity concentration, flotation, and cyanide leach extraction. This testing continues, not only in the Pilot Plant but in the Tuvatu metallurgical lab.

1.11 Mineral Resource Estimate

An independent mineral resource estimate (MRE) has been carried out for gold contained in the portion of the Tuvatu Property that is currently being developed and mined. The effective date of the MRE is March 25, 2024, and is based on a drillhole dataset in csv format, 69 wireframes representing mineralized veins and zones in the Tuvatu deposit, as well as underground development as of March 24, 2024, all in dxf format and all provided by Lion One. Two wireframes representing satellite mineralization around Zones Two and Five that was not captured by the wireframes for those zones were provided by Lion One on April 05, 2024.

The drillhole database, including pre-Lion One drilling, contained 7,592 collar locations and 240,002 assays for gold. Some samples fall outside the limits of the MRE, and their exclusion resulted in a useable dataset of 233,703 assays. Assays for sludge (69) and face (channel) samples (6,205) were removed from the dataset. The sludge samples were removed because the source location of their assay values cannot be established with sufficient accuracy for use in a MRE. The face samples were removed because attempts to reconcile estimated resources against mined resources within Zone Two resulted in an overestimation of gold present when face samples were included in the dataset. A further 30 samples were removed because they had anomalously long lengths and were either of unidentified source or had not been sampled. The resultant imported dataset included 1,288 collars and 233,703 gold assays. All sample data used for the MRE was obtained from drillcore (85%) and reverse circulation holes (15%).

Of the 69 modelled domains, all but two, URW 1-1 and URW 1-2, are interpreted as narrow, generally steep-dipping veins; URW 1-1 and URW 1-2 are stockworks. The veins are grouped into five geographic zones: 2, 5, including the previously separate 500 Zone, SKL, Tuvatu and H lodes, and the Western or Plant Site.

Significant intercepts of gold mineralization exist outside the 69 modelled domains, in particular peripheral to Zones 2 and 5, but where there is insufficient data to support a geological interpretation of those mineralized intercepts. Therefore, instead of domains based on geological interpretation, this mineralization was captured and constrained using a gradeshell threshold of 0.5 g/t gold over four (4) meters. For the MRE, the resultant volumes are designated as the Outside Domains. The gradeshell generation process did not consider the number of qualifying drillholes, only grade-thickness; consequently, some of these domains are based on one drillhole. Because it is necessary to demonstrate continuity of mineralization, a minimum of two drillholes was required during the grade interpolation process which resulted in some of these domains remaining unestimated.

Assays were composited to one meter length; the 233,703 assays were reduced to 227,254 composites, a minor reduction because most assays are one meter in length.

Grade capping was assessed on a domain basis using cumulative frequency curves. Seventy-one domains were assessed including the Outside Domains and the Underground Development that was treated as a domain so it could be subtracted from the MRE as depletion. Capping levels ranged from five (5) to 150 g/t Au; 25 domains were capped and 46 showed no evidence of outliers and remained uncapped.

The dataset included 4,801 bulk density measurements in units of grams / centimeter^3. These values were segregated by domain which demonstrated that many domains lacked sufficient bulk density measurements to support the interpolation of density measurements into the block model, so average values were calculated for each domain. For those domains for which no values were available, the global average bulk density of 2.61 g/cm^3 was used.

Analysis of spatial continuity of non-zero composite data was carried out using Sage 2001, a commercial variography software package. A minimum population of 98 composites was chosen as the threshold for variography. Twenty-five domains meet this criterion. For the remaining 46 domains, variogram parameters of proximal and similarly oriented domains were applied where possible, otherwise interpolation was carried out using inverse distance squared (ID2) that relies only on a search ellipse and strictly linear weighting of composites. All variograms used two structures and both first and second structures are spherical.

The 69 Domains and the Underground Development were estimated separately. For the 69 Domains, gold grades were interpolated into the block model in two passes for both ordinary kriging (OK) and inverse distance squared (ID^2) weighting. The Underground Development and Outside Domains were interpolated in a single pass using ID^2. In all cases, a minimum of two holes was required to interpolate a grade into a block to ensure that continuity of mineralization was demonstrated.

The estimated tonnes and ounces of gold represented by the Underground Development were subtracted from the estimated tonnes and ounces of gold estimated for the 69 Domains and the net (depleted) resource within the 69 Domains is reported as the current MRE. The resource within the Outside Domains is reported separately.

Blocks were classified as Indicated, or Inferred. For the 69 Domains, classification was carried out using all composites for all 69 domains. Classification of the Underground Development was carried out using composites for only that domain. In both cases, interpolation was by ID^2. The Outside Domains were classified as Inferred. The search ellipse for the Indicated class is of the same dimensions as that used for the first interpolation pass for most domains. The Inferred classification was designed to capture all blocks in each domain that fall outside the Indicated category.

Table 1.2 summarizes the Tuvatu MRE for the 69 Domains by Class. The left-hand columns of the table show the gross tonnes and ounces within the 69 Domains, the central columns show the tonnes and ounces in the Underground Development, and the right-hand columns show the resources in the 69 Domains net of the tonnes and ounces in the Underground Development. The basecase is taken as 3 g/t and is highlighted. Table 1.2 shows the resource in the Outside Domains. The 3 g/t basecase is highlighted.

Table 1.2 Tuvatu 69 Domains Mineral Resource Estimate Summary Net of Underground Development

CutOff Au g/t	Classification	69 Domains Gross			Underground Development			69 Domains Net		
		Au g/t	Tonnes	Ounces	Au g/t	Tonnes	Ounces	Au g/t	Net Tonnes	Net Ounces
4	Indicated	9.95	500,000	160,000	5.00	8,000	1,300	10.05	492,000	159,000
4	Inferred	9.47	958,000	292,000	5.22	2,000	300	9.50	956,000	292,000
3	Indicated	8.41	655,000	177,000	4.44	14,000	2,000	8.48	642,000	175,000
3	Inferred	7.61	1,388,000	340,000	4.43	3,000	500	7.62	1,384,000	339,000
2	Indicated	6.89	880,000	195,000	3.84	19,000	2,300	6.97	861,000	193,000
2	Inferred	5.99	2,023,000	389,000	4.23	4,000	500	5.99	2,019,000	389,000

Table 1.3 Tuvatu Mineral Resource Summary for Outside Domains

CutOff Au g/t	Classification	Aug/t	Tonnes	Ounces Au
4	Inferred	11.72	8,000	3,000
3	Inferred	9.32	11,000	3,000
2	Inferred	7.47	15,000	4,000

a) Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.
b) There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves.
c) Mineral Resource tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers may not add due to rounding.
d) The base case is based on a 3 g/t Au cutoff and cost estimates for mining of US$56/tonne, processing of US$56/tonne and G&A of US$25/tonne; gold recovery of 80%; and a three-year trailing gold price of US$1,973/ounce.
e) Mineral Resource tonnage and grades are reported as undiluted.
f) The effective date of the mineral resource estimate is March 25, 2024

Blockmodel grades were validated by 1) visual inspection, 2) comparison of mean values for composites and corresponding block models, and 3) by swath plots. Blockmodel grades are in reasonable agreement with the underlying assays and composites and the swath plots indicate that there is neither an over- or under-estimation bias.

1.12 Recovery Methods

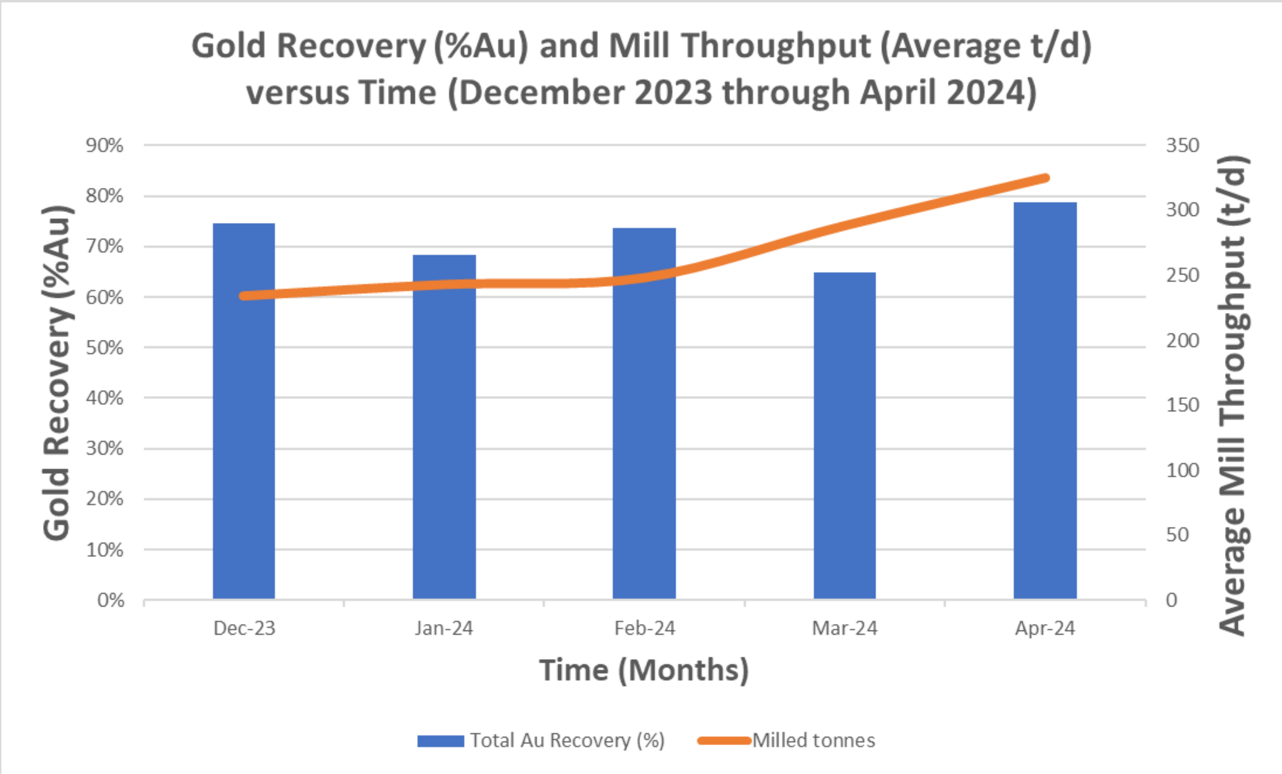
Historical metallurgical test work results were used to select the recovery method for the Project and to develop the process design criteria. The metallurgical test results indicate that the Tuvatu mineralization is amenable to a combined process of two stage gravity concentration and concentrate pre-treatment followed by cyanidation. The process facility, together with the process flowsheet, were designed based on the process design criteria.

The Pilot Plant was designed to process mineralized material at a rate of 300 t/d although, at times, it has operated at more than 500 t/d. Depending on where the mineralized feed is coming from in the mine, and the configuration of the pilot plant, the average gold recovery has varied from 65% to almost 93% gold recovery. The comminution circuits, including two-stage grinding circuit, grind the mill feed to a grind size of 80% passing (P80) 60 to 65 µm or finer. As the throughput increases, the P80 increases from approximately 74 µm to 105 µm. The coarser grind results in better gold recovery from the gravity circuits but reduces recovery in the CIL circuit.

The two-stage gravity separation circuit, including intensive cyanidation of the primary concentrators, are integrated with the secondary grinding mill to recover the coarse-free gold grains. The hydrocyclone overflow from the grinding circuit is concentrated by the secondary continuous gravity concentrator. The resulting secondary gravity concentrate is treated with a caustic pre-treatment prior to cyanide leaching. The secondary concentrator tailings are cyanide leached as well. CIL treatment is used for extracting gold from the mill feed.

The loaded carbon is stripped, and the pregnant solution is treated by a heated and pressurized electrowinning circuit to recover the gold from the solution. The pregnant solution from the intensive cyanidation reactor is sent to a separate atmospheric electrowinning cell to recover gold and silver from the solution. The carbon stripping and gold electrowinning are operated in a closed circuit. Gold doré is produced from an electric furnace located on site. The leach residue is treated by cyanide destruction using the SO2/air process prior to being filtered and trucked to the Tailings Storage Facility ("TSF") for dry stacking. The crushing circuit was designed to operate during the day shift, while the milling and leaching circuits were designed to operate 24 h/d and 330 d/a, or 365 d/a with an availability of 90.4%. Carbon stripping and gold electrowinning circuits operate as necessary, and the cycle requires approximately 24 hours of operation to produce the gold and silver sludge to feed the electric doré furnace. Figure 1.3 shows average monthly gold recovery and daily milled throughput for the period December 2023 through April 2024.

Figure 1.3 Average Monthly Gold Recovery (%) and Average Daily Milled Throughput (t/d) on a monthly basis from December 2023 through April 2024.



1.13 Project Infrastructure

The Project is located 17 km by road from Nadi International Airport. The region is well serviced with port facilities at Ba and Lautoka. Lion One maintains an operations office in Nadi, including a geochemical and metallurgical laboratory to service site operations.

The mine commenced production in June 2023. The process plant poured first gold in October 2023 all the circuits were commissioned in November 2023. The mine and process plant currently operate at a throughput rate of 300 tonnes per day. Tailings are dewatered with two filtered presses and then trucked to the tailings storage facility.

The mine currently uses reclaim water and run-off water from nearby creek. Additional water can also be drawn from the Sabeto River and wells.

An 11 kV transmission line crosses the Project site from a nearby EFL hydroelectric generation facility but because of a national shortfall in power supply from the grid, the mine generates its own power by two (2) separate diesel generator power plants for the mine operation and processing plant operation separately. An 11kV transmission line from the EFL Nagado Substation to the mine site is under construction to supply 500kVA grid power to the mill area and will be used to energize the most critical process equipment and site admin office. Land has been secured for a solar power plant that will be capable of providing full power supply to the Project during daytime.

The site mobile phone and internet systems have been upgraded and expanded for operation use. The crushing plant control room and substation are linked by a hard-wired control network, with remote stop/start capability. Mobile phone and wifi system are used to communicate between the Tailings Storage Facility and the plant for emergency response. Underground voice communications consist of primary head-end equipment and a radiating cable (leaky feeder) network system with capability for very-high frequency digital underground two channel operation.

The site administration building is located immediately east of the process plant and houses processing plant management, geology department, information technology, clerical, environmental, first aid and safety personnel. General administration, accounting, government and public relations, and geographic information systems, are housed in Lion One's Nadi office.

Site security is maintained by gatehouses located at the west and east entrances to the minesite . A paramedic will be stationed on site at all times. The site ambulance and fire response vehicles will be parked in adjacent dedicated parking bays.

The two bay exploration maintenance shop services light vehicles and provides general mechanical and electrical repair services for the drilling equipment. A mill maintenance shop and warehouse has been established next to the process water tank platform.

The mine dry, located adjacent to the decline portal and across the yard from the mine workshop, is sized for 70 personnel per shift and is equipped with shower and toilet facilities, and lockers.

Mining explosives are housed in three separate sea containers converted to storage magazines that are located approximately 150 m east of the exploration portal, well away from the main process plant and public road. Access to the magazines is via a gate with security post.

Proximity to Nadi, Latouka, and local villages provides sufficient accommodation for contractors and mine operation personnel.

1.14 Market Studies and Contracts

Lion One has contracts for the sale of gravity concentrate, flotation concentrate, carbon fines, refinery products and doré. Each of these commodities is covered under a separate contract although all contracts are with Ocean Partners UK Limited. The metal price is based on the average London Metal Exchange price for 10 days prior to the date of the transaction and as such is consistent with industry norms. Rates and charges are also considered to be within industry norms.

Shipment of the various products from the mine are covered under a separate contract with IBI International Logistics, a firm based in the UK. This contract provides for the secure transportation of shipments and the matter of insurance in the event of loss while in transit.

1.15 Environmental Studies and Permitting

Both a Construction Environmental Management Plan and Operational Environmental Management Plan were submitted to the regulatory authorities and approved on July 30, 2014. A Rehabilitation and Closure Plan was also required to be submitted. This was submitted in 2014, though no formal approval was required. All three plans will need to be updated as the mining operation continues.

Quarterly surveys of the water quality and macroinvertebrate communities have been undertaken since September 2014 to determine the baseline condition of the watercourses located adjacent to the site.

1.16 Recommendations

1.16.1 Geology

1.16.1.1 Mine Area

A program of 14,500 meters of diamond drilling is recommended to extend and better define the main zones of immediate mining interest within the mine. These include the West, SKL, Murau Extension, UR2 north of the Cabex Fault, and Zone 5. This drilling is intended to identify short-term sources of mill feed as well as to expand the currently known resource and has a budget, including sample assay costs, of CAD$2,986,000.

1.16.1.2 Regional Exploration

Lion One has acquired a significant quantity of data from exploration programs conducted by previous operators and through its own exploration that provide insights into understanding the geology and mineral occurrences of the Property area. However, this data would be of greater benefit if it were integrated into a comprehensive dataset that shares a common set of coordinates and scales. This compilation program should be followed by ground assessment, including trenching, benching, and sampling of any targets that appear to have been overlooked or under evaluated. It is recommended that this program can be carried out by one geologist and an assistant. The budget is estimated at approximately CAD$30,000 per month or CAD$200,000 for the balance of 2024. and includes salaries, analytical costs, vehicle and equipment rental and fuel and office and software support. This program will provide a baseline for future exploration work on the Property.

1.16.2 Metallurgy and Processing

Several important suggestions to improve plant performance are:

- Obtain mineralized samples from new types of mineralization found underground and conduct gravity, pre-treatment and leach tests before the mineralization is fed to the pilot plant.
- Conduct tests on a regular basis to define optimum recovery in the pilot plant.
- Modify the mill feed bin to increase active available storage volume and reduce hangups of feed in the bin. Reduce the number of draw points from four to two.
- Improve the automation of the two stage gravity concentration circuits.
- Hire an experienced Maintenance Foreman to train and work with current work force to better understand the scope and depth of their work and responsibilities.

The cost of these activities will be included in the operating budget, so no separate budget is necessary.

2.0 INTRODUCTION

Lion One Metals Limited (Lion One) is developing and exploiting the Tuvatu Mine, a high-grade, narrow-vein gold deposit (Property or Project) located in the upper reaches of the Sabeto River Valley, approximately 24 km northeast of the city of Nadi on the west coast of Viti Levu, Republic of Fiji, and 19 km by road from the Nadi International Airport.

Global Mineral Resource Services (GMRS) has been retained by Lion One Metals Limited to prepare a Technical Report, including an updated mineral resource estimate (MRE) in accordance with National Instrument (NI) 43-101. This report is being prepared to support public disclosure of the MRE and of the current state of the Project.

Information used in the preparation of this report has been obtained from Lion One and from public sources. Sources of information are noted in Section 27 References, and, where appropriate, referenced within the report.

D. Holden visited the Property on October 15 to October 22 2023, June 4 to June 11, 2022, February 16 to 23, 2020; December 1 to 7, 2019; October 27 to November 3, 2019; September 18 to 30, 2019; June 29 to July 7 2019; April 7 to 14, 2019; March 7 to 15, 2019; and a total of 12 other times, for approximately 7 to 10 days each time, between 2017 to 2018. The purpose of the visits was to conduct exploration, reconnaissance, data reviews, reporting, and targeting.

G. Mosher spent the period March 26 to May 8, 2024, inclusive at the Lion One office in Nadi and at the Tuvatu Mine. Details of the Mosher site inspection are set out in Section 12, Data Verification, of this report.

W. Witte visited the Property twice: the first visit was from Tuesday, October 10, 2023, until Friday, October 27, 2023 (17 days). The second Property visit was from Tuesday, November 28, 2024, until Friday, December 1, 2023) (4 days). The first property visit was to review the overall mine operation with a special focus on pilot plant operations and deficiency reviews, the TSF and laboratory operations and procedures. The second property visit was to provide support for a due diligence review by outside consultants representing a lender.

3.0 RELIANCE ON OTHER EXPERTS

G. Mosher, who is responsible for Section 4.0 of this report, has relied upon Lion One for the legal description of the Property as set out in Sections 4.1 and 4.2, as well as terms of acquisition, permits and other obligations, and the identification and description of political, environmental, and other risks with respect to the Property as described in Sections 4.3, 4.4, and 4.5 of this report. This information has been obtained from Mr. Patrick Hickey, Chief Operating Officer of Lion One

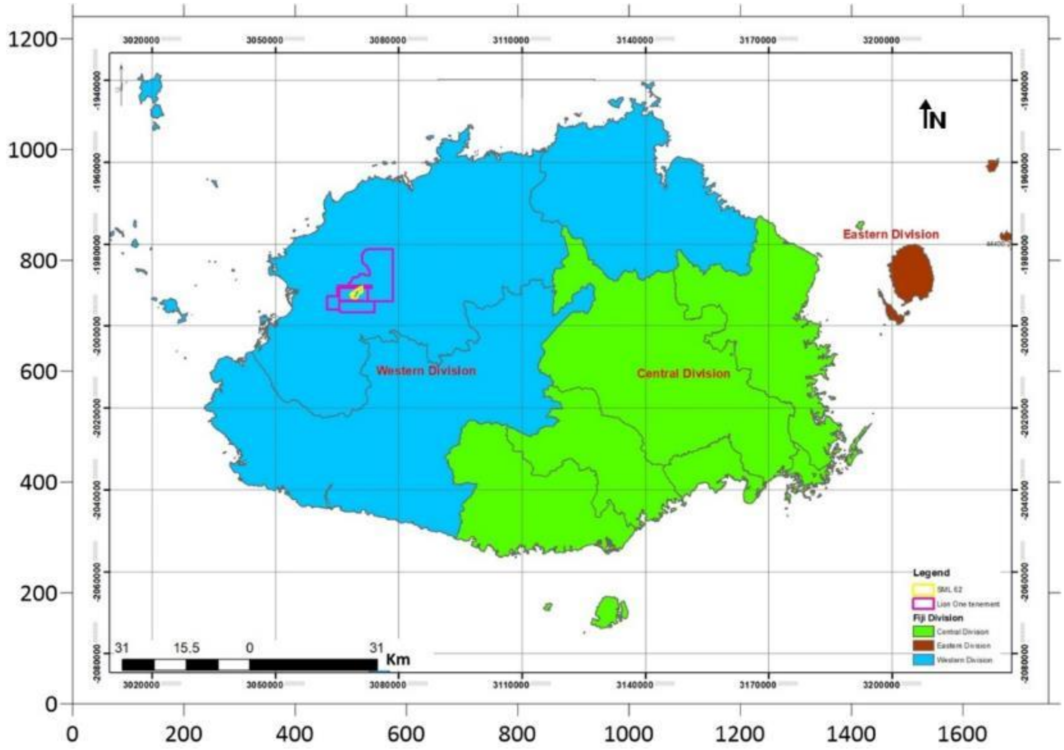
G. Mosher is not qualified to and has not verified the data referenced above.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Property Location

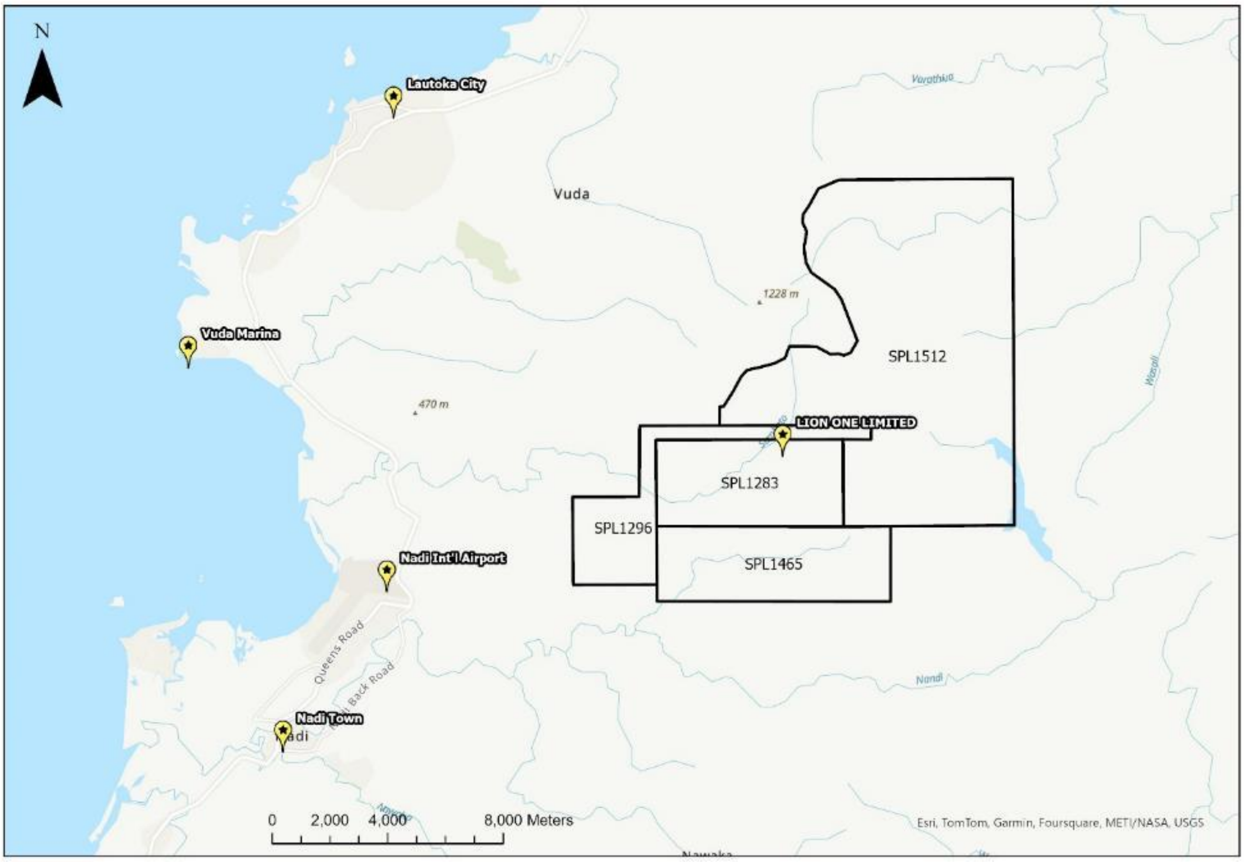
The Property is located on Viti Levu, one of the major islands comprising the Fiji archipelago (Figure 4.1), 24 km northeast of the city of Nadi and 15 km from the Nadi International Airport (Figure 4.2). The geographic center of the Property is approximately 17.71 degrees South Latitude and 177.58 degrees East Longitude. The corresponding UTM coordinates (WGS 84) are Zone 60K, 561,599 East and 8,041,671 South.

Figure 4.1 Tuvatu Mine Property Location Map Regional



Source: Lion One 2024

Figure 4.2 Tuvatu Mine Property Location Map Local



Source: Lion One 2024

4.2 Property Tenure

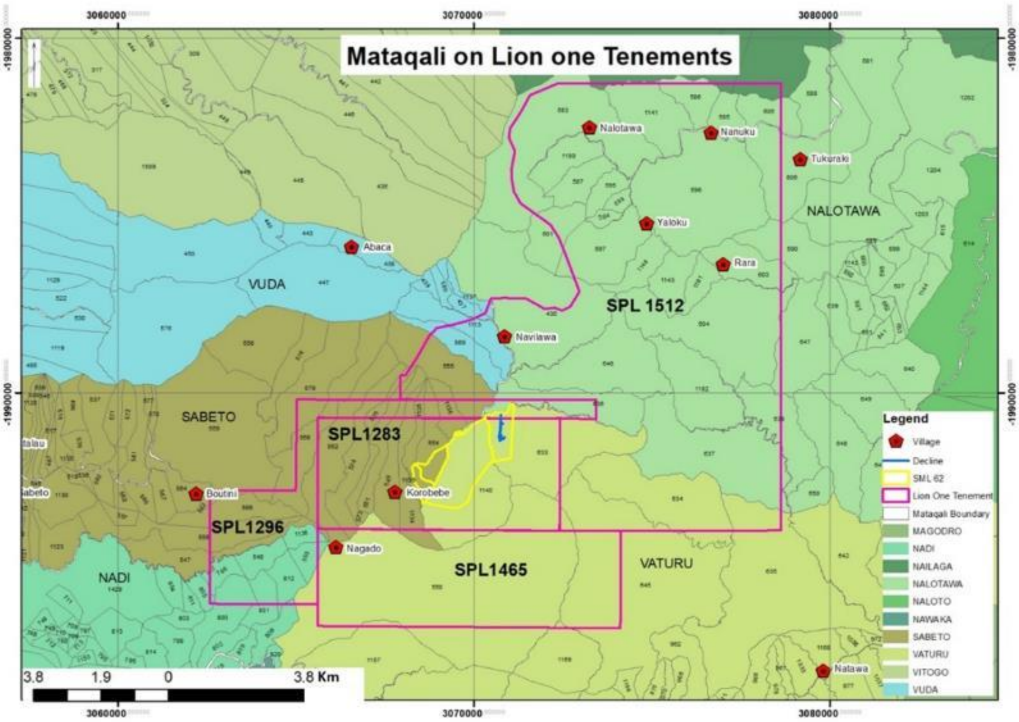
The Property is comprised of four Special Prospecting Licences (SPL), with a total area of 20,170.5 ha, held 100% by Lion One Limited, a subsidiary of Lion One Metals Limited. (Table 4.1, Figure 4.3). A Special Mining Lease (SML), 384.5 ha in area, covering the Tuvatu Mine area was granted to Lion One on January 22, 2015, and remains in good standing until February 28, 2035 (Table 4.1). In Figure 4.2, the term "Mataqali" refers to the underlying Fijian Land Owing Units. As of the effective date of this report, the exchange rate of Fijian to US dollars is $1 Fijian = $0.44 US.

Table 4.1 Tenement Details

Tenement	Area Size (ha)	Expenditure (life of tenement)	Date of Grant	Issue Date	Expiry Date
SPL 1283	1580.5	FJD$1,290,000	19-Sep-13	24-Aug-20	23-Aug-25
SPL 1296	1335.7	FJD $1,440,000	19-Sep-13	24-Aug-20	23-Aug-25
SPL 1465	2099.3	FJD $3,050,000	05-Mar-22	05-Mar-22	04-Mar-25
SPL 1512	8620.0	FJD$15,333,305	14-May-19	14-May-19	13-May-24
SML 62	375.1	N/A	22-Jan-15	22-Jan-15	28-Feb-35

Note *Renewal application for SPL 1512 is being prepared in accordance with statutory requirements, and renewal is pending.

Figure 4.3 Tenement Lease Boundaries of Tuvatu Gold Project with Mataqali Boundaries



Source: Lion One 2024

There are three types of land tenure in Fiji: native, crown, and freehold. The Property lies within native land, classified as native reserve land. Native land is vested in the National Land Trust Board (NLTB) under the Native Land Trust Act which means that only the NLTB may grant legal interest in native land. Most, if not all, of the land covered by Lion One exploration and mining tenements is within native land reserve which cannot be leased to any non-Fijian unless such land is de-reserved.

For Lion One to acquire surface rights to this land, a minimum of 60% of adult members of the Land Owning Unit (“LOU”) must firstly agree in writing for the land to be de-reserved and then Lion One must negotiate for a land lease that requires consent of 50% of adults in the LOU.

Lion One has entered into a Surface Lease Agreement with the iTaukei Land Trust Board (iTLTB), which governs the native land ownership rights in Fiji. The iTLTB manages the lease agreements between native landowners and tenants. The Surface Lease Agreement between Lion One and the iTLTB is required prior to obtaining a mining lease from the Fiji Mineral Resource Department (MRD).

There are also native Fijian leaseholders in the Property area with whom Lion One must consult regarding acquisition of SPL tenement areas. Compensation agreements must be finalized with these leaseholders and landowners to gain access to the lease area and Exploration tenements.

About 5% of the SPLs are under cane lease, through the Agricultural Land and Tenants Act (ALTA).

4.3 Royalties, Agreements and Encumbrances

There are no option agreements or joint venture terms in place for the Property. There are no known obligations on ground covered by the Prospecting and Mining leases comprising the Property other than three royalty agreements as follows:

4.3.1 Laimes Royalty

Effective October 2010, a 1.5% perpetual net smelter return (NSR) royalty is payable to Laimes Global, a corporation under the laws of the British Virgin Islands. The royalty percentage for all minerals is based on the current price of gold, such that if gold is less than $500 (average of the London Bullion market, afternoon fix, spot gold prices in US$ per ounce reported for the calendar month of production), the royalty shall be 0.5% NSR; if gold is greater than US$500 but less than US$1000, the royalty shall be 1.0% NSR, and if gold is greater than US$1000, the royalty shall be 1.5% NSR. For determination of gold equivalent, the royalty payable on minerals other than gold shall be converted to gold equivalent by using the average monthly spot prices reported.

4.3.2 Nebari Royalty

Effective February 2023, a 0.5% NSR royalty is payable to Nebari Natural Resources AIV, a limited partnership formed in Delaware, USA and Nebari Gold Fund, a limited partnership formed in Delaware, USA. The royalty shall only be payable once monthly production exceeds 2000 oz of gold from the Property (royalty trigger), and shall be payable monthly thereafter, regardless of the amount of gold produced in any month. A termination of the royalty can occur once total production from the property has reached 400,000 ounces of gold.

4.3.3 Fiji Government Royalty

In Fiji, a royalty is payable to the state government when a mineral is sold, disposed of, or used. The *Fiji Mineral Resources Act 1989* requires that the holder of a mining lease or mining claim lodge a royalty return, and any royalty is payable at least annually for all leases and claims held, even if no production took place but saleable metal was won.

The Minister allows samples with small quantities of gold to be sent for analysis; however, under the law in Fiji, trial mining and bulk sampling can be carried out and any significant gold won as determined by the Minister will be subject to royalties. Royalties for the Property will be 5% of the value of precious metal exported. This royalty is then split with parts compensating the community and other stakeholders.

An partial exemption to this royalty was negotiated with the Fiji Department of Mineral Resources on September 15, 2023, resulting in the following royalty schedule:

Table 4.2 Royalty Exemption Terms, Fiji Government

Year	Royalty Rate (%)
2023	0
2024	0.5
2025	1.1
2026	2
2027	3
2028 and thereafter	5

4.4 Environmental Liabilities

Lion One has complied with the preparation and submission of all required environmental studies and documents. There are disturbances associated with mine development and the limited production activities to date, but there are no other environmental liabilities on the Property.

4.5 Permits and Permitting

In Fiji, the 1965 Mining Act covers the licence holder's right to continue exploration and development programs. The guiding principle of Fiji's mineral investment policy is that government assumes that the grant of an exploration license implies a right to proceed to eventual project development. This is subject to the license holder maintaining a vigorous geological and/or feasibility study program approved by the Minister responsible for Mineral Resources. To date, Lion One has maintained an appropriate exploration program in good standing with the MRD.

All required permits are in place and current for the mining and processing operation as well as for the contemplated expansion of the processing plant.

4.6 Risks

There are no other known significant factors and risks that may affect access, title, or the right or ability to perform work on the Property.

Fiji is an attractive mining jurisdiction; it ranks 31 out of 86 countries reviewed in the 2023 Fraser Institute Annual Survey of Mining Companies which compares favorably with Alberta (30), Norway (37), Chile (38) and Nunavut (41).

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Access

The Property is located near the west coast of Viti Levu, 24 km northeast of the Town of Nadi, and approximately 17 km by road from the Nadi International Airport. The area is steep and rugged, and access is via the Sabeto Road, which is sealed for about half the distance to the Property. The Sabeto Road turnoff is located approximately 10 km north of the Nadi International Airport and the Sabeto Road follows the western side of the Sabeto River. The Monasavu Hydroelectricity power line crosses the Property.

Nadi is the closest town and is serviced by direct daily flights from Brisbane, Melbourne, Sydney, and Auckland by several Australian airlines, Fiji Airways, and Air New Zealand. On several days in each week there are flights to other New Zealand cities, Los Angeles and San Francisco in the USA, Vancouver in Canada, South

Korea, Hong Kong, and China, in addition to other Pacific islands. A network of local roads and pastoral tracks provide good access to most of the Property area. During the wet season, from November to March, creeks may become intermittently impassable and in wet weather, four-wheel drive vehicles are required to access the tenements. Creeks and adjacent areas are generally thickly vegetated; spurs and ridges are dominated by open grasslands.

5.2 Climate

Fiji experiences a mild, tropical South Sea maritime climate without great extremes of heat or cold. Winds are generally light to moderate and blow from east-southeast during all seasons. Maximum temperatures average 28 to 30°C for the cooler months (May to October); temperatures during November to April are higher (31 to 32°C) with heavy downpours. Monthly minimum temperatures vary between 18 and 23°C.

Fiji is occasionally traversed by tropical cyclones. These are mostly confined to the period November to April, with greatest frequency around January and February. On average, some ten to twelve cyclones per decade affect some part of Fiji, with two or three causing severe damage. Specific locations may not be directly affected for several years but the dominant northwest tracks give some increased risk of damage in the outlying northwest island groups.

Mean rainfall in the area varies from 50 mm in July to a high of 300 to 325 mm during the December to March wet season.

5.3 Local Resources

The major towns near the Property are Lautoka, Nadi, and Ba. Lautoka, Fiji's second-largest city, is located 30 km from the Property. The local economy relies heavily on the sugar industry and tourism. Nadi is Fiji's third-largest city and a tourist and business hub because of the presence of the Nadi International Airport.

The major land use in the Project region is pastoral, with most income generated from sugar cane, copra, and rice production. Fishing, manufacturing, and tourism are also employers in the region. Skilled workers for a mining operation can be drawn from the coastal Nadi-Lautoka-Ba region. There are also experienced former mine workers available from the Vatukoula Gold Mine.

5.4 Infrastructure

Little infrastructure exists within the local area of the Property other than the mine itself. Most of the regional infrastructure, such as transport, telecommunication, and energy revolve around the nearby cities of Nadi and Lautoka.

Nadi is equipped with modern technology for both internal and international telecommunications. All major towns have digital telephone exchanges, and the islands are linked by cable and satellite to worldwide networks. The Property area is covered by 2G/3G mobile-phone reception.

Energy Fiji Ltd. (EFL), formerly called the Fiji Electrical Authority, holds a monopoly for all facets of the energy sector, including generation, transmission, and distribution. Hydroelectric and diesel are the two sources of power generation for EFL. Installed power generation capacity currently stands at 237 MW; however, rising use of electricity has prompted the government to call for submissions from independent power producers. EFL has an 11 kV line at Korobebe village. This line could be upgraded by EFL to 33 kV from the Sabeto turnoff to the mine site. The villages around the Property chiefly utilize fuel wood and small diesel generators.

5.5 Physiography

Upland areas around the Property are grassland. Stream valleys and their perimeters are heavily vegetated. Several intermittent and perennial streams are located within the exploration tenements and mining lease area. Sabeto River is the largest perennial water feature in the Property area and he Mine draws sufficient water for its needs from the Sabeto River.

Elevations within the Property range from 50 m to a maximum of 700 m above mean sea level. The area is hilly with slopes of 15 to 30% being common.

5.6 Sufficiency of Surface Rights

The Property contains sufficient surface rights for mining operations, tailings and waste rock storage and the plant site.

6.0 HISTORY

6.1 Ownership

Documented mineral exploration began during the early part of the 20th century with prospecting in the upper reaches of the Sabeto River, with no evidence that the mineralization at Tuvatu was discovered at that time. Some pitting and limited underground work took place between 1945 and 1952 when Bayley and Bryant operated Prospecting License (PL) 689. Later work in the area was undertaken by the Nadele Syndicate.

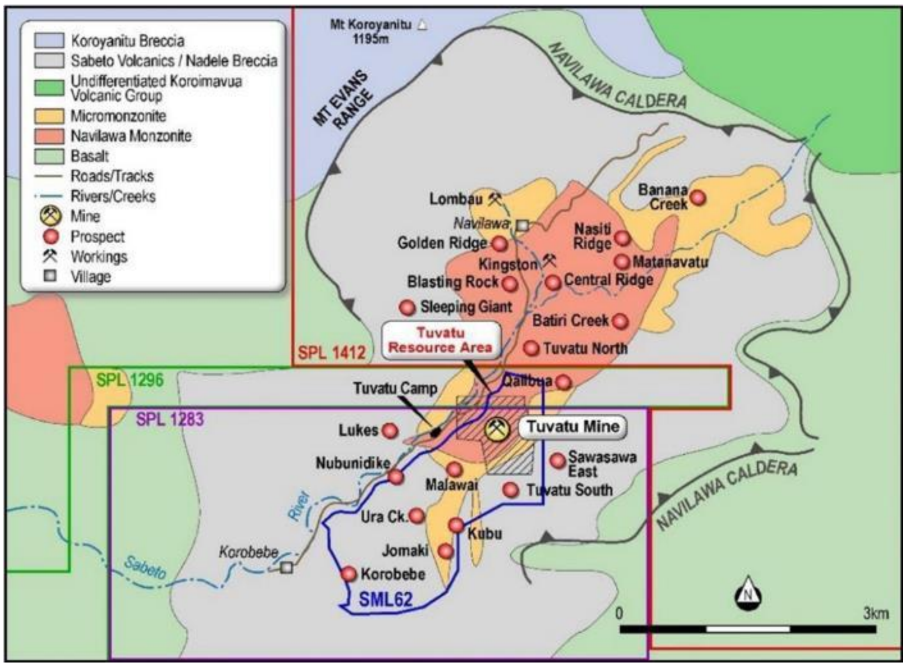
During the period from 1977 to 1979, Aquitaine Fiji explored the Project area. In 1987, Geopacific Ltd. (Geopacific) acquired SPL 1283 and 1296 and during the next ten years invested approximately $1.5 million in exploration. For three of those years, Geopacific had a joint venture with Noranda Pty Ltd. In December 1995, Geopacific entered into an option agreement with Emperor Mines Ltd. and in June 1997, Emperor Mines Ltd. exercised its option to purchase 100% of the tenements. Emperor Mines Ltd. then incorporated Tuvatu Gold Mines (TGM), to manage the Property.

In 2007, following the closure of the Vatukoula Gold Mine, Emperor Gold Mining Company Limited sold its Fijian assets, including the Tuvatu Property, to Westech Gold Pty Ltd and Red Lion Management Ltd. Licenses covering the Property were reissued in the name of Lion One by the Fijian Government. Subsequently, American Eagle Resources gained control of Lion One. Lion One is the product of the reverse takeover in January 2011 of X-Tal by American Eagle Resources.

6.2 Overview

Figure 6.1 shows the names and locations of the major mineral occurrences that were discovered and explored by previous operators. Most of these occurrences remain of significant exploration interest. Table 6.1 is a chronology of exploration activity by previous operators up to the acquisition of the property by Lion One.

Figure 6.1. Tuvatu Principal Mineral Occurrences



Source: Lion One 2024

Table 6.1 Tuvatu Chronology of Historic Exploration

Year	Company	Target Area	Geology/Prospecting	Geochemistry	Geophysics	Drilling
1906–1923	-	Kingston Mine, Central Ridge, Blasting Rock, Nasiti Ridge, Qalyalo, Vunatawa, Golden Ridge	Shaft Sinking, Bulk Sampling Trial Mining		-	-
1943–1947	South Pacific Mining	Kingston Mine, Central Ridge		Rocks	-	3 DDH
1963	Higgs & Coulson	Kingston Mine, Central Ridge		Streams, Soils	-	-
1963–1964	Geological Survey of Fiji	Kingston Mine, Central Ridge, Blasting Rock	Geological Mapping	Streams, Soils	-	9 DDH (393m) Around Kingston Mine
1968–1969	Amad JV with Ah Koy Mining Syndicate	Central Ridge, Nasiti Ridge		Streams (36), Soils (378), Rock (16)	Ground: IP	-
1970–1976	Barringer/Amad	Kingston Mine, Central Ridge, Nasiti Ridge		Soils (804)	Ground Magnetics & IP; Airborne Magnetics	5 DDH (731m); No gold assays
1977–1979	Aquitaine/ Amoco	Central Ridge, Red Ridge, Nasiti Ridge, Vatume Hill		Soils (804), Rocks (66)	-	-
1979–1980	Aquitaine/Cluff	Central Ridge, Red Ridge	Mapping	Rocks (281)	-	1 DDH
1985–1986	Venture Exploration	Kingston Mine, Central Ridge, Nasiti Ridge, Golden Ridge	Re-surveyed Previous Workings and Drillholes	Soils, Rocks (152)	Reviewed Barringer Work	-
1986–1993	Pan Continental / Venture	Kingston Mine, Central Ridge, Blasting Rock, Golden Ridge, Red Ridge, Vunatawa, Ngalyalo, Vatume Hill, Banana Creek	Geological Mapping	Soils (+106), Rocks (+857), Streams	Airborne Magnetics and Radiometrics	14 RC (1,902m)
1994–1998	CRAE	Nasiti Ridge, Nasala, Banana Creek, Tuvatu North		Rocks (90)	Ground: Magnetics, IP	1 RC; 3 DDH
1999–2002	Oribi Resources	Banana Creek	Geological Mapping	Soils (215), Rocks (6)	-	5 DDH (520m)
	Alcaston/ Mincor			Rocks (181)	-	3 DDH (595m)

Year	Company	Target Area	Geology/Prospecting	Geochemistry	Geophysics	Drilling
2002–2004		Banana Creek, Central Ridge, Tuvatu North				
2007–2008	Golden Rim/ Mincor	Central Ridge, Tuvatu North	Reassessment of Exploration Data	Rocks (+368), Soil (+858), Streams (+132)	Airborne: Magnetics, IP	8 DDH (1,670.5m)
2002 - 2008	Tuvatu Gold Mining	Tuvatu Mine			Surface RC Surface DDH Underground	81; 9,625m 217; 51,484m 112; 13,408m

6.3 Exploration by Operator

The following chronological history of exploration is modified from Tetratech 2022 and describes the main exploration activities of companies that previously held the Property or portions of it.

1906 – 1923 Various Operators

The Kingston mine shaft was sunk to 14.6 m. Handpicked mineral materials from the shaft graded up to 176.27 g/t Au, 130.05 g/t Ag, and 40.6% Cu. A bulk sample of 6 tons graded 84 g/t Au, 130 g/t Ag, and 33% Cu. The shaft was later flooded and filled with sediment from the nearby Sabeto River.

In 1915, the Kingston mine adit was driven 9.1m, and 1.4 tonnes of mineralized material containing 18.36 g/t Au and 7% Cu, were removed.

Short adits were dug into malachite-bearing rocks at Central Ridge, Blasting Rock, Nasiti Ridge, Qalyalo, Vunatawa, and benches cut at Golden Ridge.

1943–1947 South Pacific Mining Company

In 1946, the South Pacific Mining Company drilled three holes, sampled all known workings, and analysed for gold. No follow-up work was done.

1963–1964 Higgs & Coulson and The Geological Survey of Fiji

In 1963, Higgs & Coulson conducted stream sediment and residual soil (ridge and spur) sampling programs that identified four large regional copper anomalies. Samples were collected from 30 to 45 cm depths corresponding to the upper C soil horizon.

The Geological Survey of Fiji conducted a program of geological mapping, stream sediment and soil sampling, and drilling of nine (9) holes, from 11 to 109m depth and totalling 393m, to evaluate the copper potential of the Kingston mine area. The Survey concluded that no further work was warranted.

1968–1969 Amad NL and Ah Koy Mining Syndicate

Amad NL, in a joint venture with Ah Koy Mining Syndicate, completed stream sediment (36 samples), rock chip (16 samples), and ridge and spur soil sampling (378 samples) covering much of the present SPL 1412. These surveys identified a 2.4 km x 450 m copper, gold, and silver anomaly centered around the Kingston mine workings. Work was then concentrated on a gridded area covering the Kingston mine, Central Ridge, and Nasiti Ridge.

1970–1976 Barringer Fiji Ltd

In 1970, Barringer Fiji Ltd. farmed into the Amad license (PL1004) and carried out soil sampling on a 200 x 400-foot grid, ground IP, and ground magnetics. Several soil anomalies of greater than 200 ppm Cu were defined.

Five wide-spaced drillholes, 90 to 208 m in depth and with an aggregate length of 731m, were drilled in the Central Ridge – Nasiti area. Three holes tested geochemical anomalies and two holes tested IP anomalies. In general, low-grade mineralization was encountered. No gold assays were conducted. Work during this period concentrated on exploring for porphyry copper style mineralization and little or no attention was paid to gold potential. The geology of DDH 4 was summarized as "biotite andesite porphyry host, brecciated and shattered with numerous carbonate-quartz stringers with magnetite, pyrite and chalcopyrite". No assays are available.

1977–1979 Auqitane Fiji and Amoco Joint Venture

Aquitaine Fiji, in a joint venture with Amoco, conducted an extensive gridding and soil sampling program with sample stations at 50-m intervals on lines 200 m apart over a 2.8 km x 3.6 km area. An east–trending copper anomaly was identified. Only every second soil sample was analysed for gold, but some broad gold anomalies were identified with reported values of 0.1 g/t Au. Gold was assayed using atomic absorption spectrometry (AAS) with a 0.1 g/t detection limit. After this program, Amoco ceased exploration in Fiji.

1979–1980 Aquitane Fiji and Cluff Minerals Joint Venture

Aquitaine Fiji, in a joint venture with Cluff Minerals, investigated the alteration zones of Vatume Hill and Red Ridge for their gold potential. Road and track cuts were mapped and channel sampled, and one diamond hole (AC1) was drilled on Red Ridge. Although intense pyrite alteration and quartz veining was intersected in AC1, no significant gold values were reported. Aquitaine relinquished the ground in 1980.

1984–1986 Venture Exploration

In 1985, Venture Exploration in association with geologist K. Glasson conducted a program of tape and compass surveying of all known workings and drill hole collars on SPL 1218. All workings were resampled and analysed for a suite of elements. Glasson also conducted auger soil sampling and assayed for gold. This work established that gold is associated with copper in the workings at Nasiti, Central Ridge, Kingston, and Blasting Rock, and that these workings line up in an east–west direction parallel to the intrusive contact. The workings at Golden Ridge, Red Ridge, Vunatawa, Vatume Hill, and Ngalyalo, however, contained no gold nor anomalous copper.

Previous geophysical data was reviewed by P. Gunn in 1985. Gunn suggested that the Barringer IP concentric chargeable zones could be a response from a pyrite shell around the copper-gold mineralization in a porphyry-type setting. The IP anomaly is 600 m southwest of the Kingston Mine in a topographical low. The nearest drill holes are approximately 300 m to the north of the anomaly boundary: GD8 averaged 620 ppm Cu over 123 m, and in GD9, drilled to 109.9 m depth, copper assays ranged from 200 ppm to 0.55%.

1986–1993 Continental Resources

In 1986, Continental Resources (Fiji) Ltd, (Continental) a subsidiary of Pan Continental Mining, took over management of SPL 1218 in joint venture with Venture Exploration. Continental undertook detailed mapping, extensive rock chip sampling, and ridge and spur soil sampling of the Kingston Mine, Central Ridge, Golden Ridge, Vatume Hill areas, and bulldozer cuttings at Banana Creek.

Continental also carried out regional mapping and sampling of all the main drainages in SPL 1218. This sampling delineated Au and As anomalies at Upper Nanganga Creek and Southern Ridge. Gold grades obtained from surface samples in the vein system at Banana Creek, approximately four km northeast of Kingston, ranged from lower detection limit up to 70 g/t.

Four RC holes were drilled to evaluate quartz-alunite related alteration to the east of the main Kingston area at Vatume Hill, Vunatawa, and Golden Ridge. Ten RC holes, to a maximum 150 m depth, were also drilled into the quartz-sericite altered monzonites at Central Ridge. These holes mainly tested Venture Exploration geochemical anomalies.

In 1987, Austirex flew a 300-line km airborne magnetic and radiometric survey with a ground clearance of 60 m over the Kingston area.

Continental concluded that: 1) the host rocks for mineralization at Central Ridge were late-stage andesite porphyry dykes, 2) the epithermal alunite+quartz+diaspore alteration at Vatume Hill is controlled by north-northeast-trending linears, 3) the gold in soil samples at Vatume Hill are located lower than the argillic alteration and may represent a boiling zone, and 4) the contact zone between monzonite and a 500-m wide monzonite porphyry body had been a locus for intense alteration, dyking, and Cu-Au mineralization.

In 1990, M.B. Mills from the Australian National University carried out a mapping/petrology honours thesis titled "The Geology of the Navilawa Area".

1994–1998 CRA Exploration

CRA Exploration was granted SPL 1369 in 1994 and held the licence until 1998.

CRAE carried out an IP survey that defined six chargeability anomalies that were considered prospective for disseminated porphyry style Cu-Au, and possibly high grade structurally controlled epithermal Au (Cu) mineralization. Four of these anomalies coincided with extensive zones of intermediate argillic and sericitic alteration.

CRAE drilled one RC and three diamond holes, totalling 751 m, over four chargeability anomalies. The source of the IP chargeability anomaly at the Southern (RC95KN1), Nasala (DD95KN2), and the Nasiti (DD95KN3) anomalies was attributed to the presence of 1 to 3% disseminated and veinlet pyrite related to moderate propylitic or sericite-pyrite alteration of the monzonite and shoshonite. CRAE concluded that little scope exists for defining significant mineralization at reasonable depths.

Hole DD95KN4 drilled over the Waloru chargeability anomaly intersected a weakly mineralized breccia hosted by strongly potassic altered monzonite with minor chalcopyrite and bornite. No significant copper or gold intersections were obtained.

Sampling at Banana Creek suggested that some of the high-grade gold values associated with quartz veins and shears may be attributable to localized secondary enrichment.

1999–2001 Oribi Resources

SPL 1412 was granted to Oribi Resources (Oribi) in 1999.

Oribi conducted reconnaissance mapping and rock chip sampling in the creeks between Tuvatu and Banana Creek to see if there was a link between the two mineralized zones. Only very minor veins or shears were found, and high-grade alteration was lacking. Also, many of the structural features had a more northerly strike than anticipated.

A tape-and-compass grid was established over Banana Creek, parallel to the potassium radiometric anomaly at 48 degrees true north. The base line was 2.2 km long, with 200m spaced lines with 50m stations.

C horizon soil sampling was conducted at Banana Creek strong gold anomaly (>0.5 g/t Au) was outlined over an area of 1 km x 0.3 km. The gold-in-soil anomaly coincides with the strong potassium radiometric anomaly possibly indicating hydrothermal alteration.

Geological mapping (1:2,000 scale) and rock chip sampling (six samples) were conducted at Banana Creek.

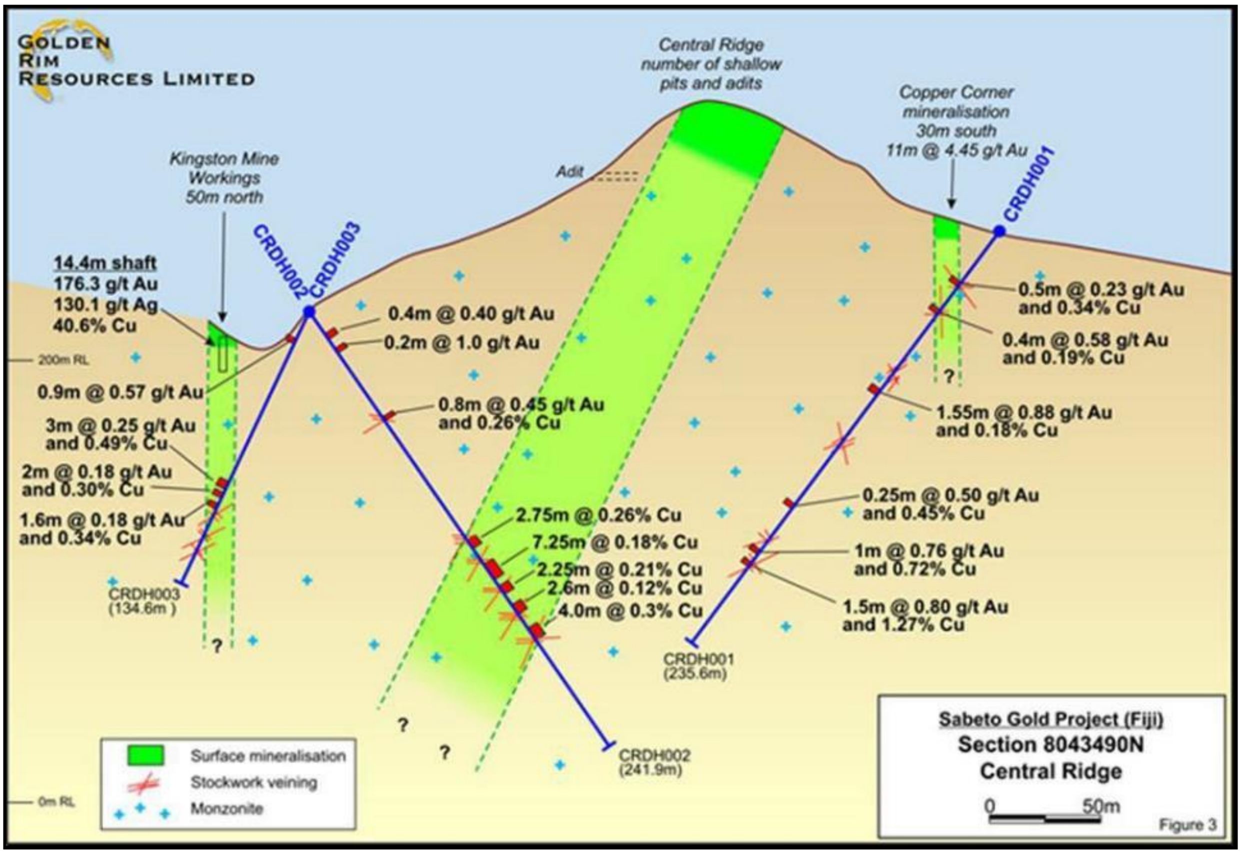
Five diamond drillholes totalling 519.9 m, were completed at Banana Creek.

2002–2008 Golden Rim Resources

TGM flew an airborne magnetic and radiometric survey over the entire tenement area. In the Central Ridge Prospect area, previous work had located gold and copper values in rock chips, and radiometric surveying also defined anomalies. Subsequently, four diamond holes were drilled by Golden Rim Resources (GRM).

Mineralization intersected typically consisted of biotite monzonite with carbonate/pyrite veining and patchy silicification. Much of the veining and silicification was associated with highly fractured zones within the main monzonite body. The most significant copper and gold mineralization was intersected in drillhole CRDH 001, that was collared near historical workings and drilled towards the old Kingston Mine. Significant intersections from holes CRDH 001 to 003 are presented in Figure 6.2 Vertical Cross-Section Showing Significant Gold Values in Drillholes at Central Ridge. The fourth hole, CRDH 004, was drilled to test possible structural intersections to the south of the historical workings.

Figure 6.2 Vertical Cross-Section Showing Significant Gold Values in Drillholes at Central Ridge



Source: Lion One 2024

Four diamond holes (TNDH 001 to 004) were completed at the Tuvatu North prospect for a total of 948.4 meters. This prospect area lies immediately north of the Tuvatu exploration adit. Major potassium radiometric anomalies were identified at this location from the survey conducted by GRM, and a number of historic IP anomalies were identified but not tested by CRAE in the mid-1980s. Mapping of tracks and creeks in the area identified abundant silica/limonite veining, but gold values were low.

Drillhole TNDH 001 intersected numerous zones of bleaching associated with silica/pyrite veins. The veins typically consist of fine-grained, dark grey pyritic silica, some of which exhibit rhythmic banding parallel to the vein margins. Individual veins vary from less than 1 cm to over 30 cm in thickness. Zones of intense veining are up to eight (8) m in thickness. Assay results from this hole were low.

Hole TNDH 002 intersected similar but less-intense mineralization than hole TNDH 001.

TNDH 003 was drilled to test a strong IP chargeability anomaly. Numerous pyritic shears were intersected together with carbonate/pyrite veins and stockworks. A broad zone of anomalous gold, arsenic, and sulphur was intersected from 98.45 to 117.85 m. The historic IP chargeability anomaly is believed to be caused by the abundance of pyrite intersected in the anomalous zone.

TNDH 004 was collared from the same location as TNDH 001 but drilled to the west, under the Sabeto River. This hole failed to intersect significant gold mineralization, with the best intercept being 0.8 m at 0.31 g/t Au from 169.5 m in a pyritic carbonate veined zone. A broad zone of quartz/pyrite +/- chalcopyrite veining was intersected between 138.65 and 171.6 m. Intersections within this zone included 0.9 m at 0.2% Cu from 143.85 m; 2.2 m at 0.34% Cu from 149.3 m; 0.7 m at 0.25% Cu from 164.7 m, and 1 m at 0.3% Cu from 168.5 m. Figure 6.3 illustrates the significant assay results from holes drilled at the Tuvatu North prospect.

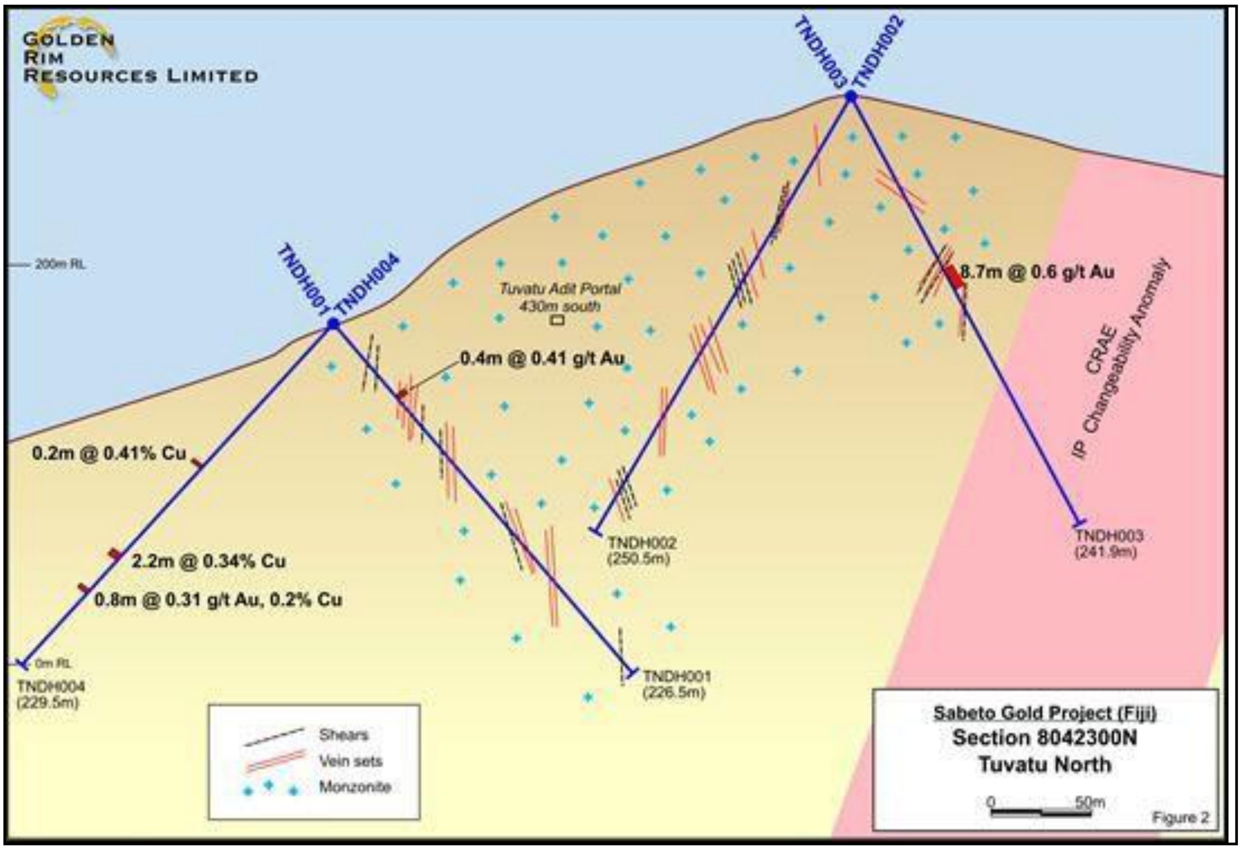


Figure 6.3 Significant Drillhole Assay Intercepts Tuvatu North Prospect

Source: Lion One 2024

Golden Rim Resources also carried out geological mapping and geochemical sampling. Figures 6.4, 6.5, and 6.6 show the locations of geochemical sampling together with resulting gold values.

Soil sample results outlined two new gold prospect areas at Nasiti Ridge and Nasiti Ridge North. Ground checking of the Nasiti Ridge soil anomaly (up to 2.42 g/t Au) located oxide copper mineralization associated with a late-stage monzonite dyke. This area has been called the Matanavatu Prospect. Numerous, thin, silica/limonite veins occur with the dyke and copper occurs as malachite stains on fractures and joint surfaces.

At Nasiti Ridge North, located approximately 800 m west of Banana Creek, a line of anomalous soil samples extends for approximately 500 m. Assay results from aplitic veins located at the Nasiti Ridge North soil anomaly returned low gold values. This result suggests that the low-level gold anomalies obtained from soil samples are probably due to mineralization associated with siliceous aplitic dykes.

Samples of limonitic aplite veins located between the Matanavatu and Central Ridge Prospects returned values of 1.14 g/t Au and 1.6 g/t Ag. Another sample of similar material returned a value of 0.19 g/t Au, further confirming that the aplite dykes in the area carry low-level gold mineralization. Additional sampling at the Matanavatu Prospects returned a result of 11.85 g/t Au, 7.0 g/t Ag, and 0.37% Cu. Mapping indicates that the main structural trend at this prospect is west-southwest, and it is probable that this trend continues at least 750 meters west to the Copper Corner Prospect at Central Ridge. A float sample of quartz vein material at Central Ridge returned a grade of 9.25 g/t Au and 14.9 g/t Ag. The source location of this sample is uncertain.

Ground checking of the 17.3 g/t Au composite soil sample from Banana Creek Prospect located a 30-cm-wide quartz vein. Rock chip sampling of this vein returned an average grade of 1.87 g/t Au. The gold anomaly over the Banana Creek Prospect is approximately 630 m in diameter. Additional sampling at the Banana Creek Prospect returned results of 20.0 g/t Au and 11.6 g/t Ag from a 0.5 m wide quartz vein, and 19.45 g/t Au from a narrow quartz vein that previously had returned maximum gold grades of 0.32 g/t Au. These gold grades are significantly higher than previously obtained from surface samples in the Banana Creek area.

An assay of 0.17 g/t Au was obtained from Sevekoro Creek, immediately north of the historical Golden Ridge workings. Mapping in this area located a broad zone of fracturing associated with major north-northeast-trending fault structures in biotite monzonite. The fault zones occur as clay-rich pyritic cataclasites or as zones of very high jointing intensity. Clay/pyrite +/- quartz occurs along the joint planes, and the host rocks are generally weakly pyritic. A single sample from a shear zone in this area returned a value of 9.16 g/t Au. Other shears sampled in the area returned anomalous but lower gold values, typically ranging between 0.11 to 0.35 g/t Au.

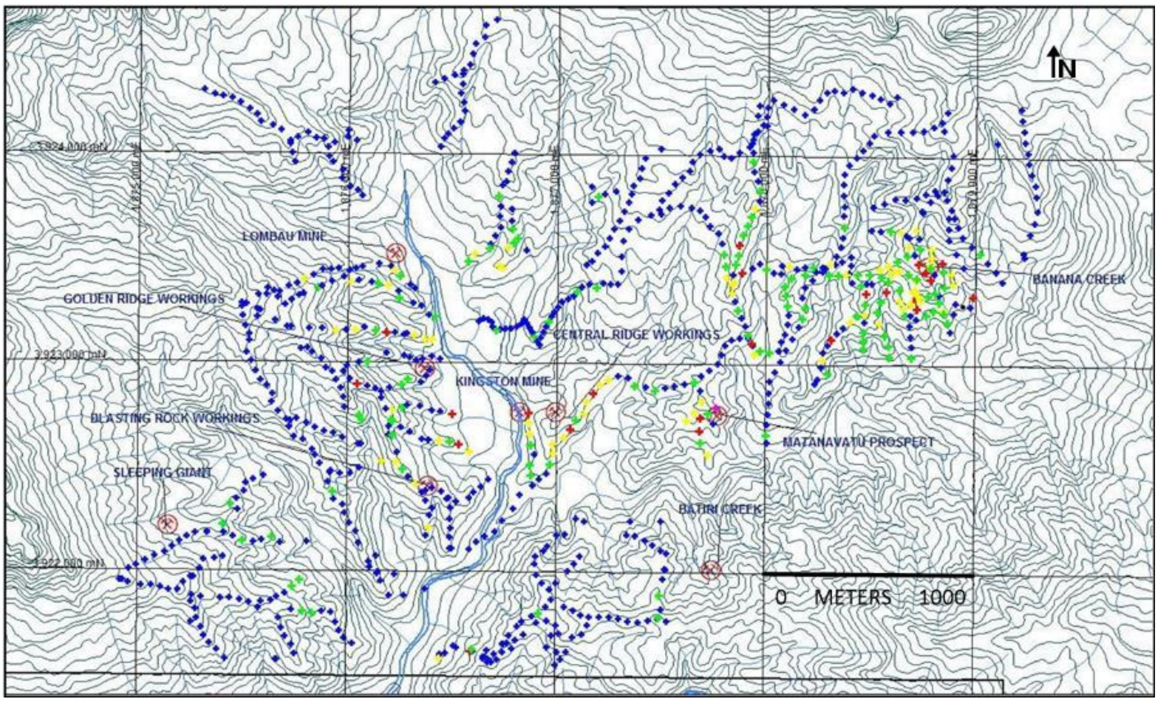
A low-level geochemical anomaly was located at Goat Hill, immediately north of Navilawa village. Numerous limonitic shears and fracture zones coincide with elevated gold-in-soil values and are considered to be the source of the anomalous soil geochemistry.

Reconnaissance mapping at the Sleeping Giant Prospect in the western part of the tenement, along the foothills of the Mt. Evans Range, 800 m west of the inferred contact of the Navilawa Monzonite, located a number of quartz vein stockwork zones associated with strong north–south-trending structures. The structures are probably hosted in rocks assigned to the Koroimavua Volcanic Group.

Very low levels of gold were detected southeast of the Sleeping Giant Prospect and southwest of Batiri Creek. Mapping at Batiri Creek located a series of northeast-trending faults and fracture zones.

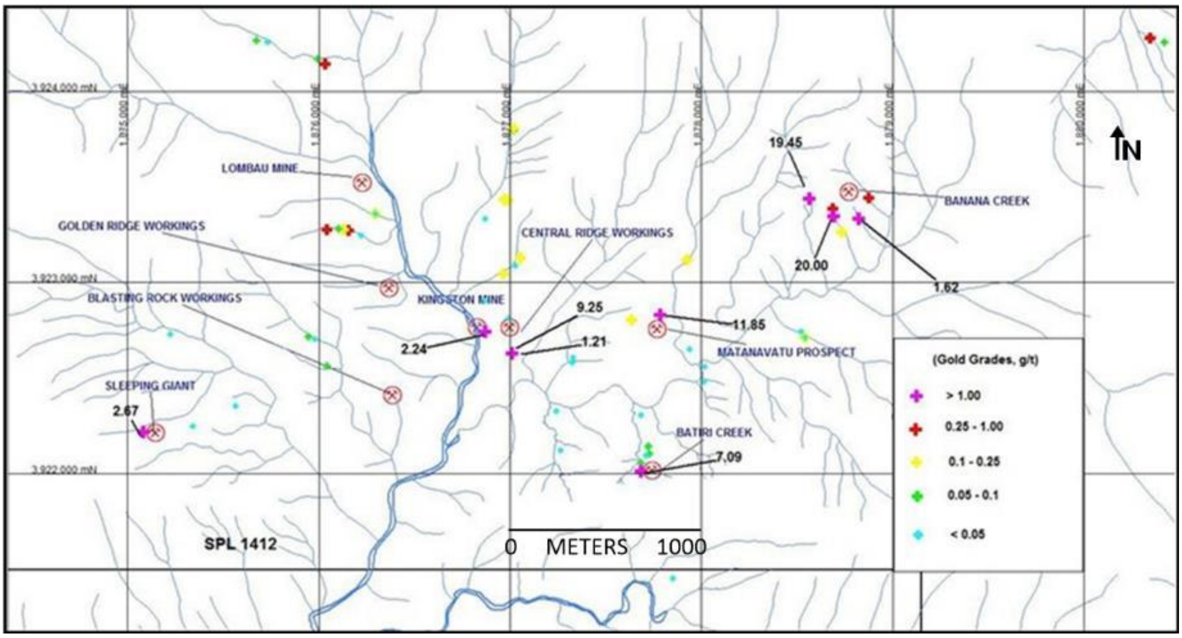
A one-meter channel sample taken across a north-northwest-trending structure located east of the Kingston Mine portal returned a value of 2.24 g/t Au. The location of this sample suggests it is from the structure that was intersected in DDH CRDH002 that intersected a fractured zone at 58 m depth and returned 0.8 m at 0.45 g/t Au and 0.26% Cu. No significant copper values were recorded in the surface sample.

Figure 6.4 Ridgeline Soil Sample Locations and Results



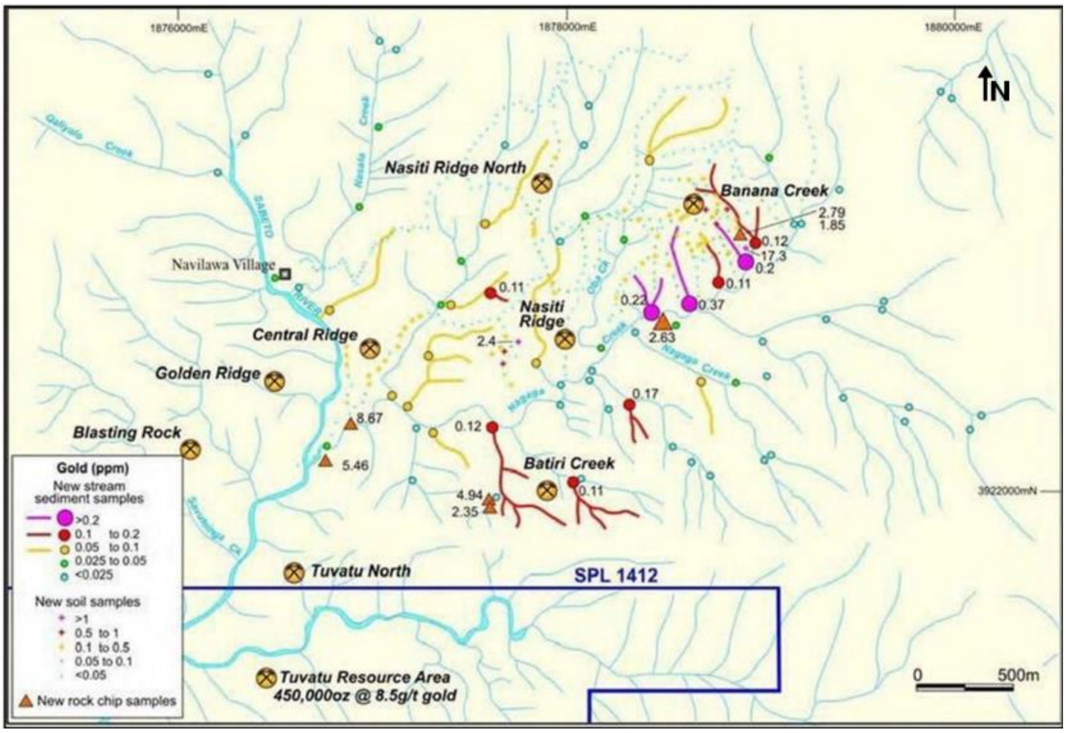
Note: Soil samples colored by gold content. Magenta >1 g/t Au, Red 0.25–1.0 g/tAu, Yellow 0.1 -0.25 g/t Au, Green 0.05–0.1 g/t Au, Blue <0.05 g/t Au. Source : Lion One 2024

Figure 6.5 Rock Chip Sample Locations and Results



Source: Lion One 2024

Figure 6.6 Summary of Stream and Soil Sample Significant Results



Source: Lion One 2024

Tuvatu Gold Mines 2002 – 2008

Tuvatu Gold Mines (TGM) completed three phases of drilling at Tuvatu, from exploration to resource delineation of the current Tuvatu deposit. Drilling was carried out both on the surface and from the 600m underground exploration decline that was developed to a depth of 240 m below surface. Drilling methods included both core and RC. In total, TGM completed 51,484 m of surface core drilling, 9,265 m of RC surface drilling, and 13,407 m of underground core drilling. Surface core holes were HQ and NQ size, and underground holes were NQ, NQ2, and BQ.

During Phase 1, 193 DD holes (TUDDH-013 to 205) and 44 RC holes (TURC-101 to 171) were completed. A total of 42,783 m of DD core (HQ and PQ diameter) and 5,225 m of 5¼ inch RC drilling were completed. This program delineated an area of mineralization that extends over 800m. In conjunction with the underground development, seventeen underground DD holes (TUG01 to 17) were completed for a total of 1,108 m of HQ diameter core to infill surface drilling and to assist in planning future development.

During the second phase of work, 26 underground DD holes (TUG-18 to 43) were completed for a total of 1,374 m of HQ diameter core.

During Phase 3, a RC drilling program tested various anomalies in the local area as well as the near-surface potential of the Upper Ridges area. Thirty-seven holes (TURC172 to 208) were completed for a total of 4,040 m. Drill holes TURC174 and TURC179 encountered significant mineralization associated with a previously untested structure located approximately 500 m west of the Tuvatu deposit. Follow-up drilling and trenching demonstrated that mineralization here is associated with two sets of east- and southeast-trending veins that are up to 5 m wide. A series of 69 underground DDHs (TUG045 to 113) were completed for a total of 10,926 m to infill and expand the Upper Ridges resource and test peripheral mineralized zones in the Murau area. This program successfully extended the Upper Ridges Zones, particularly UR2, and upgraded the Phase 2 resource.

Surface holes were also drilled to target various deep drill intersections encountered in Phase 1 as well as the newly identified zone of mineralization located 500 m west of the Tuvatu Mine. Twenty-four holes (TUDDH206–229) were completed for a total of 8,702 m.

All drill collars were located by TGM surveyors using a Leica TPS 300 theodolite. Data was entered into a database. Where possible, the collar azimuth and dip were also calculated by the surveyor to compare with the planned orientation and downhole survey data. The majority of drillholes was also surveyed downhole at 50m intervals using an Eastman downhole survey camera.

Core was photographed then logged manually onto log sheets that were then entered into a database. Recorded information included hole number, date drilled, name of driller/company, location, coordinates, core recovery, lithology, structure, rock quality designation (RQD) values, alteration, gangue minerals, sulphide minerals, mineralization, sample numbers, intervals samples, analytical values, comments, date logged and by whom. The bulk density of selected intervals and lithologies was measured.

Mineralized intersections were cut with a core-saw and half was sent for analysis. Prior to 2008, samples were sent to the Emperor Gold Mining Company Limited laboratory at Vatukoula. Monthly re-assays and checks on standards, mill products, mine and exploration samples were conducted with external commercial laboratories as part of the standard operating procedure at Vatukoula. In most cases, the whole sample was pulverized in a 5 kg ring mill prior to splitting. A 50 g subsample was analyzed for gold by fire assay with an AAS finish. Standards were inserted into the sample stream to check for laboratory bias. All samples above 1 g/t Au were re-assayed.

6.4 Historic Underground Development

During 1997 and 1998, TGM drove a 600m exploration decline and carried out approximately 740m of drifting and raise development in three phases:

During Phase 1, an exploration decline was developed with minor crosscut development to evaluate the continuity and grade of gold mineralization. Underground development started in November 1997 and a total of 572m of development was completed to a depth of 240 m below surface. Geological mapping of the underground development and systematic channel sampling were carried out. A total of 588 samples exceeded 1.0 g/t Au and 214 samples exceeded 10.0 g/t Au. The maximum value was 0.6 m at 840 g/t Au from a vertical sample taken from H Zone. In total, 32 samples exceeded 100 g/t Au.

Phase 2 started in March 1998 and involved deepening of the decline in order to access the Upper Ridges Zones in the southern part of the Mineral Resource area. These Zones had been identified during Phase 1 by surface drilling at a broad spacing. A bulk sample of Upper Ridges' vein material from the underground development was dispatched to Vatukoula for metallurgical test work. In addition, a small trial mining exercise was carried out on veining associated with the Nasivi/SKL stockwork.

During Phase 3, 69 underground core drillholes (TUG045–113) were completed to infill and expand the Upper Ridges resource and test peripheral mineralized zones in the Murau area. This program successfully extended the Upper Ridges Zones (particularly UR2).

6.5 Historic Production from the Property

Historical production from the Property is unknown.

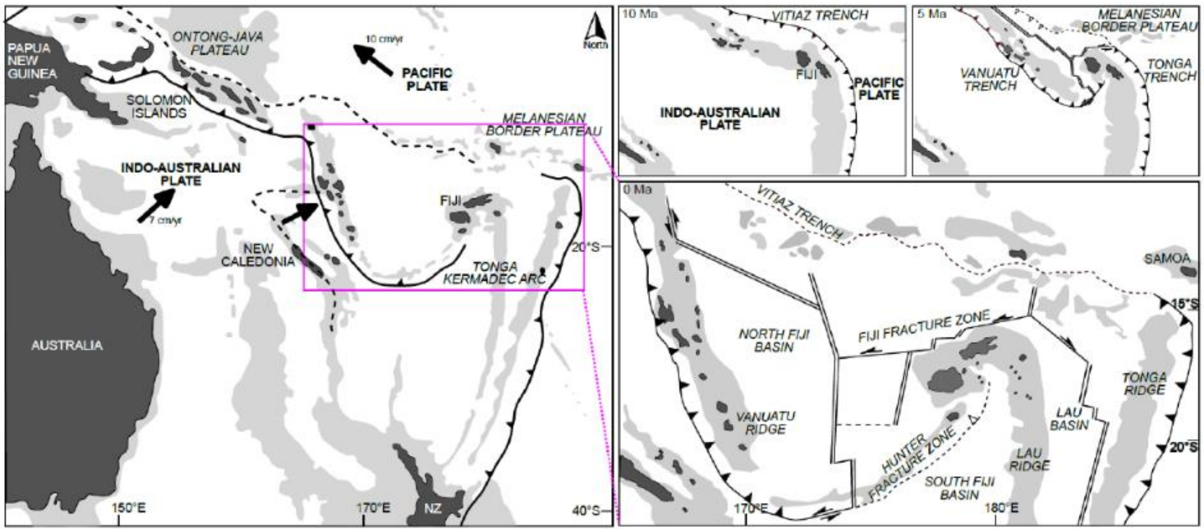
7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Tectonic Setting

As described by Clarke *et al* (2023), the Islands of Fiji sits at the complex boundary between the Pacific and Indo-Australian Plates, forming a dynamic region marked by island arcs, ridges, transform faults, and back-arc basins. Prior to the Late Miocene, the Pacific Plate was subducted beneath the Indo-Australian Plate along the Vitiaz Trench (Begg & Gray, 2002). However, this process was disrupted by the collision of the Melanesian Border Plateau and Ontong-Java Plateau, obstructing the trench, and leading to significant geological changes. This collision prompted arc-polarity reversal, fragmentation, the formation of a sinistral transverse rift, and the rotation of Fiji. This restructuring event facilitated the generation of alkaline magmas to which the main Cu-Au-Ag mineralizing events in Fiji, the Solomon Islands and Papua New Guinea are believed to be genetically associated (Figure 7.1).

The volcanic rocks in Fiji preserve evidence of both early and later stages of arc activity, as seen in the Yavuna Group and the Wainimala Group respectively. The cessation of extension marked the end of direct subduction of the Pacific Plate beneath Fiji. Around 5 million years ago, post-subduction shoshonites were emplaced as intrusions and erupted. These shoshonitic rocks coincide with mineralization events across Fiji, indicating a strong structural influence on their distribution (Clarke *et al*, 2023).

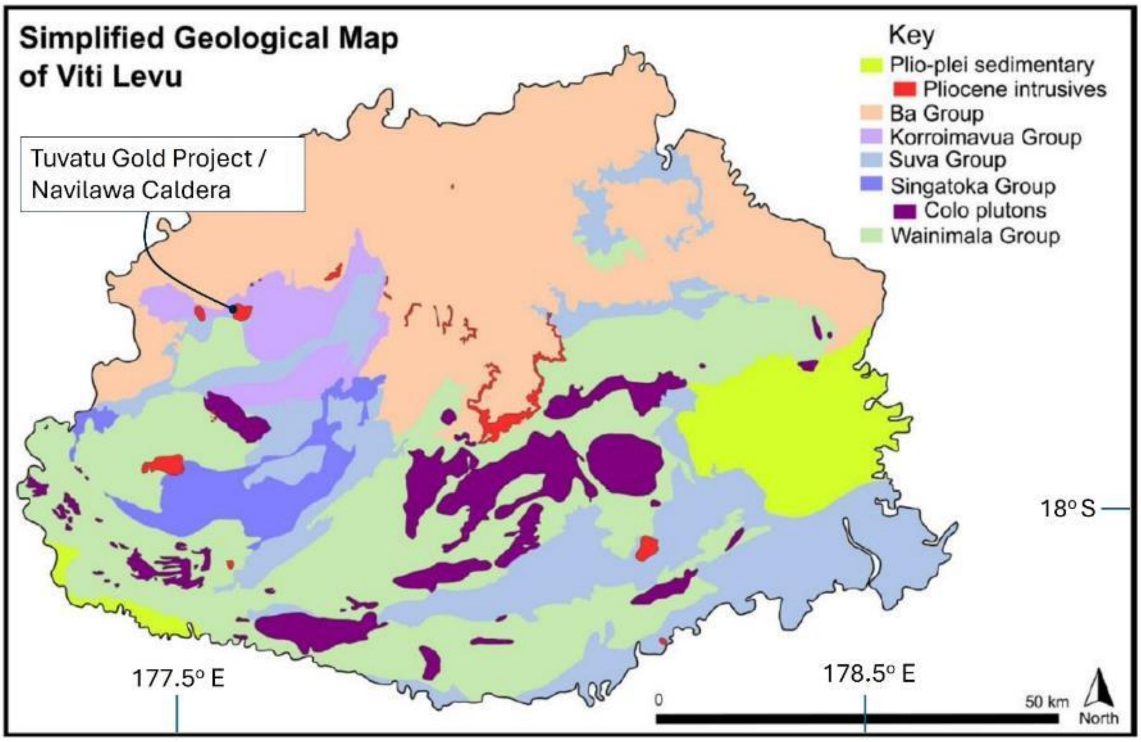
Figure 7.1 Southwest Pacific Tectonic Settings at 10, 5 and 0 Ma



Source: Clarke 2022, adapted from Begg and Gray 2002

The geology of the northwestern corner of Vitu Levu, where the Tuvatu Project is located, is dominated by the Wainamala Group (>12Ma), represented at Tuvatu as the Nadele Breccia. These units are unconformably overlain by the Korromaivua Group volcanics, referred to locally as Sabeto volcanics (5.4Ma) which are near contemporaneously intruded by monzonite stocks, e.g. Navilawa Monzonite (Figure 7.2).

Figure 7.2. Regional Geology of Vitu Levu, Fiji

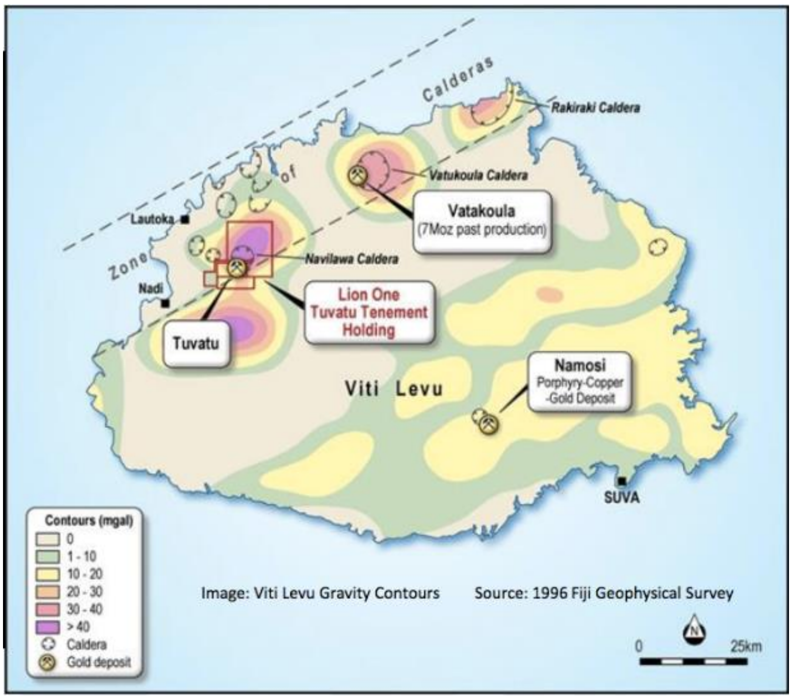


Source: modified after Clarke, 2022

A WSW lineament associated with this Miocene/Pliocene volcanism and magmatism is closely associated with other mineral deposits and links the Nabila/Faddys copper-gold occurrence SW of Nadi, the Tuvatu Gold Project, the Vatakoula Gold Mine, the Raki Raki gold project, through to the Mt Kasi gold project on the island of Vanua Levu (Figure 7.3).

This lineament links through to the Mt Kasi Gold Project on the Island of Vanua Levu to the NE.

Figure 7.3 Regional gravity contours and the WSW-ENE lineament.



Source: Lion One Ltd, Fiji Geological Survey

7.2 Navilawa Caldera Geology

The oldest unit in the Tuvatu Project area is the Nadele Breccia (26-12 Ma), part of the basaltic sequence of the Wainamala Group (Hathway, 1993).

Sabeto Volcanics (5.5 to 4.8 Ma) unconformably overlie the Nadele Breccia and represent the basal unit of the Korroimavua Volcanic Group. The unconformity can be observed in the field and is often accompanied by a distinct change in soil types with the red brown Nadele Breccia contrasting with the grey sandy soils of the Sabeto Volcanics. High ridges and cliffs emphasize this gradation due to the greater resistance of the Sabeto Volcanics to weathering (Vigar, 2000, 2009).

The Navilawa Monzonite is dated at 4.85 Ma (Scherbarth & Spry, 2006, after McDougall, 1963), though a recent date on secondary biotite in monzonite, by the Colorado School of Mines, dates at 5.13Ma +-0.09Ma (T. Monecke CSM, unpublished) and Schmidt (2023) postulates several temporally distinctive intrusions. The monzonite intrudes the Nadele Breccia and Sabeto volcanics.

The monzonite exhibits considerable local variation in composition, with changes in grain size and inclusion of country rock. The overall intrusive complex is elongated in a northeast orientation. Late small intrusive stocks and dykes, dominantly composed of micromonzonite, commonly referred to as andesite dykes, intrude monzonite and the Sabeto volcanics, and strike dominantly N to NE.

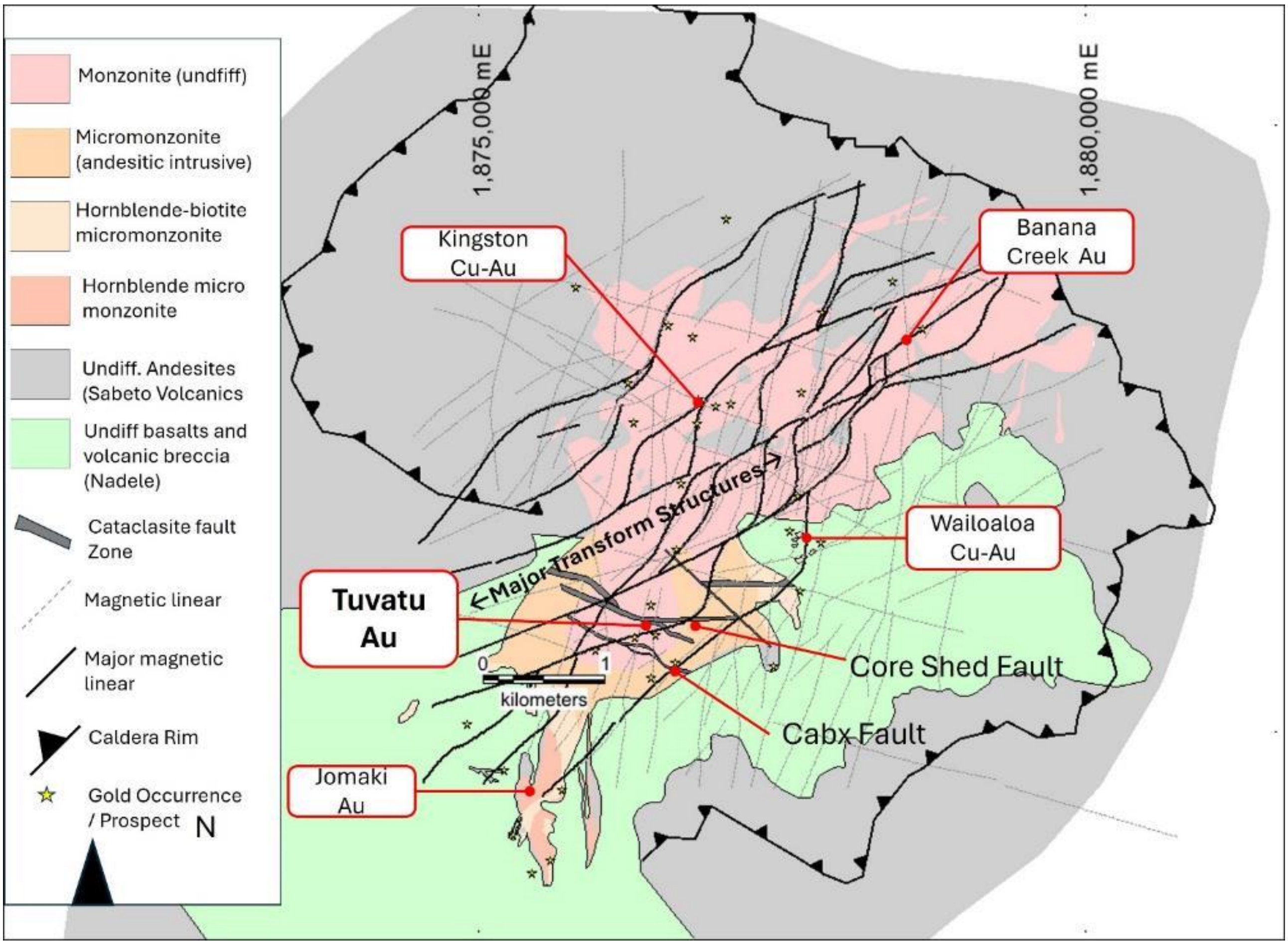
A-Izzeddin (1997) suggested that there is a spatial and temporal relationship between the emplacement of the intrusive complex and mineralization. The Project area appears to have had 1 to 2 km of overburden removed since emplacement of the intrusive complex, which may represent the magma source for overlying volcanism. The gold mineralization therefore represents deep-seated hydrothermal fluids emplaced in the very upper portions of the monzonite magma complex during the waning phases of volcanism.

Tuvatu is the largest known of several alkaline hosted gold prospects from the Sabeto area of northwestern Viti Levu. Other gold and gold copper prospects in the local region are at Vuda, Navilawa (Kingston Mine and Banana Creek), and Nawainiu Creek, all associated with known or presumed centers of volcanic activity or volcanic core complexes within the shoshonitic Korroimavua Volcanic Group.

Locally, the geology is structurally complex with the area cut by at least two 20 to 60m-wide WNW striking cataclasite fault zones referred to as the Core Shed Fault (CSF) and Cabex Fault. These are inferred to be late caldera collapse structures with normal fault displacement. Reverse displacement can also be observed along discrete structures, interpreted as local small-scale adjustment features.

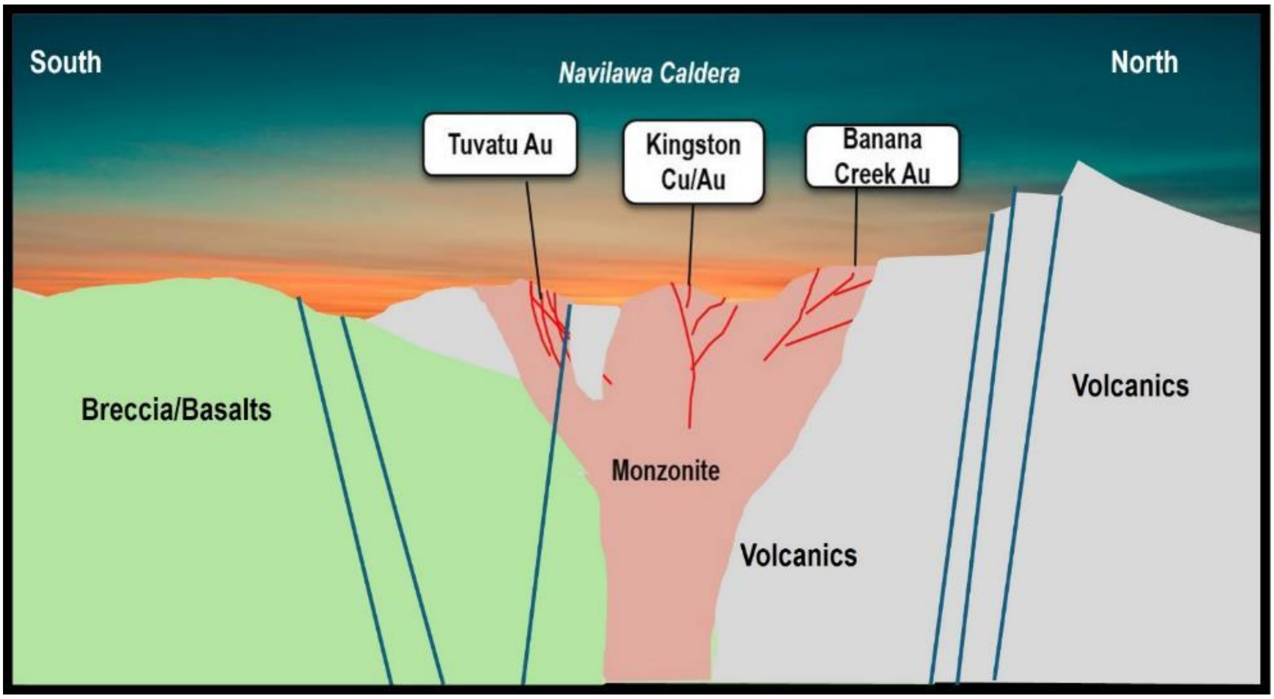
Interpretation of airborne magnetic data suggests regional ENE-striking transform structures showing an apparent dextral offset linked by NE to N jogs. A series of WNW linear features and N structures are also interpreted from magnetic data (Figure 7.4, Figure 7.5).

Figure 7.4 Navilawa Caldera and Interpreted Structures with Prospects / Mineral Occurrences



Source: Lion One 2024

Figure 7.5 Schematic Regional Section South to North (view west)



Source: Lion One 2024

7.3 Mineralization

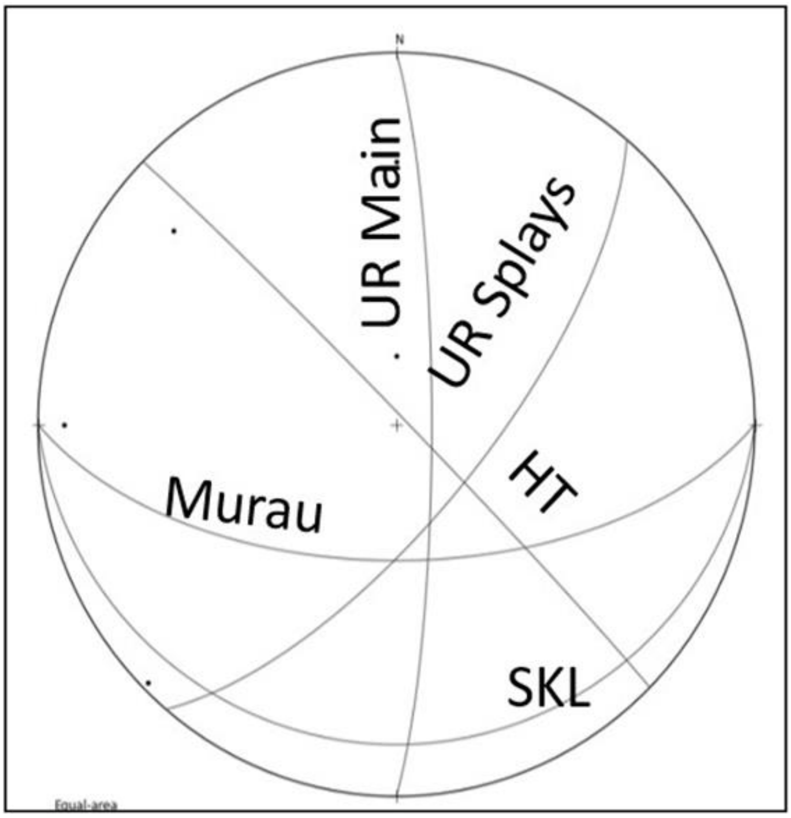
Tuvatu is an alkaline (alkalic) hosted gold deposit (See to Section 8). Mineralization is structurally controlled and occurs as sets and networks of narrow veins, cracks, and vein breccias, with individual structures generally ranging from 1 to 200 mm wide. Sets of veins are commonly up to 5 m wide with blow-out zones up to 20m wide forming at the intersection of multiple structures.

Schmidt (2023) described an early phase of mineralization as high-temperature porphyry style as indicated by coarse secondary biotite and potassic feldspar. The later, main phase of Au mineralization occurred as episodic 'flashing' of mineralizing fluids during uplift and unroofing of the monzonite. This later epithermal mineralization may have been fed by fluids from a younger and deeper intrusion which exploited the same plumbing system provided by faults and pre-conditioned structures (Schmidt, 2023).

7.3.1 Structural controls

The dominant "Upper Ridges" lodes are oriented generally north with a steep east dip and are intersected by east and south striking structures such as the Murau lodes and flat-lying to shallow-dipping narrow sets (Figure 7.6, Figure 7.11). Individual veins and zones pinch and swell both along strike and down dip and can go from a zone several meters wide to a narrow veinlet over a short distance.

Figure 7.6 Simplified Structural Orientations Stereonet for Lode Orientations at Tuvatu.



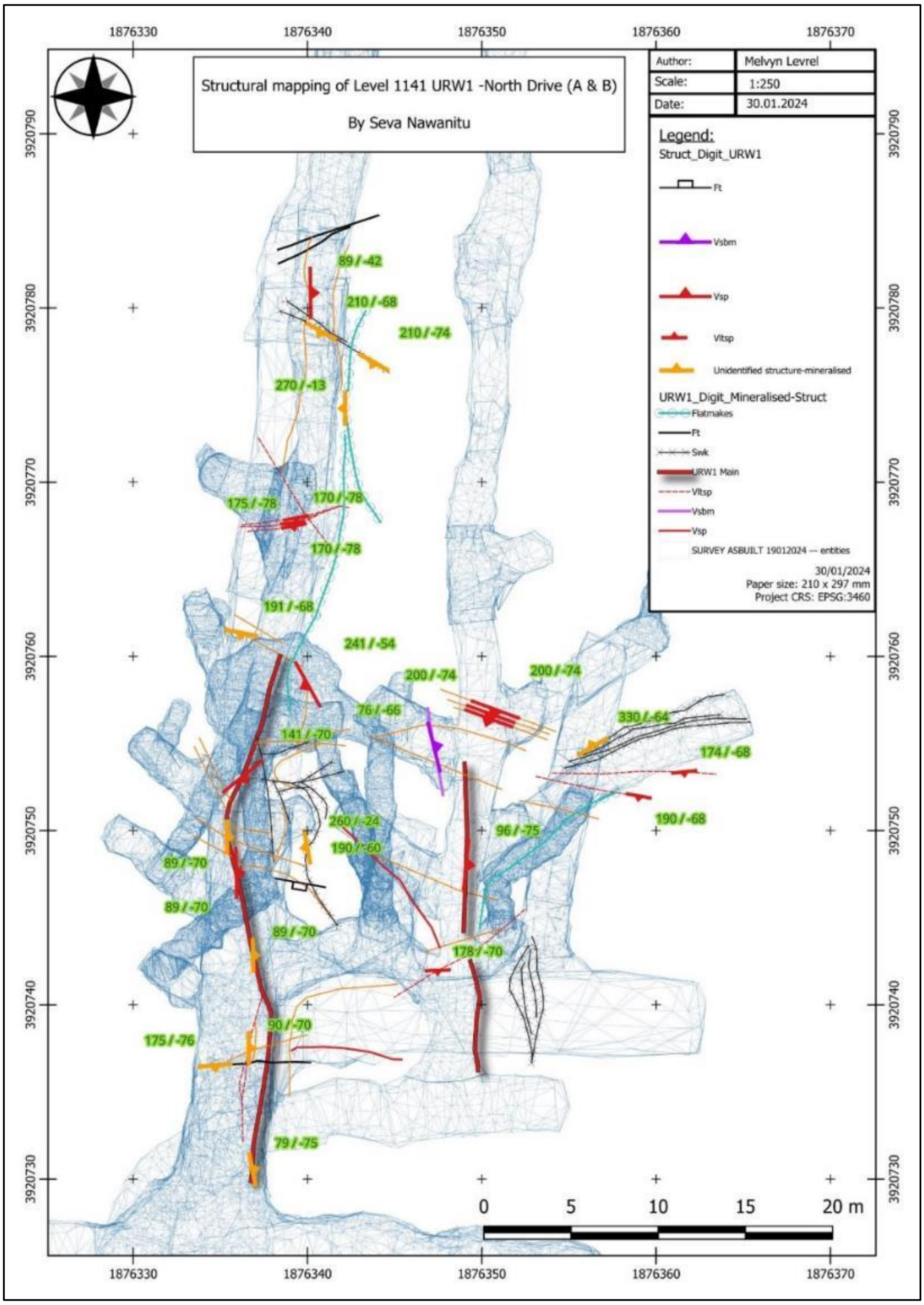
Source: Lion One 2024

High-grade 'blow-out'/stockwork zones are located at the intersection of multiple structures and generally plunge steeply south.

With recent underground development, new mapping and analysis has been carried out, for example, Figure 7.7. A high-grade stockwork zone on the intersection of URW1 with the Murau Lodes has been exposed on the 1141 Level. This mineralized stockwork zone has a steep southerly plunge.

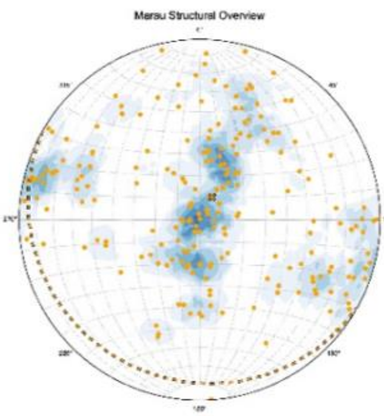
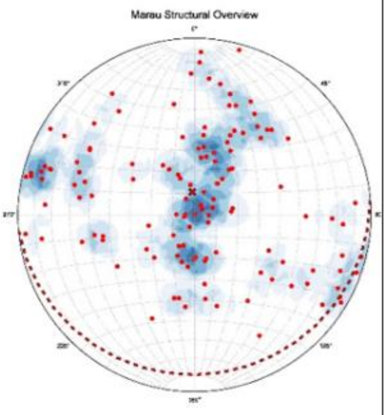
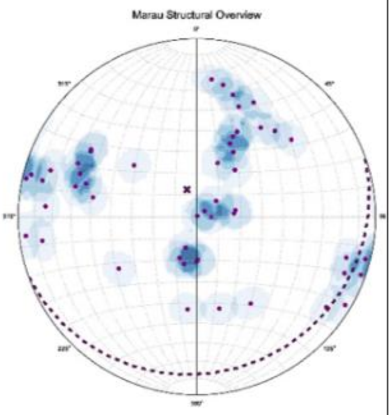
Detailed structural work by company geologists indicates that although there is a dominant north to NNE, steep east-dipping series of structures (UR main and splays), high grade gold is also found in east-striking structures dipping south (Murau lodes), and shallow south- and north-dipping micro-fractures associated with these zones (SKL lodes). The HT Zone strikes NW and contains late gold emplaced within earlier, potassic altered (base-metal) mineralization (Figure 7.8,Figure 7.9, & Figure 7.10).

Figure 7.7 Structural Mapping on the 1141 Level (URW1 Stock Work Zone)



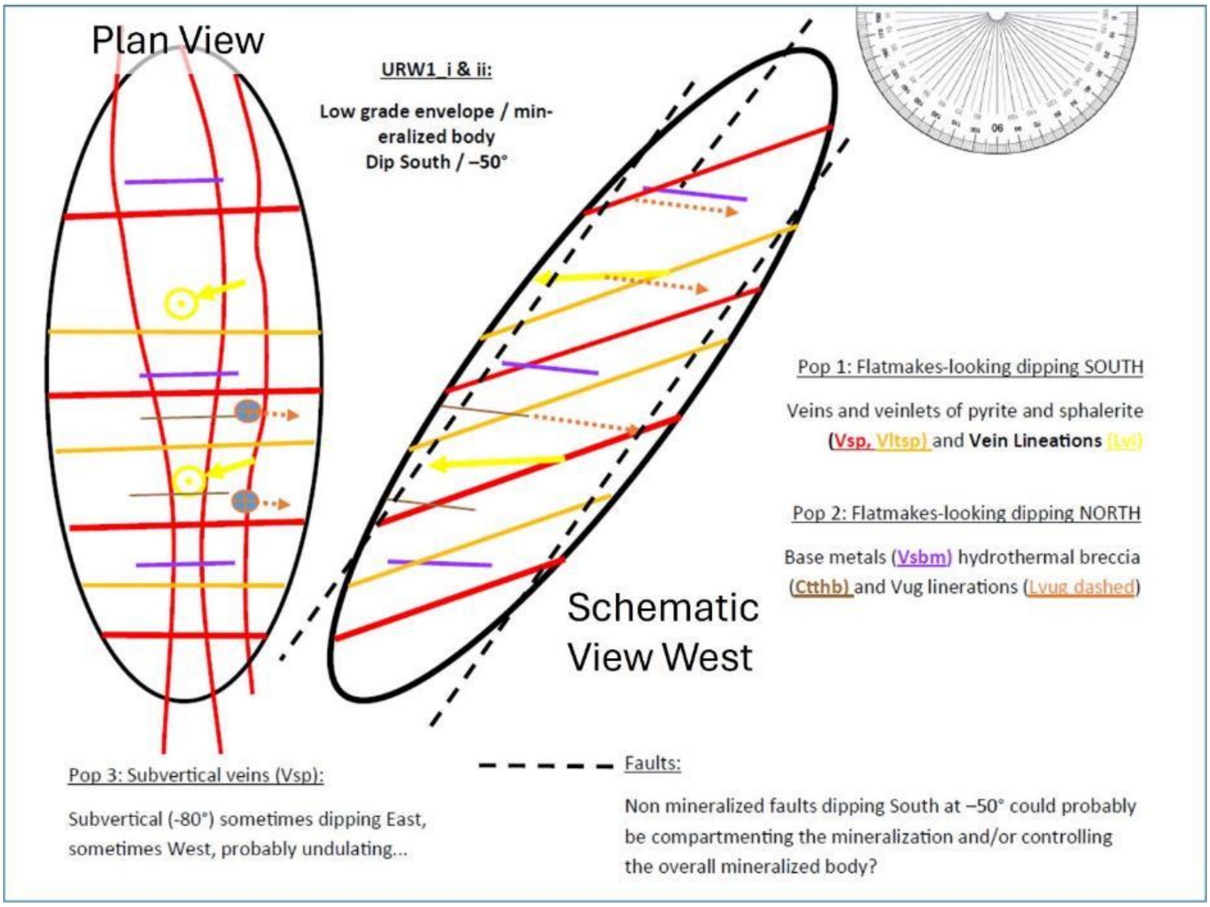
Source: Lion One 2024

Figure 7.8 Fisher Mean Stereonet - 1141 Level With Structures Tagged by Grade.

ORE GRADE Structures (>=4.0 g/t)	HIGH GRADE Structures (>=10.0 g/t)	BONANZA Structures (>=30.0 g/t)
		

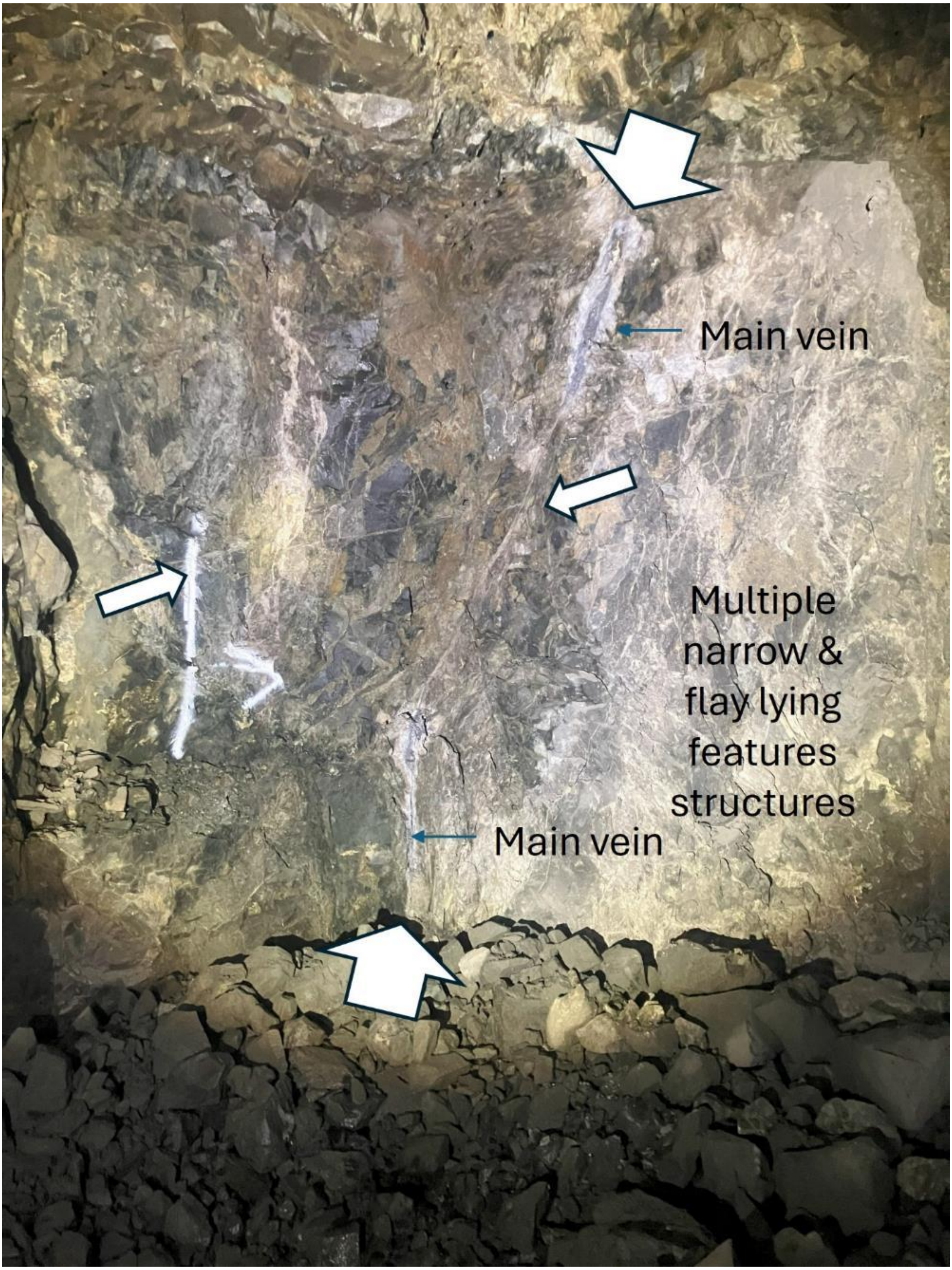
Source: M Levrel, Lion One 2024

Figure 7.9 Schematic Representation of Stockwork Veins in the URW1 (1141 Level) Showing Shallow-dipping Features (Flatmakes) in an Overall Steep-plunging Shoot



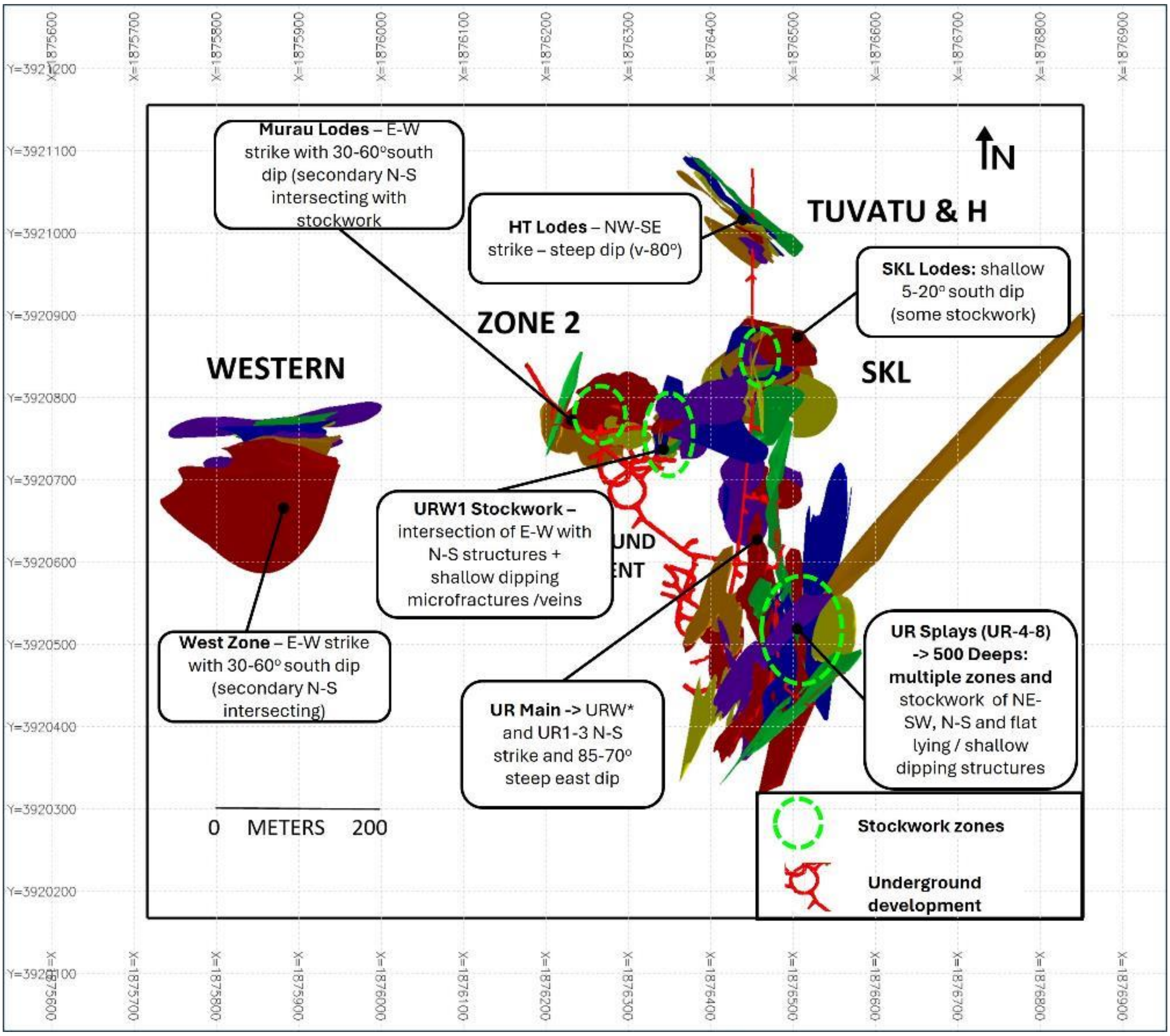
Source: M Levrel, Lion One 2024

Figure 7.10 Underground Exposure on 1141 Level Showing a Main N-S Structure and Multiple Shallow-dipping Veins and Structures. Field of view ~3m



Source: Lion One 2024

Figure 7.11 Plan View of Main Mineralised Domains with General Structural Orientations

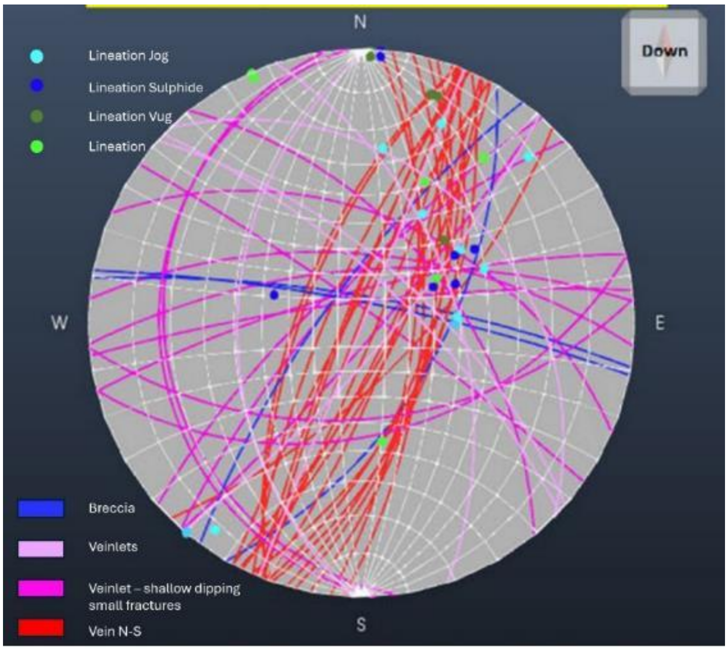


Source: modified from GMRS 2024

In 2022 Lion One retained Vektore Exploration Consulting Corp., a specialist structural geology consulting company, to review the 500 Zone feeder areas where high-grade mineralization had been intersected in drilling (Vektore, 2022). This zone is believed to be of a similar nature to the URW1 stockwork zone with drilling approximate to the overall plunge of system revealing an intersection of 75.9m averaging 20.86g/t Au from 443.4m in hole TUG-141.

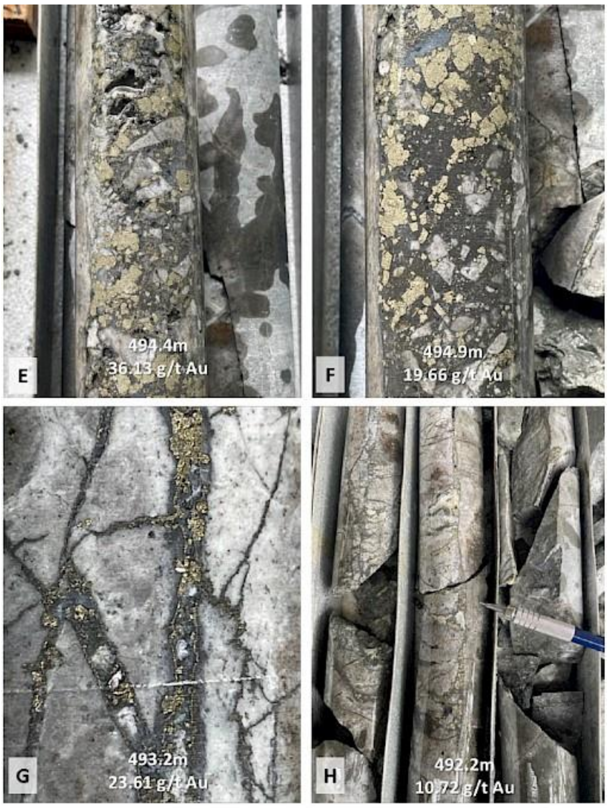
The 500 zone includes veins and vein breccias of multiple orientations but with a dominant NNE strike and, similar to URW1, shallow-dipping structures containing abundant gold mineralisation (Figure 7.12, Figure 7.13).

Figure 7.12 Stereonet of Structural Analysis of Drillhole TUG-141 in the 500 Deeps High-grade Zone. Dominant Orientation is NNE, with Veinlets of Shallow to Moderate Dip



Source: Vektore 2022

Figure 7.13 Vein/Breccia Types in Stockwork Zone (TUG-141)



Note: Meterages shown are depth down hole to top of interval. Assays are for sample length, generally one meter.

Source: Lion One 2024

7.3.2. Mineralogical Associations

Gold mineralization occurs in narrow quartz-carbonate-sulphide veins with local association with roscoelite. Individual veins and zones can exhibit distinct variations in mineralogy and particularly in sulphide content.

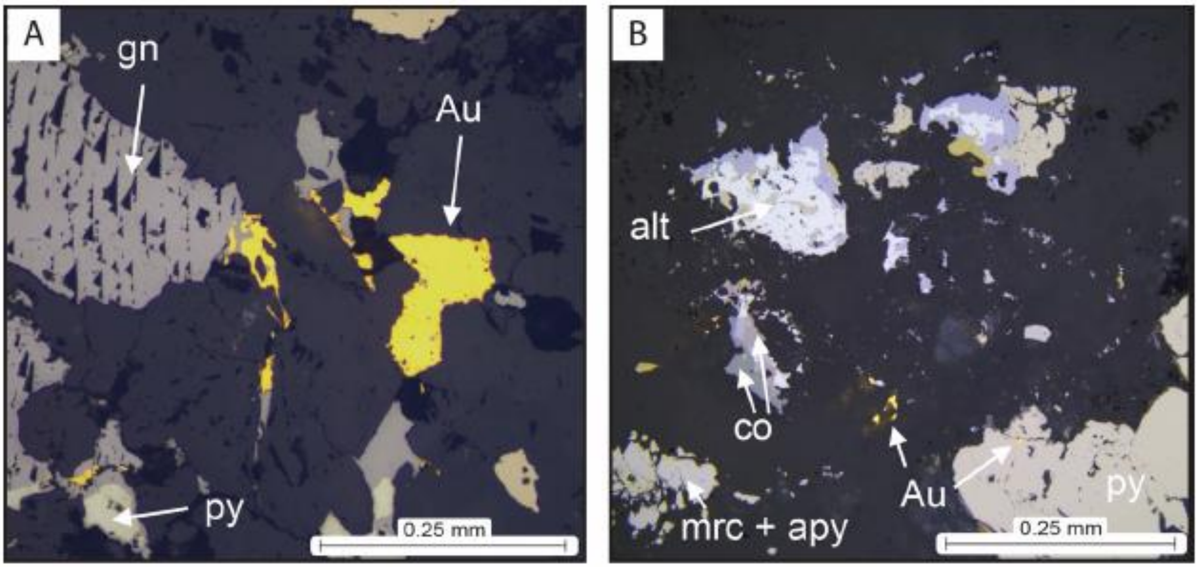
Vein selvages are generally bleached and although the silica-argillic-sulphide wallrock alteration generally extends only a few centimeters from single veins, it can be pervasive throughout breccia and stockwork zones (Schmidt, 2023; Jefferson, 2023) (Figure 7.13).

Schmidt (2023) noted three epithermal alkaline vein events:

- Epithermal I: veins consisting of pyrite, chalcopyrite, galena, and sphalerite (base-metal veins) and potassium metasomatism (gold content likely an overprint of Epithermal II).
- Epithermal II: veins crossing and reactivating earlier base-metal veins with a dominant quartz-sericite-pyrite and associations with roscoelite (vanadium-bearing mica). This phase also contains arsenian marcasite and arsenian pyrite.
- Epithermal III: albite and chlorite association with late calcite and other carbonate phases (not associated, generally, with gold mineralization).

Whilst gold is generally associated with sulphides, it occurs dominantly as native gold within the veins and coating the outside of sulphides. Some gold associated with arsenian pyrite can be bound as nano-particles within the sulphide (Jefferson, 2023, Figure 7.14) whereas Clarke (2022) noted also the gold telluride calaverite, as well as other Te-bearing phases in minor quantities.

Figure 7.14. Photomicrographs of Quartz-roscoelite-pyrite Veins (A) Galena, Pyrite, and Dendritic Gold. From TUDDH-207 at 307.16 meters. (B) Pyrite, Marcasite, Native Gold, Fresh and Tarnished Altaite, and Tarnished Coloradoite. From TUDDH-565 at 71.2 meters.



Source: Jefferson 2023

7.4 Dimensions and Continuity

Overall, the main mineral system, made up of multiple individual zones, is approximately 800m N-S by 400m E-W, and with the West Zone, extends a further 500m to the west. Mineralized zones extend from surface to a depth more than 1,000 meters.

Individual veins/zones have continuity over several hundred meters. However, the 'pinch and swell' of veins suggests that they may not be economic over their entire length. The stockwork zones such as URW1 observed on the 1141 level show an east-west width 20 to 25m and are elongate north-south for up to 40m. The URW1 stockwork zone is currently understood to extend steeply down plunge to the south for over 100m.

7.5 Discussion

The structural controls on mineralization, including variably striking steeply dipping veins and very narrow yet high grade shallow dipping structures provide challenges for preferred drill orientation and targeting in response to which, Lion One has conducted various campaigns to intersect individual structures at variable drill orientations. The highest grade/widest zones, and potentially most productive zones (stockwork at major structural intersections such as observed at URW1 on 1141 level, and the high-grade long intersection in TUG-141 in the 500 zone deeps), manifest essentially as steep, southerly plunging pipes. Prior to the recognition of the steep plunging pipes, much of the drilling was conducted from west to east and east to west for the UR zones to intersect major N-S structures and south to north at the Murau and West Zones to intersect southerly dipping structures. As a consequence, this early drilling commonly missed the high-grade pipe-shaped bodies.

In addition, the short periodicity of 'pinch and swell' structures (15 to 20m), also means that drilling may pass through a structure without returning appreciable width and grade. Conversely, drilling that has intersected a mineralized structure at the point of a wider vein or the stockwork pipes, has revealed very high-grade material over considerable widths.

The episodic nature of three identified mineral phases, and sub-phases of fluid 'flashing' particularly in Epithermal II phase, has provided an array of mineralization with variable mineralogical and sulphide associations and variability in grade between and within lodes.

There are several other variations on geology and deposit style throughout the Navilawa Caldera, including potential porphyry related Cu-Au mineralization at Wailoaloa, and gold associated with andesite /micromonzonite dykes at Banana Creek (refer to Section 9 for further details).

8.0 DEPOSIT TYPES

8.1 The Alkalic Epithermal Gold Model Definition

The Tuvatu Gold deposit is an alkalic gold system (Hennigh 2019; Holden 2019, Kelley *et al,* 2016). An alkalic epithermal gold system, according to early definitions by Jensen and Barton (2000), is a particular class of epithermal gold deposit wherein the potential scale and grade is considerably larger than a typical 'hot-spring' epithermal gold system. Hot-spring deposits are bonanza grade systems, due to the narrow vertical extent of boiling horizons, and do not show large vertical or lateral continuity. By contrast, alkalic gold systems mainly form vertically extensive vein and pipe-type deposits. Alkalic gold systems, as a class in the broadest definition of epithermal systems, can show large tonnages and vertical extents beyond 1,000 m (Hedenquist 2000, Kelley *et al,* 2022). Related definitions of alkalic systems are presented by Jensen & Barton (2000), Kelley & Luddington (2002), and Kelley *et al,* 2020.

Clarke (2022) summarized the definition criteria, as presented in Table 8.1.

Table 8.1 Alkalic Gold Systems Defining Criteria Compared to Epithermal Systems (Clarke, 2022 after Ciobanu et al., 2006; Kelley & Spry, 2016; Richards, 2009; Sillitoe, 2002)

Alkalic-type	Classic low sulfidation	High sulfidation
Defining characteristics	**Equivalent comparative/contrasting characteristics**	
Primarily of Mesozoic-Neogene age; probably a relic of palaeodepth of deposition and erosion of older deposits (Sillitoe, 2010)	Similar to alkaline-hosted LS: typical of epithermal deposits which by definition are shallow	
Exceptionally Au-rich natures with Au>Ag and Au mineralogy including native-Au/electrum, Au tellurides (and selenides where chemistry permits) and auriferous, often arsenian, pyrite	Au and Ag present, although typically Au<Ag	Au rich nature more although other main metals include Cu and As-Sb
High Te grades and tonnages with extensive telluride mineralisation	Tellurides present locally	Tellurides common where magma oxidised
Enrichments in W, Bi, Sb, PGE, As, Mo, Zn	May have similar enrichments but often not such high tonnages	
Base-metal poor with low total sulfides (where present, sulfides primarily in veins as opposed to sulfidised rocks, and may include pyrite-sphalerite-galena or minor tennantite-tetrahedrite-chalcopyrite)	Often sulfide poor (5-20% by volumes), some pyrite, galena, sphalerite, tetrahedrite-tennantite	Sulfide rich, often with abundant copper, enargite, luzonite, famatinite, covellite
Common V-bearing mineralisation (especially roscoelite) in veins and alteration halos	Importance not noted	
Extensive carbonation and limited silicification in alteration assemblage or veins	Carbonation (if present) often minor and late, far more silicification	Carbonation essentially impossible in HS environment, massive silicification and residual quartz
Large 'nebulous' alteration systems including voluminous K-metasomatism ranging from broad zones of potassic to sericitic alteration, selvages may be subtle	Sericitic alteration may be common, potassic is not.	Advanced argillic alteration occurs proximally, sericitic may be present more distally, potassic rare
Fluorine enrichment as either fluorite or F-rich biotite, forming prior to Au and associated with base-metal sulfide deposition	Fluorite common locally	No fluorite, barite common and typically late
Fluids regularly at least partly characterised by a magmatic signature (O, H and Sr isotopes), but with little to no acid-type alteration	Fluids often appear to be heated meteoric	HS signature is magmatic with characteristic acid-type alteration
Low magma volumes, forming isolated systems or small clusters rather than regionally extensive provinces, often in association with deep-seated faults (Richards, 1995)	Requires deeper seated magmatic heating of meteoric water, hence although 'associated' with magma there is clear separation	Generally small deposits derived from near-surface fluids associated with a shallow geothermal system, although these systems are often large and extensive
Close spatial and/or temporal association with Cu and/or Mo porphyries	Usually considered distal / peripheral to porphyry-type systems	Typical association to porphyry (Far Southeast – Lepanto is type location for where this is directly observed)
Close spatial relationships with alkaline magmas, whether effusive, hypabyssal, or plutonic	Subalkaline, may form in subduction zones or rifting basins	Only occur along subduction zones, within oxidised magmas (subset within HS includes reduced magmas, associated with lithocaps)

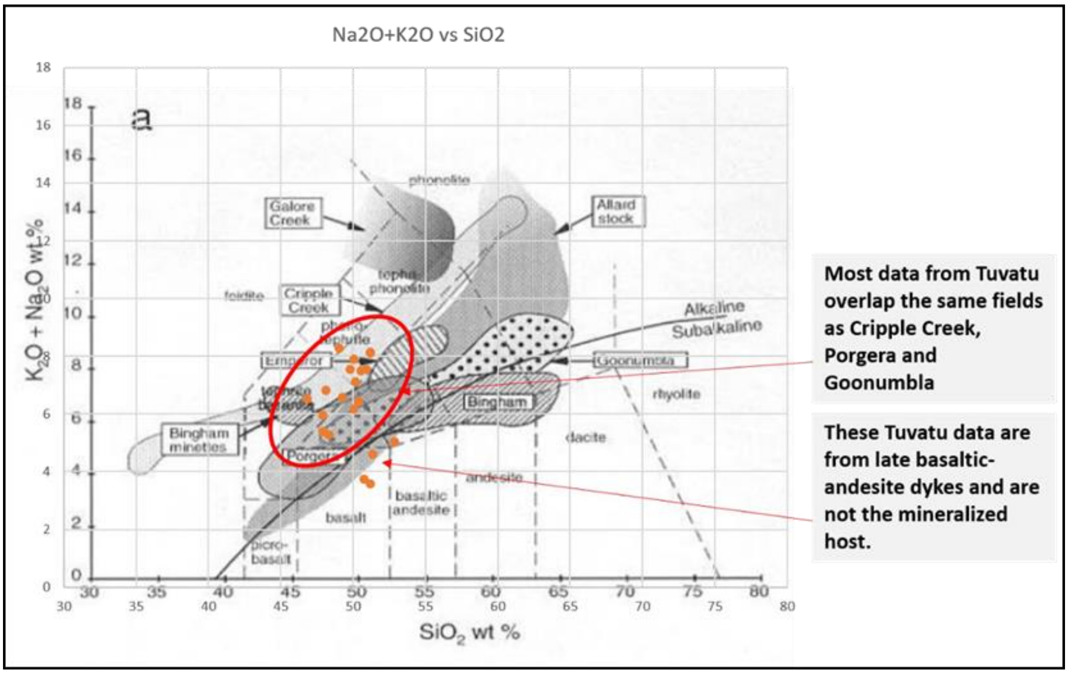
Other well-documented examples of alkalic gold systems include Vatukoula (Fiji), Porgera (Papua New Guinea), Cadia Ridgeway (Australia) and Cripple Creek (Colorado, USA) (Kelley *et al,* 2016).

Alkaline magmatism relates to intrusions that are generally low in silica and are made up of alkali feldspars. The principal Tuvatu host rock is a monzonite, an alkaline lithology (Scherbarth & Spry 2006). Scherbarth & Spry present a series of multi-element lithochemistry tables, including the K_2O and Na_2O values for unaltered monzonite from Tuvatu. These data, when compared to graphs of Na_2O, K_2O, and SiO_2 presented by Jensen & Barton (2000), show clear similarities between Tuvatu and other world-class alkaline gold systems.

8.2 Lithochemistry

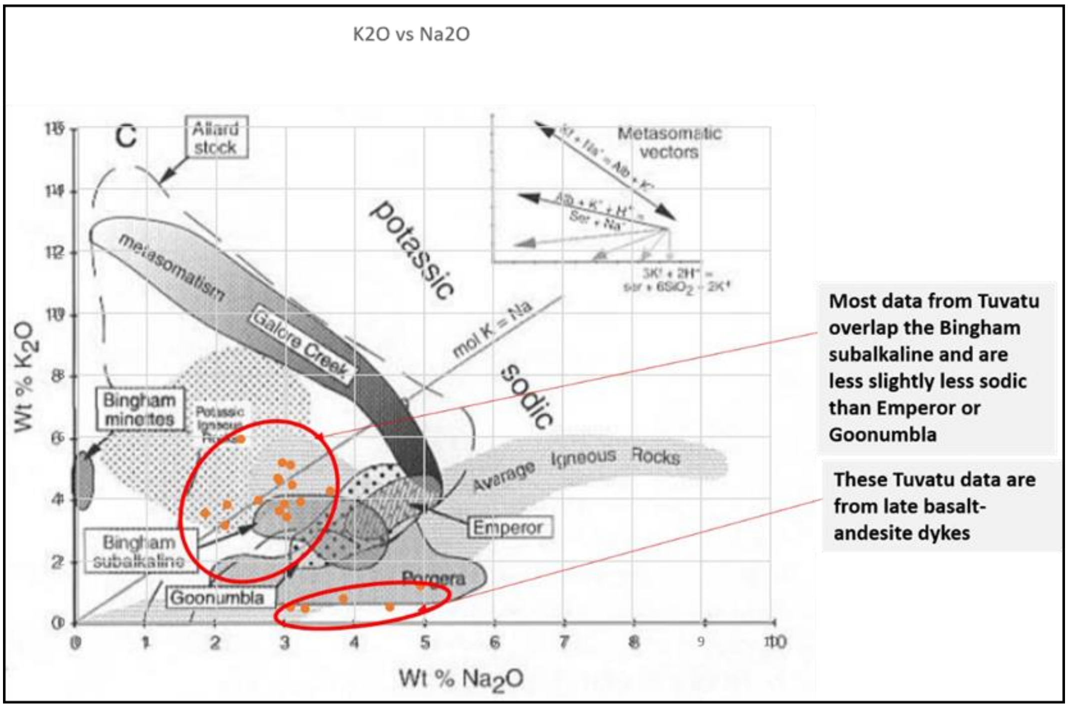
As shown in Figure 8.1, data from Tuvatu, when overlaid on the Na_2O+K_2O versus SiO_2 plot from Jensen and Barton (2000), show a favorable comparison with Porgera (PNG), Goonumbla (NSW, Australia), and Cripple Creek (USA) alkaline gold systems. As shown in Figure 8.2 and Figure 8.3, data from Tuvatu, when overlaid on K_2O versus Na_2O plots, show a favorable comparison with Bingham Canyon subalkaline gold deposit (Utah), Cripple Creek (Colorado), and Golden Sunlight (Montana), and is slightly less sodic than both Emperor (Vatukoula, Fiji) and Porgera (Papua New Guinea). Scherbarth & Spry (2006) plotted lithochemistry, which also places the Tuvatu Project in this environment (Figure 8.4).

Figure 8.1 Data from Tuvatu (Orange Dots) Derived from Scherbarth and Spry (2006) Compared to K_2O+Na_2O vs. SiO_2 Plot of Alkali Gold System.



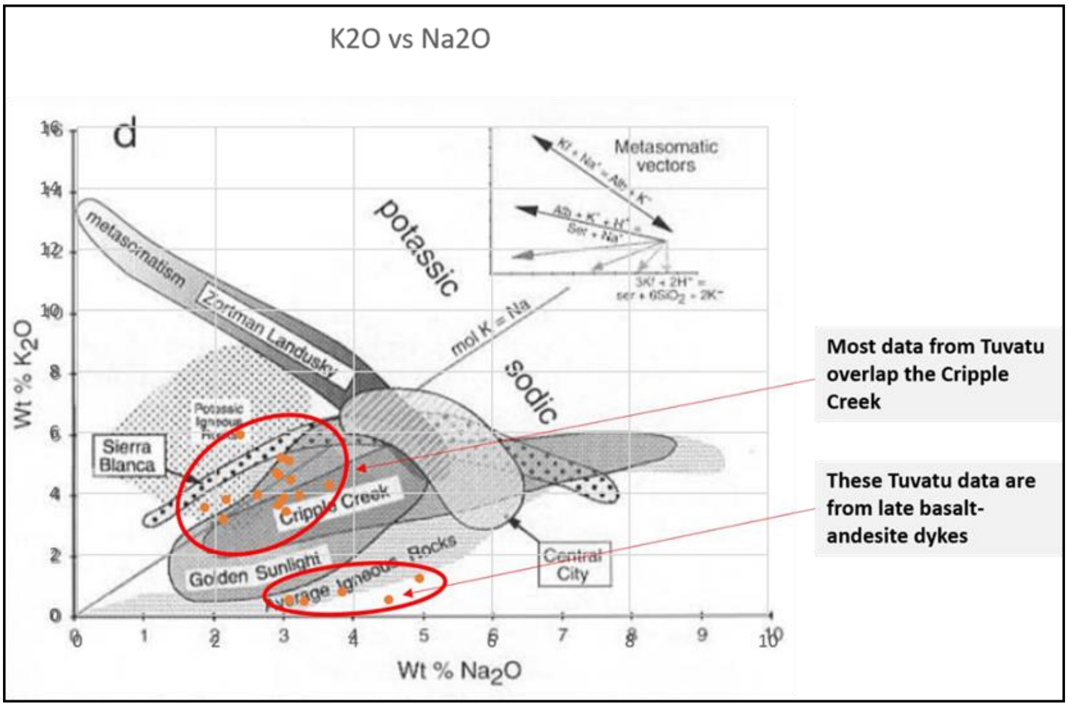
Source: Lion One modified after Jensen and Barton (2000)

Figure 8.2 Data from Tuvatu (Orange Dots) Derived from Scherbarth and Spry (2006) Compared to K_2O vs. Na_2O of Alkali Gold Systems.



Source: Lion One modified after Jensen and Barton (2000)

Figure 8.3 Data from Tuvatu (Orange Dots) Derived from Scherbarth & Spry (2006) Compared to K_2O vs. Na_2O of Subalkaline Gold Systems



Source: Lion One modified after Jensen and Barton (2000)

Figure 8.4 Plots of $Na_2O + K_2O$ vs. SiO_2 for Intrusions and Volcanics from Tuvatu.

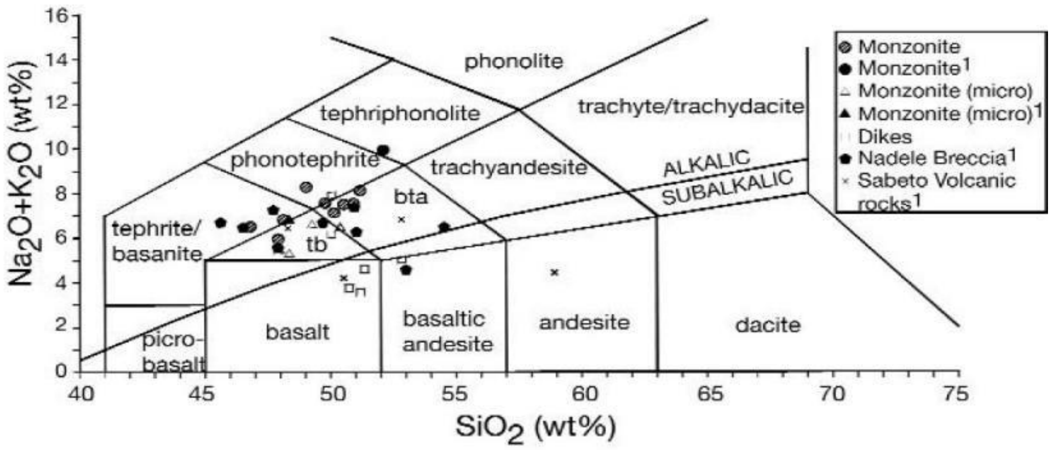


FIG. 6. Total alkali-silica diagram of Le Bas et al. (1986) for the Navilawa Monzonite, basaltic-andesite dikes, Nadele Breccia, and Sabeto Volcanics. The alkalic-subalkalic line is defined by Miyashiro (1978). Abbreviations: bta = basaltic-trachyandesite, tb = trachybasalt. [1]Data obtained from Hatcher (1998).

Source: Scherbarth & Spry (2006)

This work presents supporting evidence that Tuvatu compares favorably on lithochemistry and source intrusions with other alkalic gold systems and in particular with Porgera, Cripple Creek, Goonumbla, and Bingham Canyon subalkaline gold systems.

8.3 Alteration

At Tuvatu, potassium feldspar is dominant in many veins. The extent of alteration from veins into the wall-rock is normally restricted to a few centimeters and is suggestive of a mineralizing fluid that is in equilibrium with the surrounding hostrock. This fluid, in equilibrium with its hostrock, is not typical of a hot-spring epithermal deposit where meteoric waters dominate epithermal activity and react with the host rock producing intense alteration. Tuvatu is generally a low-silica system, and large/wide quartz veins are not observed. Quartz-carbonate-feldspar veins, with some sericite alteration (Figure 8.5 and Figure 8.6) dominate the main mineralized structures at Tuvatu. Roscoelite, a vanadium mica, is found within particularly high-grade, gold-bearing structures.

The HT-Lodes Tuvatu Lodes appear different to the main body of mineralization such as the Upper Ridges Lodes, and are equivalent to an early base metal phase as described by Schmidt (2023). These HT-Lodes contain coarse, shreddy biotite (Figure 8.6), which is consistent with high-temperature potassic alteration (see also fluid inclusion work below). As Richards *et al.* (1997) described, the Porgera alkalic system also contains both an early magmatic phase (stage 1) and a later alkalic epithermal phase (stage 2) of mineralization. This is also consistent with multiple phases described at Cripple Creek and other Rocky Mountain alkalic systems (Kelley & Luddington 2002, Kelley *et al*, 2016).

High-grade veins, such as the coarse visible gold noted in Figure 8.7, may show very little wall rock alteration.

The low-sulphide content at Tuvatu is noted by Scherbarth & Spry (2006) and is consistent with the multiple element data. For gold assays >2 g/t from Tuvatu, the median sulphur content is 1.8%, suggesting total sulphides of less than 4%.

Sphalerite (Zn sulphide) present at Tuvatu is generally pale yellow; this is suggestive of a low-temperature mineralization (Figure 8.5).

Top left image is base-metal and silica dominant from Jomaki prospect (early base-metal, (not alkalic); bottom left image is potassium rich minerals, including secondary biotite and potassium feldspar (early base-metal, not alkalic). Right image is typical Upper Ridges (UR) style with sericite and carbonate with low-silica (alkalic style).

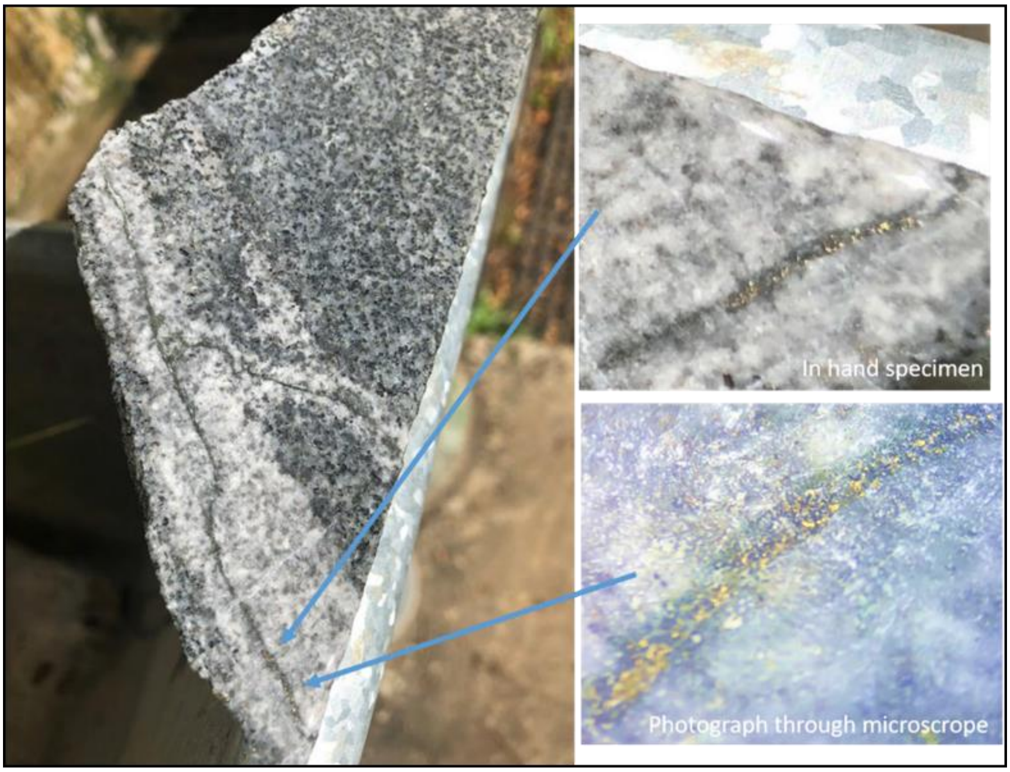
Figure 8.5 Some Alteration Styles at Tuvatu.

Source: Lion One 2024

Figure 8.6 K-Feldspar + Silica Breccia Fill (left) (Alkalic Style) and High-temperature Secondary Biotite (Right) (Early Basemetal Style)

Source: Lion One 2024

Figure 8.7 Very High-grade Native Gold on a Narrow Vein with Minimal Wallrock Alteration (Alkalic Style).



Source: Lion One 2024

In assessing the temperature of mineralization, work by Emperor Gold Mining Company Limited on fluid inclusions from Tuvatu (Baker 1989) and subsequent work by Scherbarth and Spry (2006) suggest that the UR2 vein was generally deposited at low temperature, whereas the HT-Lodes were deposited at a higher temperature.

Table 8.2 Fluid Inclusion Data for Lodes at Tuvatu, Showing the Temperature of Vein Deposition

Lode Name	Lowest Temperature	Highest Temperature °C	Average Temperature °C
UR2	84	290	207
UR8	205	277	241
URW3	217	292	242
UR6	273	278	276
URW1	250	382	279
H-Lodes	176	413	285
UR9	210	382	291
T-Lodes	296	498	411

Compiled after Baker (1989) and Scherbarth and Spry (2006)

It is important to note that the UR2 vein, which is confirmed as a high-grade structure, has the coolest depositional environment and is most certainly an alkalic structure, whereas the high-temperature T-Lodes and H Lodes are outside of the normal range for an epithermal vein system but relate to an early base-metal phase (also noted by Schmidt, 2023).

8.4 Mineralogical associations

Recent studies of mineralogy at Tuvatu by Clarke (2022), Jefferson (2023) and Schmidt (2023) describe common mineralogical associations with gold bearing structures. These include native gold commonly associated with arsenian pyrite, arsenian marcasite, galena, sphalerite, and minor gold bearing telluride (calaverite). Refer also to Section 7.

Mineralogy presented in the aforementioned studies is not, however, quantifiable. The following comments can be made regarding the comparison of gold versus other elements in Table 8.3,.

- Ag < Au (Ag is low compared to low-sulphidation epithermal)
- As is high (arsenopyrite is not common, but arsenian pyrite is commonly observed in very high-grade zones (Jefferson, 2023 noted Au associated but not necessarily within arsenian pyrite)
- Cu is low (compared to porphyry or other higher temperature systems)
- Pb and Zn is low (compared to epithermal hot-spring systems)
- V is low (though vanadium is assumed to be associated primarily with roscoelite in high-grade zones)
- Te is high (though presence of other non-gold bearing tellurides is noted by Clarke, 2022)

Table 8.3 Average Grade of Multi-element Assays for Drill Samples >2ppm Au.

Element	Samples	Average Grade (ppm)
Au_ppm	7240	17.6
Ag_ppm	4230	13.5
As_ppm	4186	570.2
Cu_ppm	4207	640.8
Pb_ppm	4149	461.8
Zn_ppm	4133	951.1
V_ppm	4125	260.4
Sb_ppm	786	12.4
Hg_ppm	353	10.8
Te_ppm	3868	15.1

Note: Average grades of samples are not length-weighted. N samples = total number of multi-element assays available where Au > 2ppm

8.5 Summary

Table 8.4 confirms the criteria defining alkalic systems in Table 8.1.

Table 8.4 Criteria Defining Alkalic Systems and Reference to Observations at Tuvatu

Alkalic-type	Observations at Tuvatu	Confirmed ?
Primarily of Mesozoic-Neogene age; probably a relic of palaeodepth of deposition and erosion of older deposits (Sillitoe, 2010)	Dated ~5Ma	Yes
Exceptionally Au-rich natures with Au>Ag and Au mineralogy including native-Au/electrum, Au tellurides (and selenides where chemistry permits) and auriferous, often arsenian, pyrite	Au > Ag at Tuvatu. Native Au and minor Au tellurides observed (Clarke, 2022; Jefferson, 2023)	Yes
High Te grades and tonnages with extensive telluride mineralisation	Average Te grade for Au>2g/t (av 16.7ppm Au) is 14.7ppm (Holden, 2019). This is low-grade for tellurium and consistent with only rare calaverite	Partial
Enrichments in W, Bi, Sb, PGE, As, Mo, Zn	Tuvatu enriched in As with arsenian pyrite present. Also enriched with in Mo and Sn. Tuvatu is low in Bi. Sb and W not routinely assayed	Partial
Base-metal poor with low total sulfides (where present, sulfides primarily in veins as opposed to sulfidised rocks, and may include pyrite-sphalerite-galena or minor tennantite-tetrahedrite-chalcopyrite)	Relative to a porphyry system or epithermal system, Tuvatu low in Cu, Pb, Zn	Yes
Common V-bearing mineralisation (especially roscoelite) in veins and alteration halos	Roscoelite observed, particularly in v. high grade veins	Yes
Extensive carbonation and limited silicification in alteration assemblage or veins	Silicification is restricted to short distance from vein selvages. Carbonation noted by Clarke, 2022)	Yes
Large 'nebulous' alteration systems including voluminous K-metasomatism ranging from broad zones of potassic to sericitic alteration, selvages may be subtle	Potassium feldspar in veins	Yes
Fluorine enrichment as either fluorite or F-rich biotite, forming prior to Au and associated with base-metal sulfide deposition	Unknown	-
Fluids regularly at least partly characterised by a magmatic signature (O, H and Sr isotopes), but with little to no acid-type alteration	As noted in Clarke, 2022	Yes
Low magma volumes, forming isolated systems or small clusters rather than regionally extensive provinces, often in association with deep-seated faults (Richards, 1995)	Navilawa is a stock approximately exposed over 4 x 5km, rather than a large batholith. A large structure links Tuvatu to Vatakoula, Raki Raki and Mt Kasi	Yes
Close spatial and/or temporal association with Cu and/or Mo porphyries	Early porphyry related base-metal mineralization observed	Yes
Close spatial relationships with alkaline magmas, whether effusive, hypabyssal, or plutonic	Monzonite and shoshonitic volcanics	Yes

8.6 Alkalic Systems, Implications for exploration and development

The Tuvatu deposit, as an alkalic gold system, is relatively small compared to >10 million-ounce deposits such as Porgera (PNG), Cripple Creek (USA), and Cadia (Australia). Although an early base-metal/porphyry related phase is common in many alkalic systems, it has been previously misinterpreted as being directly associated with the main mineralizing event at Tuvatu. To avoid false-positives of early-stage porphyry related base-metal mineralization, to target the potential large scale alkalic system Lion One geologists consider:

- Intersection of structures enabling stockwork zones to 'blow out' and zones that form steeply dipping to near-vertical conduits for fluid-flashing resulting from sudden drops in pressure;
- Using arsenic and tellurium as pathfinders defining the alkalic component (useful in surface sampling and drill/underground assays);
- Base-metal mineralization, in the absence of arsenic and tellurium, indicates that the early porphyry related stage has not been re-activated in the alkalic epithermal stage.

It should be further noted that the discovery of the 500 Feeder Zone mineralization in 2020 indicates that other high-grade alkalic gold zones are possible in the environs of the current deposit. Furthermore, alkalic systems such as Cadia-Ridgeway and others commonly present as a cluster of several deposits related to the source alkali intrusion. Considering that the wider Navilawa Caldera/monzonite is yet to be adequately explored, the clustering nature of alkalic systems suggests that further discoveries are possible.

9.0 EXPLORATION

Following work by previous owners, Lion One commenced exploration at Tuvatu in 2011 and since then has conducted continuous exploration activities both at the Tuvatu deposit and within the wider project area. In 2019, the Company was awarded the exploration license (SPL1512) covering the wider Navilawa Caldera.

9.1 Historic Exploration Data

The Company continues to validate and analyze historic (pre-Lion One) exploration in the district. Historic data was sourced by the Company from data filed at the Mineral Resources Department of Fiji, including geological mapping, surface geochemistry, drilling, and geophysics.

Drill data generated by Emperor Gold at Tuvatu has been validated and confirmed and is incorporated where appropriate in the Company's master database.

Historic data, especially data in SPL1512 (Navilawa Caldera) has been reported as frequently mis-located (survey errors or grid-conversion errors), as having assay validation requirements (e.g. laboratory method not recorded, sample field preparation not recorded), and variability in geophysical and geological mapping methods. Lion One continues to validate this historic information and incorporate it into its targeting process. Although the data is of a historic nature, considering that it is surface information only and not used in mineral resource estimate, it is considered fit for purpose to assist with targeting.

Please refer to Section 6 history of exploration and discovery and Section 10 for the incorporation of historic drilling.

9.1.1 Lion One Exploration 2011-2020

A detailed history of exploration prior to 2020 is provided in Huang et al, 2022.. This work is summarised in Table 9.1.

Table 9.1 Summary of exploration 2008-2020

Year(s)	Summary	Surface Chemistry	Geological Mapping	Geophysics	Drilling
2008-2010	Employment of first geo-team separate from Emperor Gold Mines (under Tuvatu Gold Mines), mapping and sampling, data review and validation	Reconnaissance rock sampling	Reconnaissance	No	Tuvatu Area
2011-2012	Lion One acquired Tuvatu Gold Mines along with staff Cambria Geoscience and SJ Geophysics mobilized to assist on site. Work involved relogging core, resampling. New stream sediment samples collected and geophysical data collection	Yes - stream sediments, rock sampling and trenching	Reconnaissance	IP Survey	Tuvatu Area
2013-15	Resource estimation work and reconnaissance	Yes - rock sampling	Reconnaissance	No	Tuvatu Area
2016	High grade extensions intersected in drilling	No	No	No	Tuvatu Area
2017	Awarded the Navilawa SPL; compilation of historic data; extensional drilling	Yes - benching program	Yes	No	Tuvatu Area
2018	Regional bench sampling, on-going extensional exploration	Yes - benching program	Yes	No	Tuvatu Area
2019	Continued bench sampling with new discoveries regionally. Commences BLEG stream sediment sampling. Deep drilling intersects new zones	Yes - benching program and BLEG Streams Program	Yes	CSAMT survey	Tuvatu Area and regional
2020	Results from CSAMT survey integrated. Regional targeting; and ongoing drilling - Discovery of 500 Deeps Feeder zones	Yes - benching program	Yes	CSAMT survey	Tuvatu Area and regional

9.2 Extensional Exploration 2020 - Current

Exploration at Tuvatu, in the past three to four years has focused on:

- Extensional exploration in the immediate vicinity of the current project
- Regional exploration investigating new prospects and targeting for new mineralized systems.

The Tuvatu gold deposit consists of a series of 0.1 to >8 m wide zones of mineralization hosted within a monzonite and enclosing andesite. The monzonite is exposed in the floor of the interpreted collapsed Navilawa Caldera.

Mineralization at Tuvatu has been confirmed over a north–south strike length of more than 900 m and from surface to depths more than 1000m. The system has a complex structural control, with high-grade bonanza steeply plunging shoots within individual zones. Mineralization is confined to structural zones consisting of veins and veinlets of quartz-potassium feldspar-carbonate. Sulphide content is generally low, but a typical association includes minor components of pyrite-arsenopyrite-galena-sphalerite-bornite- tellurides-roscoelite. Gold is generally fine free gold, with occasional visible gold sighted in drilling. The individual lodes and characteristics are listed in Table 9.2.

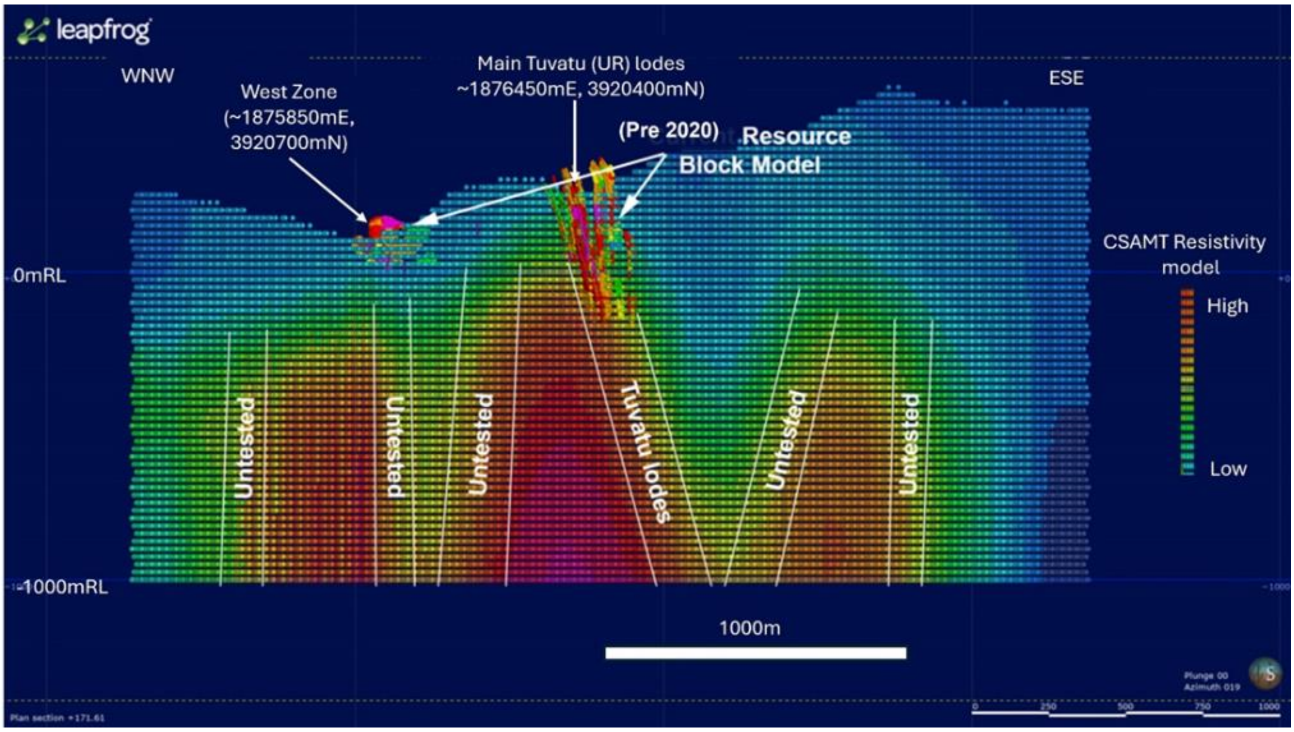
Table 9.2 General lode types at Tuvatu

Mineralized Zones	Principal Veins	Orientation	Comments
UR Zones	UR1, URW1, URW2, UR2, UR3, UR4, UR5, UR6, UR7, UR8	UR1 to UR4: North–south strike and dipping 70 to 85° east dip	UR is an abbreviation of "Upper Ridges". Individual and zones of lodes pinch and well extend over strike lengths of >800 m, with 20 to 30 m long bonanza zones plunging steeply southward. Mineralization consists of zones of quartz-feldspar veins and veinlets with sulphide (Arsenian pyrite-Py) and roscoelite.
		UR5 to UR8: Splaying from north–south to northeast–southwest with 70 to 85° east dip	URW1 intersected on the 1141 level underground included a >20m wide stockwork zone plunging south.
HT Zone	H1, H2, T1, T2	Steep west-northwest– east-southeast to northwest–southeast strike with vertical to dipping steeply both northeast and southwest	These are the original outcropping discoveries with T = Tuvatu. Wide vuggy zones of variable gold mineralization. Alteration includes potassium feldspar and shreddy coarse biotite. Galena and sphalerite are common. Likely early base-metal phase (Epithermal I) overprinted with late alkalic veins (Epithermal II)
Murau-West	M1, M2, M3, M4, Snake (S1-3), W1, W2, W3, W4	East–west strike with 60 to 80° dip south	Narrow zones with the most abundant visible gold in the system. Minor sulphide (py) content and associated telluride. Likely Epithermal II veins (Schmidt, 2023 definition)
SKL Lodes	SKL1, SKL2, SKL3, SKL4, SKL5	East–west strike with shallow (10 to 30°) dip to the south	Flat zones with limited extent (20 to >50 m), but with very high (>30 g/t) bonanza grades. Equivalent to the "flatmakes" at Vatakoula.
500 Feeder	500A, B, C, D, E + stockwork zones	NW-SE with steep dip (UR4 extensions).N-S with steep dip east (URW + UR1-3 orientations). Steeply plunging stockwork shoots (e.g. TUG-141)	Abundant roscoelite, arsenian pyrite with minor base-metals. Minerization hosted in chalcedonic quartz breccias and veins. A network of veins have been defined with multiple structures.

In 2019 the Company conducted studies into the deposit-style and refined the deposit model of Tuvatu as an alkalic epithermal type deposit with an investigation into comparable system elsewhere (Hennigh, 2019; Holden, 2019) (and refer also Section 8). This realization prompted an investigation into targeting for deep feeder systems beneath the current (at the time) mineral resource model (Figure 9.1 CSAMT Resistivity Model Relative to Mineralized Structures at Tuvatu. WNW-ESE Cross-Section).

Aided by controlled source magneto-tellurics survey (CSAMT) geophysics (refer below for further information on CSAMT work), a series of resistivity gradients were noted that showed a N-S resistivity ridge with the main mineralization at Tuvatu associated directly above this.

Figure 9.1 **CSAMT Resistivity Model Relative to Mineralized Structures at Tuvatu. WNW-ESE Cross-Section**



Source: Lion One 2024

Subsequent deep drill testing of this zone identified a new mineralized zone in TUDDH-500 (Lion One press release dated 21 July 2020). This zone was named the 500 Feeder Zone, and subsequently returned 12.7m grading 46.14g/t Au (from 558m down hole), with 0.3m grading 1310g/t Au from 582.8m down-hole). Assaying with a gravimetric finish subsequently upgraded the high-grade interval to 12.7m averaging 55.43g/t gold including 0.3m grading 1400g/t gold (Figure 9.2

The 500 Feeder Zone is inferred to be a continuation of UR4 (NE-SW strike) with the intersection of multiple structures forming and network and stockwork zone (N-S and flat-lying gold bearing veins (refer also Section 7), Vektore (2022).

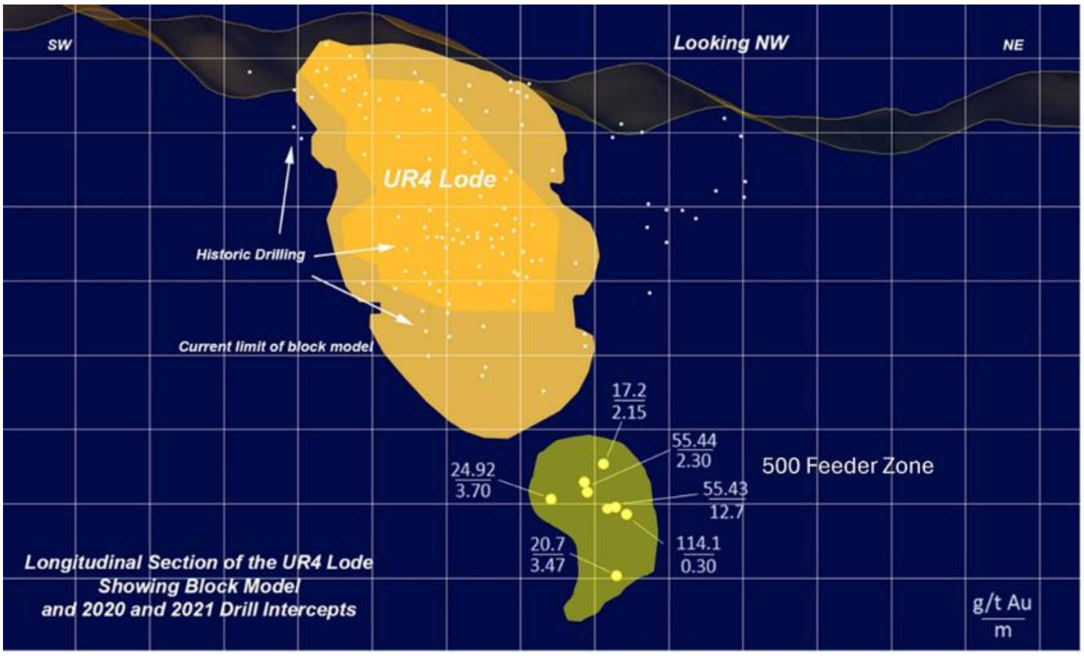
With the recognition that this zone had multiple structural orientations the Company increased the drilling of the 500 Zone with up to three rigs.

Figure 9.2 Core from Approximately 583m inTUDDH500.

Photo shows 1cm wide adularia-quartz vein with coarse visible gold, pyrite, and minor galena/sphalerite.

Source: Lion One 2024

Figure 9.3 Long-Section of the 500 Feeder Zone, Drill Results 2021-22



Source: Lion One Press Release 7 Sept 2021

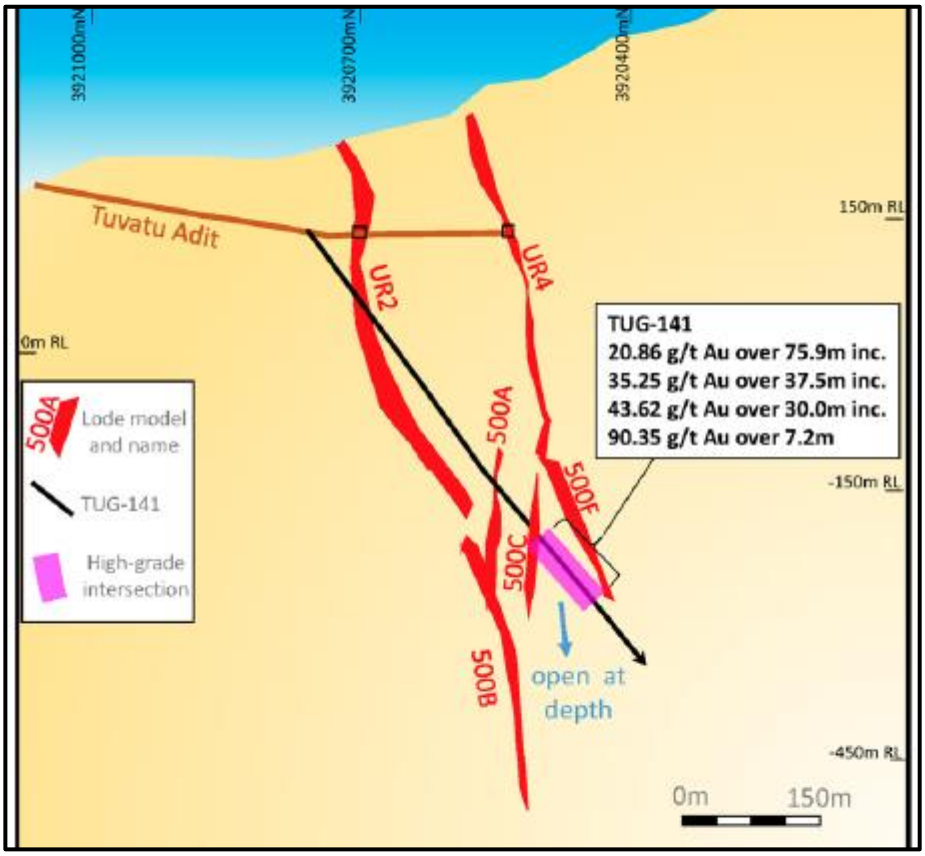
In June 2022 the Company announced results from the widest high-grade intersection to date on the project from underground hole, TUG-141 (Lion One news release 6 June 2022). With results including:

- 20.86 g/t Au over 75.9m from 443.4-519.3m
- including 35.25 g/t Au over 37.5m from 471.3-508.8m
- including 43.62 g/t Au over 30.0m from 477.6-507.6m
- including 90.35 g/t Au over 7.2m from 494.4-501.6m

(Figure 9.3, Figure 9.4, Figure 9.5)

Structures observed in TUG-141 offered multiple orientations and vein breccias. Subsequent follow up drilling with TUG-145 & TUDDH-601 provided evidence that this zone, part of the 500 Zone Feeder, is a steep southerly plunging network (stockwork) of veins (Lion One news release: 15 August 2022).

Figure 9.4 Vertical Section Looking E of the Trace of TUG-141 and Selected Drillholes Relative to the 500 Zone



Source: Lion One Press Release 6 June 2022

Figure 9.5 **TUDDH-601 at 580.2m Qtz-py Hydrothermal Breccia Vein with Chalcedonic Quartz, Native Gold and Arsenian Pyrite grading 140.99 g/t Au**

Source: Lion One news release 15 August 2022

9.3 Regional Exploration

As noted in Section 8, alkalic gold systems commonly form in clusters of deposits. There are numerous noted mineral occurrences throughout the wider Navilawa Caldera (Figure 9.6). These include base-metal dominant zones (Epithermal I under Schmidt (2023)):

- Kingston (historic small mine) with supergene enriched copper-gold (chalcocite)
- Central Ridges area of historic drilling for copper gold
- Biliwi bornite vein
- Matanavatu
- Wailoaloa – a new porphyry related discovery (Lion One news release: 4 March 2024).
- Nakalua (historic excavation on malachite rich veins)
- Jomaki

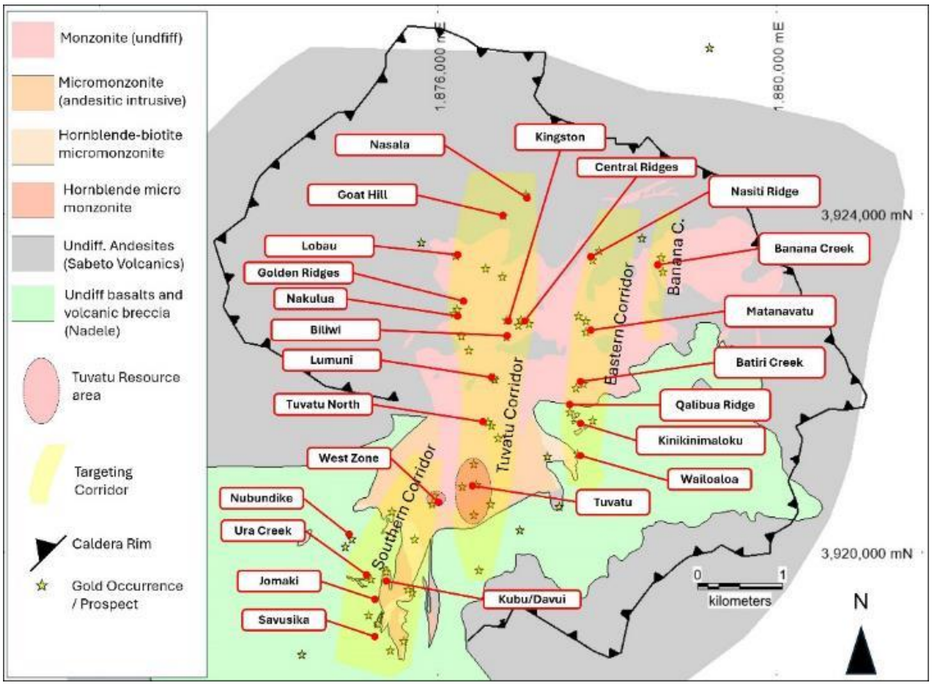
It is possible that base-metal dominant structures have been re-activated with later gold dominant alkalic mineralization (Epithermal II under Schmidt (2023)). Although the major structures noted from magnetic data interpretation (Section 7) are principally NE-trending, there are several distinct north-south corridors that are also manifest in topography disruptions. Noting that UR lodes tend to also strike north-south, these potentially represent targeting corridors and later-reactivation in the alkalic mineralization phase.

Target areas that remain a focus for gold dominant systems include:

- Tuvatu (-> North) Corridor:
- Tuvatu-Lumini-Nakulua-Golden Ridges-Kingston/Central Ridges-Lobau-Goat Hill
- Southern Corridor
- Savusika-Jomaki-Ura Creek-Malawai-West Zone
- Eastern Corridor
- Wailoaloa-Kinikinimaloku-Qalibua Ridge-Batiri Creek-Matanavatu-Nasiti Ridge

- North Eastern - Banana Creek

Figure 9.6 Regional Tuvatu Prospect Map Underlain by Generalised Geology



Source: Lion One 2024

9.3.1 Soil Sampling Data

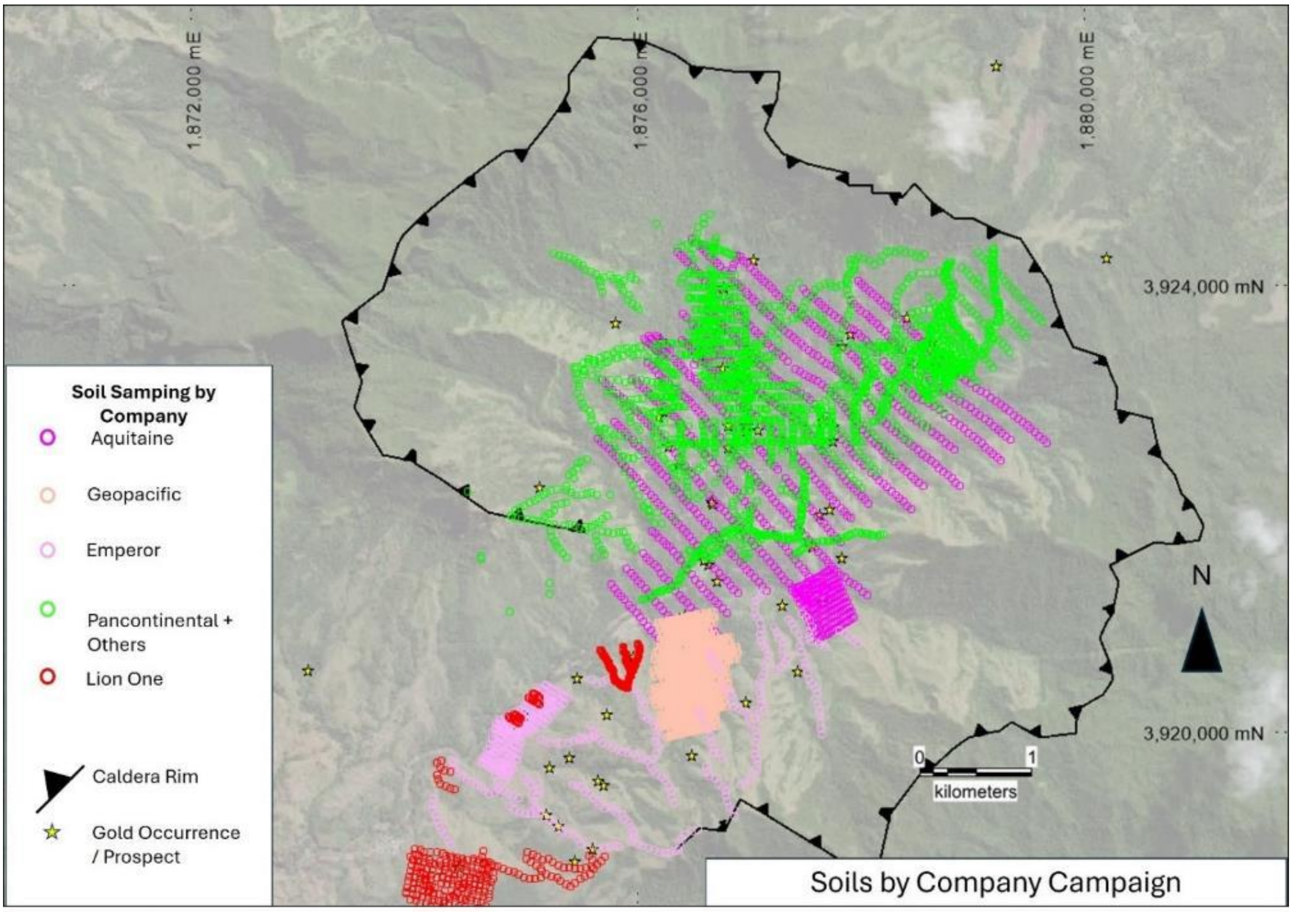
Lion One has compiled a database that includes soil sample results from previous explorers (Table 9.3, Figure 9.7). The original sampling techniques of previous explorers have not been recorded in the database. In the case of Lion One samples, a sieved B-horizon sample is collected and processed in the field before being sent to ALS Laboratory in Townsville, Australia for Au-AA25 (fire assay) with a 0.02 ppm (20 ppb) detection limit and ME61S for 33 element aqua regia digestion analysis.

Table 9.3 Summary of Soil Sampling Data in Database

Company	Number of Samples	Year (approx)	Gold Assay	Other Assay
Aquitaine	1161	1977-78	No	Cu
Geopacific	1036	1991	Yes	-
Pancon+Golden Rim*	2286	1986-1999	Yes	Ag-Cu-Pb-S-Zn+
Emperor	5000	2001	Yes	Cu -Pb-Zn+
Lion One**	393	1999*-2024	Yes	Ag-Cu-Pb-Zn-Te+

.*Pancontinental Mining and Golden Rim compiled data from other explorers, this has been included
+ indicates not a full suite is available for every sample in the dataset.

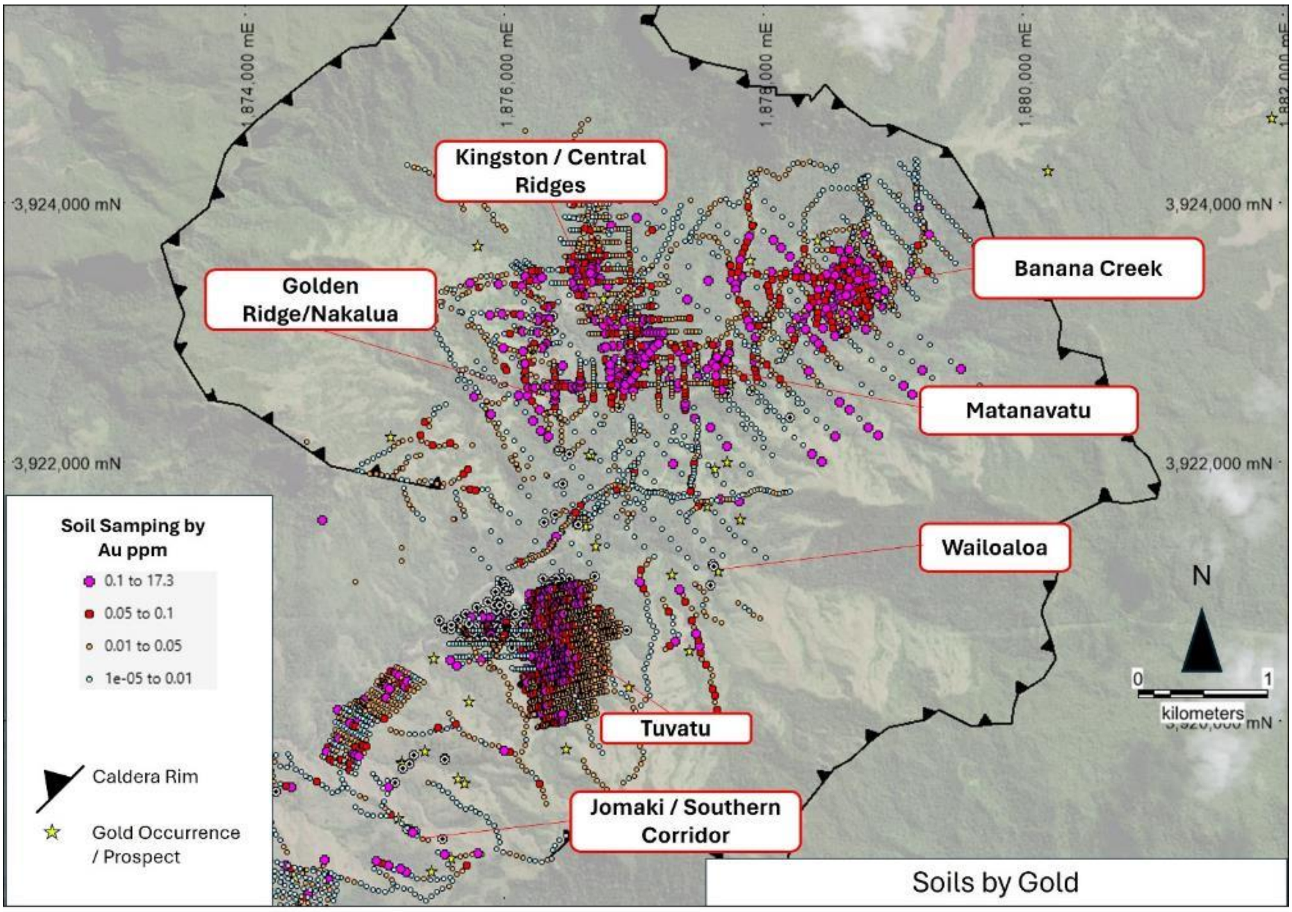
Figure 9.7 Soil Sampling Data by Company Campaign



Source: Lion One 2024

Due to the variable nature of the soil sampling, including a mixing of historic and Lion One results and a combination of ridge sampling versus gridded soils, this data is not levelled and cannot be used reliably for prospect prioritisation. Furthermore, due to the high rainfall and steep terrain there is likely both enrichment and depletion occurring in soil horizons. As such, the soil sampling data is considered to be used only as a guide for on-ground prospecting. Nevertheless, large zones of > 0.1 ppm(100 ppb) gold in soils have been identified at Banana Creek, Kingston / Central Ridges, Matanavatu and Golden Ridge areas--these are considered high tenor occurrences (Figure 9.8).

Figure 9.8 Regional Gold in Soil Samples

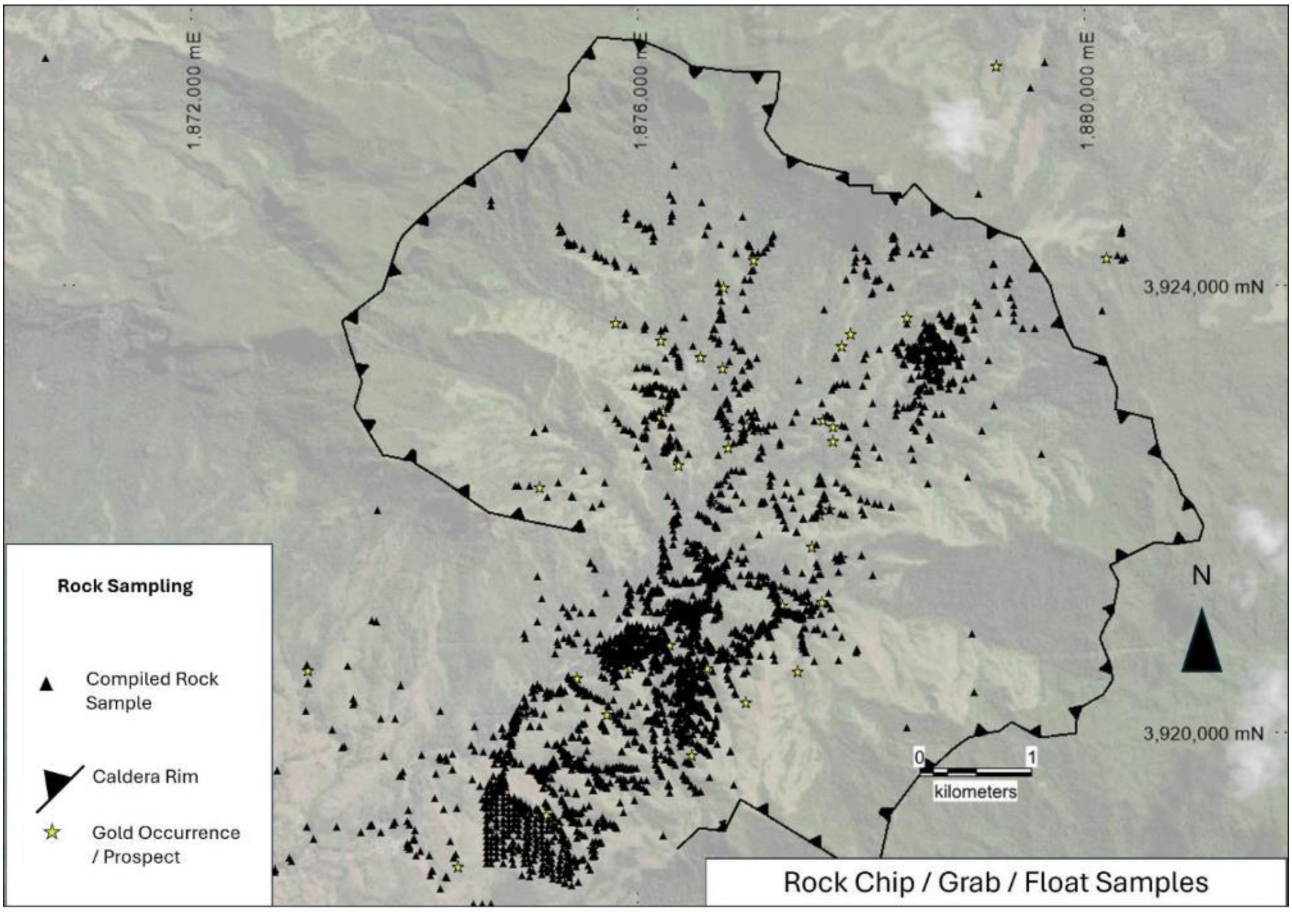


Source: Lion One 2024

9.3.2 Rock Chip Sampling

Lion One has compiled a database of 8,337 samples recorded as rock, rock float or rock-chip samples (Figure 9.9. The sampling technique and assay method for these are widely variable, and in many cases, assay results may be biased to an unrecorded specific structure with no context to width. As such, these selective rock-chip data are used sparingly by Lion Oneand used in identifying mineralized trends rather than specific targets.

Figure 9.9 Rock Chip+ Sampling Locations



Source: Lion One 2024

9.3.3 Benching/Channel Sampling/Trenches

Recognising the uncertainty presented in selective rock-chip sampling, Lion One commenced a chip-channel and map-sampling program. As of 2017, all regional surface-rock sampling includes a recorded width and mapping of structures. These data are recorded in a database equivalent to the drilling data, with each channel having a "collar" recorded being the start of the channel, the survey being the dip and azimuth of the channel, and a sample table containing "from" and "to" as well as multi-element assay results.

From 2016 to 2019 prior to the construction of the new laboratory, Lion One used ALS laboratories in Townsville for Au-AA25 (fire assay) with a 0.02 ppm (20 ppb) detection limit, and ME-61 for 33 element aqua regia digest analysis. Since mid-2019, samples are being prioritised through Lion One's own laboratory, with select assays also being sent to ALS in Townsville for further check assay. Samples with significant base metal assays are also forwarded for check assays.

Certified reference material (CRM) / standards are inserted into the sample stream at a ratio of 1:20 to check laboratory performance.

Sample locations include creek-channels, benching, and underground sampling in the existing adit. Creek-channel samples are from natural exposure in the various creeks. Benching involves excavation of a 1 to 5m bench along a hillside to expose weathered rock. Near-surface rock is extremely weathered and friable and is subject to bias with either oxidized leaching of metal or enrichment.

The channel sampling database contains 27,002 samples (Figure 9.13 & Figure 9.14). All data are located with either a handheld global positioning system (GPS) with an accuracy +-5 m, or differential GPS with an accuracy of+-0.01m, by a qualified surveyor.

Channel sampling data is recorded like a drill hole with a start, azimuth, dip, sampling from, sampling to, geology codes. Key structures are also mapped with dip and dip-direction. Sampling is generally conducted orthogonal to structures.

Figure 9.10, Figure 9.11 & Figure 9.12 shows a typical channel sampling survey, with white lines indicating the structure, and red paint marksshowing the sampling marks. Similarly in creek-channel sampling, the process is repeated (Figure 9-12).

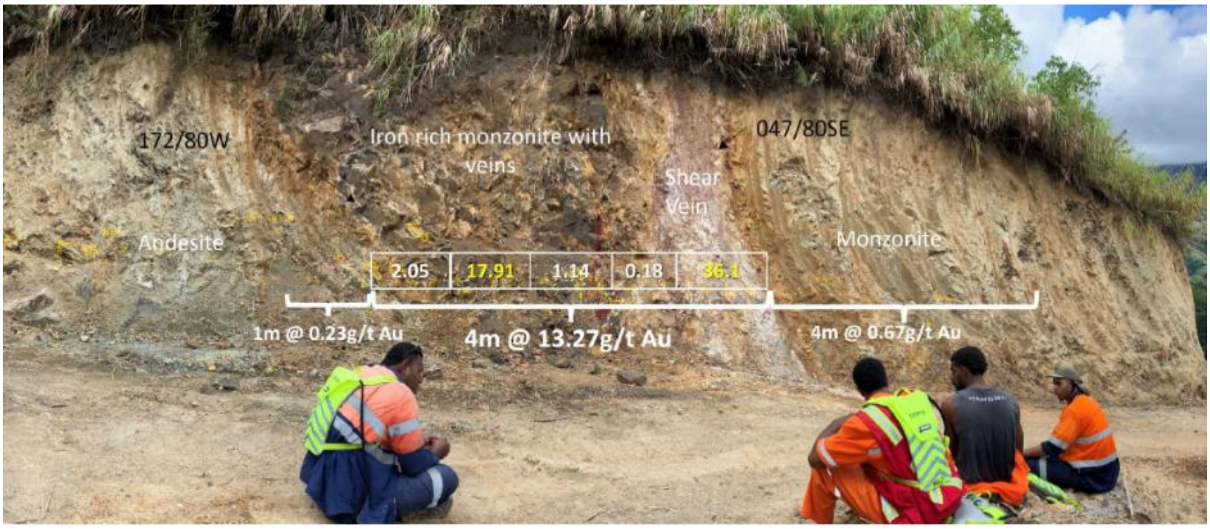
Figure 9.10 Example of a Channel Sample on a Bench with Paint Marks for Mapping and dGPS Surveying

Source: Lion One 2024

Figure 9.11 Channel Sample on an Outcrop with Paint Marks for Mapping and dGPS Surveying

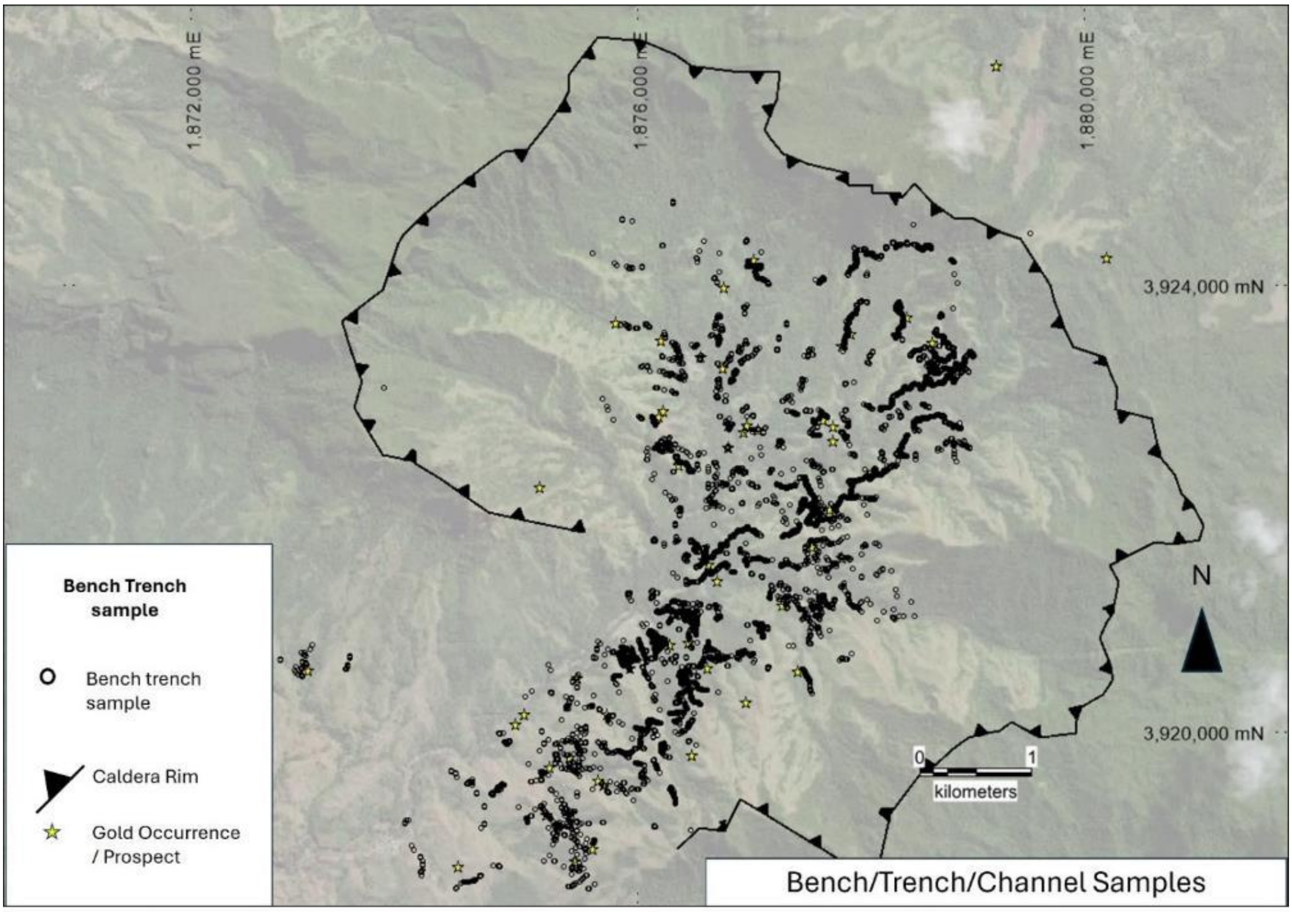
Source: Lion One 2024

Figure 9.12 Length-weighted Averaging of Assay Results Using From-to Survey (Batiri Bench discovery)



Source: Lion One 2024

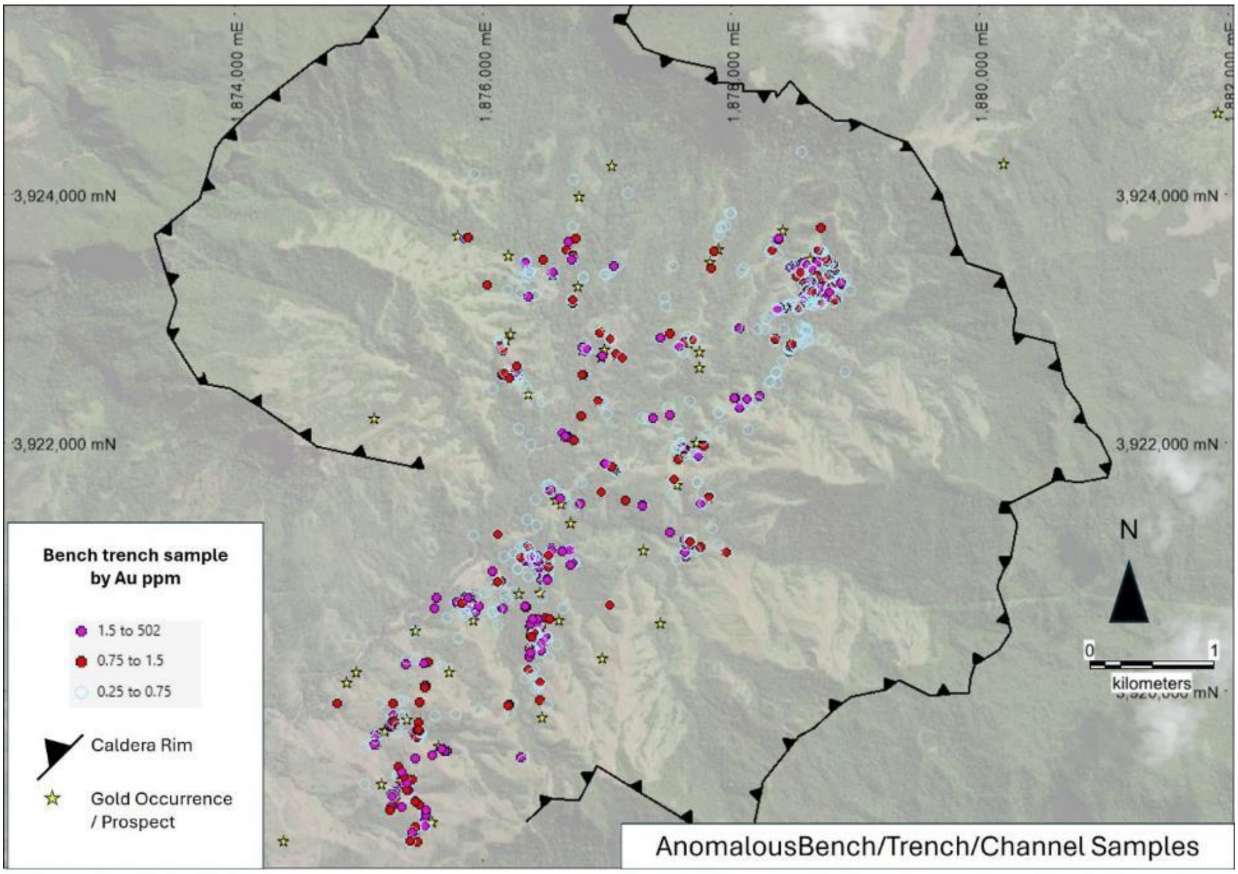
Figure 9.13 Channel, Bench and Trench Sample Locations



Source: Lion One 2024

All samples collected by a qualified and experienced team of geologists and field assistants. Samples are secured in cable-tied polyweave bags before being transported to Lion One's Nadi office for staging. If samples are exported to an overseas laboratory, e.g., ALS in Brisbane or Townsville, Australia, they are inspected by a government official for the granting of a requisite export permit before being airfreighted. If samples are to be prepared for analysis at Lion One's own laboratory (since October 2019), they are checked by laboratory staff before being processed.

Figure 9.14 Anomalous Bench/Trench/Channel samples



Source: Lion One 2024

9.3.4 Use of multiple data types/techniques in building maps of mineralized cells for prospectivity analysis

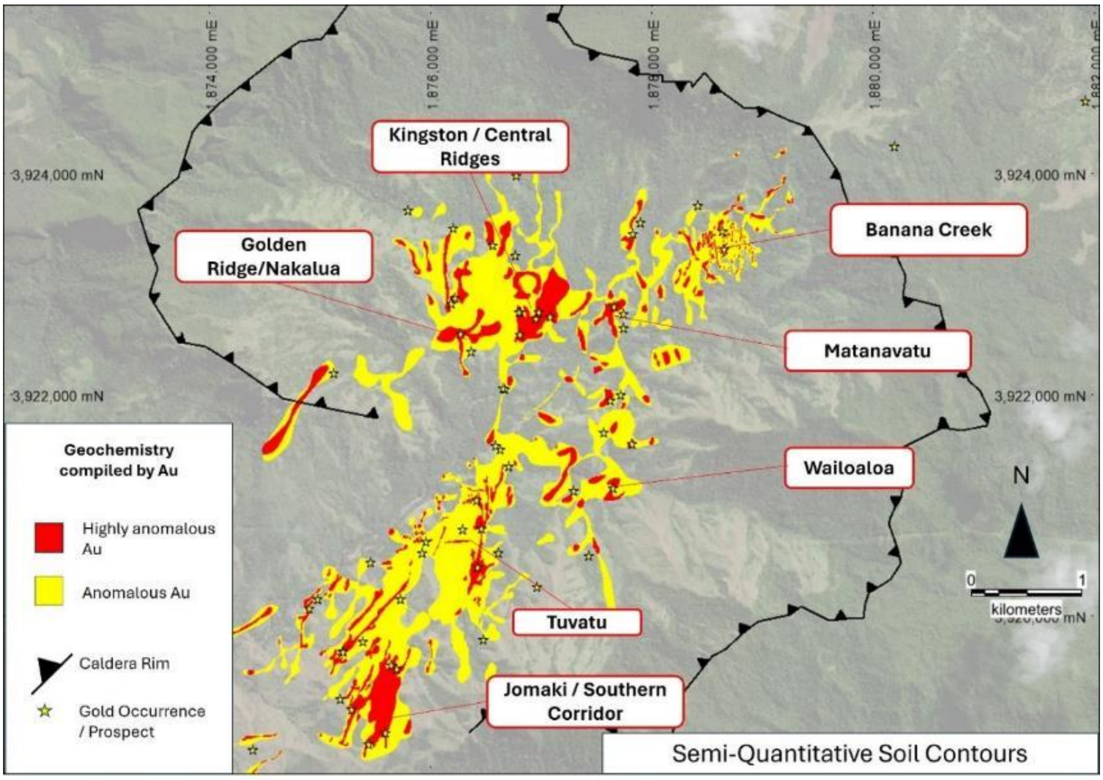
Due to the variability in sample and assay techniques, along with topographic, tropical weathering, and stream dispersion, it is not possible to build an objective picture of the mineralized footprints for regional targeting. As an alternative, a review of all surface sampling data of various mediums has been integrated with hand contouring of either low-level, mid-level, or high-level results. In the case of gold, for example, low level was considered where clusters of surface sampling in areas that showed grades >0.5 ppm Au in rocks and channels, and >0.1 ppm in soil samples. Similarly, the mid-level gold contours encircle clusters of samples where Au is >1 ppm in rocks and channels, and >0.05 ppm in soils. Whilst absolute values were used in this way, null values or sub-grade values were largely ignored, and as such, this is to be considered as a spatial analysis of potential prospectivity and anomalism rather than an absolute enclosure of mineralized grade.

Figure 9.15, Figure 9.16, Figure 9.17 & Figure 9.18 illustrate this regional contouring of multiple-elements. Table 9.4 Summary of Regional Geochemical Analysis summarizes the results of this work.

Table 9.4 Summary of Regional Geochemical Analysis

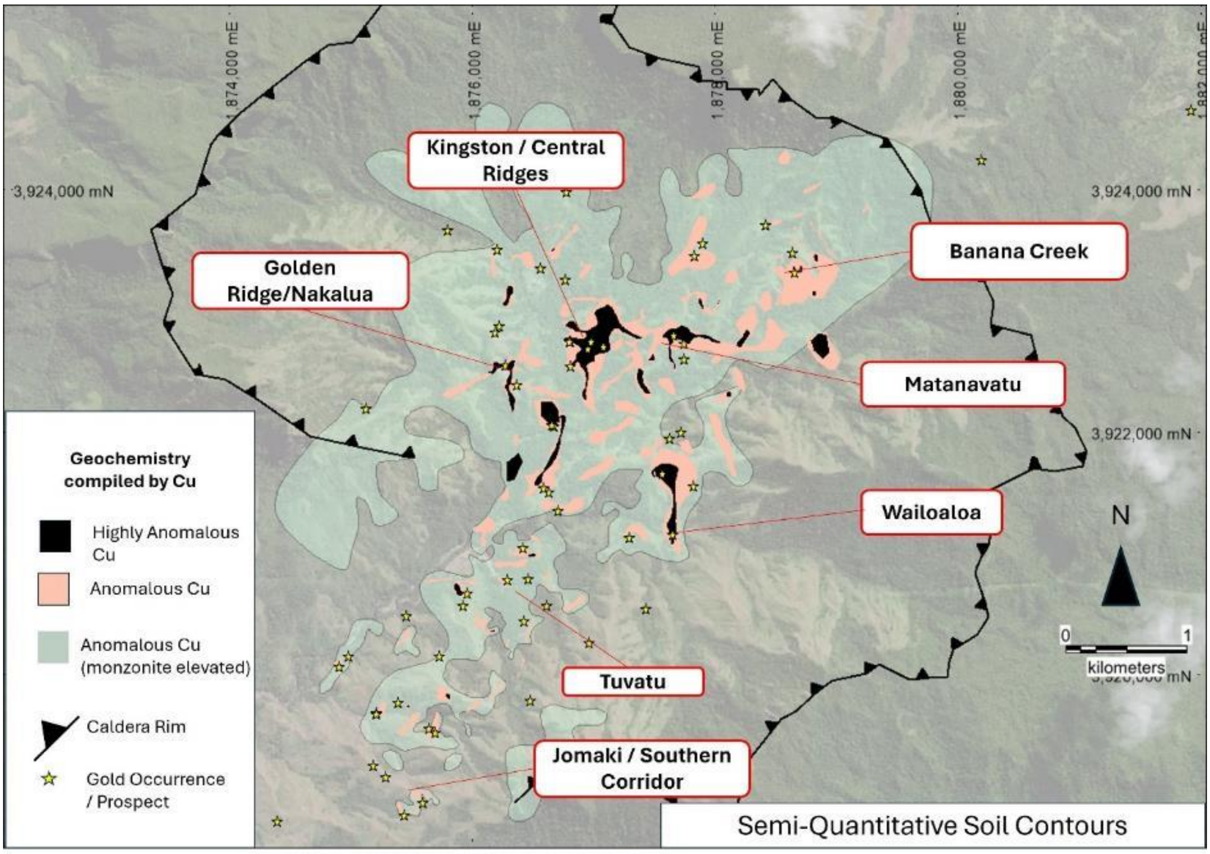
Prospect	Au	Cu	Ag	As	Te	Comments
Tuvatu	High	Low	Mod	Mod	Mod	Tellurium appears controlled by east–west structure.
Banana Creek	High	Low	High++	High++	Mod	Arsenic is far more extensive than the gold footprint. Continues to north and northeast.
Nasiti Ridge	High	Mod	Low	Mod	Low	Not much sampling; could be a continuation of Matanavatu with gold > copper increasing to the north.
Matanavatu	High	High++	High	Low	Low	Has affiliations with Banana Creek, Kingston. and Nasiti Ridge. A cross-roads in elements.
Kingston / Central Ridges / Biliwi	High	High++	Low	Low	High	V. High Cu.Tellurium driven by north–south structures.
Qalibua Ridge	Mod	High	Low	Low	Mod	Copper and low-level gold to follow up.
Batiri Creek	High	Low	Low	Mod	Mod	Only sporadic sampling.
Ura Creek	High	Low	High	High	Mod	Very similar to Tuvatu, but in Nadele and no appreciable gold in shallow drill results.
Jomaki / Southern Corridor	High	Low	Low	Low	Mod	Very similar to Tuvatu, but in Nadele and no appreciable gold in shallow results.
Golden Ridge/Nakalua	High	High	Mod	High	Low	Copper and low-level gold to follow up.
Wailoaloa	Mod	High	Mod	Mod	Mod	Copper anomalism and potential porphyry target

Figure 9.15 Semi-quantitative Contouring of Surface Gold Anomalies



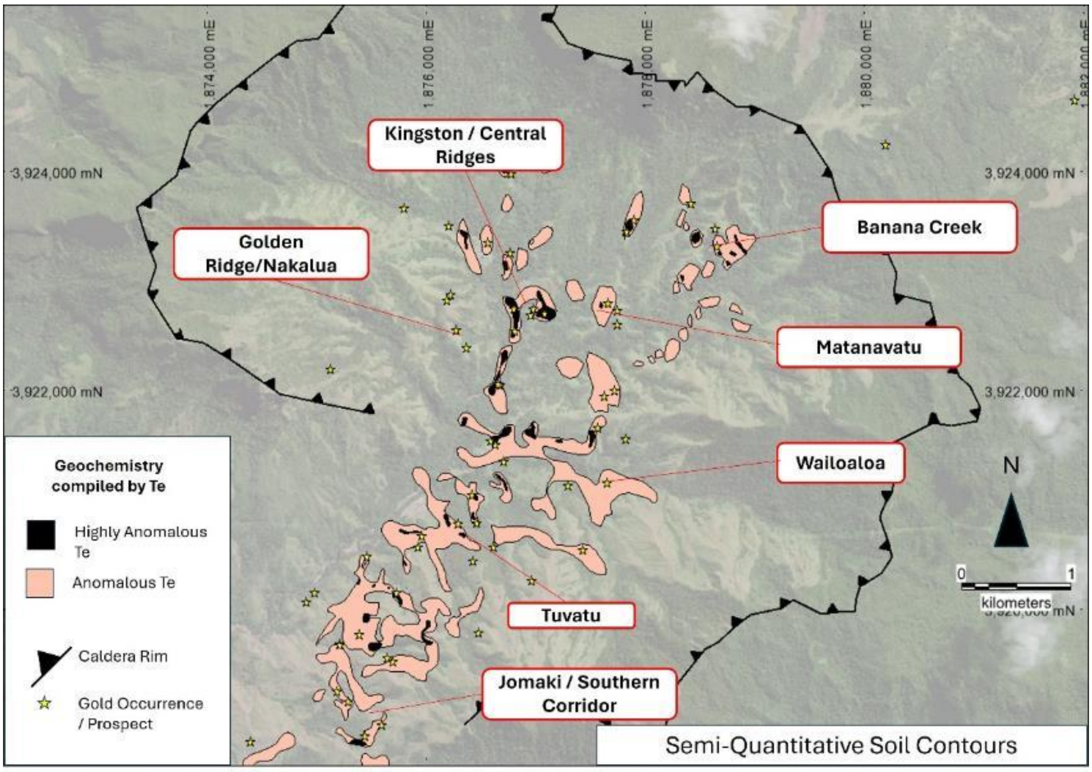
Source: Lion One 2024

Figure 9.16 Semi-quantitative Contouring of Surface Copper Anomalies



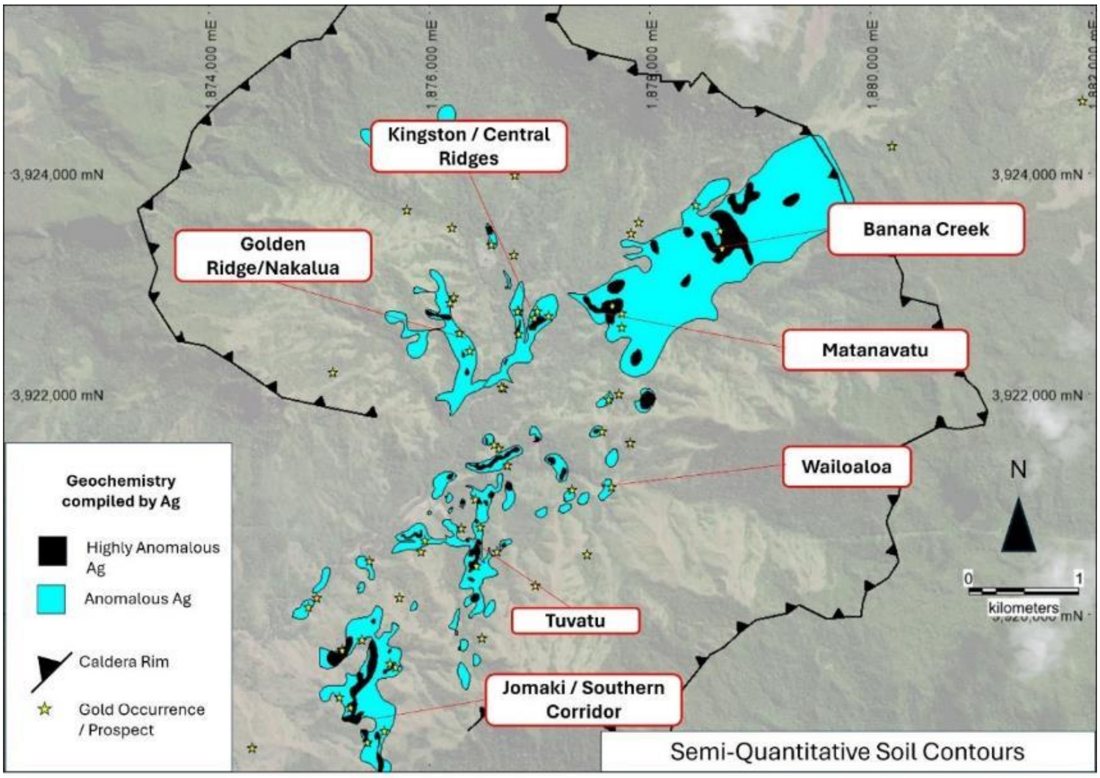
Source: Lion One 2024

Figure 9.17 Semi-quantitative Contouring of Surface Tellurium Anomalies



Source: Lion One 2024

Figure 9.18 Semi-quantitative Contouring of Surface Silver Anomalies



Source: Lion One 2024

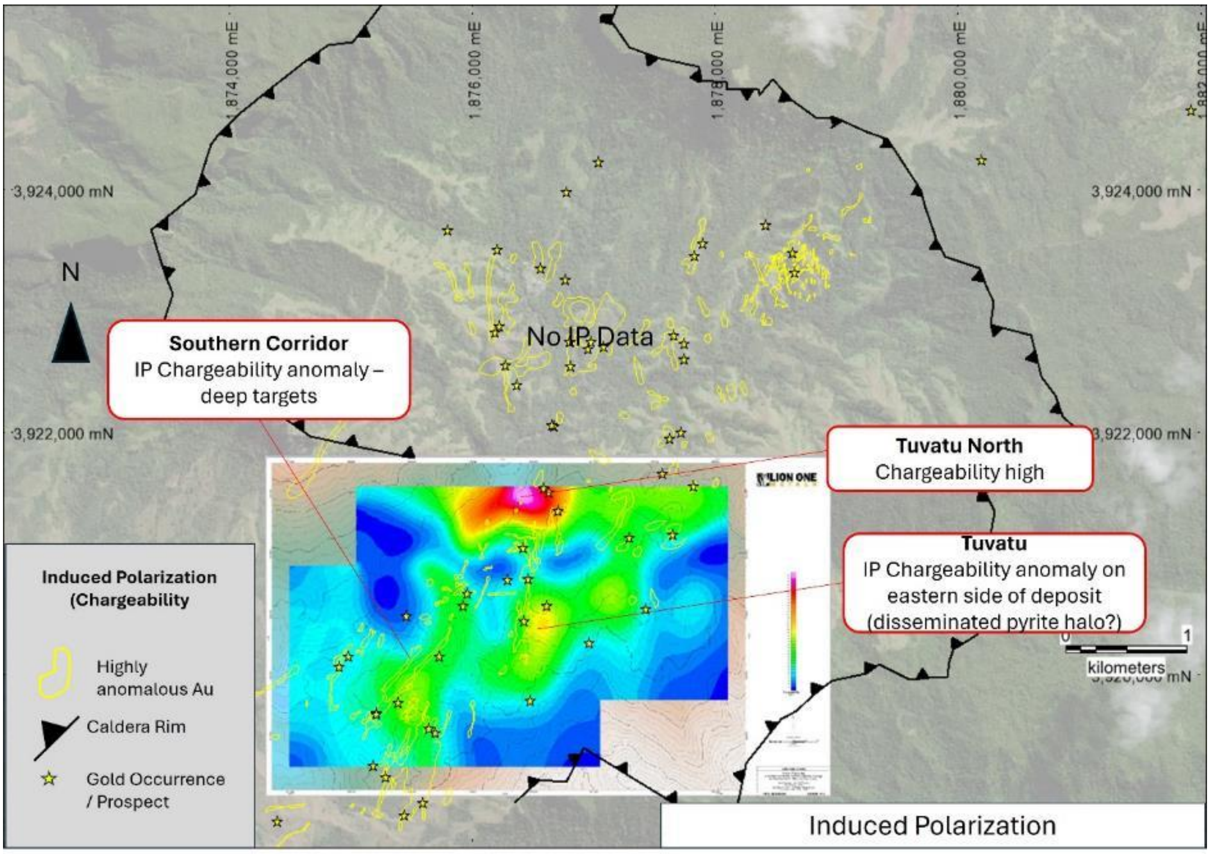
9.3.5 Geophysical Data

9.3.5.1 Induced Polarisation

In 2012, SJ Geophysics of Vancouver conducted a ground based induced polarisation survey over the main Tuvatu Mine area (Huang et al Technical Report 2022). These data were modelled and interpreted in 2019 by Thomas Weis, a geophysical consultant based in Denver, Colorado. Weis' task was to not only consider the chargeability and conductivity zones revealed in the 2012 IP survey, but to also consider the electrical properties of the rock types and alteration with a view to conducting a controlled source audio magnetotelluric survey (CSAMT). This survey was subsequently completed in late 2019 (Weis, 2020).

Weis (2020) noted that there is a IP chargeability high to the east of the main Tuvatu Zone. This is inferred to relate to distal and indistinct disseminated pyrite alteration. In addition, there is a deep chargeability anomaly extending under the Southern Corridor geochemical anomalies. This is inferred to be a deep intrusion beneath the Nadele breccias and constitutes a drill target >500m deep. A large chargeability high at Tuvatu North is yet to be explained.

Figure 9.19 Tuvatu IP Chargeability Plan View



Source: Lion One 2024

9.3.5.2 CSAMT

In late 2019, Lion One completed a controlled source magneto telluric CSAMT survey over the Project, including the Navilawa Caldera. This survey was expanded in 2022-23 with additional lines added (Weis, 2020; Weis 2024).

The survey was carried out by Zonge Engineering and Research Organisation (Zonge) based in Adelaide, Australia. The equipment specifications were:

- Zongo International GDP3224 receiver system (roving and remote reference).
- ANT-6 0.1-10000 Hz magnetic sensors.
- Zonge International GGT10 transmitter system.
- Non-polarisable copper sulphate electrodes.
- CSAMT data recorded at 32 kHz same rate.
- Audio Magnetotelluric Survey (AMT) data sampled at 1 kHz and 32 kHz.
- Transmitters placed 2-5km from receivers
- Receiver station spacing between 100m (2019) and 50m (2022-23)
- GPS locations recorded using hand held Garmin GPS.

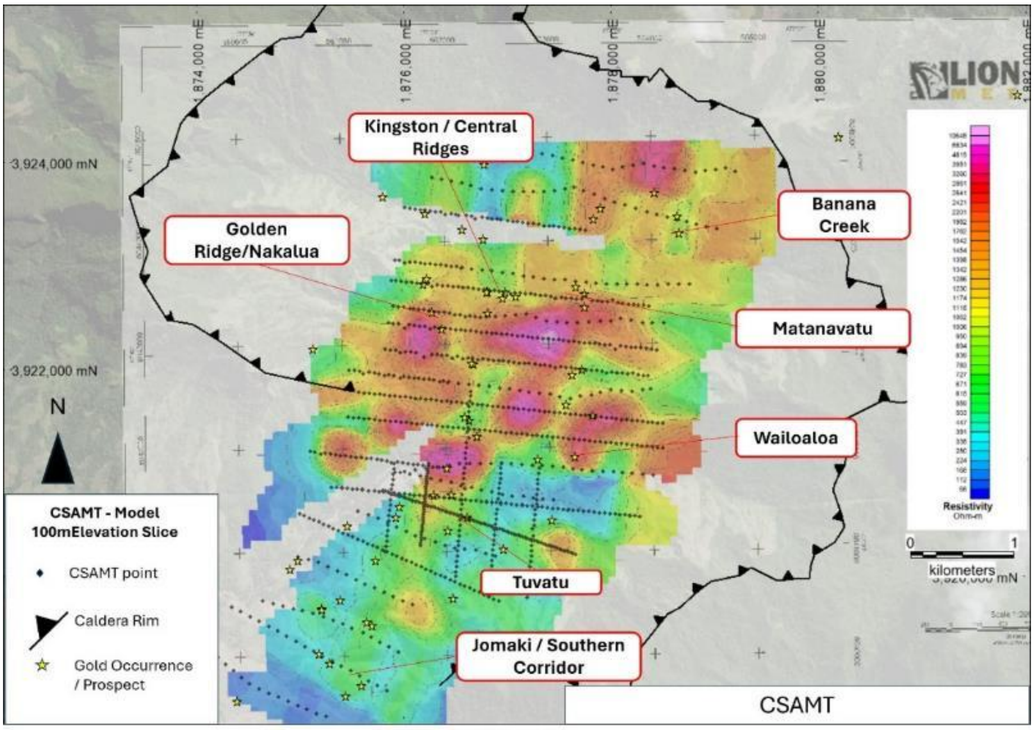
The survey specifications were as follows:

- Data recorded on twelve lines.
- AMT and CSAMT data recorded over the 8-8192 Hz frequency range.
- ExHy and EyHx components recorded (EyHx component recorded for every second site).
- 100 m station spacing.
- Two transmitter dipoles of 1.5 km in length were used, lines 8 to 12 read from tx electrodes at 560086E/8040526N and 560722E/8040121N.
- Lines 1 to 7 read from tx electrodes at 563050E/8044425N and 564099E/8044198N.
- Transmitter current ranged from approximately 14 A at 8 Hz to 3 A at 8 kHz.

CSAMT data in section (Figure 9.1) at Tuvatu, shows a close relationship between resistivity gradients. The resistivity highs are inferred to relate to late intrusions of nebulous silicification, with mineralization concentrating on a structurally controlled corridor adjacent to them.

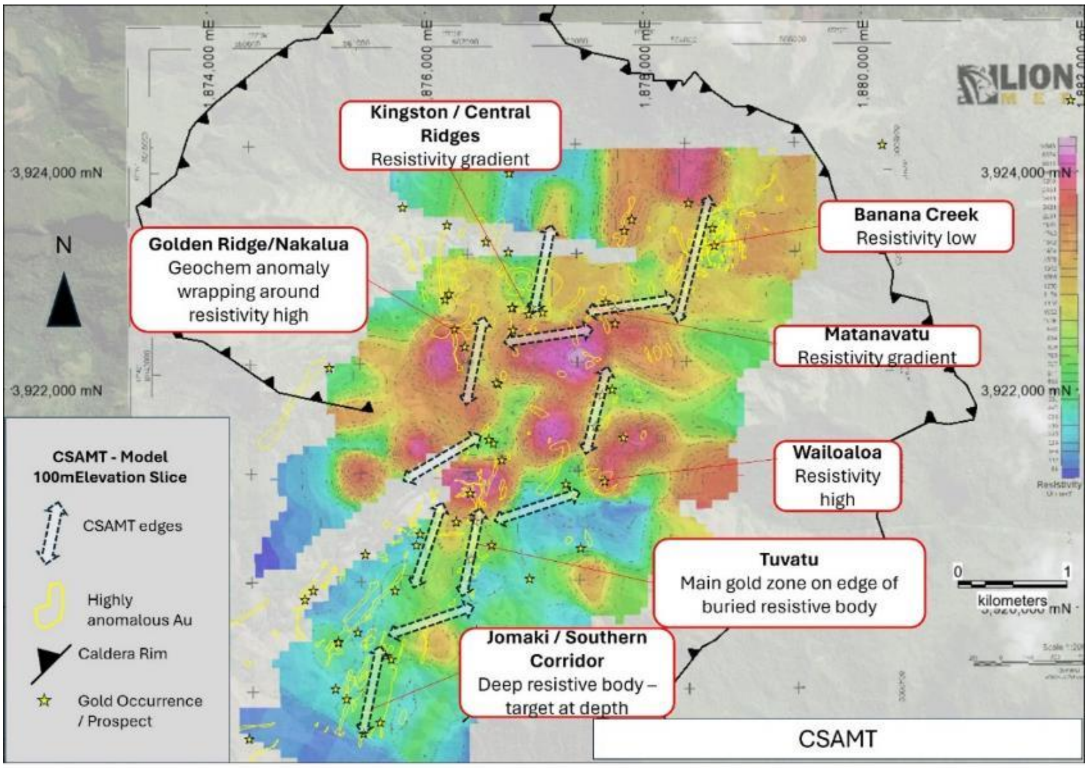
Weis (2024) modelled the CSAMT lines into a regional model. There are several corridors defined throughout the caldera that are coincident with known mineralization.

Figure 9.20 CSAMT Model (100m Elevation Slice) Showing CSAMT Receiver Points



Source: Lion One 2024

Figure 9.21 C SAMT Model (100m Elevation Slice) Showing Major Gradients and Commentary on Select Prospects



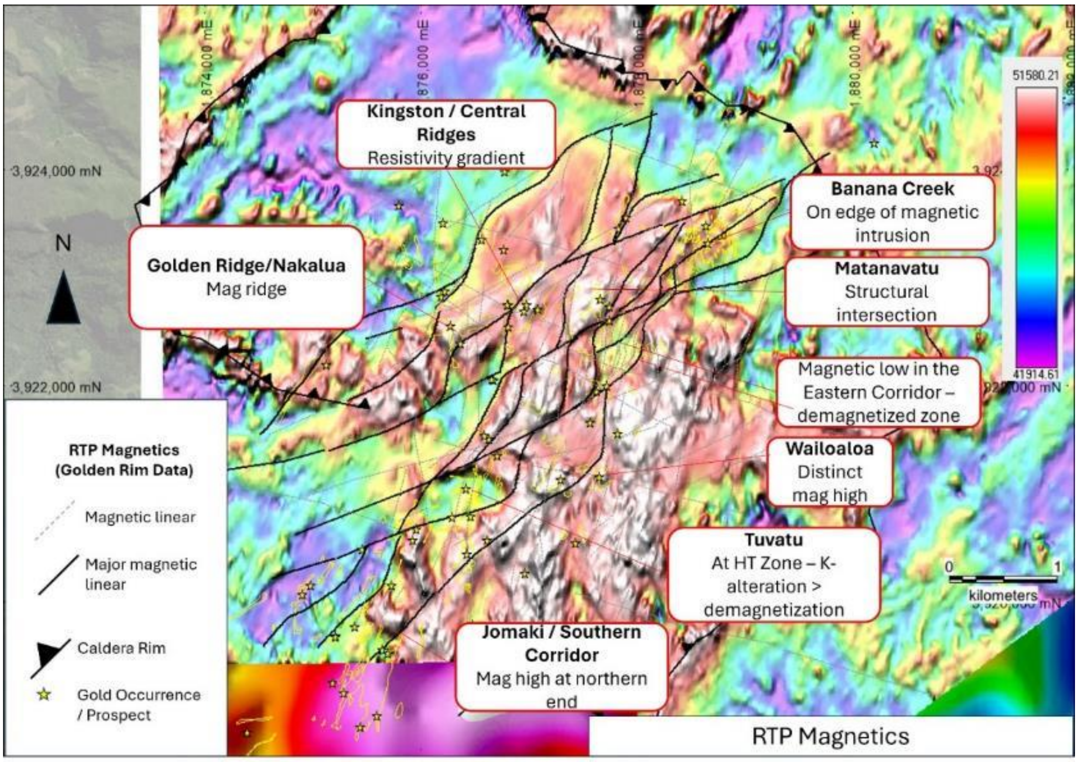
Source: Lion One 2024

9.3.5.3 Airborne Magnetics and Radiometrics

In 2006 Golden Rim, with JV partners Mincor Ltd, flew a helicopter-borne magnetic/radiometric survey on east-west lines with 50m spacing. The Company sourced this data in 2022 from Mineral Resources Department of Fiji. Only gridded data was available with the original flight-line data not stored at the MRD. General observations are:

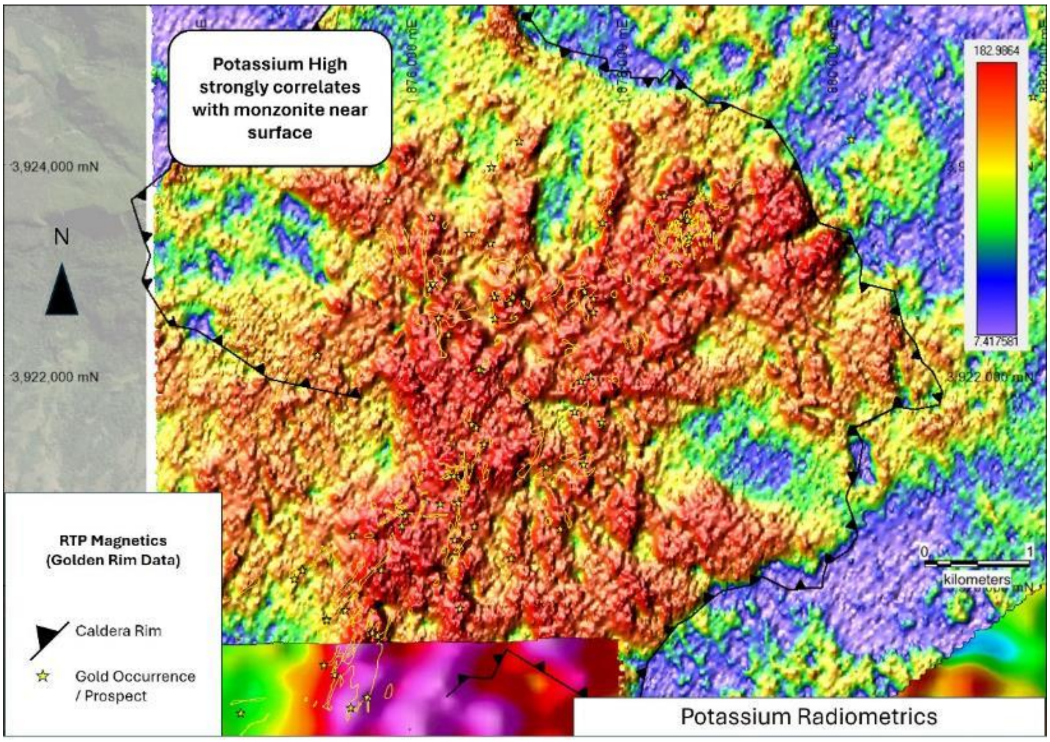
- A N-S structural grain coincident with corridors (Figure 9.22)
  - Tuvatu main UR trend to Lobau (village) and west Kingston Central Ridges
  - Upper Qalibua->Batiri->Matanavatu->Nasiti Ridge (west)
  - Banana Creek area
- NE to ENE-striking structures to link potentially south of Banana Creek to north Tuvatu (Figure 9.22)
- WNW-striking structure of uncertain context (Figure 9.22)
- Minor secondary NW-trending structures, including one through the 141 to 500 zone. (Figure 9.22)
- Potentially demagnetised zones that may represent high-temperature reduction state alteration: Fe Oxides (magnetite) replaced with sulphides (e.g. pyrite) One such zone is coincident with the HT Zone at Tuvatu, and another is potentially a target north of Batiri and south of Matanavatu Prospects in the Eastern Corridor (Figure 9.22)
- K-Band radiometrics is a striking facsimile of the interpreted monzonite bodies at surface (Figure 9.23)

Figure 9.22 Gridded Reduced To Pole magnetic image



Source: Lion One 2024 based on Golden Rim magnetic survey

Figure 9.23 Potassium Band Radiometrics



Source: Lion One 2024 based on Golden Rim data

9.3.6 Regional Drilling

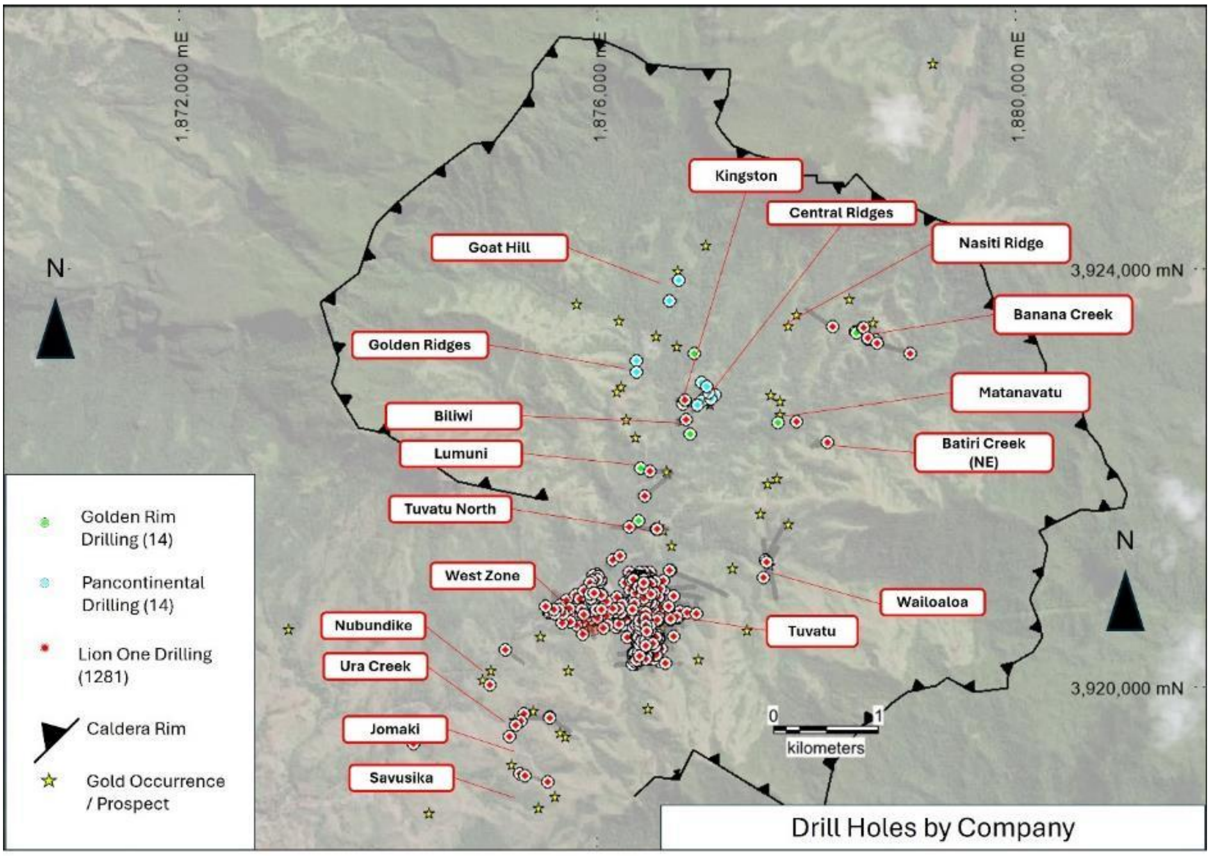
A total of 79 holes for 14,911 meters of drilling has been completed outside of the main Tuvatu Resource area. Of these, 28 holes (4,022 meters) were completed prior to Lion One acquiring the project and included some reverse circulation drilling (Table 9.5 & Figure 9.24).

Table 9.5 Regional Drillholes Outside in Lion One Database

HOLEID	COMPANY CODE	Hole Type	EAST	NORTH	RL	DEPTH	CollarAziTN	CollarDip
BCDH1	GOLDENRIM	DDH	1878467	3923397	450	100.1	315	-60
BCDH2	GOLDENRIM	DDH	1878471	3923390	450	100.4	135	-60
BCDH3	GOLDENRIM	DDH	1878667	3923317	443	100.6	135	-60
BCDH4	GOLDENRIM	DDH	1878586	3923324	402	102.6	337	-60
BCDH5	GOLDENRIM	DDH	1878585	3923329	402	116.5	323	-75
CRDH001	GOLDENRIM	DDH	1877070	3922743	265	235.6	270	-59
CRDH002	GOLDENRIM	DDH	1876815	3922711	231	241.9	84	-60
CRDH003	GOLDENRIM	DDH	1876813	3922710	223	134.6	268	-70
CRDH004	GOLDENRIM	DDH	1876883	3922415	218	110	283	-51
DD95KN2	GOLDENRIM	DDH	1876928	3923191	185	153	0	-90
DD95KN3	GOLDENRIM	DDH	1877726	3922530	185	180.25	0	-90
DD95KN4	GOLDENRIM	DDH	1876415	3922089	185	190	324	-70
RC95KN1	GOLDENRIM	RC	1876387	3921591	175	128	0	-90
TNDH001	GOLDENRIM	DDH	1876302	3921528	167	226.5	91	-51
KRC1	PANCONTINE	RC	1877022	3922766	286	126	168	-60
KRC10	PANCONTINE	RC	1877120	3922794	258	122	161	-60
KRC11	PANCONTINE	RC	1876992	3922911	294	148	246	-65
KRC12	PANCONTINE	RC	1876688	3923690	372	150	88	-60
KRC13	PANCONTINE	RC	1876369	3923123	251	134	271	-60
KRC14	PANCONTINE	RC	1876367	3923014	245	130	290	-65
KRC2	PANCONTINE	RC	1876990	3922735	286	120	0	-90
KRC3	PANCONTINE	RC	1876953	3922697	289	120	285	-60
KRC4	PANCONTINE	RC	1876952	3922693	289	150	217	-60
KRC5	PANCONTINE	RC	1877081	3922758	265	150	169	-60
KRC6	PANCONTINE	RC	1876779	3923892	410	150	275	-60
KRC7	PANCONTINE	RC	1877062	3922819	273	150	282	-60
KRC8	PANCONTINE	RC	1877043	3922875	279	116	0	-90
KRC9	PANCONTINE	RC	1877042	3922875	279	136	282	-60
BH-01	TUVATU / Emperor	DDH	1874239	3919457	86	27	0	-90
TNDH002	TUVATU / Emperor	DDH	1876562	3921512	289	250.5	270	-60
TNDH003	TUVATU / Emperor	DDH	1876565	3921512	289	241.9	90	-60
TNDH004	TUVATU / Emperor	DDH	1876303	3921531	167	229.5	270	-45
TUDDH-187	TUVATU / Emperor	DDH	1875540	3919709	301	308	270	-45
TUDDH-194	TUVATU / Emperor	DDH	1875540	3919708	301	349.4	126	-46
TUDDH-230	TUVATU / Emperor	DDH	1874967	3920017	169	202.4	329	-44
TUDDH-338	TUVATU / Lion One	DDH	1875115	3920353	108	274.1	311	-60
TUDDH-340	TUVATU / Lion One	DDH	1875115	3920353	108	274.1	131	-35
TUDDH-473	TUVATU / Lion One	DDH	1875300	3919740	236	99	288	-61
TUDDH-474	TUVATU / Lion One	DDH	1875299	3919739	236	91.5	257	-61
TUDDH-475	TUVATU / Lion One	DDH	1875265	3919671	231	90	300	-61
TUDDH-476	TUVATU / Lion One	DDH	1875264	3919669	231	91.5	270	-60
TUDDH-477	TUVATU / Lion One	DDH	1875213	3919639	233	120	9	-61
TUDDH-478	TUVATU / Lion One	DDH	1875159	3919526	232	132	291	-60
TUDDH-486	TUVATU / Lion One	DDH	1875301	3919154	350	106.3	290	-52
TUDDH-487	TUVATU / Lion One	DDH	1875302	3919153	350	106.1	290	-67
TUDDH-488	TUVATU / Lion One	DDH	1875254	3919171	340	151.1	111	-51
TUDDH-489	TUVATU / Lion One	DDH	1875307	3919152	351	118.3	297	-81
TUDDH-490	TUVATU / Lion One	DDH	1875521	3919089	418	269.7	287	-52
TUDDH-498	TUVATU / Lion One	DDH	1876844	3922562	202	75.82	270	-60
TUDDH-499	TUVATU / Lion One	DDH	1876843	3922562	202	144.58	269	-60
TUDDH-501	TUVATU / Lion One	DDH	1876843	3922560	202	56.54	230	-45
TUDDH-501A	TUVATU / Lion One	DDH	1876843	3922560	202	17.07	240	-45
TUDDH-501B	TUVATU / Lion One	DDH	1876844	3922560	202	144.86	240	-45
TUDDH-502	TUVATU / Lion One	DDH	1876839	3922747	216	124.9	253	-55
TUDDH-503	TUVATU / Lion One	DDH	1878537	3923433	457	40.31	252	-35
TUDDH-503A	TUVATU / Lion One	DDH	1878537	3923433	457	117.17	252	-35
TUDDH-505	TUVATU / Lion One	DDH	1878548	3923435	457	5.26	75	-33
TUDDH-505A	TUVATU / Lion One	DDH	1878549	3923435	457	17.45	75	-33
TUDDH-505B	TUVATU / Lion One	DDH	1878548	3923435	457	17.45	75	-33

HOLEID	COMPANY CODE	Hole Type	EAST	NORTH	RL	DEPTH	CollarAziTN	CollarDip
TUDDH-506	TUVATU / Lion One	DDH	1876838	3922748	216	145.6	270	-52
TUDDH-507	TUVATU / Lion One	DDH	1878548	3923436	457	83.54	61	-35
TUDDH-508	TUVATU / Lion One	DDH	1878671	3923293	434	119.84	348	-35
TUDDH-509	TUVATU / Lion One	DDH	1876839	3922748	216	153.4	274	-70
TUDDH-510	TUVATU / Lion One	DDH	1878580	3923340	419	136.6	292	-69
TUDDH-512	TUVATU / Lion One	DDH	1878674	3923293	434	27.43	342	-48
TUDDH-512A	TUVATU / Lion One	DDH	1878674	3923293	434	28.98	342	-47
TUDDH-515	TUVATU / Lion One	DDH	1878674	3923293	434	86.49	338	-59
TUDDH-536	TUVATU / Lion One	DDH	1878247	3923443	422	519.9	300	-54
TUDDH-543	TUVATU / Lion One	DDH	1878991	3923187	369	938.8	288	-58
TUDDH-558	TUVATU / Lion One	DDH	1877903	3922541	261	118.3	306	-59
TUDDH-611	TUVATU / Lion One	DDH	1878202	3922338	328	248.6	255	-49
TUDDH-614	TUVATU / Lion One	DDH	1878202	3922338	328	171.9	273	-50
TUDDH-615	TUVATU / Lion One	DDH	1878202	3922338	328	96	243	-49
TUDDH-662	TUVATU / Lion One	DDH	1877586	3921045	314	632.8	22	-58
TUDDH-669	TUVATU / Lion One	DDH	1877609	3921212	326	683	26	-58
TUDDH-675	TUVATU / Lion One	DDH	1876450	3921828	164	607.8	51	-59
TUDDH-679	TUVATU / Lion One	DDH	1877607	3921211	326	573.1	356	-70
TUDDH-687	TUVATU / Lion One	DDH	1877615	3921192	326	953.5	160	-71
TUDDH-691	TUVATU / Lion One	DDH	1876501	3922061	192	270.3	86	-58

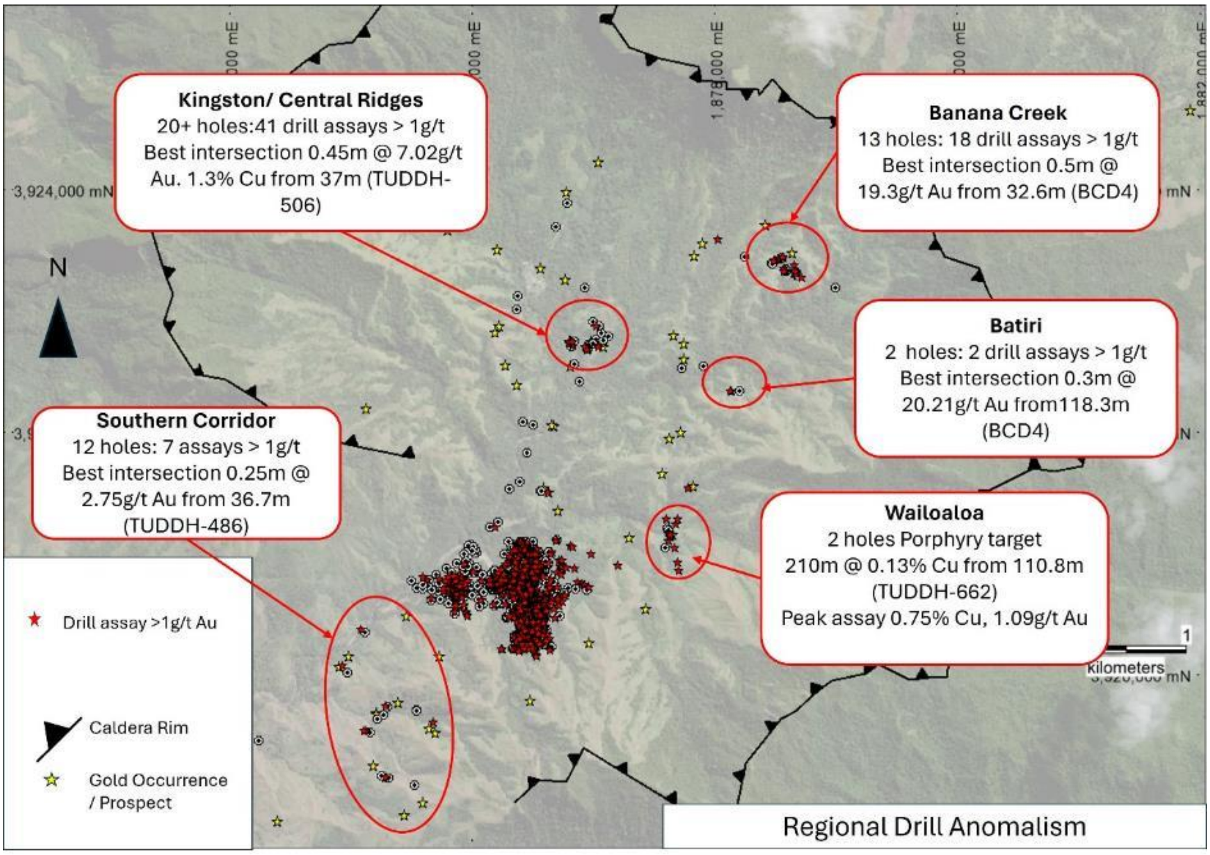
Figure 9.24 Regional Drilling by Company



Source: Lion One 2024

A summary of significant drill results is shown in Figure 9.25 below.

Figure 9.25 Regional Drill Results >1g/t Au



Source: Lion One 2024

9.4 Exploration Target Discussion

The Tuvatu district comprises outcropping and surface signatures of mineralization over a 7 km x 5 km area. With the exception of the main Tuvatu deposit, previous drilling was restricted to only near surface testing of specific occurrences or deep stratigraphic holes to test specific CSAMT targets. There is considerable untested potential both for feeder zones beneath the Tuvatu Mineral Resource and on regional prospects.

Lion One is well advanced in exploration targeting. There is a considerable body of knowledge, including drill data (Tuvatu resource environs), geochemistry (rock, channels, soils, and stream-sediments), and geophysics (induced polarisation and CSAMT). This is supplemented by local scale mapping of structures through the creek, outcrop, and benching mapping programs.

With the application of on-going research, the Company's geoscience team is building a body of knowledge to target alkalic and porphyry related systems.

Alkalic systems and targets are being prioritized on the basis of:

- Gold zones
- High Te-As signatures in pathfinder geochemistry (potentially low Ag and base-metals*)
- CSAMT (resistivity gradients)
- Intersection of multiple mapped structures in magnetics, surface mapping and CSAMT

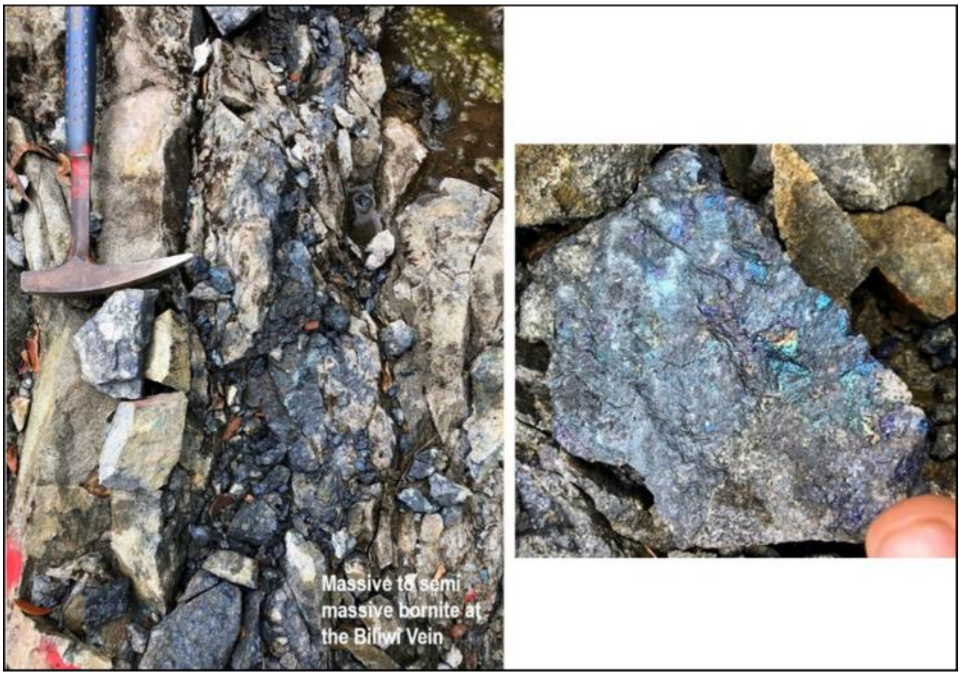
**Note at the Tuvatu Project, some early, higher-temperature base-metal veins are reactivated with a later alkalic epithermal overprint.* On specific targets, the following comments are made:

9.4.1 Tuvatu Corridor North (Kingston, Biliwi, Central Ridges, Goat Hill, Golden Ridges, Nakalua)

The Kingston/Central Ridges area includes the historic Kingston Mine and is located approximately 1,600 m north of the Tuvatu Mine. Between 1900 and 1923, a shaft was dug to 14.6 m and an adit driven 9.1 m in a supergene enriched malachite (copper oxide) deposit at Kingston. There is strong geochemical anomalism at surface. Drilling by previous explorers focused on the top 50 to 200m and returned low-grade, wide, (>20m) intersections of copper and gold (<0.2g/t Au, 0.2% Cu). However, this area is a major north-south and NE-intersecting corridor, and the potential remains for a significant porphyry system at depth.

The Biliwi to Lumuni zone linking Kingston/Central Ridges to Tuvatu has strong Cu-As-Te anomalies. The presence of high tellurium warrants further investigation for alkalic type systems (Figure 9.26.

Figure 9.26 Bornite at the Biliwi Veins Outcroping over 10m strike in the Sabeto



Source: Lion One 2024

The area to the north of Kingston including the Goat Hill silica-pyrite-dickite-alunite zone, has high tenor surface gold results, is strong in arsenic and tellurium and suggests the presence of advanced argillic alteration, thereby warranting further investigation.

In late 2023, the Company commenced benching at Nakalua and Golden Ridges revealing gold and copper mineralization. The main showings in this area have not been drilled and the Company is planning the first programs for later in 2024.

9.4.2 Southern Corridor

The Southern Corridor encompassing Jomaki-Ura Creek-Kubu-Savusika area consists of considerable surface gold anomalism. To date, drilling, mainly shallow, has been generally disappointing. However, monzonite at surface outcrops principally as narrow dykes in the Nadele Breccia so the potential for high-grade mineralization may be at depth. The 2019 and 2022-23 CSAMT surveys (and earlier IP Survey show strong potential anomalies at depth. Targeting here should focus on >500m depth for potential high-grade alkalic style systems.

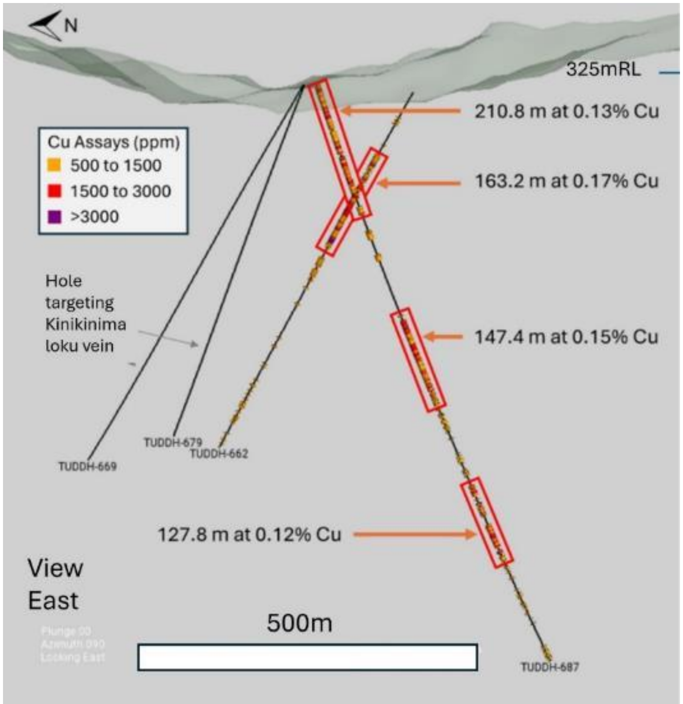
9.4.3 Eastern Corridor

The Eastern Corridor linking Wailoaloa-Kinikinimaloku-Batiri-Matanavatu-Nasiti Ridge is an underexplored N-S structural corridor through the caldera. There are multiple gold and copper occurrences linking through this area.

The discovery of porphyry style mineralization at Wailoaloa (Figure 9.27) is very encouraging with the first holes intersecting wide zones of >1000ppm Cu (Lion One: news release 4 March 2024). An area to the north of Batiri (south of Wailoaloa) is a demagnetized zone potentially representing a potassic altered core. This target has not been drilled.

Matanavatu and Nasiti Ridge are highly anomalous in Au-Te-Cu surface sampling, with strong alteration observed at surface. This area is potentially a hybrid porphyry Cu-Au target and an alkalic gold target.

Figure 9.27 Porphyry Related Mineralization Drilled at Wailoaloa



Source: Lion One news release, 4 March, 2024

9.4.4 Banana Creek

Similarly to the Southern Corridor, Banana Creek area has considerable surface anomalism and strong mapped structures. However, drilling to date has generally disappointed. Given the strong silver in this area, this target area may represent a higher level epithermal (hot spring?) type system rather than an alkali system. The area to the south of Banana Creek is at lower elevations and warrants further investigation.

9.5 Exploration overview.

In recent times, exploration at Tuvatu has been focused in the immediate resource area. The Company has, however, over the past 4 years, added significant new zones at depth on the main deposit, including high-grade intercepts in the 500 Feeder Zone. Drilling from surface for small footprint high-grade pipes is a difficult proposition due to their dimensions and the surface topography. However, as underground development continues, the ability to target zones from underground drill pads will become increasingly possible. There remains significant exploration upside at Tuvatu.

Regionally, there is a large anomalous system at Tuvatu with only scant drill testing of regional targets. Many surface gold and base-metal occurrences have been noted and the Company's exploration continues to investigate targets.

10.0 DRILLING

10.1 Drilling history

Lion One began exploring the Property in 2008 and exploration drilling has been ongoing since then. These various exploration drilling campaigns are summarized in Table 10.1. Table 10.2 summarizes drilling by year and location. This table does not include metallurgical, geotechnical, water or underground grade control holes.

Table 10.1 Summary of Tuvatu Drilling

2008 to 2024	Number of Holes	Number of Meters
Surface DDHs	412	102,936
Underground DDHs	40	10,327
Grade Control holes	190	20,476
Geotechnical diamond holes	6	883
Metallurgical holes	7	1,127
Total	**655**	**121,531**

Table 10.2 Tuvatu Drilling by Year

Year	Surface		Underground	
2008	376 m (2 holes)	TUDDH338 and TUDDH340	-	-
2012 - 2013	13,842 m (65 Holes)	TUDDH341 to TUDDH405	-	-
2016	2,472.9 m (12 holes)	TUDDH-406 to TUDDH-418	-	-
2017	8,619.6 m (54 Holes)	TUDDH-419 to TUDDH-472	1684.2 m (16 Holes)	TUG114 to TUG129
2018	624 m (6 Holes)	TUDDH-473 to TUDDH-478	-	-
2019	3,733 m (15 Holes)	TUDDH-479 to TUDDH-493	-	-
2020	6843.19 m (30 Holes)	TUDDH-494 to TUDDH-517	-	-
2021	19,607.3m (62 Holes)	TUDDH-518 to TUDDH-570	2,146.5m (7 Holes)	TUG-130 to TUG-136
2022	18,871.1m (55 Holes)	TUDDH-571 to TUDDH-623	5,434.4m (15 Holes)	TUG-137 to TUG-151
2023	23,670.4m (86 Holes)	TUDDH-624 to TUDDH-706	1,240.3m (3 Holes)	TUG-152 to TUG-153
2024	4633.95m (23 Holes)	TUDDH-707 to TUDDH-733	-	-

10.1.1 Lion One 2008

Two surface DD holes (TUDDH-338 and TUDDH-340) totaling 375.90 m were drilled during October 2008 to test the Nubunidike / Hornet Creek / 290 Vein system over a strike length of 500 m at the Nubunidike Prospect, 1.6 km southwest of the Tuvatu resource area. Drilling was planned to intersect the veins about 50 m below the surface and gain information on the dip and strike continuity of the vein system, as well as grade distribution within the structures.

10.1.2 Lion One 2012 to 2013

Since little shallow drilling had been completed in the resource area, and in response to the results from the trenching program, Lion One focused part of this drilling program to identify any broad zones of low-grade mineralization potentially exploitable by surface mining methods. Additionally, as little drilling had previously targeted the east–west striking Murau Lodes, Lion One commenced a systematic program to delineate the extent of gold mineralization to the west of the main Upper Ridges and Upper Ridges West Lodes.

Drilling was re-commenced in June 2012 with a combination of infill and step-out holes. The program had three objectives: infill drilling to increase the confidence level of the existing resource; step-out drilling to expand the resource base; exploratory drilling to test additional targets.

Initial infill drill holes were planned to test areas of the intersections of the east-trending Murau Lodes with the north–trending Upper Ridge Lodes west of the north–trending Upper Ridges structural corridor and current resource.

Step-out holes tested for mineralized extensions of the Tuvatu and H Lodes in the northern portion of the Tuvatu resource area, where surface mapping has identified continuous mineralization along a strike length of 300 m.

A total of 65 surface DDHs with an aggregate length of 13,842 m were completed.

10.1.3 Lion One 2016 to 2024

Between 2016 and 2020, Lion One restarted drilling within the main deposit areas and also drilled a number of holes in regional targets. The 2016 to 2017 drilling in the Tuvatu deposit area was designed to confirm the drilling by Emperor Gold Mining Company Limited and to better differentiate between the various deposits and lodes within the mineralization system. In 2017 drilling focused on the H and Tuvatu Lodes.

Although most drilling was collared from surface; 16 holes were also completed from underground within the dewatered workings of the existing underground exploration decline.

In total more than 13,000 m of diamond core drilling was completed during this period.

Diamond drilling in 2018 targeted surface anomalies in the Ura Creek area to the southwest of Tuvatu. A total of six DD holes (TUDDH473 to 478) were completed for an advance of 625m. Minor anomalies were identified.

Initial drilling in 2019 (TUDDH479 to 485) targeted the Tuvatu resource area, specifically the HT zone, SKLs GRF, and UR2 lodes. This was followed in 2019 by five DD holes (TUDDH486 to 490) that targeted the Jomaki surface trench anomaly, and further holes into the HT zone corridor (TUDDH491 and 492). Late in 2019 and into 2020, TUDDH493 to TUDDH496 targeted coincident CSAMT and surface geochemical/drilling anomalies beneath the existing Tuvatu resource area. These holes are targeting deep extensions of the existing Tuvatu Lodes. TUDDH494 and 495 were terminated early (748.60 and 768.70m, respectively) due to drilling conditions.

From 2020 to 2022, drilling resumed at the Tuvatu Project area and focused on deep extensions targeting feeder zones. Hole TUDDH-500 intersected significant high-grade zones, with these new mineralized intercepts referred to as the '500 Zone' or '500 feeder zone'. Regional drilling was also conducted at Banana Creek (12 holes for 1619m).

In early 2021 a drill rig was repurposed for underground drilling (TUG). TUG-141 was commenced in April 2022 and intersected the best grade/width on the project 20.86 g/t Au over 75.9m from 443.4-519.3m confirming a new shoot in the 500 zone.

In September 2022, the underground rigs were moved on to grade-control drilling (TGC), with the surface rigs used mainly on near mine extensional exploration and regional work. Two holes were drilled Lumuni for 877m and three holes at the Batiri Bench for 516m. All other surface (TUDDH) drilling was dedicated to the immediate environs of the Tuvatu operation.

10.2 Drilling Procedures

10.2.1 2008 Onwards

All surface drilling by Lion One was carried out by diamond core drilling for which the following procedures were used:

- Drill hole collar locations are surveyed using a Leica digital theodolite instrument.
- Downhole survey data was collected using a Ranger Downhole Survey Camera initially, and later using an Axis Mining Technology Downhole Survey Camera (Champ Discoverer). These two instruments are both magnetic drill hole surveying systems. In March 2024 downhole surveying switched to a gyro instrument from Axis Mining Technology (Champ OSA) and soon thereafter it was replaced by a Boart Longyear Gyro system. This was subsequently upgraded to an Axis Mining Technology gyro unit (Champ Pilot) beginning February 2024.
- Downhole core orientation was initially carried out using the spear method. Since August 2022, the Company adopted Reflex Core Orientation tools (ACTIII HQ and ACTIII NQ), which was subsequently replaced by Axis Mining Technology Core Orientation (Champ Ori for HQ and NQ) in March 2023. There is no core orientation collected at PQ core.
- Structural logging was initially done by collecting alpha and beta angles of selected structures. This was changed in August 2022 when the Company started renting core orientation tools from Reflex Imdex in parallel with the deployment of proprietary Ore.Node software from by Vektore Exploration Consulting Inc. providing real-time visualization of structural elements.
- Drill core was digitally photographed and uploaded onto the database
- Core was originally logged manually onto log sheets and all data entered into the database. Beginning September 2020, logs were input into OCRIS logging software and the data was transferred directly into a dedicated database.
- Information included hole number, date drilled, name of driller/company, location, coordinates, core recovery, lithology, structure, RQD values, alteration, gangue minerals, sulfide minerals, mineralization, sample numbers, intervals samples, analytical results, comments, date logged and by whom. Specific Gravity of selected intervals and lithologies were also routinely measured.
- A summary log was prepared after each hole was logged.
- Selected drill core was cut in half with a diamond bladed core saw for sampling.
- From 2008-2019, with exception noted below, half-core samples were dispatched to the ALS sample preparation facility in Suva, Fiji. Samples were first crushed and pulverized at Suva prior to analysis at ALS Minerals, an independent and qualified analytical laboratory in Brisbane or Townsville, Australia. Gold was determined by fire assay and silver by aqua regia digestion and AAS finish.

- Select samples were assayed for multi-element using aqua regia methods. Consistent with industry standard practice, standard reference samples and blanks and additional control methods are used to ensure quality control.

- During the 2016 to 2017 drilling program, some samples were sent to Vatukoula Gold Mines laboratory for analysis. The pulps of any samples analyzed at Vatukoula and returning gold results greater than 1 g/t Au were then sent to ALS Minerals in Australia for check analysis.

- From December 2019, drill samples were processed in Lion One's own laboratory (Waimalika, Fiji). Drill samples were crushed and pulverized at Waimalika, gold was determined by fire assay (30 g charge) and Ag, As, Cu, Fe, Pb, Se, Te, V, and Zn were routinely analyzed by a three-acid digestion and inductively coupled plasma optical emission (ICP-OES) spectroscopy finish. Samples returning greater than 0.5 g/t Au or 0.5% Cu, Pb, or Zn were sent to ALS Minerals (Townsville) for check analysis. The high base metal samples were also fire assayed providing a check of gold analysis below 0.5 g/t Au.

- Beginning mid-2023, the Lion One laboratory purchased and deployed a new ICP analyzer. Since then, all samples returning greater than 0.5 g/t Au, in addition to being submitted to ALS Minerals (Townsville) for Au analysis check by fire assay, were also analyzed in-house for a suite of pathfinder elements by ICP-OES, including Ag, Al, As, Ca, Co, Cr, Cu, Fe, K, Mg, Mo, Ni, P, Pb, S, Sc, Se, Sr, Te, Ti, V, Zn and Zr.

10.2.2 Grade control/development drilling

A significant quantity of grade control and development drilling has been completed by Lion One beginning September 2022. This is summarized in Table 10.3. Drill core size is NQ3 and core is sampled from collar to end of hole. In contrast to exploration drilling where sampling for analytical purposes was carried out on sawn half-core, sampling of grade control drill core is done using whole core. Analysis of grade control drill core is carried out as described above for exploration drill core, with the exception that the in-house ICP-OES analysis of the suite of pathfinder elements is not applied to all samples in a given batch, providing that one sample in that batch returned greater than 0.5 g/t Au by fire assay.

Table 10.3 Grade Control Drilling Summary

Year	Grade Control Drilling	
2022	514m (6 holes)	TGC-0001 to TGC-0006
2023	4,198m (133 holes)	TGC-0007 to TGC-0138
2024	5,764m (53 holes)	TGC-0139 to TGC-0190
	Drilling in progress	TGC-0191 to TGC-0193

10.3 Recovery and Quality

Core recovery is overall very high, although within sheared and broken intervals there are evidence of some core loss, particularly if associated with major zones of faulting and/or carbonate minerals.

10.4 Relevant Results

Figures 6.2 and 6.3 show representative drill results from regional drill programs. Figure 9.4 shows a representative drillhole from the Tuvatu deposit. Figures 8.5 and 8.6 shows typical core recoveries. Holes were drilled at a variety of angles with respect to the mineralization intersected so that it is not possible to provide a simple relationship between intersected and true thickness. This variability is addressed in the mineral resource estimate described in Section 14 by use of constraining wireframes and estimates of volumes of mineralization.

11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Sample Preparation

Lion One drill core is logged and sampled on site at Tuvatu by Lion One staff. Prior to 2019, core samples were then delivered from the mine site to the ALS Minerals sample preparation facility in Suva. ALS Minerals, a division of Australian Laboratory Services Pty. Ltd., is an independent and ISO accredited analytical laboratory.

At the ALS prep lab, samples were crushed to greater than 75% passing through -2 mm and a 1 kg split was then pulverized to greater than 85% passing through -75 µm prior to dispatch to ALS Minerals in Brisbane, Australia, for analysis.

ALS determined gold content by fire assay and silver by aqua regia digestion and AAS finish. Consistent with industry standard practice, standard reference samples and blanks and additional control methods are used to ensure quality control.

Following the closure of the ALS sample preparation laboratory in Suva in 2015, Lion One dispatched entire samples to ALS Minerals in Australia for sample preparation and analysis. Samples were securely dispatched via DHL courier.

Since December 2019, drill samples have been processed in the Lion One laboratory in Waimalika. Drill samples were crushed and pulverized to 80% passing 75 microns.

11.2 Sample Analysis

During 2008 and from 2012 to 2019, assaying was done by ALS Minerals laboratories in Brisbane, Australia. Gold was analyzed by fire assay with a 30 g charge and AAS finish. Samples with gold grades greater than 3 g/t were re-assayed. Silver is analyzed by aqua regia digestion and AAS. Samples are also analyzed for 33 elements using a four-acid digestion and inductively coupled plasma atomic emission spectrometry.

Following the commissioning of the Lion One Limited geochemical laboratory in Fiji in October 2019, Lion One has completed its own sample analyses to the same standards as ALS. Gold is determined by fire assay (30 g charge) and silver, arsenic, copper, iron, lead, selenium, tellurium, vanadium, and zinc were routinely analyzed by a three-acid digestion and inductively coupled plasma optical emission spectroscopy finish. Samples returning greater than 0.5 g/t Au or 0.5% Cu, Pb, or Zn are sent to ALS Minerals in Townsville, Australia for check analysis where analyses are carried out using fire assay with an AA finish (ALS code Au-AA26). Samples that return grades greater than 10 g/t Au by Au-AA26 are re-analyzed by gravimetric method (ALS code Au-GRA22). High base metal samples are also fire assayed providing a check of gold analysis below 0.5 g/t Au.

11.3 Sample Security

Core is delivered from the drill to the core processing facility at the Tuvatu Mine by drilling personnel. Security at the core processing facility is maintained by a gate and a guard. Only qualified personnel are permitted to handle and process the core. A chain-of-custody protocol is followed for sample security from the core logging facility to the assay lab. Samples are delivered to the Lion One assay lab in Nadi by Lion One personnel and are formally handed over to assay lab staff who document the transfer of sample custody. Access to the assay lab is restricted to qualified personnel only.

The author (Mosher) is of the opinion that sample preparation, analytical and security procedures meet industry norms and that the resultant assays are of sufficient quality to be used to support the mineral resource estimate described in Section 14 of this report.

11.4 Quality Assurance / Quality Control

Lion One has used a QA/QC program of standards to monitor accuracy, field duplicates to monitor precision, and blanks to monitor possible cross-sample contamination, since the 2012 drill program. It is not known whether QA/QC protocols were in place for the 2008 drill program although this is not relevant for the MRE described in Section 14 as only sample data acquired from 2008 onwards was used.

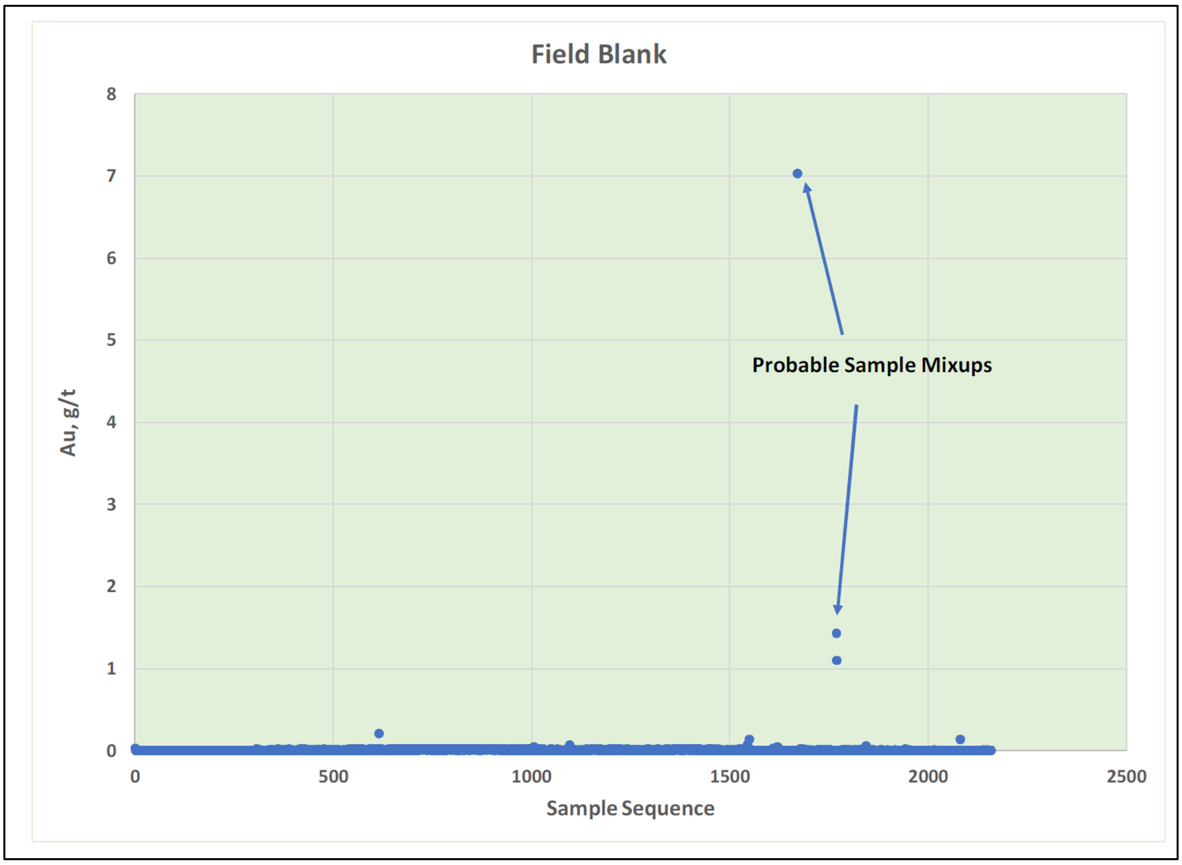
From 2012 onwards, standards, blanks, and field duplicates samples were inserted into the sample stream prior to shipment from the logging facility. Three standards and two field duplicates are inserted in every batch of 100 regular samples.

In March 2023, Smee & Associates Consulting Ltd., consulting geochemists, carried out an audit of Lion One geological quality control. The following descriptions are excerpted from the Smee & Associates report.

11.4.1 Blanks

Geological field blank data for 2,159 blanks dating from 2019 to 2023, was plotted. Only Au was examined. A plot of field blank data indicated that at least three of the blanks are probably sample mis-ordering errors as the values are too high for the source to be contamination (Figure 11.1). It is not known whether these three values were investigated.

Figure 11.1. Tuvatu Field Blank Assays 2019 - 2023

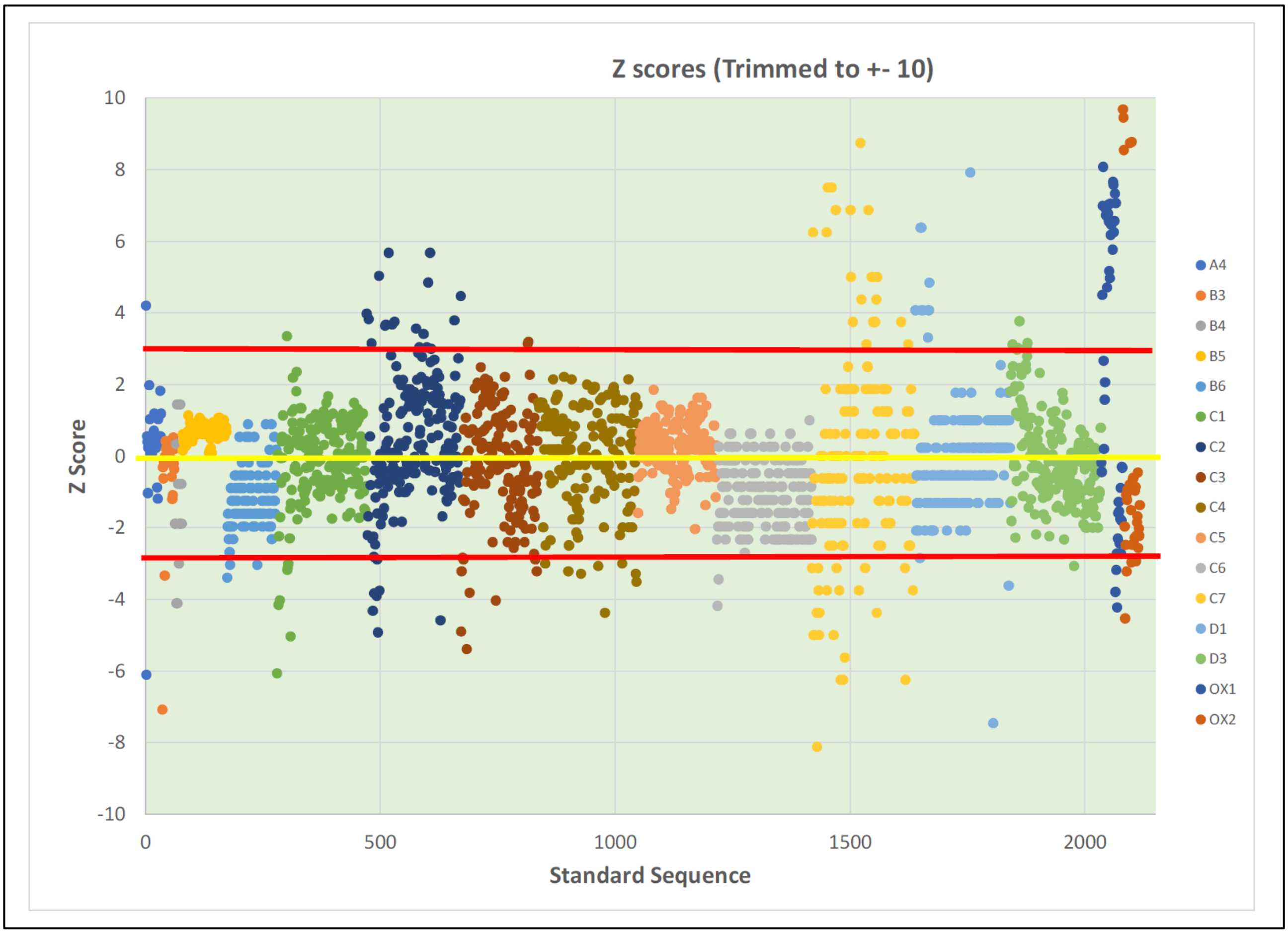


Source: Smee & Associates 2023

11.4.2 Standards

From 2019 to 2023, 16 different standards, totaling 2,142 samples, were used to monitor laboratory accuracy. A review of the data appears to show that none of the CRM results has been actively monitored, and failures were not noted or acted upon, thus making the whole process moot. The results have been plotted in Z score format. Figure 11.2 shows the Z Score plot for z score values of +/- 10. The ideal value is zero and the lab failure limit is +/- 3. It can be seen that many of the standards fall outside that range. Smee & Associates interpreted these results as mis-identification errors that interfere with the assessment of lab accuracy.

Figure 11.2. Z Score Plot of Standard Assays 2019 – 2023



Source: Smee & Associates 2023

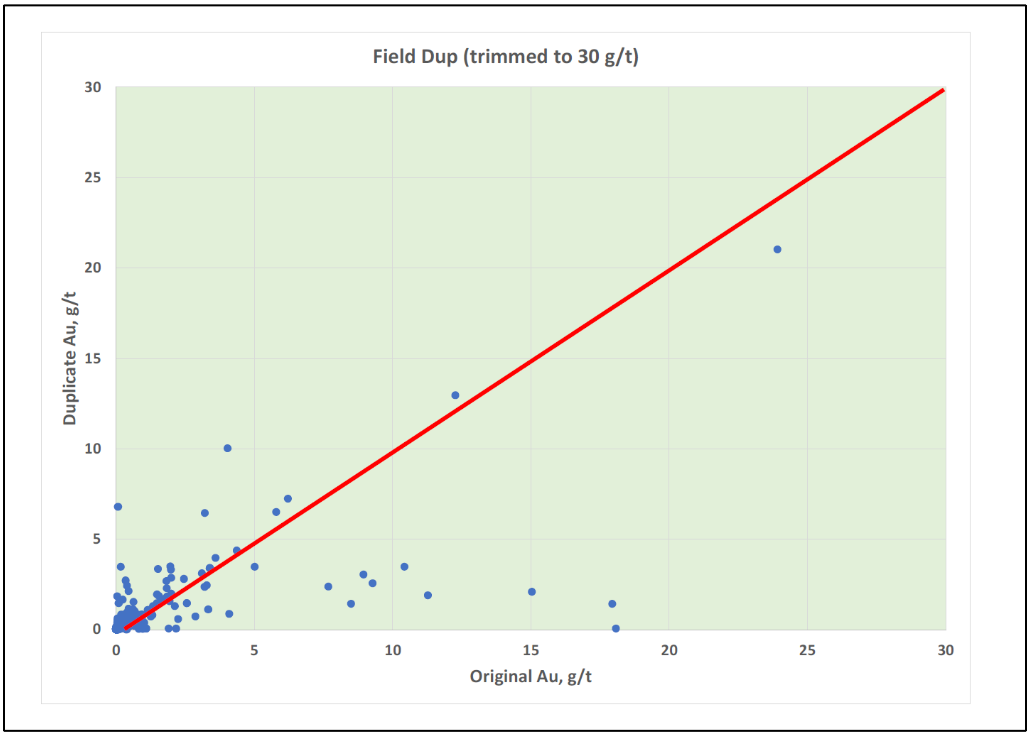
Smee & Associates recommended that Lion One have custom reference materials prepared by a company such as CDN Labs in Vancouver using the reject material composited to several grades relevant to the Tuvatu deposit. One should be made near the expected economic cutoff for the mineralization, one near the mean grade and one high grade standard that will be assayed using gravimetric finish. Presently none of the high-grade samples are monitored by a high-grade standard, except by the lab itself. Smee & Associates also recommended the adoption of a relational geological data base that uses bar coded sample tickets that can be read by the laboratory. This procedure would decrease to near zero possible sample mis-ordering errors. The data base should also have an automatic QC section to capture standards, blanks, and duplicates, and create instant charts.

11.4.3 Field Duplicates

Field duplicates were reviewed using the Thompson- Howarth method of calculating precision from duplicate data. There were a total of 2,085 duplicates in the dataset.

Figure 11.3. Plot of Field Duplicate Gold Assay Values is a plot of original vs duplicate Au assay values. There is a large number of outliers that are interpreted to be a reflection of the nuggety nature of the gold mineralization as there is not an obvious bias toward original or duplicate values and is consistent with the characteristics of the Tuvatu mineralization.

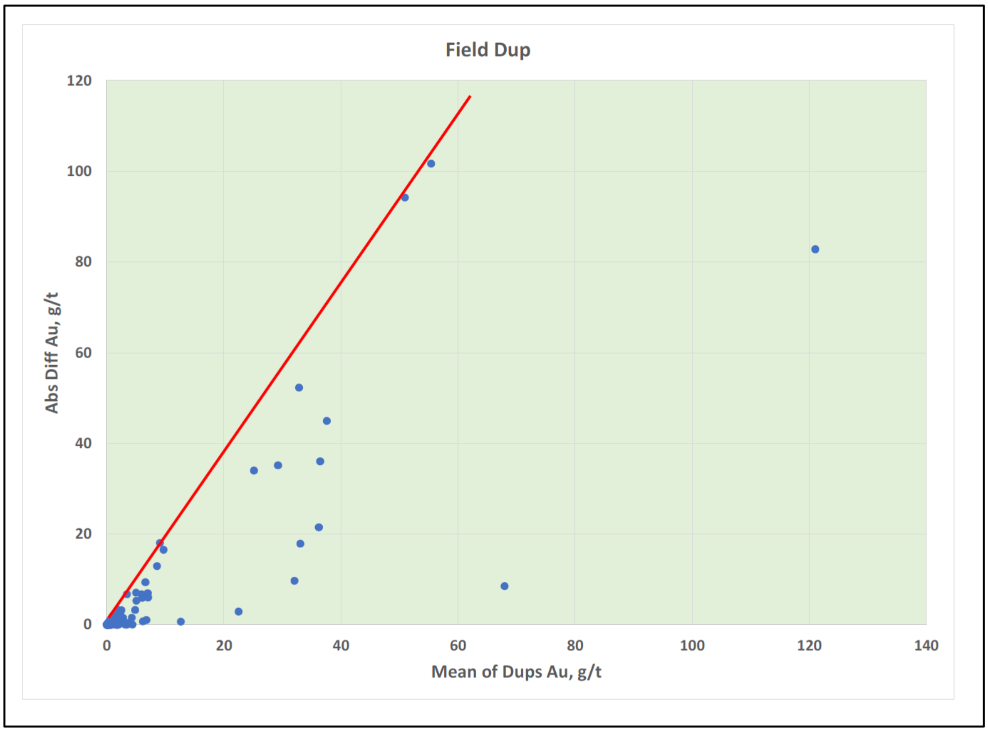
Figure 11.3. Plot of Field Duplicate Gold Assay Values



Source: Smee & Associates 2023

Figure 11.4 is a mean vs difference chart. The departure of the slope of the best-fit line is a reflection of the difference between original and duplicate values. If the two duplicates had the same value the line will have a slope = 1 and is an indication that coarse gold occurs at all concentrations. In these cases, it is impossible to place a definitive concentration on the sample.

Figure 11.4. Sample Duplicate Mean vs Difference Gold Assay Plot

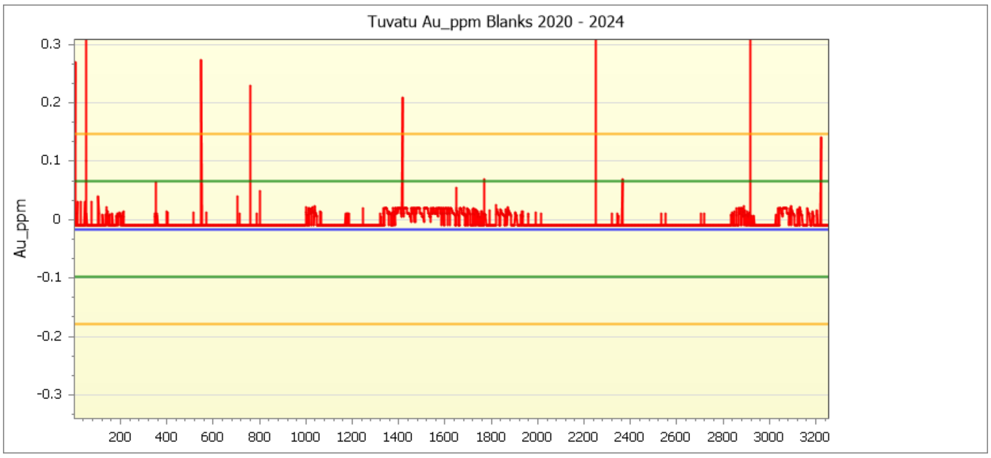


Source: Smee & Associates 2023

Smee & Associates concluded that the solution to this sampling uncertainty is to perform a screen metallics assay on all samples that are thought to contain coarse gold, or where visible gold is seen in the core. Lion One has adopted this recommendation in 2023 and now does screen metallic assays. Smee & Associates also concluded that the use of a database is imperative to minimize sample identification errors and thereby make the QA/QC data more useful and informative.

The author (Mosher) has carried out further tests of QA/QC data for the period 2020 to 2024. Figure 11.5 shows the plot of blanks with +/- 2 and 3 standard deviation limits. It can be seen that of a population of 3,255 blanks, nine (9) exceeded two or three standard deviations and of those, eight (8) exceeded three. It is probably that three of those, because of their magnitude (1.4, 1.1 and 0.8 g/t), are mis-labelled standards. The cause of the others cannot be determined. It is not known whether Lion One investigated the cause of the over limits.

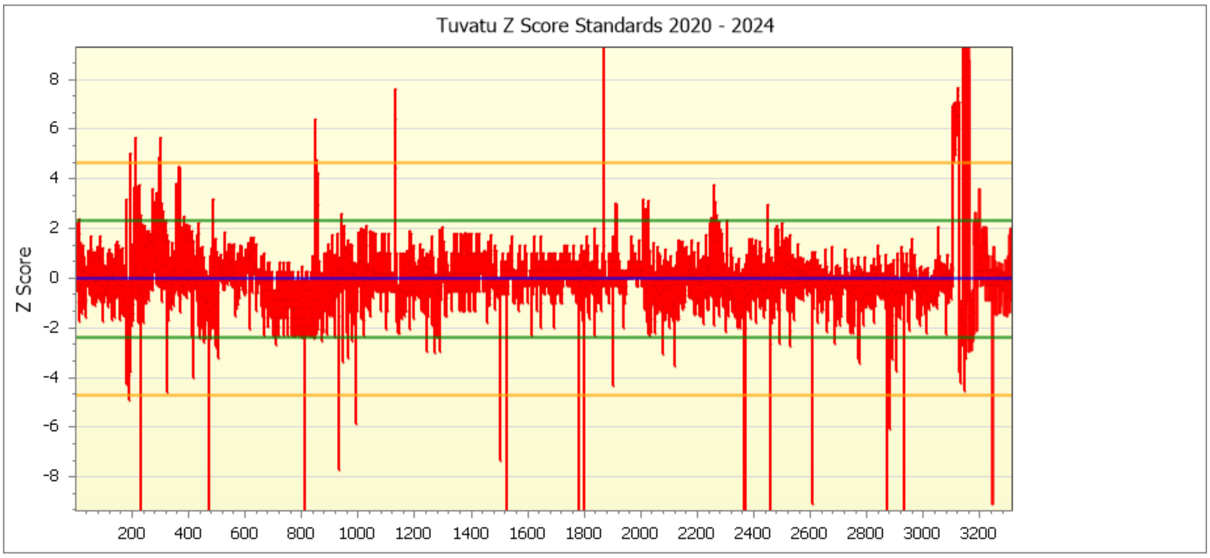
Figure 11.5 Tuvatu Drill Core QA/QC Blanks



Source: GMRS 2024

Figure 11.6 is a plot of Z-Scores for 3,314 assays of 12 standards. The number of assays exceeding +/- 2 standard deviations is 122, or 3.6% of the population. The number exceeding +/- 3 standard deviations is 67, or 2% of the population with most associated with Standards Oxy 1 and 2. Lion One has determined that these standards were unreliable and have reduced the number of standards used to the six most stable.

Figure 11.6 Tuvatu Drill Core Standard Z-Scores



Source: GMRS 2024

Despite the failures noted by Smee & Associates, the further assessment of QA/QC data by Mosher indicates that the failure rates for blanks and standards are relatively small (less than 3%). Further, reconciliation of ounces of gold recovered from early test stoping in Zone 2 indicates that the grades assayed from drillholes were encountered during mining and acceptable reconciliations between the two can be obtained. For these reasons, the author (Mosher) is of the opinion that the data are suitable for use in the resource estimate that is described in Section 14 of this report.

12.0 DATA VERIFICATION

One of the authors (Mosher) spent the period March 26 through April 08, 2024, at the Lion One offices and Tuvatu Mine. During that period, the following verification activities were carried out:

Inspection of the Lion One assay laboratory including sample processing and assay procedures as well as post-assay sample storage;

Underground tour of the Tuvatu Mine to inspect mine development, geology as exposed in stope walls and headings, mineralization in stopes including visible gold;

Observation of an underground drill that, at the time of the inspection, was drilling resource definition holes;

Examination of the core logging, sampling, and storage facilities at the Tuvatu Mine including observation of core logging, sample markup, core sawing, sample collection, and core storage procedures.

No surface drillhole locations were inspected as late March was the end of the rainy season and atypically heavy rains immediately prior to the site visit had made all but principal roads impassible.

Following the site inspection Mr. Mosher reviewed approximately 500 assay values on lab certificates relative to the corresponding values in the mineral resource database. No discrepancies were found.

No verification samples were collected during the site inspection. The presence of gold in the mine is not in question and Lion One routinely sends 5% of the drill core samples to ALS for independent verification which is a much more rigorous check on lab accuracy that would be achieved by the resubmittal of a small number of coarse rejects or pulps. These check assays compare closely with those from the Lion One lab. Further, at the time of the site inspection, Smee & Associates had just completed an audit of the Lion One assay lab and had determined that the quality of the assays generated by the Lion One lab is comparable in quality to commercial laboratories.

Mr. Mosher is of the opinion that the data used for the mineral resource estimate described in Section 14 is adequate for that purpose.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Background

Since 1997, extensive test work has been conducted on the samples collected from the Property. The test work includes mineralogy studies, comminution tests, gold and silver recovery tests, cyanide destruction tests, tailing filtration, rheology, and process-related parameter determination tests. These tests have been the basis for the design, operation and testing with the Pilot Plant. The gold recovery methods tested in the labs include gravity concentration, flotation, and cyanide leach extraction. This testing continues, not only in the Pilot Plant but in the Tuvatu metallurgical lab.

Table 13.1 summarizes the main test work programs conducted. Test work performed between 1997 and 2015 were reviewed and summarised in the 2015 PEA (Freudigmann et al. 2015). The 2022 PEA (Holden et al. (2022) included a high-level review of tests from 1997 to 2019/2020 and are not included in this technical report. Recent testwork, from 2022 duplicated the same methodologies but with a larger more representative sample. This sample was taken from Zone 2 and identified some possible issues that have been also identified while operating the Pilot Plant. General summaries of the most recent tests are discussed in greater detail in this report.

Two deleterious minerals and elements were identified in the more recent testwork and during the operation of the Pilot Plant. Arsenian pyrite and tellurium have been identified in various concentrations within the lodes being mined. Previous cyanide extraction testwork was performed prior to 2022, used lime for pH control and the Pilot Plant was designed and built to include a lime mixing and distribution system resulting in very low gold extraction and recovery. The system was changed to use caustic (NaOH) and the overall cyanide extraction improved significantly from approximately 40% Au to approximately 55% to 60% depending on feed grade. The caustic solution, at a high pH 12 to 12.5 breaks most of the bonds between the arsenic and gold thereby increasing gold extraction in the CIL circuit. Tellurium was also an issue resulting in low recoveries as the initial mine production commenced. The presence of tellurium has declined significantly with depth and in most samples is below detection levels except in concentrates. Metallurgical testing in the Tuvatu lab continues to assay for tellurides and the effects on extraction and recovery.

Prior to the startup of the pilot plant in October 2023, most of the recent metallurgical testwork after 2020 was conducted by ALS Metallurgical ("ALS") in Kamloops, British Columbia, and Sepro Mineral Systems ("Sepro") in Langley, British Columbia. Other labs were used for specialist testing and evaluations. A shipment of approximately 1.5t of coarsely crushed mineralization from Tuvatu was sent to ALS in Kamloops. The bulk sample was stage crushed to 6 mesh (3.35mm) minimizing the generation of fines and homogenized using a small bulldozer. From the homogenized sample, 300 kg was split with the bulldozer for testing.

The 300 kg sample was rotary split with cuts removed as follows:

- 8kg for a Bond Ball Mill Work Index test.
- Duplicate cuts for assay and mineralogy
- Two – 145kg composites for metallurgical testwork

ALS retained one of the 145kg composites and the other sample was sent to Sepro for duplication of some of the testwork.

Table 13.1. Metallurgical test programs and reports since 1997

Year	Test Programs/Reports	Company
1997	Processing Test Report	AMMTEC
1997	Tuvatu Comminution Test Work Report No. A5724	AMMTEC
1997	Pilot-Scale Processing Test Report	OMC
1997	Tuvatu Comminution Tests Report No. N8394	Amdel
1997	AG/SAG Amenability of Tuvatu Project Ore Types	OMC
1998	Tuvatu Comminution Tests Report No. N8448	Amdel
2000	Processing Test Reports	Metcon
2000	Petrological Study of Tuvatu Gold Project Samples	CMS
2012	Gravity Test Report	Gekko
2015	Processing Test Report	Jinpeng Group
2015	Tuvatu Gold Property PEA NI 43-101 Report	Lion One
2016	Metallurgical Test Work Report No. A16743	ALS Metallurgy
2018	Mineral Processing Report	Xinhai
2018	Mineralogical Assessment Report	BV
2018	Petrologic Studies Report	APSAR
2018	Metallurgical Test Report (BV1801004)	BV
2018/2019	Metallurgical Test Data Reports (BV1801807 & BV1803310)	BV
2019/2020	MS1944 Lion One Metals Report	Met-Solve

Year	Test Programs/Reports	Company
2022	Royal Treatment Flowsheet Results	Sepro
2023	Gravity Recovery, Cyanidation and Flotation Test Results	Sepro
2023	Filtration and Rheology Tailings Report	RMS
2023	Summary Site Test Report – ROM Pad Samples	LIO
2023	Summary Report Tests	ALS Metallurgy
2023	Leach Cyanide Detoxification Study	Kemetco
2023	Tuvatu Tailings Characterization for Slurry Pipeline	Coanda
2023/2024	Tuvatu Pilot Plant Data	Tuvatu
2024	Site Testwork Update	Tuvatu
2024	Site Testwork – Cyclone Overflow Material – Data	Tuvatu

Notes: Amdel – Amdel Limited Mineral Services; AMMTEC – Australian Metallurgical and Mineral Testing Consultants Limited; APSAR – Applied Petrologic Services & Research; BV – Bureau Veritas; Coanda- Coanda - A TetraTech Company; CMS – Central Mineralogical Services; Gekko – Gekko Systems Inc.; Jinpeng Group – Metallurgical Company Yantai Jinpeng Group; Kemetco – Kemetco Research Inc, Metcon – Metcon Laboratories; Met-Solve – Met-Solve Laboratories Inc.; OMC – Orway Mineral Consultants; Sepro – Sepro Mineral Systems; Tuvatu – Lion One Tuvatu Site Lab and Pilot Plant; Xinhai – Yantai Xinhai Mining Research & Design Co. Ltd.

13.2 Comminution Tests Prior to 2023

In June 1997, AMMTEC conducted a preliminary comminution test program on three samples from drill holes DDH-44, 65, and 76 of the Tuvatu deposit. In October of the same year, Amdel Limited Mineral Services also completed comminution tests. Based on these results, Orway Mineral Consultants (OMC) simulated various grinding circuit options proposed for a Tuvatu feasibility study. In February 1998, Amdel completed another comminution test program with a major focus on the sample's competency to autogenous grinding (AG) and SAG. In 2000, Metcon measured comminution work indices for a few of the samples. The results, however, were considered as indicative only. In 2012, Gekko Systems Inc. (Gekko) measured Bond crushing work index and abrasion index on samples from the Property and valuated the possibility of using a vertical shaft impactor (VSI) as a main comminution device to reduce the particle size. The results from these tests were included in the 2015 and 2022 PEAs and apart from the comments above, will not be presented again in this report.

13.3 Sampling and Comminution Test – ALS Metallurgy, October 2023

In September 2023 a 1,414 kg composite core sample from Tuvatu Zone 2 was shipped to ALS Metallurgy in Kamloops, British Columbia, Canada. The sample was used for additional metallurgical testwork to confirm the anticipated performance of the pilot plant being supplied by Xinhai and Sepro. Two 150kg samples were split from the 1,414kg sample. One sample was sent to Sepro for gravity, flotation, leaching testwork and the other 150 kg sample was used in parallel by ALS. A single 8kg sample was used for a Bond ball grindability test by ALS.

Table 13.2 ALS Comminution Test Results

BOND BALL GRINDABILITY TEST
KM6852 ME 2022-001 300KG

Weight of 700 ml Sample : 1414.9 g   Aperture Test Sieve : 75µm
1/3.5 of Sample Weight : 404.3 g   Percent Undersize : 16.5%

Cycle	Weight of New Feed	Number of Revolutions	Weight of Undersize			
			Product	Feed	Net Product	Net/Rev
1	1414.9	200	359.1	232.9	126.2	0.63
2	359.1	547	552.1	59.1	493.0	0.90
3	552.1	348	439.5	90.9	348.6	1.00
4	439.5	331	415.9	72.3	343.6	1.04
5	415.9	324	404.6	68.5	336.1	1.04
6	404.6	325	404.0	66.6	337.4	1.04

BOND WORK INDEX FORMULA

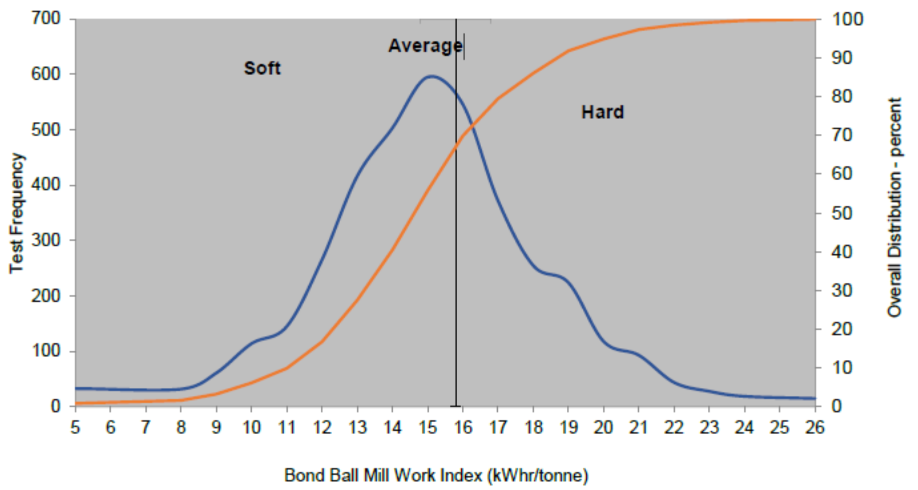
Wi = (44.5 x 1.102) / (Pi^.23 x Gpb^.82 x (10/√P - 10/√F))

Pi = Sieve Size Tested. 75 µm
Gbp = Net undersize produced per revolution of mill. 1.04 g
P = 80% Passing size of test product. 57 µm
F = 80% Passing size of test feed. 2262 µm

BOND BALL WORK INDEX (Wi) 15.8 kW-hr/tonne

Source: ALS Metallurgy, Kamloops - W. Witte 2024

Figure 13.1. Bond Ball Mill Work Index Test Results Summary and Comparison to ALS Metallurgy Kamloops Database



Note: The displayed Data is based on 3878 Bond ball work indices from test programs conducted at ALS Metallurgy, Kamloops prior to January 31, 2018

Source: ALS Metallurgy, Kamloops - W. Witte 2024

13.4 Simulations

No simulations were performed using this data since the grinding mills and associated drives, motors and equipment were being fabricated and shipped to Fiji. The data is helpful in understanding the variation in the grindability of feed material from the Tuvatu deposit as different test areas and campaigns are processed through the pilot plant. Historic data were provided to the supplier of the grinding mills, Xinhai, apparently but relied on internal generated grinding data for sizing the mills. This information was not shared with Lion One.

13.5 Gold Recovery – Metallurgical Tests

Extensive metallurgical test programs for gold recovery were completed on the Tuvatu gold samples between 1997 and 2020. Three major treatment routes were investigated:

- Route 1: Whole-Ore Cyanidation – Direct cyanide leaching on ground samples.
- Route 2: Gravity Concentration + Cyanidation – Gravity concentration on head samples, with gravity tailings subject to cyanide leaching process.
- Route 3: Gravity Concentration + Flotation +Cyanidation – Gravity concentration on head samples, with gravity tailings subject to flotation concentration followed by cyanide leaching processes on both flotation concentrates and tailings.

13.5.1 Previous Metallurgical Test Work 1997 to 2022

Eight laboratories including **AMMTEC**, Metcon, OMC, Gekko, ALS Metallurgy, Bureau Veritas,Metallurgical Company Yantai Jinpeng Group (Jinpeng Group), Xinhai Group, Met-Solve and Sepro conducted the initial test work for preliminary processing flowsheet development test work and optimization resulting in the design of the Tuvatu pilot plant. The results from these tests were included in the 2015 and 2022 PEAs and will not be presented again in this report.

13.5.2 Recent Metallurgical Test Work 2023 to Present

The recent metallurgical test work from 2023 was focused on optimizing the conditions to test using the pilot plant and the Tuvatu mineralization. Work has been done to duplicate the existing flowsheet and some flotation tests for the possible expansion to full scale operation.

13.5.2.1 Mineral Content and Fragmentation of Bulk Sample - ALS

X-Ray Diffraction (XRD), Bulk Mineral Analysis with Liberation estimation (BMAL) 2 using QEMSCAN, and a Trace Mineral Search (TMS) using TESCAN Tima was completed on the sample. XRD was used to confirm an accurate mineral identification from QEMSCAN. A summary of the mineral composition data from the BMAL is in Table 13.3.

Table 13.3. Mineral Content from Bulk Sample - ALS

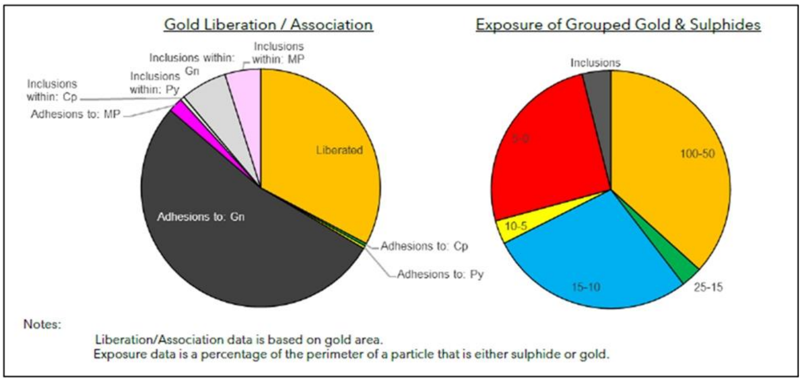
Sulphide Minerals	Content - wt.%	Non-sulphide Minerals	Content- wt.%
Copper Sulphides	0.1	Feldspars	57.0
Pyrite	1.5	Micas	17.7
Arsenopyrite	0.1	Pyroxene/Amphibole	4.9
Other Sulphide Minerals	<0.1	Epidote	3.6
		Quartz	3.4
		Others	11.6
Total Sulphide Mineral Content	1.8	Total Non-Sulphide Mineral Content	98.2

Source: ALS Metallurgy, Kamloops - W. Witte 2024

Sulphide minerals made up only 1.8 % of the sample, predominantly as pyrite. Although Arsenopyrite was noted, no arsenian pyrite was observed in this sample but has been identified in some of the mill feed material to the pilot plant. No problematic non-sulphide gangue minerals were measured that would be expected to cause significant dilution during flotation, although iron oxides (including magnetite) comprised about 2.4 percent of the mass and may also upgrade due to higher mineral specific gravity.

Most gold observed via the microscope was either adhered to other minerals, particularly non-sulphide minerals, so that the gold would not be contacted with a cyanide solution. These included gold grains were general very fine, and significant regrind would be required to expose these grains. The general gold mineral fragmentation is presented in Figure 13.2.

Figure 13.2. Gold Mineral Fragmentation – ALS



Source: ALS Metallurgy, Kamloops - W. Witte 2024

13.5.2.2 Metallurgical Test Work – ALS

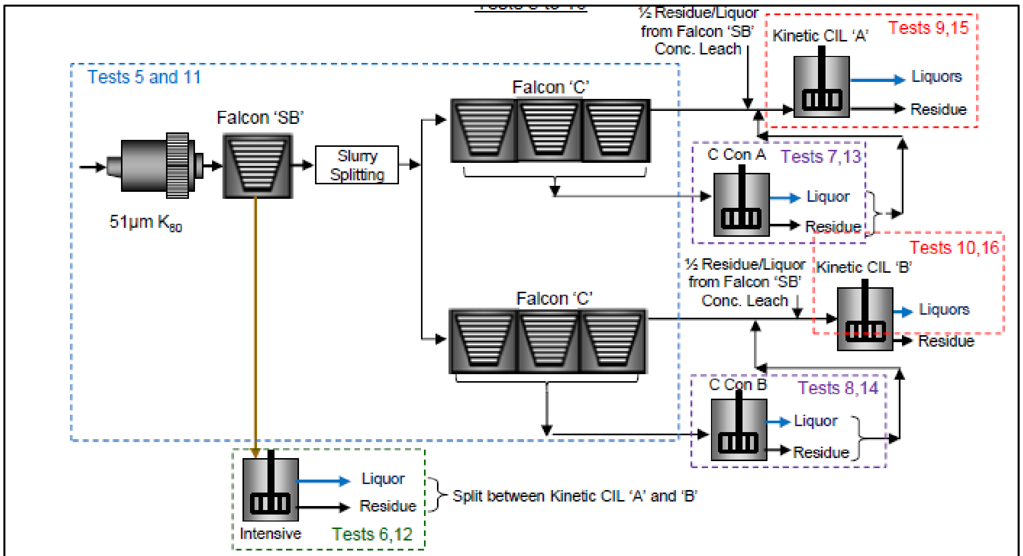
A series of tests were performed by ALS using various flowsheet arrangements using the equipment that was being sent to Tuvatu for the pilot plant. The arrangements included a combination of two stage grinding, gravity concentration with Falcon concentrators and cyanidation kinetic leaching. Flotation tests have also been conducted although the process is not currently incorporated or available in the pilot plant.

Errors were made in the first four gravity tests by ALS and are not presented in this report.

13.5.2.3 Initial Flowsheet: Falcon SB/C and Cyanidation - ALS

In ALS tests 5 to 16, Falcon SB separation was followed by splitting of the Falcon SB tailing such as to conduct duplicate Falcon C separations. "SB and "C" refer to the cone used in the Falcon; the "SB" is a low mass recovery cone, and the "C" is a high mass yield cone. The Falcon SB concentrate was leached using intensive cyanidation while the SB concentrate was leached with standard cyanidation. These tests were conducted twice using identical conditions. These tests resulted in recoveries of 60 to 67 percent for gold and 70 to 76 percent for silver. The sodium cyanide consumption was low, measuring bout 0.5 kg/t of gravity feed and lime consumption of about 1.1 kg/t gravity feed. Figure 13.3 illustrates the flowsheet and results for these tests. These tests were also duplicated by the Sepro lab.

Figure 13.3. Falcon and Cyanidation Flowsheet and Conditions – Tests 5 to 16 - ALS



Test Conditions

Parameter	SB Concentrate (Tests 6,12)	C Concentrate (Tests 7,8,13,14)	Combined Kinetic CIL (Tests 9,10,15,16)
NaCN Conc. - ppm	20000	2000	2000
Duration - hours	24	24	48
pH	12	11	11

Extractions

Product	Gold Extraction - percent				Silver Extraction - percent			
	T5-9 (A)	T5-10 (B)	T11-15 (A)	T11-16 (B)	T5-9 (A)	T5-10 (B)	T11-15 (A)	T11-16 (B)
SB Leach	41.5	52.0	43.3	40.5	17.3	18.9	20.6	18.1
C Con Leach	14.5	12.7	12.7	11.4	29.1	26.8	23.3	25.2
Total Extraction	**60.3**	**63.2**	**66.5**	**63.5**	**75.4**	**70.5**	**73.0**	**70.2**

Reagent Consumptions

Product	Consumption - kg/tonne gravity feed			
	NaCN		CaO	
	Tests 5-10	Tests 11-16	Tests 5-10	Tests 11-16
SB Leach	0.02	0.02	0.02	0.0
C Con Leach	0.10	0.07	0.08	0.1
Comb. Leach	0.4	0.4	1.0	1.0
TOTAL	**0.5**	**0.5**	**1.1**	**1.1**

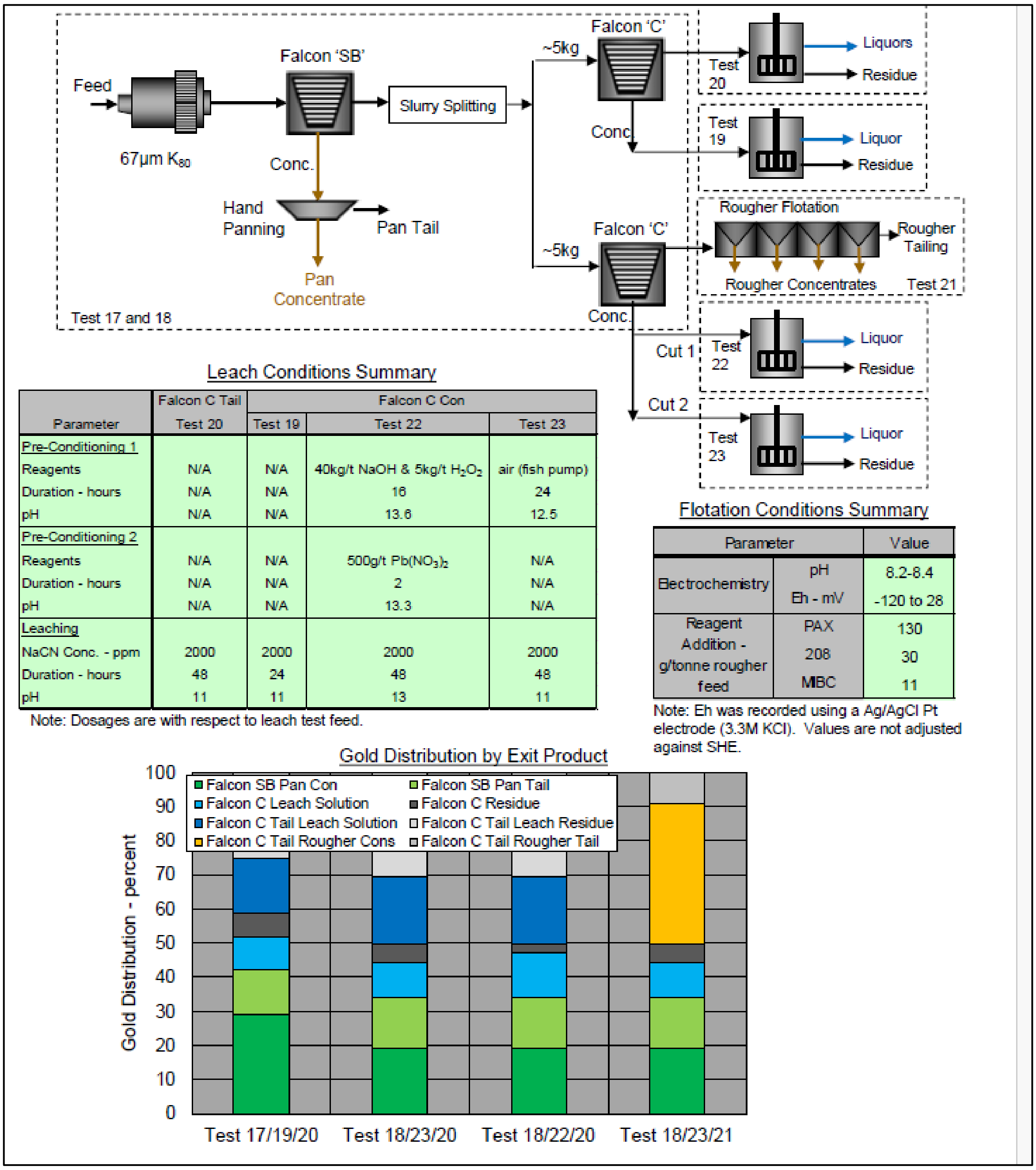
Notes: a) All cyanidation leach tests were open to atmosphere.

Source: ALS Metallurgy, Kamloops - W. Witte 2024

13.5.2.4 Falcon SB/C and Cyanidation and Rougher Flotation- ALS

In the next round of ALS tests, 17 to 23, the Falcon SB was again used in combination with the Falcon C, however, only a single pass of the Falcon SB tails was made through the Falcon C rather than triplicate passes. On one Falcon C split, cyanidation leaching was conducted using similar conditions as used previously. However, the other Falcon C splits used pre-conditioning stages ahead of cyanidation leaching for the Falcon C concentrate leaches using hydrogen peroxide and lead nitrate in Test 22, or with a 24-hour pre-aeration period in Test 23. Figure 13.4 presents the flowsheet and results of Tests 17 to 23. The results indicate overall gold recovery between 76 to 91%.

Figure 13.4. Flowsheet, Conditions and Results of Tests 17 to 23 - ALS



Leach Conditions Summary

Parameter	Falcon C Tail Test 20	Falcon C Con Test 19	Test 22	Test 23
Pre-Conditioning 1				
Reagents	N/A	N/A	40kg/t NaOH & 5kg/t H_2O_2	air (fish pump)
Duration - hours	N/A	N/A	16	24
pH	N/A	N/A	13.6	12.5
Pre-Conditioning 2				
Reagents	N/A	N/A	500g/t $Pb(NO_3)_2$	N/A
Duration - hours	N/A	N/A	2	N/A
pH	N/A	N/A	13.3	N/A
Leaching				
NaCN Conc. - ppm	2000	2000	2000	2000
Duration - hours	48	24	48	48
pH	11	11	13	11

Note: Dosages are with respect to leach test feed.

Flotation Conditions Summary

Parameter		Value
Electrochemistry	pH	8.2-8.4
	Eh - mV	-120 to 28
Reagent Addition - g/tonne rougher feed	PAX	130
	208	30
	MIBC	11

Note: Eh was recorded using a Ag/AgCl Pt electrode (3.3M KCl). Values are not adjusted against SHE.

Source: ALS Metallurgy, Kamloops - W. Witte 2024

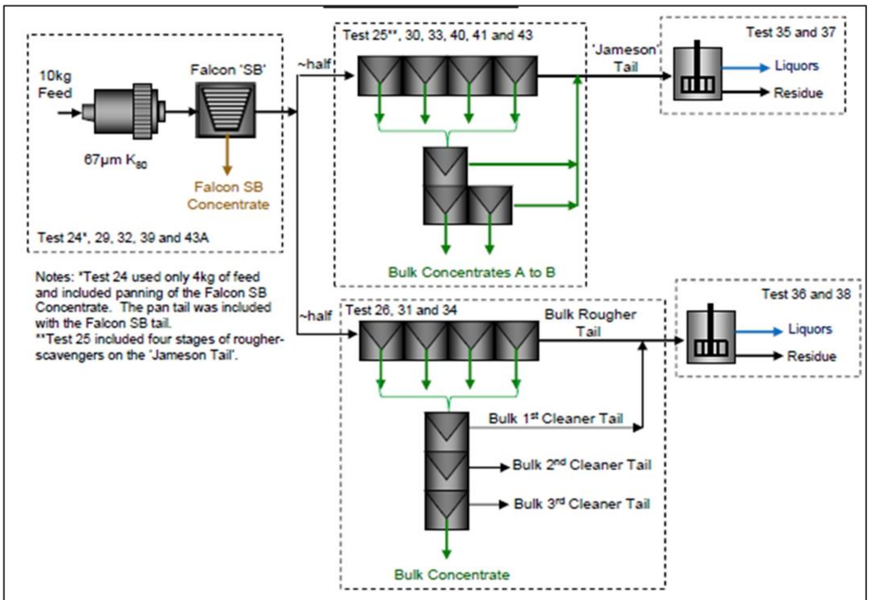
13.5.2.5 Falcon SB and C / Cyanidation / Flotation Tests - ALS

In subsequent tests, cleaner tests were carried out on Falcon SB tailing and replacing the C concentrator with Jameson and/or conventional flotation. Flotation flowsheets included:

- A simulated Jameson cell followed by rougher/scavenger flotation.
- A simulated Jameson cell.
- Conventional roughing followed by 3 stages of dilution cleaning.

In selected tests, the flotation tailings were subsequently subjected to cyanidation leaching. Leach tests on flotation tailings utilized aggressive pre-conditioning involving the addition of hydrogen peroxide and sodium hydroxide. Figure 13.5 presents the Flowsheet, Conditions and Results of tests 24-26 , 29-41 and 43 by ALS.

Figure 13.5. Flowsheet, Conditions and Results of Tests 24-26 , 29-41 and 43 - ALS



Leach Conditions Summary

Parameter	Tests 35-38
Pre-Conditioning	
Reagents	~3.5kg/t NaOH & 5kg/t H_2O_2
Duration - hours	16
pH	12.0-12.3
Leaching	
NaCN Conc. - ppm	2000
Duration - hours	48
pH	12.1-12.3

Flotation Conditions Summary

Stage	Electrochemistry		Reagent Addition - g/tonne w.r.t. rougher feed	
	pH	Eh - mV	PAX	MIBC
Roughers	8.2-8.6	-238 to 215	325	11-18
Cleaners	8.3-8.7	-58 to 154	-	0-22

Source: ALS Metallurgy, Kamloops - W. Witte 2024

A comparison was made between using Jameson flotation cells and conventional cells. Figure 13.6 presents the conditions and recoveries using the Falcon SB concentrator with Jameson cells and conventional cells under different conditions by ALS.

Figure 13.6. Conditions and Recoveries with Gravity and Different Flotation Cells – ALS

Gold Performance

Tests	Flowsheet	Concentrate Grade - g/t Au			Recalc Hd	Recovery - percent			
		Gravity	Flotation	Combined		Gravity	Flotation	Leach	Combined
Test 24/25	Jameson	551	112	278	4.81	28.7	57.3		86.0
Test 24/26	Conventional Rougher & 2 Cleaners	551	128	255	4.81	28.7	58.2		86.9
Test 29/30/35	Jameson	237	105	224	5.21	42.1	43.2	6.0	91.2
Test 29/31/36	Conventional Rougher & 2 Cleaners	237	102	189	5.21	42.1	38.0	4.6	84.6
Test 32/33/37	Jameson	260	97.2	219	5.35	47.8	39.7	5.0	92.5
Test 32/34/38	Conventional Rougher & 2 Cleaners	260	83.9	183	5.35	47.8	37.4	3.6	88.8

Note: Flotation recoveries and concentrate grades indicate bulk cleaner concentrates.

Silver Performance

Tests	Flowsheet	Concentrate Grade - g/t Au			Recalc Hd	Recovery - percent			
		Gravity	Flotation	Combined		Gravity	Flotation	Leach	Combined
Test 29/30/35	Jameson	34	46	97	1.8	17.2	53.3	15.9	86.4
Test 29/31/36	Conventional Rougher & 2 Cleaners	34	51	93	1.8	17.2	53.7	12.0	82.8
Test 32/33/37	Jameson	35	48	107	1.8	19.5	56.7	16.1	92.4
Test 32/34/38	Conventional Rougher & 2 Cleaners	35	43	94	1.8	19.5	61.6	6.4	87.4

Leach Test Summary

Test	Leach Extraction - percent		Residue Grade - g/t		NaCN Consumption - kg/t gravity feed
	Au	Ag	Au	Ag	
35	40.4	53.9	0.40	0.2	0.03
36	37.4	67.5	0.63	0.2	0.13
37	39.8	67.8	0.43	0.1	0.13
38	39.3	54.0	0.54	0.2	0.20

Source: ALS Metallurgy, Kamloops - W. Witte 2024

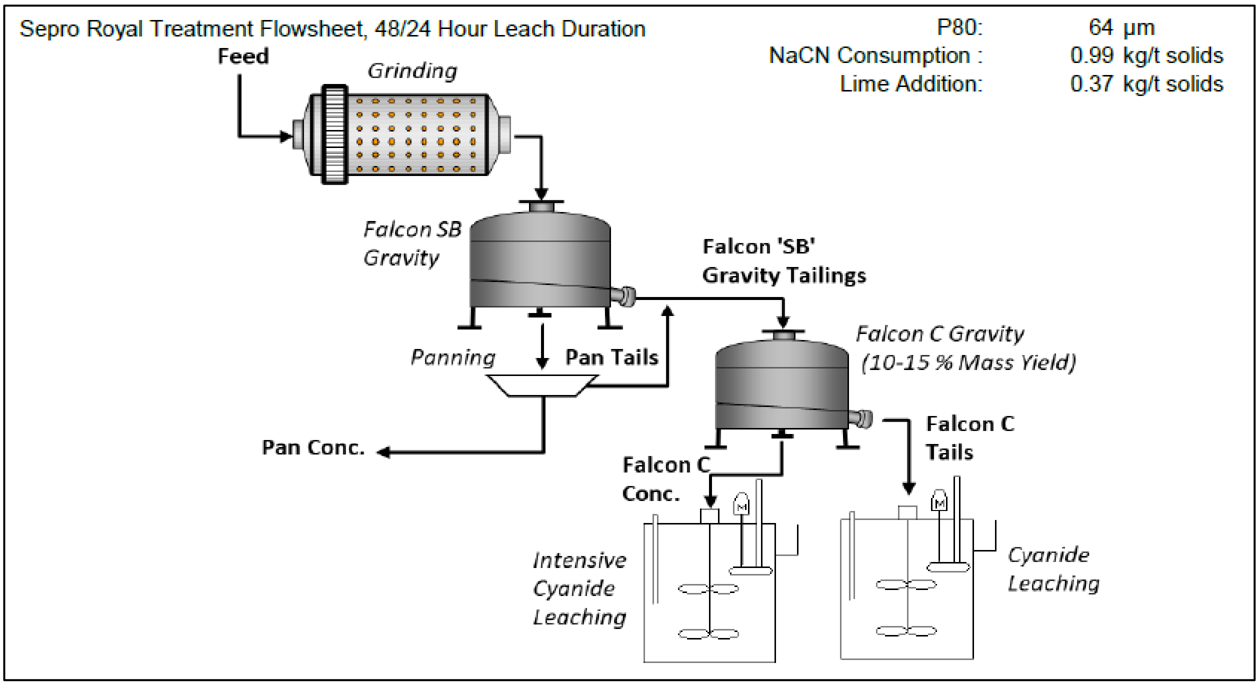
13.5.2.6 Falcon SB and C / Cyanidation / Flotation Tests - ALS

Sepro received the split 150kg sample from ALS to conduct a series of gravity concentration, caustic pre-treatment, cyanidation, and flotation tests on the Tuvatu mineralized material.

13.5.2.7 Initial Falcon SB and C Gravity Concentration and Cyanidation – Sepro

Two identical tests were conducted using the same flowsheet that Sepro followed in their previous tests in 2022 that achieved 85 to 92% gold recovery. However, the recovery results were much lower at 77.5 and 76.4% gold recovery with similar reagent conditions and consumption. The initial test flowsheet is presented in Figure 13.7.

Figure 13.7. Initial Royal Treatment Flowsheet - Sepro



Source: Sepro Labs - W. Witte 2024

The summary results from the first two duplicate tests are presented in Table 13.4 and 13.5.

Table 13.4. Conditions and Results from Initial Royal Treatment Test – Sepro

Products / Time	Wt.		Assay (g/t or mg/L)	Distribution (%)		
				Au		
	(g)	(%)	Au	Global	Falc-Stage	CN Stage
Pan Conc.	**32.1**	**0.33**	**848.20**	**41.3**		
Falcon 'C' Concentrate	**1,555.1**	**15.86**	**14.16**	**33.4**	56.9	
24 hour CN leach sol'n	1,816.9		8.40	24.3		72.8
Residue	1,553.7		3.85	9.1		27.2
Falcon 'C' Tailings	**8,220.6**	**83.82**	**2.03**	**25.3**	43.1	
48 hour CN leach sol'n	9,219.1		0.80	11.9		46.8
Residue	8,187.8		1.09	13.5		53.2
Combined CN Leach Recovery				**36.2**		61.6
Total Gold Recovery				**77.5**		
Combined Residue	9,741.5		1.53	22.5		
Calculated Head	**9,807.8**	**100.00**	**6.72**	**100.0**		
Assayed Head						

Source: Sepro Labs - W. Witte 2024

Table 13.5. Conditions and Results from Second Duplicate Test - Sepro

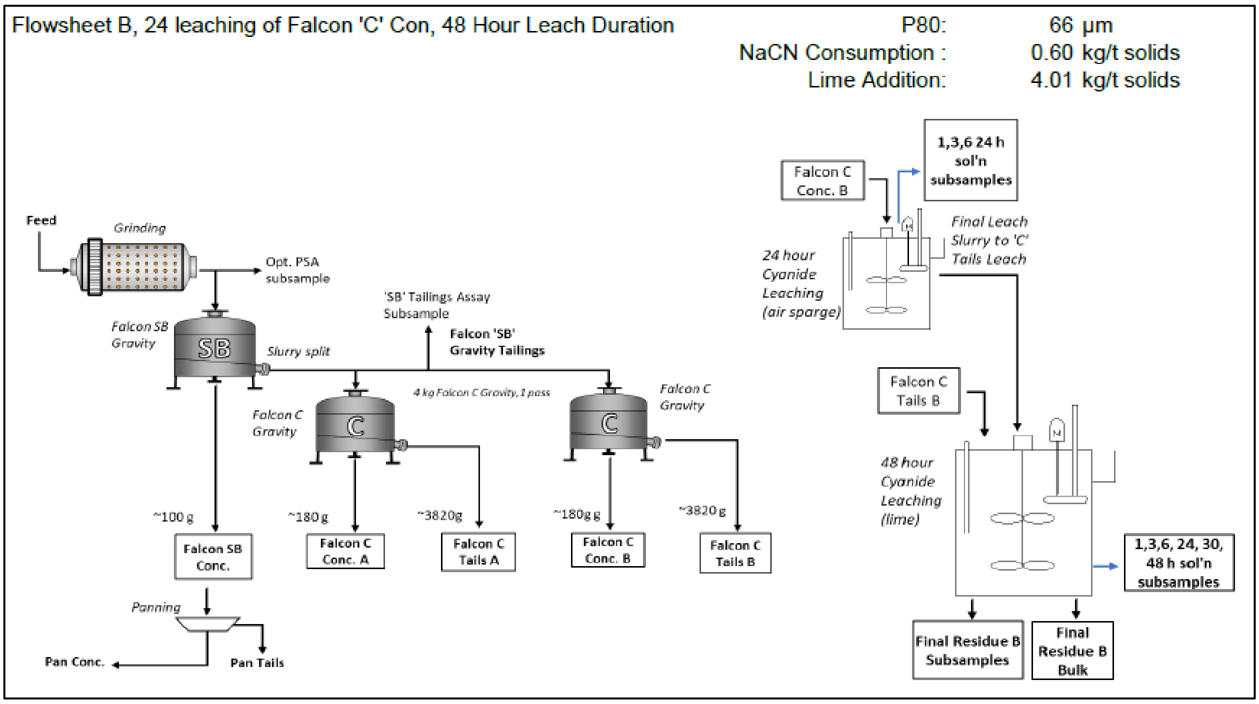
Products / Time	Wt.		Assay (g/t or mg/L)	Distribution (%)		
				Au		
	(g)	(%)	Au	Global	Falc-Stage	CN Stage
Pan Conc.	**32.1**	**0.33**	**848.20**	**40.4**		
Falcon 'C' Concentrate	**1,555.1**	**15.86**	**15.07**	**34.8**	58.4	
24 hour CN leach soln	1,814.3		8.60	24.4		70.1
Residue	1,552.6		4.52	10.4		29.9
Falcon 'C' Tailings	**8,220.6**	**83.82**	**2.03**	**24.8**	41.6	
48 hour CN leach soln	9,219.1		0.80	11.6		46.8
Residue	8,187.8		1.09	13.2		53.2
Combined CN Leach Recovery				**36.0**		60.4
Total Gold Recovery				**76.4**		
Combined Residue	9,740.4		1.63	23.6		
Calculated Head	**9,807.8**	**100.00**	**6.87**	**100.0**		
Assayed Head						

Source: Sepro Labs - W. Witte 2024

13.5.2.8 Falcon SB and C Gravity Concentration, Pre-treatment, and Cyanidation – Sepro

Additional tests were conducted using different methods of pre-treatment prior to the cyanidation. Sepro's Flowsheet B is presented in Figure 13.8 and the results in Table 13.6. Conditions and Results of Flowsheet B Test - Sepro Table 3.6. Concentrate samples were split from the C concentrators and treated with cyanide and air sparging for 24 hours, while concentrate tailings were sent directly to standard kinetic cyanidation for 48 hours. The gold recovery from this test provided 77.4% gold recovery.

Figure 13.8. Test Flowsheet B with Air Sparge Pre-treatment - Sepro



Source: Sepro Labs - W. Witte 2024

Table 13.6. Conditions and Results of Flowsheet B Test - Sepro

Products / Time	Wt.		Assay (g/t or mg/L)	Distribution (%)		
				Au		
	(g)	(%)	Au	Global	Falc-Stage	CN Stage
Pan Conc.	**11.5**	**0.11**	**2,374.30**	**38.8**		
Pan Tails	**94.1**	**0.92**	**108.10**	**14.4**		
Leach Feed	**10,076.2**	**98.96**	**3.17**	**46.7**		
48 hour CN leach sol'n	12,614.8		1.26	24.2		51.7
Residue	10,026.8		1.59	22.6		48.3
Total Gold Recovery				**77.4**		
Calculated Head	**10,181.9**	**100.00**	**6.92**			
Assayed Head			5.62			

Flowsheet B, 24 leaching of Falcon 'C' Con, 48 Hour Leach Duration

P80:	66	µm
NaCN Consumption :	0.60	kg/t solids
Lime Addition:	4.01	kg/t solids

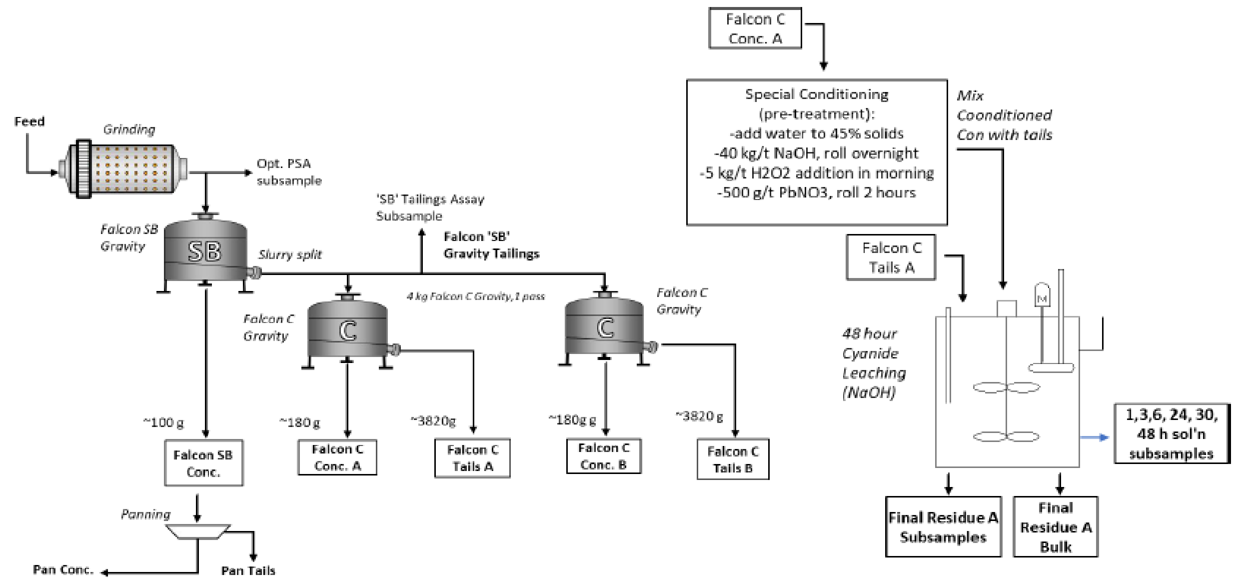
Source: Sepro Labs - W. Witte 2024

Another test was conducted using pre-treatment consisting of NaOH, H_2O_2 and $PbNO_3$ prior to standard kinetic cyanidation. The pre-treatment using 40kg/t NaOH was for 24 hours, with the addition of $PbNO_3$ two hours prior to 48 hours of standard cyanidation. The resulting gold extraction Table 13.7.

Figure 13.9. Test Flowsheet A with Caustic Pre-treatment – Sepro

Flowsheet A, Preconditioning of Falcon 'C' Con, 48 Hour Leach Duration

P80:	66	µm
NaCN Consumption :	0.48	kg/t solids
Lime Addition:	0.79	kg/t solids



Source: Sepro Labs - W. Witte 2024

Table 13.7. Conditions and Results of Flowsheet A Test - Sepro

Products / Time	Wt.		Assay (g/t or mg/L)	Distribution (%)		
				Au		
	(g)	(%)	Au	Global	Falc-Stage	CN Stage
Pan Conc.	**11.5**	**0.11**	**2,374.30**	**39.2**		
Pan Tails	**94.1**	**0.92**	**108.10**	**14.6**		
Leach Feed	**10,076.2**	**98.96**	**3.20**	**46.2**		
48 hour CN leach sol'n	12,295.0		1.34	23.8		51.6
Residue	10,039.9		1.56	22.4		48.4
Total Gold Recovery				**77.6**		
Calculated Head	**10,181.9**	**100.00**	**6.85**			
Assayed Head			5.62			

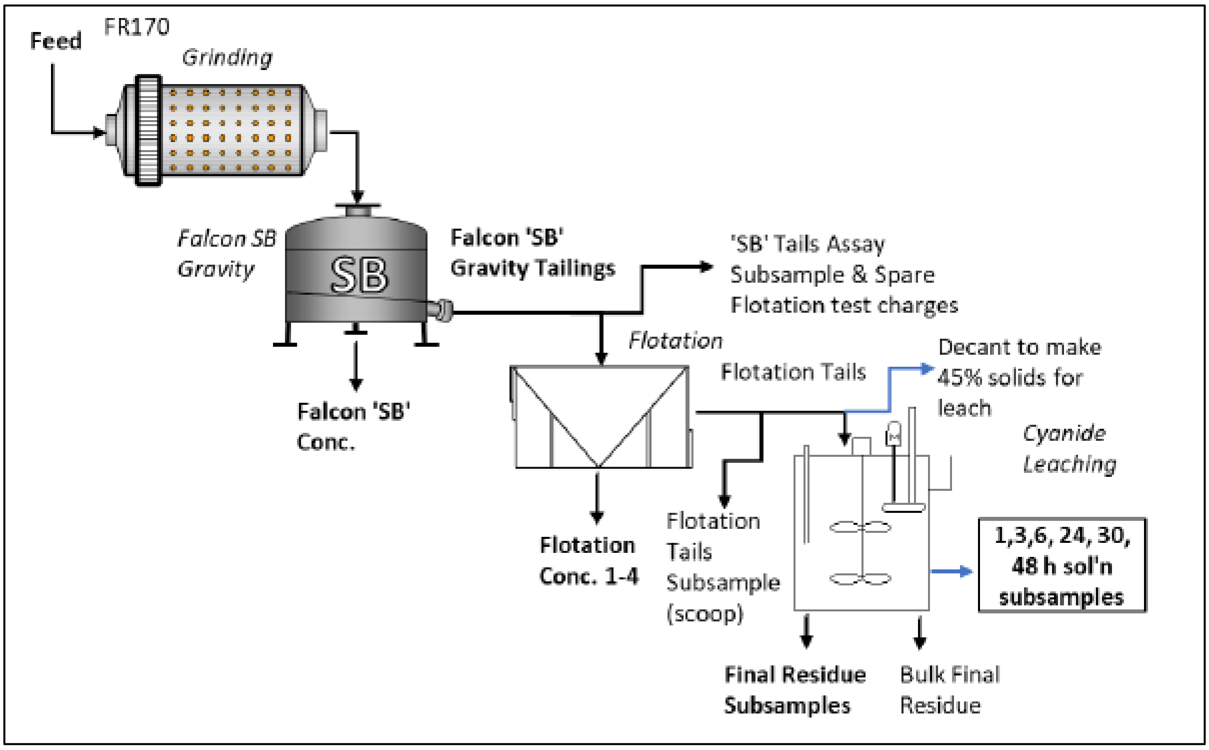
Source: Sepro Labs - W. Witte 2024

13.5.2.9 Falcon SB Concentrator, Flotation and Cyanidation – Sepro

A simplified test was conducted using the Falcon SB concentrator and standard flotation of the concentrate prior to cyanide leaching. The flowsheet is presented in Figure 13.10.

This test was intended to explore the effectiveness of flotation in the overall recovery and consider producing a saleable concentrate in place of cyanidation. Doré would still be produced from the SB intensive cyanidation ("SLR") if implemented in the pilot plant. The conditions and results are presented in Table 13.11. The overall gold recovery from this test was 95.8%. Most of the pilot equipment was either on the Tuvatu site or being shipped.

Figure 13.10. Test Flowsheet – Falcon SB Concentrator, Flotation and Cyanidation - Sepro



Source: Sepro Labs - W. Witte 2024

Figure 13.11. Conditions and Results -Falcon SB Concentrator, Flotation and Cyanidation – Sepro

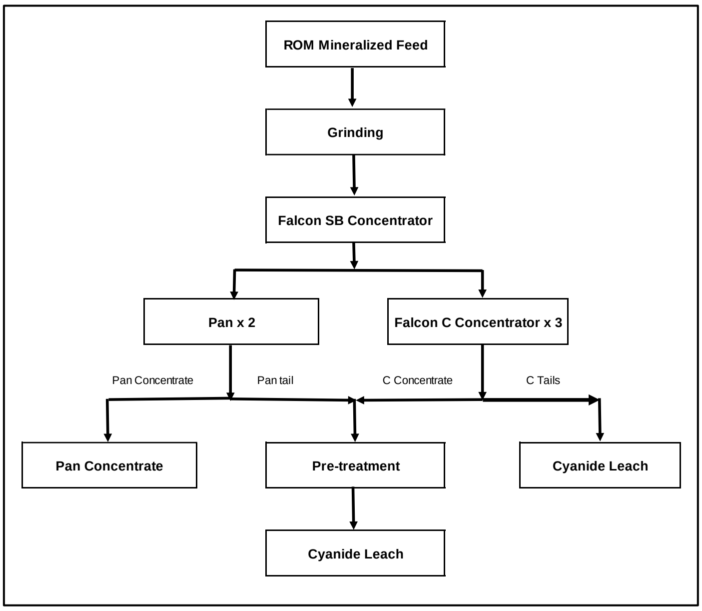
Products / Time	Wt.		Assay (g/t or mg/L)	Distribution (%)	
				Au	
	(g)	(%)	Au	Global	CN Stage
Falcon SB Conc.	**109.4**	**1.0**	**250.50**	**46.0**	
Flotation Concentrate	**810.9**	**7.1**	**34.90**	**47.5**	
Leach Feed (Float Tails)	**10,489.1**	**91.9**	**0.40**	**6.4**	
48 hour CN leach sol'n	14,541.3		0.09	2.2	34.3
Residue	10,438.7		0.24	4.2	65.7
Total Gold Recovery				**95.8**	
Calculated Head	**11,409.4**	**100.0**	**5.22**		
Assayed Head			5.62		

Source: Sepro Labs - W. Witte 2024

13.5.2.10 Falcon SB and C Concentrators, Pre-treatment, and Cyanidation – Tuvatu Metallurgical Lab

Metallurgical testwork in the Tuvatu Lab started in October to establish different criteria to assist with the startup of the pilot plant. The work included developing grinding data, commissioning of the gravity concentrators and setting up the bottle rolls and other instruments in the lab. Some samples are taken from specific areas in the deposit prior to being mined in order to ascertain the metallurgical properties of potential feed to the pilot plant. Formal reports are not prepared for most of these tests however it is useful for the pilot plant operators. The initial test programs mimicked the pilot plant flowsheet and is presented in 13.13.

Figure 13.12. Standard Laboratory Test Flowsheet - Tuvatu Lab



Source: Tuvatu Lab - W. Witte 2024

A more detailed metallurgical report on January 19, 2024, from belt samples taken from November 4 to November 13th since the pilot plant was processing at steady state. Since the startup of the pilot plant, the average tailings grade was 0.76g/t gold without using very high levels of caustic while, under similar conditions and head grade the tailings from lab testwork was 1.88g/t. Based on these differences with similar feed grades and conditions, parallel tests on the mill feed sample to determine if the lab tests were reliable compared to the pilot plant.

The composite sample was taken based on the weights reported in Table 13.8 and the determination of the average head weight for the master composite in presented in Table 13.11.

Table 13.8. Sample Selection by Weight

Sample Date	Day Shift (D/S) Night Shift (N/S)	Weight (kg)
11/4/2023	D/S	6.4
11/4/2023	N/S	6.3
11/5/2023	D/S	0
11/5/2023	N/S	3.5
11/6/2023	D/S	1.7
11/6/2023	N/S	7
11/10/2023	D/S	2
11/10/2023	N/S	0
11/11/2023	D/S	4.8
11/11/2023	N/S	3.3
11/12/2023	D/S	1.4
11/12/2023	N/S	7.4
11/13/2023	D/S	6.3
Total		**50.1**

Source: Tuvatu Lab - W. Witte 2024

Table 13.9. Head Assay of Master Composite

SAMPLE	Au 1	Au 2	Ag	As	Cu	Fe	Pb	Se	Te	V	Zn
DESCRIPTION	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
23008 Head 1(M526)	5.58	6.34	47	287	373	4.5	719	<0.1	22.22	240	1757
23008 Head 2(M527)	9.12	5.98	10	282	370	4.5	720	<0.1	0.39	246	1759
23008 Head 3(M528)	4.99	5.90	11	302	375	4.6	744	<0.1	0.54	250	1918
Average	6.32		23	290	373	4.5	728	<0.1	7.72	245	1812

Source: Tuvatu Lab - W. Witte 2024

Kinetic cyanidation tests were conducted on the mixture of the C concentrator concentrate and the tailings as shown in . The parameters tested were:

1. Grind size (P80): 64µm, 84µm, and 113µm.
2. NaOH dosage: the amount required to reach pH = 12 that was maintained in the pilot plant at 20kg/t.

The results are presented in Table 13.10 and the observations were as follows:

1. Sample T3 has the similar leach conditions in terms of grinding size and caustic as the pilot plant and the final tail is 0.8g/t gold which was running at 0.77g/t gold (November 6th to November 15th assuming a 2-day delay) This indicates that the lab results can be reliable.
2. For both NaOH dosages, the grind sizes show the same effect: the finer the grind, the lower the tail grade.
3. For the three grind sizes, NaOH has the same effect: the higher the NaOH dosage, the lower the tailings grade. This was confirmed in other laboratory tests when compared to the performance of the pilot plant.

Table 13.10. Summary of Standard Flowsheet Test Results – Tuvatu Lab

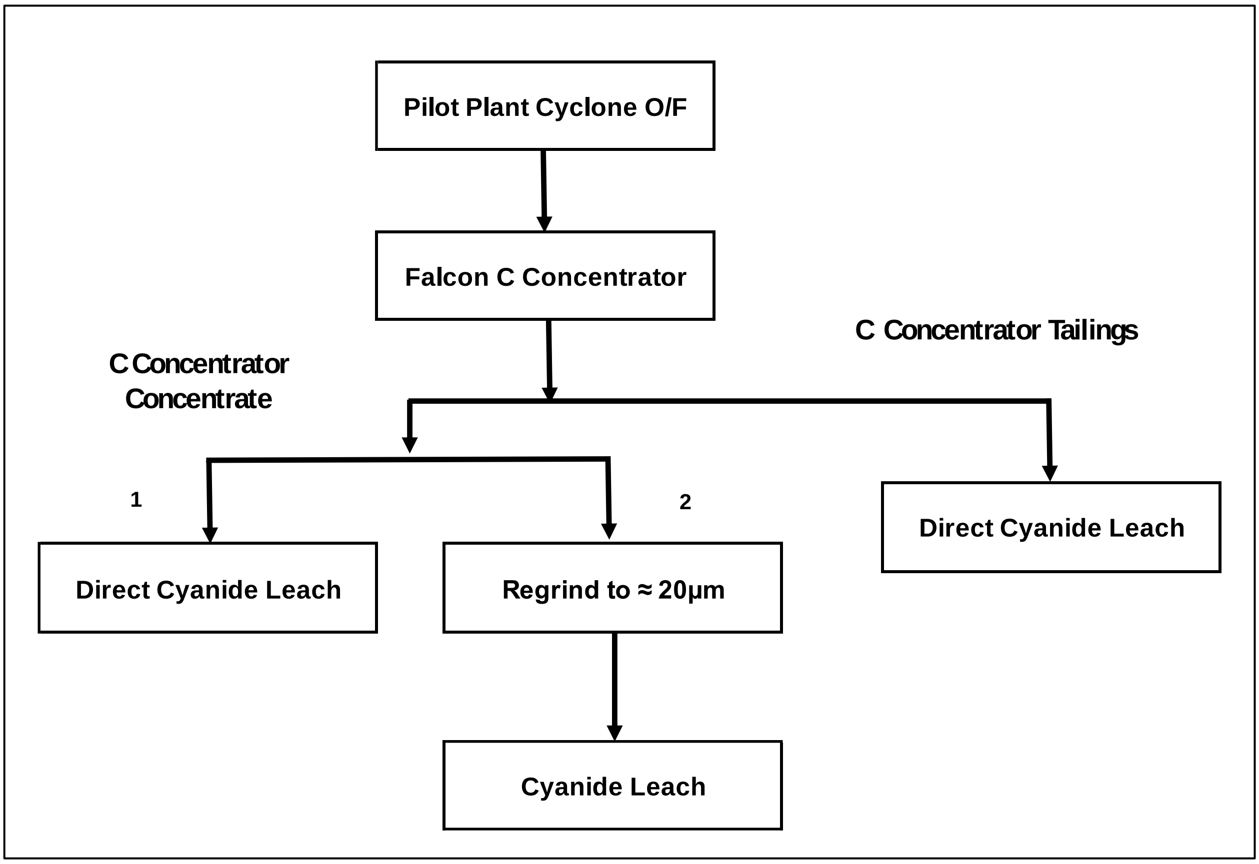
Test #	P80 (µm)	Calc Head (g/t Au)	Final Tail (g/t Au)	Recovery (%)	pH	NaOH (kg/t)	CN Strength (g/L)	CN cons (kg/t)
T1	64	2.07	0.79	72.6	12.1	2.08	0.50	0.83
T2	64	3.11	0.63	80.0	13.1	20.00	0.50	0.77
T3	84	2.37	0.80	0.7	12.1	2.08	0.50	0.63
T4	84	3.26	0.72	78.5	13.3	20.00	0.50	0.68
T5	113	4.25	1.02	80.1	12.1	2.58	0.50	0.68
T6	113	6.13	0.86	86.3	13.1	20.00	0.50	0.71

Source: Tuvatu Lab - W. Witte 2024

13.5.2.11 Regrinding of C Concentrator and Flotation Concentrates Tests – Tuvatu Metallurgical Lab

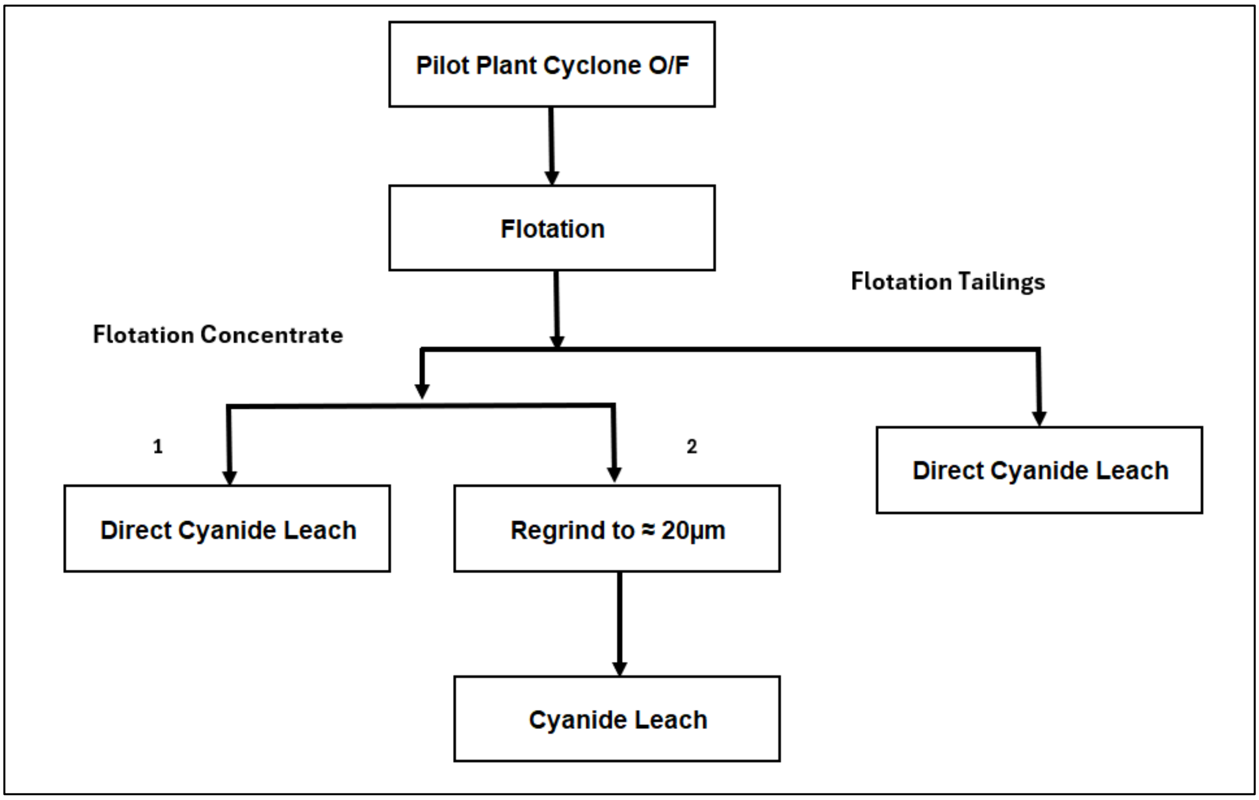
Recent metallurgical tests in early April 2024 were conducted on cyclone overflow slurry (Pilot Plant Cyclone O/F) to investigate the effects on gold recovery by regrinding concentrate from the C concentrator or from a flotation circuit. Scenario A includes producing concentrate from the C concentrator, splitting it and then performing a direct cyanide leach on one sample and regrinding the other split to approximately minus 20 µm and then doing a standard cyanide leach. Scenario A is illustrated in Scenario B is illustrated in Figure 13.3.17 and includes producing concentrate from a standard flotation circuit, splitting the concentrate and then performing a direct cyanide leach on one sample (1), regrinding the other split (2) to approximately minus 20 µm and then doing a standard cyanide leach.

Figure 13.13. Scenario A – Regrind C Concentrate, Regrind and Leaching – Tuvatu Lab



Source: Tuvatu Lab - W. Witte 2024

Figure 13.14. Scenario B – Regrind Flotation Concentrate, Regrind and Leaching – Tuvatu Lab



Source: Tuvatu Lab - W. Witte 2024

The cyclone overflow sample was collected from the undersize of the trash screen that receives the cyclone overflow for the pilot plant on April 5, 2024. The head assays from the samples and the resulting composite gold grade are presented in Table 13.11 and are similar to the calculated head grades fed to pilot plant on April 5, 2024.

Table 13.11. Pilot Plant Cyclone Overflow Sample Head Analysis – Tuvatu Lab

SAMPLE	Au 1	Au 2	Ag	As	Cu	Fe	Pb	Se	Te	V	Zn
DESCRIPTION	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
24003 CYC. O/F - HEAD ASSAY 1 (M1048)	2.41	2.48	3.88	108	274	3.6	96	<0.1	<0.05	216	343
24003 CYC. O/F - HEAD ASSAY 2 (M1049)	2.98	3.09	3.19	120	279	3.8	98	<0.1	<0.05	235	368
	2.74		3.54	114	276	3.7	97			225	356

Source: Tuvatu Lab - W. Witte 2024

The recovery results from both C concentrator and flotation concentrates are presented in Tables 13.3.6 and 13.3.7. To make a fair comparison, the mass pull for each test is similar. The flotation gold recovery from flotation (93.3% Au) is much higher versus C concentration (52.3% Au). These results are consistent with previous tests on other samples. The gold recovery from the C concentrator is not as effective as flotation is the quantity of gold associated with recovering sulfides and the very fine sub-micron gold. Some of the gold is associated with arsenian pyrite that may not be liberated or leached with NaOH.

Table 13.12. Recovery Results from C Concentration Concentrate– Tuvatu Lab

Product	Weight		Assay - g/tonne								Distribution - percent					
	%	grams	Au	Ag	As	Cu	Pb	Zn	Te	Fe	Au	As	Cu	Pb	Zn	Fe
C Conc.	6.6	780.0	20.6	15	293	490	462	569	69	7	52.2	15.0	10.2	28.3	9.2	11.6
C Tail	93.4	10955.0	1.34	<0.2	118.4	305.7	83.3	397.7	<0.05	4.0	47.8	85.0	89.8	71.7	90.8	88.4
Recalculated Feed	100.0	11735.0	2.62		130	318	109	409		4.17	100	100	100	100	100	100
Measured Feed	100.0	11735.0	2.74	3.54	114	276	97	356	<0.05	3.70						

Source: Tuvatu Lab - W. Witte 2024

Table 13.13. Recovery Results from Flotation Concentrate – Tuvatu Lab

Product	Weight		Assay - g/tonne								Distribution - percent					
	%	grams	Au	Ag	As	Cu	Pb	Zn	Te	Fe	Au	As	Cu	Pb	Zn	Fe
Ro Con 1	6.7	780.0	34.8	25	1236	3264	981	4082	110	7	93.3	75.5	85.4	81.1	82.2	12.6
Ro Tail	93.3	10885.0	0.18	<0.2	28.8	40.1	16.4	63.5	<0.05	3.5	6.7	24.5	14.6	18.9	17.8	87.4
Recalculated Feed	100.0	11665.0	2.49		110	256	81	332		3.71	100	100	100	100	100	100
Measured Feed	100.0	11665.0	2.74	3.54	114	276	97	356	<0.05	3.70						

Source: Tuvatu Lab - W. Witte 2024

Based on previous test results and data from the pilot plant, the following leaching parameters were used for leaching C concentrate and flotation concentrate:

1. 50kg/t NaOH was used for pre-treatment.
2. Pre-treatment time was 40 hours and leaching time was 48 hours.
3. NaCN concentration was 2000ppm.

Table 13.14. Comparison of Feed and Product from Regrinding Tests – Tuvatu Lab

Concentrate	% Passing 20µm	
	Feed to Regrind Size (%)	Regrind Size (%)
C Concentrate	26.5	75.2
Flotation Concentrate	78.8	91.3

Source: Tuvatu Lab - W. Witte 2024

The effect of regrinding concentrates on cyanide extraction is presented in Table 13.3.9. Regrinding had a positive impact on both concentrates resulting in higher leach extraction and lower tailings grades.

1. For C concentration, the leach tailings dropped from 0.85g/t Au to 0.42g/t Au.
2. For Flotation concentrate, the leach tailings dropped from 3.45g/t Au to 2.88g/t Au.

Table 13.15. Summary effects of regrinding of concentrates and leaching performance.

	C Conc	Flot Conc
Recovery	52%	93.3%
Mass pull	6.65%	6.69%
Leaching extration, original	96.1%	88.8%
Leaching extration, after regrinding	98.1%	90.5%
Increase on leaching extraction	2.00%	1.70%
Increase on global recovery	1.04%	1.59%
Leaching Tail, original, g/t	0.85	3.45
Leaching tail, after regrinding, g/t	0.42	2.88
Decrease on the leaching tail, g/t	0.43	0.57

Source: Tuvatu Lab - W. Witte 2024

Although a tower mill has been purchased and delivered to Tuvatu, based on these results, it was not installed since the improvement in recovery does not justify further capital expense.

13.6 Leach Cyanidation Detoxification Study – Kemetco

ALS Metallurgy – Kamloops engaged Kemetco to carry out bulk cyanide leach and cyanide detoxification test work using the following samples from the Tuvatu bulk sample:

- Flotation concentrate
- Flotation tails

The objectives of the program were to:

1. Conduct CIL cyanide leach tests using the leach conditions expected at Tuvatu.
2. Characterize the gold barren solution.
3. Conduct one continuous cyanide destruction test, using the conditions established during the optimization testing, to confirm that the target of 5mg/L CN_{WAD} can be achieved; characterize the cyanide detox effluent.
4. Produce a pulp sample for subsequent geochemical testing at Coanda.

13.6.1 Bulk Leach Procedure

The Tuvatu slurry samples received from ALS were decanted to adjust the pulp density to 45% solids w/w. After thoroughly mixing the slurry, a small slurry sample (≈100ml) was collected to confirm the percentage of solids.

The pre-treatment with NaOH and H_2O_2 was performed on the flotation concentrate (0.44kg dry basis) only. Prior to commencement of the 16hrs pre-treatment period, the pH was adjusted to12, utilizing 3.9kg/t feed, and 10% H_2O_2 (5kg/t feed). Throughout the pre-treatment period, the aeration was maintained at 100ml/min to ensure the dissolved oxygen (“DO”) remained about 5mg/L. The initial NaOH treatment was not sufficient to maintain flotation concentrate pulp at pH 12, necessitating a minor supplemental addition of NaOH (4.03g).

Upon completion of the pre-aeration phase, the flotation concentrate was combined with flotation tails slurry. The requisite among of NaCN, along with 30g/L carbon were introduced to initiate the 48-hour CIL process. Aqueous samples were systematically collected at pre-defined time intervals to measure the pH and cyanide concentration.

At the end of the 48hr CIL period, the carbon was screened, washed, dried, weighed, and small sample was retained for triplicate analysis. The barren slurry was also weighed, sampled, refrigerated, and used a feed for subsequent cyanide destruction testing. In addition, small samples of barren solution and solids were collected for metal analysis by ICP/AAS. The barren solution was further submitted for CN_{WAD} and SCN analysis.

13.6.2 Cyanide Destruction Procedure

The cyanide destruction experimental set-up comprised one reaction vessel (overflowing at 4.5L) equipped with Rushton turbine, baffles, dissolved oxygen and pH probes, and an inlet tube for oxygen. In addition, reagent reservoirs were required for sodium metabisulfite ($Na_2S_2O_5$), a solution of copper sulfate ($CuSO_4$) and hydrated lime slurry (20g/L). Reagents were added using peristaltic pumps. Oxygen flow was controlled with a pressure regulator and needle valve and monitored with a rotameter. A slurry reservoir fitted with baffles and an overhead mixer was used for the feed slurry. After treatment, the slurry overflowed into a reservoir. Figure 13.15 shows the Kemetco test setup.

Figure 13.15. Kemetco Cyanide Test Setup

Source: W. Witte 2024

13.6.3 Test Results – Kemetco

Table 13.16. Reagent consumption during pre-leach - Kemetco

Component	Units	
Feed	kg	9.5
Flotation con	kg	0.448
Flotation tails	kg	18.416
10% H_2O_2	g	2.24
NaOH for pre-treatment	g	5.78
NaOH for pH adjustment CIL	g	27.33
Cumulative NaOH	g	33.11
Cumulative NaCN	g	25.3
NaOH addition	kg/t	1.76
10% H_2O_2	kg/t	0.12
NaCN	kg/t	2.84

Source: Kemetco - W. Witte 2024

Table 13.17. CIL Leach Results – Kemetco

Sample	Amount/Units		Assay (mg/kg, mg/L)		Content (mg)		Recovery (%)	
			Ag	Au	Ag	Au	Ag	Au
Head	18.86	kg	1.10	2.78	20.75	52.44	-	-
Filtrate	22.2	L	<0.05	<0.1	0.00	0.00	0.00	0.00
carbon	0.64	kg	24.00	49.21	15.32	31.41	80.25	56.99
Residue (48 h)	18.85	kg	0.20	1.31	3.77	24.69	19.75	44.01
Calc Head	n/a	n/a	1.01	2.98	5.68	56.10		

Source: Kemetco - W. Witte 2024

Table 13.18. CIL Carbon Analysis – Kemetco

	Units	Au	Ag
Carbon cut 1	mg/kg	48.8	24
Carbon cut 2	mg/kg	49.4	
Carbon cut 3	mg/kg	49.5	

Source: Kemetco - W. Witte 2024

At the conclusion of the CIL process, gold and silver tenors in barren solutions were determined to be below the detection limit of 0.1 mg/L and 0.05 mg/L. the solution contained 87.1 mg/L Cu and 3.85 mg/L Zn, in addition to 11 mg/L arsenic and 16.5 mg/L iron. Notably tellurium remained below the detection limit of 0.1 mg/L. Both the distillation and picric methods yielded consistent results for weak dissociable cyanide, with CNp was 864 mg/L and CN_{WAD} was 844 mg/L. the barren solution composition is summarized in Table 13.19.

Table 13.19. Chemical composition of the 48hr barren leach solutions

Analyte	Units	48-hour Barren Solution
CN_{WAD}	mg/L	844
CN_P	mg/L	864
SCN	mg/L	184
Au Gold	mg/L	<0.1
Ag Silver	mg/L	<0.05
Al Aluminum	mg/L	3.1
As Arsenic	mg/L	11.0
B Boron	mg/L	0.96
Ba Barium	mg/L	<0.02
Be Beryllium	mg/L	<0.02
Bi Bismuth	mg/L	<0.25
Ca Calcium	mg/L	20.4
Cd Cadmium	mg/L	0.02
Co Cobalt	mg/L	0.20
Cr Chromium	mg/L	<0.05
Cu Copper	mg/L	87.1
Fe Iron	mg/L	16.5
K Potassium	mg/L	39.6
Li Lithium	mg/L	<0.1
Mg Magnesium	mg/L	<0.1
Mn Manganese	mg/L	0.2
Mo Molybdenum	mg/L	2.2
Na Sodium	mg/L	1062
Ni Nickel	mg/L	0.13
Pb Lead	mg/L	<0.2
S Sulfur	mg/L	206
Sb Antimony	mg/L	<0.2
Se Selenium	mg/L	0.7
Si Silicon	mg/L	14.5
Sn Tin	mg/L	<0.2
Sr Strontium	mg/L	0.51
Ti Titanium	mg/L	<0.1
Tl Thallium	mg/L	<0.2
U Uranium	mg/L	<0.5
V Vanadium	mg/L	0.13
Zn Zinc	mg/L	3.85
Te Tellurium	mg/L	<0.1

Source: Kemetco - W. Witte 2024

Table 13.20. Summary of Cyanide Destruction Optimization Conditions and Results - Kemetco

Test conditions	Residence Time min	109	
	pH	>11.0	
	O2 Source	O2	
Reagents	$Ca(OH)_2$, g/g $Na_2S_2O_5$	0.65	
	SO_2, g/g CN_{WAD}	6.9	
	Cu^{2+}	20	
Stream		Feed	Effluent
Analyte Concentration (mg/L)	CN_{WAD}	864	0.4
	CN_T	910	1.4
	SCN	184	145
	Cu	87.1	0.5
	Fe	16.5	0.9
	Ni	0.1	<0.1
	Zn	3.8	<0.1

Source: Kemetco - W. Witte 2024

Two effluent samples were collected after 6 hours and 10 hours and submitted for ICP-OES analysis. The final sample (10 hours) underwent comprehensive analysis, including CN_{TOTAL}, CN_{WAD}, SCN, CNO, as shown in Table 13.21. The final CN_{WAD} concentration was lower than 1mg/L, while Total Cyanide was 1.4mg/L. The copper, iron and zinc concentrations in the final solution were below1mg/L.

Table 13.21. Composition of Cyanide Detox Effluent - Kemetco

Analyte	Analyte Concentration (mg/L)	
	Sample and Detox Effluent (Collection Timepoint)	
	6 hours	10 hours
CN_{WAD}	1.2	0.16
CN_{TOTAL}		1.4
CNO		827
SCN		145
Ag Silver		<0.05
Al Aluminum	<0.1	<0.1
As Arsenic	1.5	1.2
B Boron	<0.5	<0.5
Ba Barium	0.2	0.1
Be Beryllium	<0.02	<0.02
Bi Bismuth	<0.2	<0.2
Ca Calcium	684	581
Cd Cadmium	<0.02	<0.02
Co Cobalt	0.2	0.2
Cr Chromium	<0.05	<0.05
Cu Copper	0.8	0.6
Fe Iron	0.7	0.3
K Potassium	116	107
Li Lithium	<0.1	0.1
Mg Magnesium	9.1	7.1
Mn Manganese	0.2	2.6
Mo Molybdenum	2.1	2.1
Na Sodium	3218	3019
Ni Nickel	<0.05	<0.05
Pb Lead	<0.2	<0.2
*S Sulfur	2652	2449
Sb Antimony	<0.2	<0.2
Se Selenium	0.5	0.5
Si Silicon	5.3	4.5
Sn Tin	<0.2	<0.2
Sr Strontium	9.6	8.8
Ti Titanium	<0.1	<0.1
Tl Thallium	<0.2	<0.2
U Uranium	<0.5	<0.5
V Vanadium	<0.1	<0.1
Zn Zinc	0.1	0.1

Source: Kemetco - W. Witte 2024

13.6.4 Conclusions – Kemetco

The following conclusions can be drawn from this study:

1. Two sample (flotation and flotation tails) were received; the flotation con was subjected to a preleach treatment with NaOH and H_2O_2 and then the samples were combined and used for carbon-in-leach to generate pulp for subsequent cyanide destruction testing. Following the 48 hour CIL test, we achieved a calculated gold extraction of 56%.
2. By employing specific cyanide destruction conditions, including 6 g SO_2 /g CN_{WAD} 20 mg/L copper addition, a 120-minute retention time, and maintain the pH of 8.0, the CN_{WAD} concentration in the effluent was reduced to below 5 mg/L.

13.7 Tuvatu Tailings Characterization Measurements for Slurry Pipeline Design

Lion One was considering the installation of a tailings pipeline for the Tuvatu mine if the dry tailings deposition method was not successful to the tailings storage facility ("TSF"). Knight Piésold ("KP") designed the TSF and, if required, would design the slurry pipeline. The characteristics of the Tuvatu tailings would be required to develop the design criteria for the pipeline system if necessary. To support KP's design work, they required specific geotechnical and rheological measurements to be performed. The design slurry concentration for the pipeline was expected to be approximately 40wt% solids.

Representative samples of the tailings were received by Coanda from Kemetco. The test material was from 4 twinned drill holes from Zone 2. ALS (as reported in Section 13.3.1 of this report) performed the gravity and flotation separation and concentration, and Kemetco performed the CIL process and cyanide detoxification. Tailings samples we then sent to Coanda for characterization measurements.

The objectives of this work were to measure various characteristics of the tailings sample that are important for the design of a slurry pipeline for tailings transport. In addition, some of the characterization data may also be used to inform dam breach modelling of the TSF.

The following measurements were performed on the provided tailings sample from Kemetco.

1. Specific gravity
2. Compaction testing
3. Particle size distribution
4. Atterberg limits
5. Settling and air drying
6. Consolidation testing
7. Rheology
8. Pressure filtration testing
9. Static liquefaction tests

The data from the Coanda test program was not used for the TSF or the design of a tailings slurry pipeline since the dry stacking method has been successful at Tuvatu, even during periods of heavy tropical rainfall.

14.0 MINERAL RESOURCE ESTIMATES

14.1 Introduction

Greg Mosher of Global Mineral Resource Services (GMRS) was retained by Lion One Limited to carry out an independent mineral resource estimate (MRE) of gold contained in the portion of the Tuvatu Property that is currently being developed and mined. On March 25, 2024, GMRS received from Lion One, a drillhole dataset in csv format, 69 wireframes representing mineralized veins and zones in the Tuvatu deposit, as well as underground development as of March 24, 2024, all in dxf format. Two wireframes representing satellite mineralization around Zones Two and Five that was not captured by the wireframes for those zones were received on April 05, 2024. The dataset and wireframes were imported into SGS Genesis, a commercial resource estimation software program and were used for the MRE that is described in the following sections.

14.2 Data Used

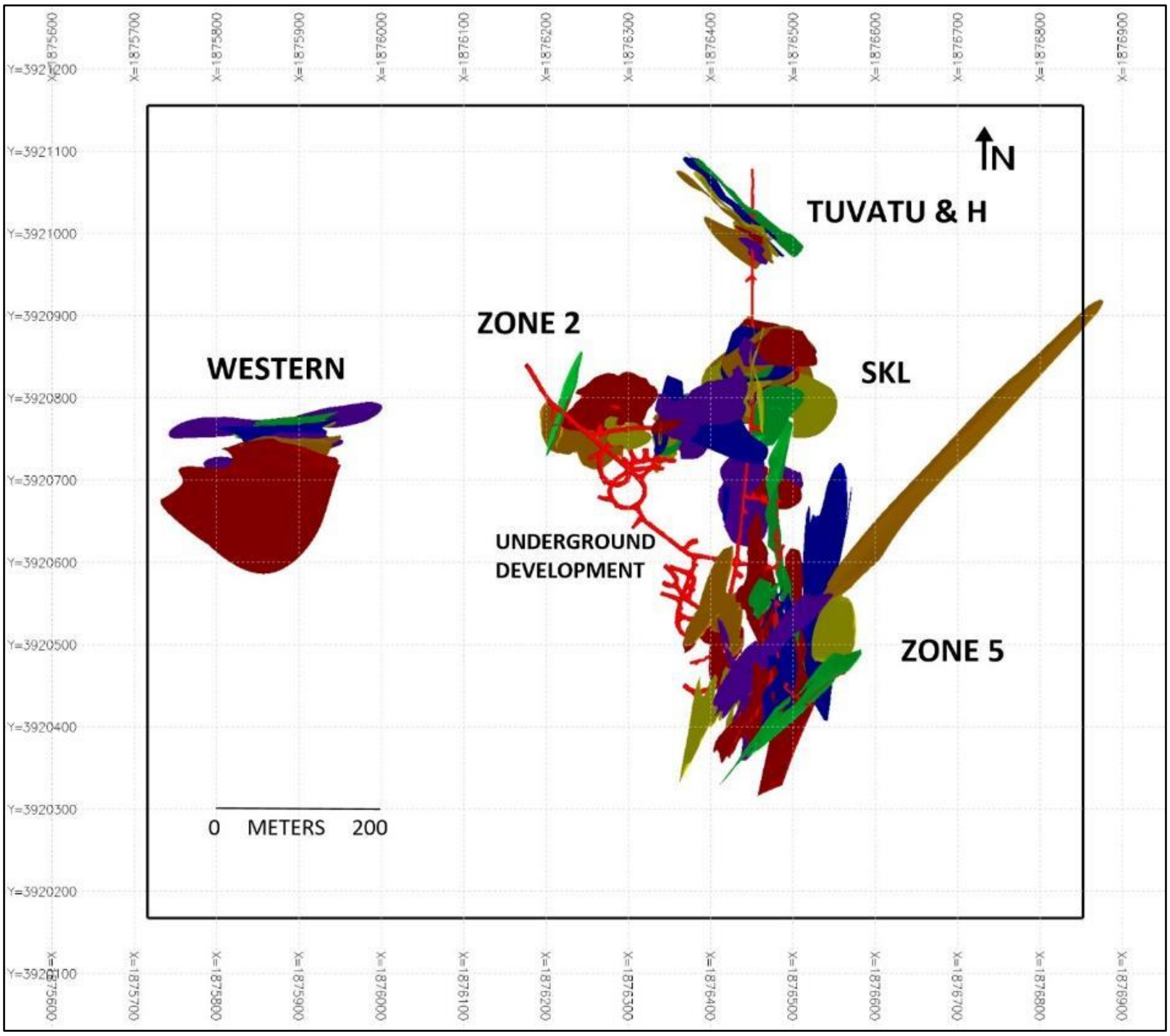
As received, the sample database contained 7,592 collar locations and 240,002 assays for gold. On the recommendation of Alex Nichol, Lion One Senior Vice President Exploration and Geology, assays for sludge (69) and face (channel) samples (6,205) were removed from the dataset. The sludge samples were removed because the source location of their assay values cannot be established with sufficient accuracy for use in a MRE. The face samples were removed because attempts to reconcile estimated resources against mined resources within Zone Two resulted in an overestimation of gold present when face samples were included in the dataset. A further 30 samples were removed because they had anomalously long lengths and were either of unidentified source or had not been sampled. The resultant imported dataset included 1,288 collars and 233,703 gold assays. All assays used were obtained from drill core (85%) and reverse circulation holes (155).

14.3 Geological Interpretation

Tuvatu is identified as an alkalic epithermal gold deposit that is comprised of structurally controlled veins and stockwork zones that are contained in a monzonite intrusive hostrock. Of the 69 modelled domains, all but two, URW 1-1 and URW 1-2, are interpreted as narrow, generally steep-dipping veins; URW 1-1 and URW 1-2 are stockworks. The veins are grouped into five geographic zones: 2, 5 (including the previously separate 500), SKL, Tuvatu and H lodes, and the Western or Plant Site (Figure 14.1).

Significant intercepts of gold mineralization exist outside the 69 modelled domains, in particular peripheral to Zones 2 and 5, where there is insufficient data to support a geological interpretation of those mineralized intercepts. Therefore, instead of domains based on geological interpretation, this mineralization was constrained using a gradeshell threshold of 0.5 g/t gold over four (4) meters. The resultant volumes are designated the Outside Domains. The gradeshell generation process did not consider the number of qualifying drillholes, only the grade-thickness; consequently, some of these domains are based on one drillhole. Because it is necessary to demonstrate continuity of mineralization, a minimum of two drillholes was required during the grade interpolation process which resulted in some of these domains remaining unestimated.

Figure 14.1 Tuvatu Principal Mineral Zones

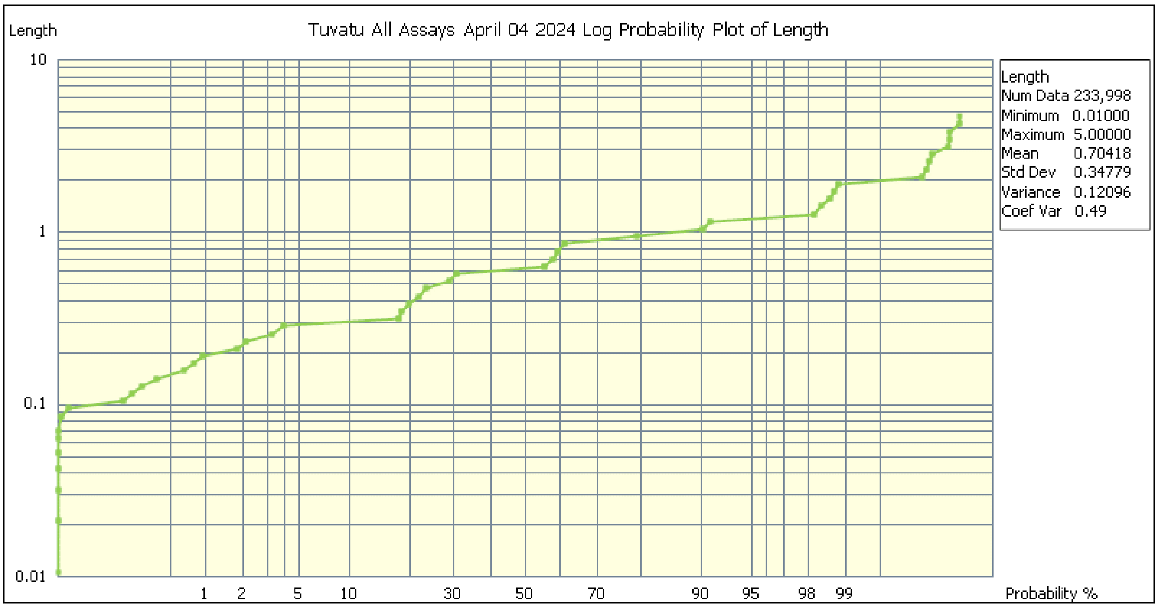


Source: GMRS 2024

14.4 Compositing

Figure 14.2 is a cumulative frequency plot of sample lengths. Approximately 91% of the samples are one meter or less in length so a composite length of one meter was chosen for the MRE and the 233,703 assays were reduced to 227,254 composites. The composite set was partitioned into the 69 modelled domains, the underground development, and the Outside Domains around Zones 2 and 5.

Figure 14.2 Cumulative Frequency Plot of Tuvatu Sample Lengths



Source: GMRS 2024

14.5 Exploratory Data Analysis

Table 14.1 tabulates the number and average grade of assays, composites, and block model by domain.

Table 14.1 Tuvatu Assay, Composite and Block Population Numbers and Average Gold Grade

Domain	Assays	Au g/t	Comps	Au g/t	Blocks	Au g/t	Domain	Assays	Au g/t	Comps	Au g/t	Blocks	Au g/t
Av 01	43	15.38	22	6.87	430	7.01	**SKLW 03**	61	3.14	34	2.54	141	2.22
GRF 01	124	4.98	88	3.48	3159	3.71	**SKLW 04**	12	0.86	31	2.96	34	0.27
GRF 02	55	7.62	43	2.17	1266	1.18	**SKLW 05**	91	6.17	59	3.36	343	1.11
H 01	229	1.96	181	2.14	3816	2	**SKLW 06**	44	1.27	33	0.73	382	0.76
H 02	212	2.57	139	1.9	3838	1.95	**SKLW 07**	58	2.03	38	1.45	1,255	1.28
MUR 01	1,023	5.91	638	4.43	3628	4.56	**SKLW 08**	47	2.49	32	7.69	407	7.47
MUR 02	242	9.32	146	5.88	2047	4.66	**SKLW 10**	46	3.08	32	1.99	184	1.85
MUR E01	279	1.82	158	1.76	2321	1.32	**SKLW 11**	24	0.27	19	0.06	223	0.09
MUR X	333	7.56	185	5.44	354	5.88	**SOC HW1**	319	7.35	231	6.32	2,881	7.28
NOC D01	1,481	7.32	745	5.3	19542	3.35	**SOC HW2**	74	4.18	49	3.32	5,471	2.05
NOC DF	79	13.98	43	12.39	1213	12.87	**SOC UR2**	587	13.79	315	10.5	12,356	9.77
NOC DHW1	802	5.47	460	3.56	30601	1.14	**SOC X**	382	5.08	252	3.93	8,194	3.97
NOC DHW2	115	3.97	57	2.74	2707	5.45	**T 01**	228	5.14	183	3.77	3,113	3.36
NOC DL	148	13.37	71	8.86	1713	2.58	**T 02**	244	3.14	215	2.89	6,513	2.22
NOC F01	51	4.5	35	3.15	900	1.85	**T 03**	32	1.25	23	0.86	180	0.85
NOC S01	17	116.24	8	135.51	276	6.82	**T 04**	23	1.1	20	1.06	689	1.31
NOC UR2	1,200	5.27	625	3.39	12752	4.65	**UG DEV**	1,218	4.67	950	2.74	7,759	2.67
OUTSIDE DOMAINS	3,223	3.99	2403	2.9	19076	1.27	**UR 3S**	158	8.33	87	5.04	2,264	4.74
SKL 01	54	4.65	33	3.17	836	2.85	**URA 01**	154	7.48	96	5.5	1,838	4.82
SKL 01A	16	11.83	16	13.15	586	7.85	**URW 01 1**	891	9.72	498	6.82	1,289	7.33
SKL 01B	21	2.51	11	1.04	411	0.75	**URW 01 2**	269	9.72	171	6.46	457	6.53
SKL 02	93	7.25	66	4.71	1003	4.15	**URW 03**	50	4.83	19	4.24	379	4.5
SKL 02A	20	5.25	14	4.68	293	4.45	**W 01**	54	2.99	41	2.81	3,174	2.74
SKL 03	72	3.61	45	3.37	1152	4.73	**W 01FW**	45	2.58	33	2.05	5,505	2.17
SKL 04	54	5.03	31	2.96	890	2.45	**W 01HW**	55	2.4	40	1.73	5,839	1.11
SKL 05	69	6.82	59	3.36	897	2.98	**W 02**	91	8.23	112	9.08	5,618	6.82
SKL 06	38	9.45	25	6.55	739	2.35	**W 02FW**	21	14.53	15	9.6	2,040	9.69
SKL 06A	22	12.19	15	10.36	443	7.04	**W 03**	131	5.37	117	6.29	11,676	3.5
SKL 07	32	15.73	15	1.31	832	1.02	**W 04**	101	8.37	63	7.15	6,416	3.77
SKL 07A	37	1.37	27	1.33	953	1.07	**XX 01**	28	9.36	10	6.55	346	3.74
SKL 07B	29	6.22	22	4.2	1096	3.45	**XX 02**	44	18.26	19	12.2	641	10.54
SKL 08	19	9.92	13	4.96	1098	3.48	**YY 01**	244	5.83	89	3.54	4,877	3.74
SKL 09	18	0.41	6	1.97	442	1.68	**YY 02**	144	4.17	147	4.21	2,803	3.78
SKL 10	9	2.34	4	0.35	423	0.27	**YY 03**	58	2.39	33	2.84	1,286	3.43
SKLW 01	30	3.41	26	1.48	203	0.88	**YY 04**	39	10.68	19	6.72	517	6.82
SKLW 02	50	1.78	32	1.52	89	0.86							

14.6 Grade Capping

Cumulative frequency plots of composite gold values were generated for each modelled domain to determine whether capping of gold grades was appropriate for that domain. Capping was not applied to most domains as there is no discernible break in the cumulative frequency trend line. Table 14.2 summarized the capping levels that were applied. In several domains capping levels were modified following the initial resource estimation because the block model average gold values were either obviously higher or lower than the corresponding declustered composite grades.

Table 14.2 Tuvatu Composite Gold Grades by Domain

Domain	Cap Au ppm	Domain	Cap Au ppm	Domain	Cap Au ppm	Domain	Cap Au ppm
Av 01	No Cap	OUTSIDE DOMAINS	100	SKLW 02	No Cap	UR 3S	150
GRF 01	No Cap	SKL 01	No Cap	SKLW 03	No Cap	URA 01	No Cap
GRF 02	No Cap	SKL 01A	No Cap	SKLW 04	No Cap	URW 01 1	100
H 01	No Cap	SKL 01B	No Cap	SKLW 05	10	URW 01 2	150
H 02	15	SKL 02	No Cap	SKLW 06	No Cap	URW 03	No Cap
LGS	50	SKL 02A	No Cap	SKLW 07	No Cap	W 01	No Cap
MUR 01	No Cap	SKL 03	No Cap	SKLW 08	No Cap	W 01FW	10
MUR 02	No Cap	SKL 04	No Cap	SKLW 10	No Cap	W 01HW	10
MUR E01	10	SKL 05	150	SKLW 11	No Cap	W 02	No Cap
MUR X	No Cap	SKL 06	10	SOC HW1	No Cap	W 02FW	No Cap
NOC D01	No Cap	SKL 06A	No Cap	SOC HW2	10	W 03	No Cap
NOC DF	No Cap	SKL 07	No Cap	SOC UR2	150	W 04	No Cap
NOC DHW1	10	SKL 07A	10	SOC X	No Cap	XX 01	10
NOC DHW2	No Cap	SKL 07B	No Cap	T 01	No Cap	XX 02	No Cap
NOC DL	10	SKL 08	10	T 02	No Cap	YY 01	No Cap
NOC F01	10	SKL 09	5	T 03	10	YY 02	No Cap
NOC S01	10	SKL 10	No Cap	T 04	10	YY 03	No Cap
NOC UR2	100	SKLW 01	No Cap	UNDERGROUND DEVELOPMENT	8	YY 04	No Cap

14.7 Bulk Density

The dataset included 4,801 bulk density measurements in units of grams / centimeter^3. These values were imported into Genesis and partitioned by domain. The spatial distribution of the bulk density measurements was not sufficient to support the interpolation of density measurements into the block model so average values were calculated for each domain. For those domains for which no values were available, the global average bulk density (2.61 g/cm^3) was used. Table 14.3 summarizes the average bulk density values for each domain.

Table 14.3 Tuvatu Bulk Density Average Values by Domain

Domain	g/cm3	Number	Domain	g/cm3	Number	Domain	g/cm3	Number	Domain	g/cm3	Number
Av 01	2.89	1	SKL 01	2.81	3	SKLW 03	2.46	8	URA 01	2.64	13
GRF 01	2.63	15	SKL 01A	2.15	1	SKLW 04	2.61	0	URW 01 1	2.64	13
GRF 02	2.48	4	SKL 01B	2.8	1	SKLW 05	2.44	10	URW 01 2	2.53	18
H 01	2.46	15	SKL 02	2.63	7	SKLW 06	2.46	5	URW 03	2.61	0
H 02	2.45	19	SKL 02A	2.63	1	SKLW 07	2.48	8	W 01	2.42	4
MUR 01	2.6	89	SKL 03	2.79	5	SKLW 08	2.35	1	W 01FW	2.58	4
MUR 02	2.69	6	SKL 04	2.35	3	SKLW 10	2.43	2	W 01HW	2.61	0
MUR E01	2.69	15	SKL 05	2.61	7	SKLW 11	2.61	0	W 02	2.62	1
MUR X	2.45	7	SKL 06	2.6	4	SOC HW1	2.61	0	W 02FW	2.61	0
NOC D01	2.65	66	SKL 06A	2.56	1	SOC HW2	2.77	3	W 03	2.65	15
NOC DF	2.6	2	SKL 07	2.67	1	SOC UR2	2.65	26	W 04	2.6	1
NOC DHW1	2.55	36	SKL 07A	2.53	6	SOC X	2.55	26	XX 01	2.61	0
NOC DHW2	2.61	0	SKL 07B	2.77	3	T 01	2.48	20	XX 02	2.61	0
NOC DL	2.52	11	SKL 08	2.61	3	T 02	2.43	20	YY 01	2.61	11
NOC F01	2.71	4	SKL 09	2.42	2	T 03	2.14	1	YY 02	2.49	19
NOC S01	2.61	0	SKL 10	2.61	0	T 04	2.43	2	YY 03	2.53	5
NOC UR2	2.6	55	SKLW 01	2.44	1	UG Dev	2.63	29	YY 04	2.53	8
OUTSIDE DOM	2.61	168	SKLW 02	2.58	2	UR 3S	2.63	14			

14.8 Analysis of Spatial Continuity

Variographic analysis of non-zero composite data was carried out using Sage 2001, a program that generates 36 directional variograms (12 in the XY plane and three in the YZ plane) and then fits a least-squares three-dimensional variogram to the resultant data. Table 14.4 lists the number of composites within each domain. Most domains contain too few composites to support the development of meaningful variograms. A minimum population of 98 composites was chosen as the threshold for variography. Twenty-five domains meet this criterion. For the remaining 46 domains, variogram parameters of proximal and similarly oriented domains were applied where possible, otherwise interpolation was carried out using inverse distance squared (ID2) that relies only on a search ellipse and strictly linear weighting of composites. Table 14.5 lists the parameters of the variograms for the 25 domains that were modelled. All variograms used two structures and both first and second structures are spherical.

Table 14.4 Tuvatu Estimation Methodology by Domain

Domain	Comps > 0	Variogram	Domain	Comps > 0	Variogram
UNDERGROUND DEVELOPMENT	2,108	ID2	**NOC F01**	38	ID2
SATELLITE DOMAINS	1,946	ID2	**W 01**	38	W03
URW 01 1	1,192	URW 01 1	**NOC DF**	34	ID2
NOC UR2	780	NOC UR2	**YY 03**	33	ID2
MUR 01	718	MUR 01	**SKL 01**	31	ID2
NOC D01	654	NOC D01	**SKLW 07**	31	ID2
SOC UR2	500	SOC UR2	**W 01HW**	30	W03
NOC DHW1	414	NOC DHW1	**T 03**	29	ID2
SKL 05	396	SKL 05	**GRF 02**	27	ID2
URW 01 2	311	URW 01 2	**URW 03**	27	ID2
SOC X	280	SOC X	**XX 02**	27	ID2
T 02	248	T 02	**SKLW 03**	25	ID2
GRF 01	233	GRF 01	**SKLW 06**	24	ID2
T 01	229	T 01	**W 01FW**	24	W03
H 01	181	H 01	**T 04**	23	ID2
SOC HW1	179	SOC HW1	**SKL 06**	22	ID2
UR 3S	154	UR 3S	**SKL 07A**	22	ID2
H 02	153	H 02	**SKLW 02**	21	ID2
MUR X	153	MUR X	**SKLW 10**	19	ID2
MUR 02	139	MUR 02	**YY 04**	19	ID2
MUR E01	136	MUR E01	**SKL 07B**	18	ID2
YY 02	123	YY 02	**XX 01**	17	ID2
URA 01	102	URA 01	**SKLW 01**	16	ID2
W 03	102	W 03	**SKL 02A**	14	ID2
W 02	98	W 03	**SKL 07**	13	ID2
YY 01	89	YY 01	**SKL 06A**	12	ID2
SKL 04	84	ID2	**W 02FW**	12	ID2
SOC HW2	73	ID2	**SKL 01A**	10	ID2
SKL 02	57	ID2	**SKL 08**	10	ID2
AV 01	56	ID2	**SKL 01B**	9	ID2
NOC DL	56	ID2	**NOC S01**	8	ID2
NOC DHW2	54	ID2	**SKL 09**	6	ID2
SKLW 08	53	ID2	**SKLW 04**	5	ID2
W 04	51	ID2	**SKLW 11**	5	ID2
SKLW 05	47	ID2	**SKL 10**	3	ID2
SKL 03	42	ID2			

Table 14.5 Tuvatu Variography Parameters

Domain	C0	C1	C2	Strike Y (°)	Plunge Y (°)	Dip X (°)	Dip Azimuth (°)	Major Y (m)	Median X (m)	Minor Z (m)	Lag (m)
GRF 01	0.404	0.582		285	20	10	15	5	10	5	10
GRF 01			0.014	80	30	65	265	145	30	460	10
H 01	0.352	0.61		20	10	20	110				10
H 01			0.038	40	5	70	115	65	20	140	10
H 02	0.66	0.321		340	40	10	75	115	5	10	10
H 02			0.019	80	20	-10	165	120	115	15	10
MUR 01	0.599	0.39		200	50	10	305	10	10	5	10
MUR 01			0.012	265	-25	-30	10	360	195	720	10
MUR 02	0.008	0.847		20	65	-20	355	10	5	5	10
MUR 02			0.145	30	60	-30	5	5	180	610	10
MUR E01	0.427	0.471		360	60	-15	295	30	5	5	10
MUR E01			0.102	10	30	60	165	150	15	105	10
MUR X	0.147	0.824		10	-45	-45	190	5	5	5	10
MUR X			0.029	30	0	-5	120	80	5	25	10
NOC D01	0.247	0.415		25	-30	-15	120	20	10	5	10
NOC D01			0.338	75	10	-25	160	25	55	105	10
NOC DHW1	0.1	0.877		330	70	10	95	5	5	5	10
NOC DHW1			0.023	5	55	25	135	1060	55	745	10
NOC UR2	0.585	0.332		5	-20	5	95	15	20	150	10
NOC UR2			0.083	345	10	5	75	70	160	810	10
SKL 05	0.05	0.792		10	25	60	140	5	5	5	10
SKL 05			0.158	75	0	0	165	45	20	5	10
SOC HW1	0.001	0.869		110	0	-85	205	15	5	5	10
SOC HW1			0.129	315	65	-20	5	575	25	275	10
SOC UR2	0.704	0.295		285	-20	-70	85	5	50	15	10
SOC UR2			0.002	25	70	15	170	30	40	140	10
SOC X	0.529	0.405		300	30	-20	15	85	10	5	10
SOC X			0.066	30	45	-40	95	50	35	335	10
T 01	0.613	0.373		330	-65	-20	100	35	5	10	10
T 01			0.014	350	75	-10	50	480	315	760	10
T 02	0.396	0.344		360	30	-5	85	25	20	5	10
T 02			0.26	30	40	15	130	240	10	70	10
UR 3S	0.719	0.27		355	-10	-25	90	10	5	190	10
UR 3S			0.011	350	35	15	90	195	60	230	10
URA 01	0.485	0.504		260	0	-60	355	5	15	5	10
URA 01			0.011	265	80	0	355	55	5	220	10
URW 01 1	0.603	0.364		30	-25	0	120	5	5	5	10
URW 01 1			0.033	10	25	40	75	25	10	100	10
URW 01 2	0.258	0.605		5	50	-30	135	5	5	5	10
URW 01 2			0.137	35	20	5	125	10	5	40	10
W 02	0.549	0.408		330	-35	-30	215	30	10	5	10
W 02			0.043	340	-40	-40	30	120	10	210	10
W 03	0.174	0.729		80	25	-65	50	15	5	5	10
W 03			0.098	320	-5	-30	55	110	15	445	10
YY 01	0.168	0.813		285	-55	15	360	10	5	5	10
YY 01			0.02	30	80	-5	105	85	120	300	10
YY 02	0.687	0.306		0	5	20	95	170	10	15	10
YY 02			0.007	345	-10	35	65	85	30	25	10

14.9 Block Model

Block model parameters are given in Table 14.6.

Table 14.6 Tuvatu Block Model Parameters

Origin (WGS 84)		Block Size (m)	Discretization	Model Size (#)		Ending (WGS 84)
X	1875716	2	1	Columns	568	1876850
Y	3920170	4	2	Rows	247	3921154
Z	400	4	2	Levels	276	1500
Rotation (°)	0	Origin = block centroid				

14.10 Interpolation Plan

Table 14.7 shows the search ellipses used to interpolate grades into the model. This table contains parameters for the modelled 69 Domains as well as the Outside Domain mineralization and the Underground Development. The 69 Domains and the Underground Development were estimated separately. The tonnes and ounces of gold represented by the Underground Development were then subtracted from the estimate for the 69 Domains and the net (depleted) resource within the 69 Domains is reported as the current MRE. The resource within the Outside Domain is reported separately.

Table 14.7 Tuvatu Search Ellipse Parameters

Pass	Az	Plunge	Dip	Major	Median	Minor	Pass	Az	Plunge	Dip	Major	Median	Minor
AV_01 1	100	90	0	30	30	10	SKL_W02 2	0	0	-20	100	100	5
AV_01 2	100	90	0	100	100	10	SKL_W03 1	0	0	-20	10	10	5
GRF_01 1	80	10	65	10	30	30	SKL_W03 2	0	0	-20	100	100	5
GRF_01 2	80	10	65	10	150	150	SKL_W04 1	0	-30	-30	10	10	5
GRF_02 1	90	90	0	30	30	10	SKL_W04 2	0	-30	-30	100	100	5
GRF_02 2	90	90	0	150	150	10	SKL_W05 1	0	-5	-10	10	10	5
H_01 1	45	5	70	10	30	30	SKL_W05 2	0	-5	-10	100	100	5
H_01 2	45	5	70	10	150	150	SKL_W06 1	0	0	10	10	10	5
H_02 1	325	40	10	30	10	30	SKL_W06 2	0	0	10	100	100	5
H_02 2	325	40	10	150	10	150	SKL_W07 1	0	5	0	20	20	10
MUR_01 1	265	-25	-30	30	30	10	SKL_W07 2	0	5	0	100	100	10
MUR_01 2	265	-25	-30	100	100	10	SKL_W08 1	0	10	0	20	20	10
MUR_02 1	90	50	0	30	20	10	SKL_W08 2	0	10	0	100	100	10
MUR_02 2	90	50	0	100	100	10	SKL_W10 1	0	-10	0	10	10	5
MUR_X 1	30	0	-15	20	20	10	SKL_W10 2	0	-10	0	100	100	5
MUR_X 2	30	0	-15	100	100	10	SKL_W11 1	0	10	0	20	20	10
MURE_01 1	350	55	-5	30	30	10	SKL_W11 2	0	10	0	100	100	10
MURE_01 2	350	55	-5	150	150	10	SOC_HW1 1	110	0	-85	10	30	30
ND_HW1 1	320	75	10	30	30	10	SOC_HW1 2	110	0	-85	100	100	30
ND_HW1 2	320	75	10	500	500	10	SOC_HW2 1	130	0	-85	10	25	25
ND_HW2 1	310	75	-70	30	10	30	SOC_HW2 2	130	0	-85	150	150	25
ND_HW2 2	310	75	-70	150	10	150	SOC_UR2 1	285	-15	-85	10	30	30
NOC_D01 1	0	-40	0	30	10	30	SOC_UR2 2	285	-15	-85	150	150	150
NOC_D01 2	0	-40	0	250	10	250	SOC_X 1	130	-75	0	30	30	10
NOC_DF 1	0	10	10	30	30	10	SOC_X 2	130	-75	0	150	150	20
NOC_DF 2	0	10	10	100	100	10	T01 1	290	90	-20	30	10	30
NOC_DL 1	350	30	-60	30	30	10	T01 2	290	90	-20	100	100	30
NOC_DL 2	350	30	-60	150	150	20	T02 1	60	85	15	30	30	10
NOC_FL01 1	0	30	10	30	30	10	T02 2	60	85	15	100	150	20
NOC_FL01 2	0	30	10	100	100	10	T03 1	120	0	0	20	10	20
NOC_SC01 1	90	-80	0	30	20	10	T03 2	120	0	0	100	10	100
NOC_SC01 2	90	-80	0	100	100	10	T04 1	120	0	-5	30	10	30
NOCUR2 1	350	-20	5	30	10	30	T04 3	120	0	-5	100	10	100
NOCUR2 2	350	-20	5	150	150	150	UG DEV	0	0	0	30	30	30
OUTSIDE	0	0	0	30	30	30	UR3S 1	355	-10	-10	30	10	30
SKL_01 1	0	0	0	30	30	10	UR3S 2	355	-10	-10	100	10	100
SKL_01 2	0	0	0	100	100	10	URA_01 1	290	0	-60	10	30	30
SKL_01A 1	0	-10	0	30	30	10	URA_01 2	290	0	-60	10	100	100
SKL_01A 2	0	-10	0	100	100	20	URW011 1	30	-25	0	25	10	35
SKL_01B 1	0	0	0	30	30	10	URW011 2	30	-25	0	100	10	100
SKL_01B 2	0	0	0	100	100	10	URW012 1	50	-25	-30	10	20	20
SKL_02 1	0	0	0	30	30	10	URW012 2	50	-25	-30	10	100	100
SKL_02 2	0	0	0	100	100	10	URW3 1	195	5	20	30	10	30
SKL_02A 1	0	0	0	20	20	10	URW3 2	195	5	20	100	10	100
SKL_02A 2	0	0	0	150	150	20	W_01 1	80	25	65	30	30	10
SKL_03 1	0	5	5	20	20	10	W_01 2	80	25	65	250	250	20
SKL_03 2	0	5	5	100	100	10	W_01FW 1	50	60	65	30	30	10
SKL_04 1	0	10	5	20	20	10	W_01FW 2	50	60	65	150	150	20
SKL_04 2	0	10	5	100	100	10	W_01HW 1	80	25	65	30	30	10
SKL_05 1	75	5	5	30	30	10	W_01HW 2	80	25	65	150	150	20
SKL_05 2	75	5	5	100	100	10	W_02 1	80	25	65	30	30	10
SKL_06 1	0	10	0	30	30	10	W_02 2	80	25	65	150	150	20
SKL_06 2	0	10	0	100	100	10	W_02FW 1	70	35	75	30	30	10
SKL_06A 1	0	10	0	30	30	10	W_02FW 2	70	35	75	100	100	10
SKL_06A 2	0	10	0	100	100	10	W_03 1	80	25	55	30	30	10
SKL_07 1	0	5	0	30	30	10	W_03 2	80	25	55	150	300	20
SKL_07 2	0	5	0	125	125	20	W_04 1	80	25	65	30	30	10
SKL_07A 1	0	5	0	20	20	5	W_04 2	80	25	65	250	250	40
SKL_07A 2	0	5	0	100	100	10	XX_01 1	120	90	0	20	20	10
SKL_07B 1	0	5	0	20	20	10	XX_01 2	120	90	0	100	100	10
SKL_07B 2	0	5	0	100	100	10	XX_02 1	110	-70	0	30	30	10
SKL_08 1	0	0	0	20	20	10	XX_02 2	110	-70	0	100	100	10
SKL_08 2	0	0	0	100	100	10	YY_01 1	300	70	15	30	30	10
SKL_09 1	15	10	0	30	30	10	YY_01 2	300	70	15	100	100	10
SKL_09 2	15	10	0	100	100	10	YY_02 1	295	70	15	30	30	10
SKL_10 1	45	15	0	20	20	10	YY_02 2	295	70	15	150	150	20
SKL_10 2	45	15	0	100	100	10	YY_03 1	290	65	15	30	30	10
SKL_W01 1	0	0	-20	10	10	5	YY_03 2	290	65	15	150	150	20
SKL_W01 2	0	0	-20	100	100	10	YY_04 1	345	-10	-5	30	10	30
SKL_W02 1	0	0	-20	10	10	5	YY_04 2	345	-10	-5	100	10	100

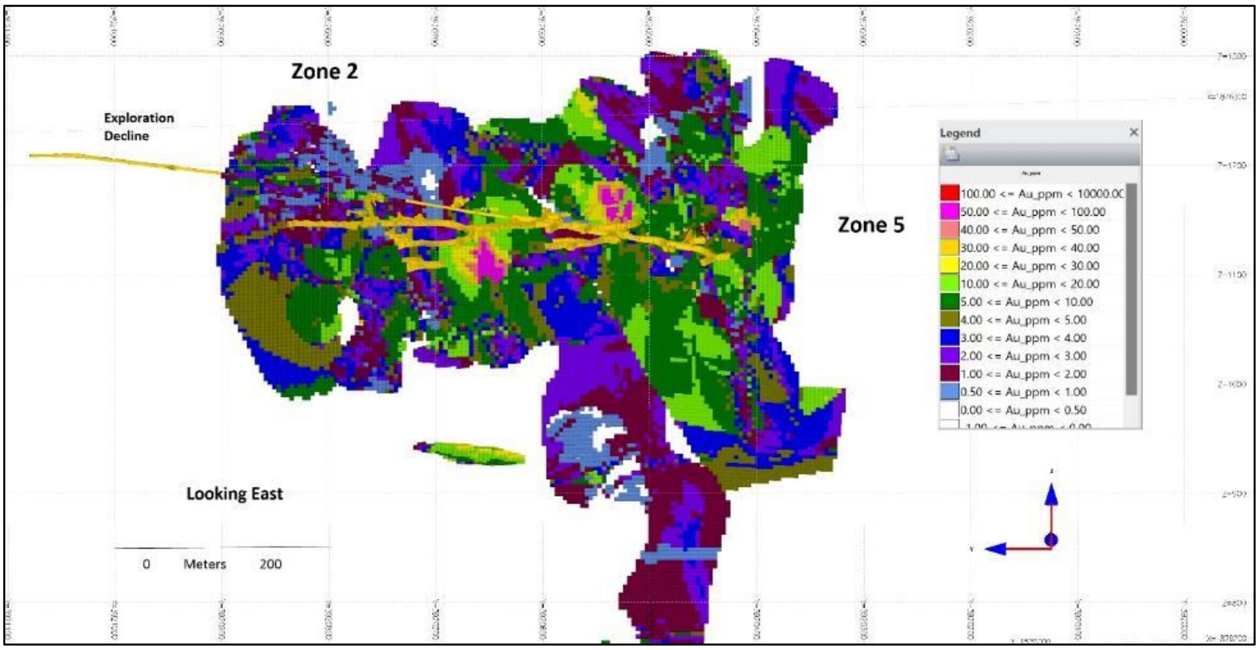
For the 69 Domains, gold grades were interpolated into the block model in two passes using both ordinary kriging (OK) and inverse distance squared (ID^2) weighting. The Underground Development and Outside Domains were interpolated in a single pass. In all cases, a minimum of two holes was required to interpolate a grade into a block to ensure that continuity of mineralization was demonstrated.

Table 14.8: Tuvatu Interpolation Parameters

Domain	Pass	Number of Composites		
		Minimum	Maximum	Max / Hole
69	1	4	16	2
69	2	2	16	1
Underground Development	1	4	16	2
Outside	1	2	16	1

Figure 14.3 shows the grade distribution of blocks in the 69 Domains. Figure 14.4 shows the classification of the 69 Domains.

Figure 14.3. Tuvatu Block Model Domains, Zones 2 and 5 Perspective View



Source: GMRS 2024

14.11 Mineral Resource Classification

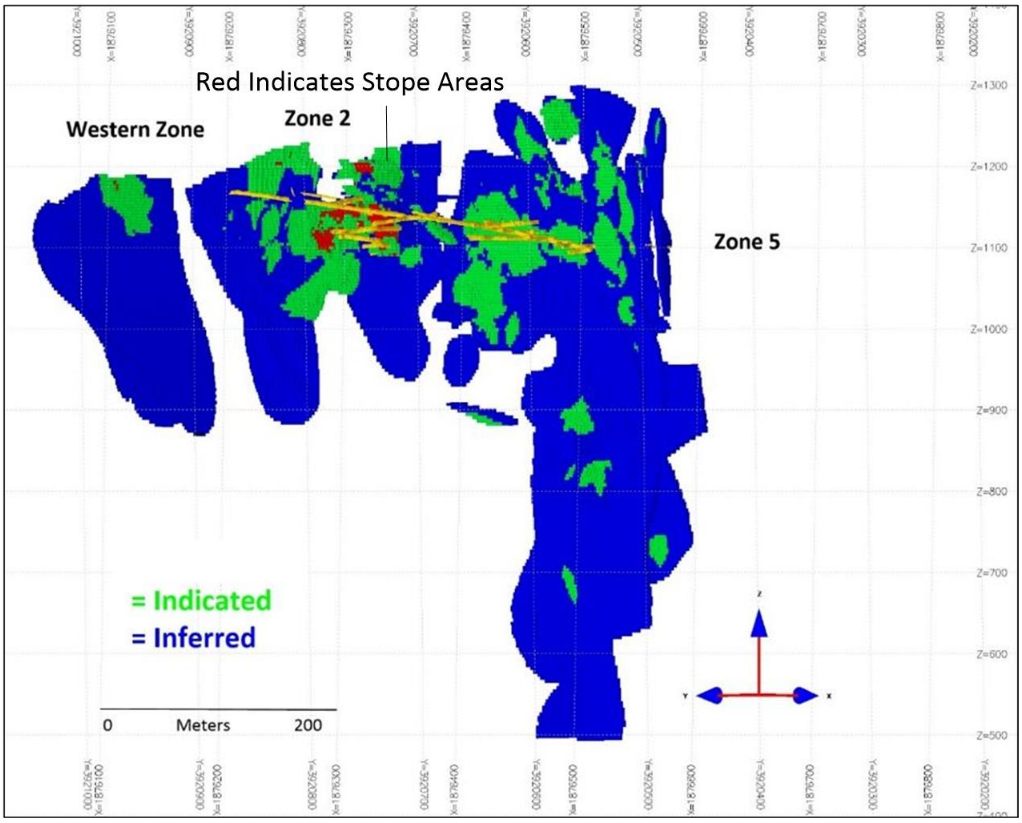
Table 14.8 lists the number of composites required, and size of the search ellipses used, to classify the blocks as Indicated, or Inferred. For the 69 Domains, classification was carried out using all composites for all 69 domains. Classification of the Underground Development was carried out using composites for only that domain. In both cases, interpolation was by ID^2. The Outside Domains were classified as Inferred.

The search ellipse for the Indicated class is of the same dimensions as that used for the first interpolation pass for most domains. The Inferred classification was designed to capture all blocks in each domain that fall outside the Indicated category.

Table 14.9 Tuvatu Resource Classification Parameters

Class	Composites			Orientation			Size (m)		
	Minimum	Maximum	Min / Hole	Azimuth	Plunge	Dip	Major (m)	Median (m)	Minor (m)
Indicated	8	16	2	0	0	0	30	30	30
Inferred	2	16	1	0	0	0	250	250	250

Figure 14.4. Tuvatu Block Model Classification Long Section View Looking Northeast



Source: GMRS 2024

14.12 Reasonable Prospects of Eventual Economic Extraction

The resource is stated at a cutoff grade of 3 g/t based on the following costs, selling prices and mining and processing factors:

Table 14.10 Reasonable Prospects Costs and Prices

Reasonable Prospects Parameters		
Activity/Item	Unit	Cost / Price US$
Mining	Tonne Mined	56
Processing	Tonne Processed	56
G&A	Tonne Mined	25
Gold	Ounce	1,973
Gold	Gram	63
Recovery	%	80
Mining Dilution	%	0

The mining and processing costs are based on the 2022 Tetra Tech PEA. The gold price is the three-year (2022, 2023, 2024) trailing average obtained from the website https://www.macrotrends.net/1333/historical-gold-prices-100-year-chart.

Gold recovery is based on recoveries realized as of the effective date of the report. Mining, processing and G&A costs divided by the realized (post-recovery) price of gold per gram equals 2.74 grams / tonne. This has been rounded to 3 g/t and used as the basecase cutoff grade.

14.13 Mineral Resource Tabulation

Table 14.11 summarizes the Tuvatu MRE for the 69 Domains by Class. The left-hand columns of the table show the gross tonnes and ounces within the 69 Domains, the central columns show the tonnes and ounces in the Underground Development, and the right-hand columns show the resources in the 69 Domains net of the tonnes and ounces in the Underground Development. The basecase is taken as 3 g/t and is highlighted. Table 14.12 shows the resource in the Outside Domains. The 3 g/t basecase is highlighted.

Table 14.11 Tuvatu 69 Domains Mineral Resource Estimate Summary Net of Underground Development

CutOff Au g/t	Classification	69 Domains Gross			Underground Development			69 Domains Net		
		Au g/t	Tonnes	Ounces	Au g/t	Tonnes	Ounces	Au g/t	Net Tonnes	Net Ounces
4	Indicated	9.95	500,000	160,000	5.00	8,000	1,300	10.05	492,000	159,000
4	Inferred	9.47	958,000	292,000	5.22	2,000	300	9.50	956,000	292,000
3	Indicated	8.41	655,000	177,000	4.44	14,000	2,000	8.48	642,000	175,000
3	Inferred	7.61	1,388,000	340,000	4.43	3,000	500	7.62	1,384,000	339,000
2	Indicated	6.89	880,000	195,000	3.84	19,000	2,300	6.97	861,000	193,000
2	Inferred	5.99	2,023,000	389,000	4.23	4,000	500	5.99	2,019,000	389,000

Table 14.12 Tuvatu Mineral Resource Summary for Outside Domains

CutOff Au g/t	Classification	Aug/t	Tonnes	Ounces Au
4	Inferred	11.72	8,000	3,000
3	Inferred	9.32	11,000	3,000
2	Inferred	7.47	15,000	4,000

a) Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.
b) There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves.
c) Mineral Resource tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers may not add due to rounding.
d) The base case is based on a cutoff of 3 g/t Au and cost estimates for mining of US$56/tonne, processing of US$56/tonne and G&A of US$25/tonne; gold recovery of 80%; and a three-year trailing gold price of US$1,973/ounce.
e) Mineral Resource tonnage and grades are reported as undiluted.
f) The effective date of the mineral resource estimate is March 25, 2024

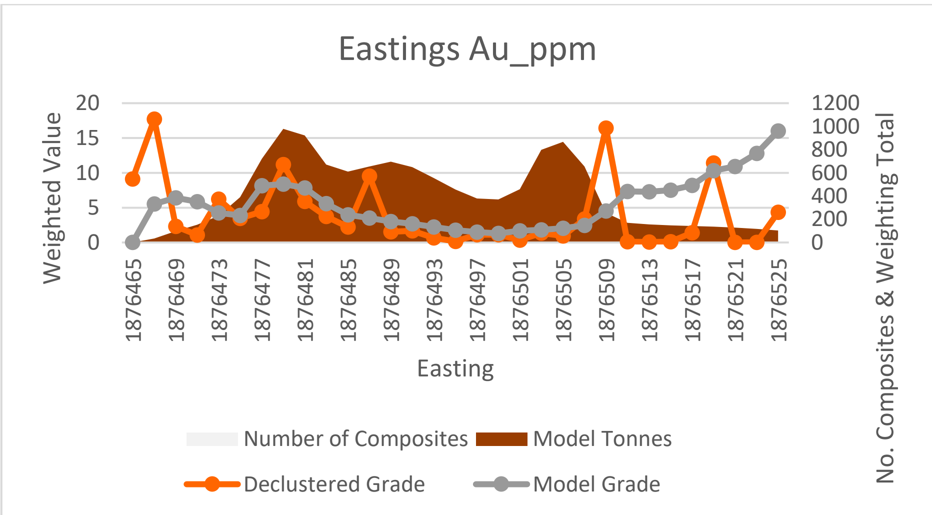
14.14 Block Model Validation

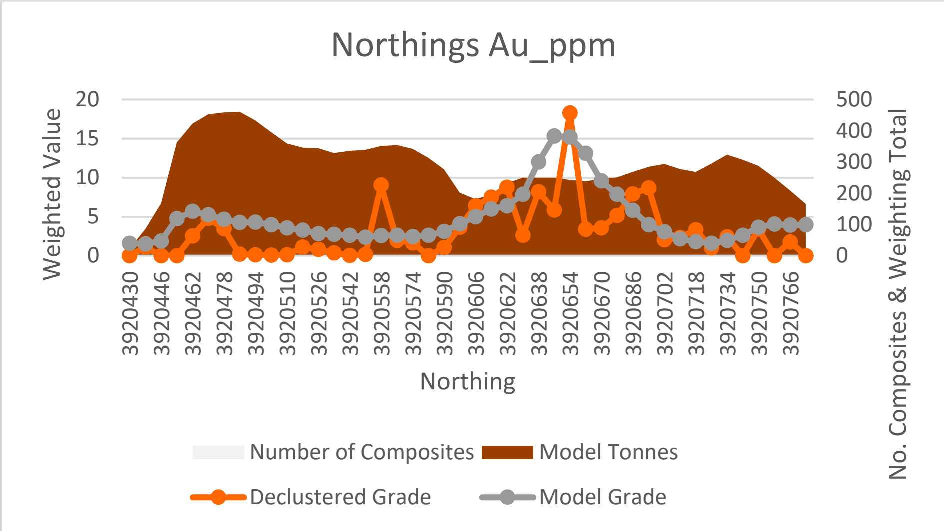
The three block models were validated by 1) visual inspection, 2) comparison of mean values for composites and corresponding block models, and 3) by swath plots. Table 14.12 shows the comparison of assay, composite, and block average gold grades. Most composite grades are lower than the corresponding assay grades but in agreement with block grades. Many of the smaller domains do not contain a sufficient number of composites to support meaningful swath plots. Figures 14.5 and 14.6 show swath plots for two of the domains, NOC UR2 and URW 01-1, that have relatively large numbers of composites.

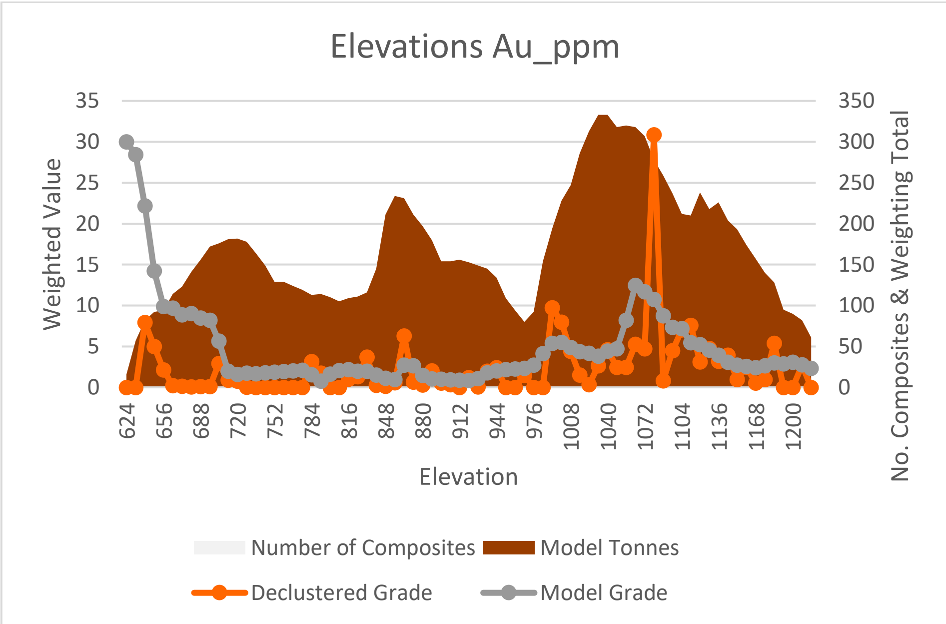
Table 14.13 Comparison of Assay, Composite and Block Model Average Gold Grades by Domain

Domain	Assays	Au g/t	Comps	Au g/t	Blocks	Au g/t	Domain	Assays	Au g/t	Comps	Au g/t	Blocks	Au g/t
Av 01	43	15.38	22	6.87	430	7.01	SKLW 03	61	3.14	34	2.54	141	2.22
GRF 01	124	4.98	88	3.48	3159	3.71	SKLW 04	12	0.86	31	2.96	34	0.27
GRF 02	55	7.62	43	2.17	1266	1.18	SKLW 05	91	6.17	59	3.36	343	1.11
H 01	229	1.96	181	2.14	3816	2.00	SKLW 06	44	1.27	33	0.73	382	0.76
H 02	212	2.57	139	1.90	3838	1.95	SKLW 07	58	2.03	38	1.45	1,255	1.28
MUR 01	1,023	5.91	638	4.43	3628	4.56	SKLW 08	47	2.49	32	7.69	407	7.47
MUR 02	242	9.32	146	5.88	2047	4.66	SKLW 10	46	3.08	32	1.99	184	1.85
MUR E01	279	1.82	158	1.76	2321	1.32	SKLW 11	24	0.27	19	0.06	223	0.09
MUR X	333	7.56	185	5.44	354	5.88	SOC HW1	319	7.35	231	6.32	2,881	7.28
NOC D01	1,481	7.32	745	5.30	19542	3.35	SOC HW2	74	4.18	49	3.32	5,471	2.05
NOC DF	79	13.98	43	12.39	1213	12.87	SOC UR2	587	13.79	315	10.50	12,356	9.77
NOC DHW1	802	5.47	460	3.56	30601	1.14	SOC X	382	5.08	252	3.93	8,194	3.97
NOC DHW2	115	3.97	57	2.74	2707	5.45	T 01	228	5.14	183	3.77	3,113	3.36
NOC DL	148	13.37	71	8.86	1713	2.58	T 02	244	3.14	215	2.89	6,513	2.22
NOC F01	51	4.50	35	3.15	900	1.85	T 03	32	1.25	23	0.86	180	0.85
NOC S01	17	116.24	8	135.51	276	6.82	T 04	23	1.10	20	1.06	689	1.31
NOC UR2	1,200	5.27	625	3.39	12752	4.65	UG DEV	1,218	4.67	950	2.74	7,759	2.67
OUTSIDE DOMAINS	3,223	3.99	2403	2.90	19076	1.27	UR 3S	158	8.33	87	5.04	2,264	4.74
SKL 01	54	4.65	33	3.17	836	2.85	URA 01	154	7.48	96	5.50	1,838	4.82
SKL 01A	16	11.83	16	13.15	586	7.85	URW 01 1	891	9.72	498	6.82	1,289	7.33
SKL 01B	21	2.51	11	1.04	411	0.75	URW 01 2	269	9.72	171	6.46	457	6.53
SKL 02	93	7.25	66	4.71	1003	4.15	URW 03	50	4.83	19	4.24	379	4.50
SKL 02A	20	5.25	14	4.68	293	4.45	W 01	54	2.99	41	2.81	3,174	2.74
SKL 03	72	3.61	45	3.37	1152	4.73	W 01FW	45	2.58	33	2.05	5,505	2.17
SKL 04	54	5.03	31	2.96	890	2.45	W 01HW	55	2.40	40	1.73	5,839	1.11
SKL 05	69	6.82	59	3.36	897	2.98	W 02	91	8.23	112	9.08	5,618	6.82
SKL 06	38	9.45	25	6.55	739	2.35	W 02FW	21	14.53	15	9.60	2,040	9.69
SKL 06A	22	12.19	15	10.36	443	7.04	W 03	131	5.37	117	6.29	11,676	3.50
SKL 07	32	15.73	15	1.31	832	1.02	W 04	101	8.37	63	7.15	6,416	3.77
SKL 07A	37	1.37	27	1.33	953	1.07	XX 01	28	9.36	10	6.55	346	3.74
SKL 07B	29	6.22	22	4.20	1096	3.45	XX 02	44	18.26	19	12.20	641	10.54
SKL 08	19	9.92	13	4.96	1098	3.48	YY 01	244	5.83	89	3.54	4,877	3.74
SKL 09	18	0.41	6	1.97	442	1.68	YY 02	144	4.17	147	4.21	2,803	3.78
SKL 10	9	2.34	4	0.35	423	0.27	YY 03	58	2.39	33	2.84	1,286	3.43
SKLW 01	30	3.41	26	1.48	203	0.88	YY 04	39	10.68	19	6.72	517	6.82
SKLW 02	50	1.78	32	1.52	89	0.86							

Figure 14.5 Swathplot NOC UR2

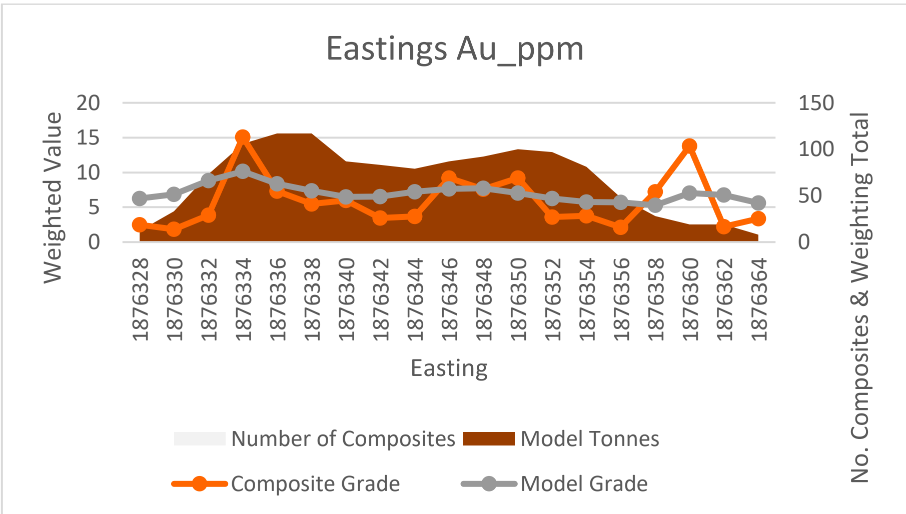


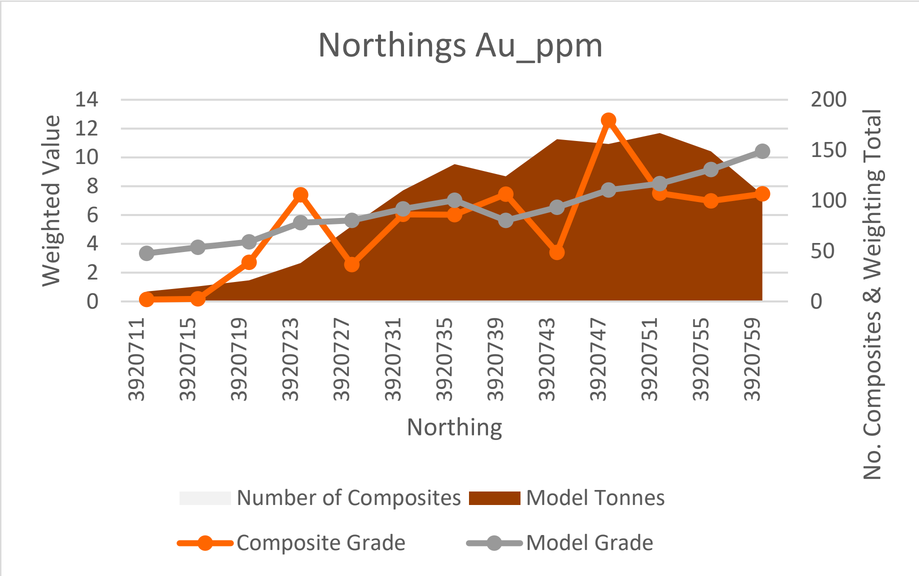


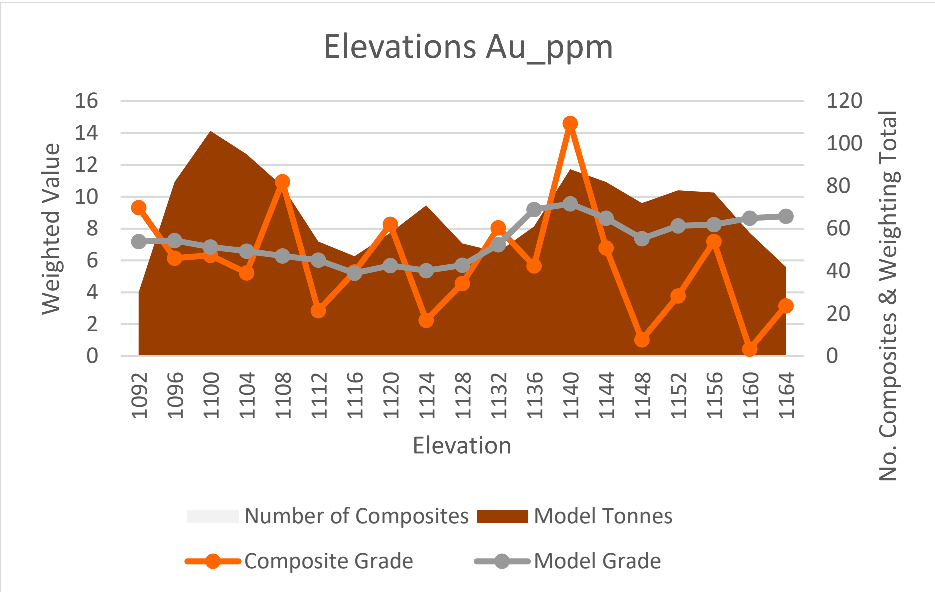


Source: GMRS 2024

Figure 14.6 Swathplot URW 01-1







Source: GMRS 2024

14.15 Comparison With Previous Estimates

The most recent previous MRE was completed by Ian Taylor in February 2023, at a cutoff of 3 g/t Au. Relative to that estimate, the current estimate contains approximately 126,000 fewer tonnes and 68,000 fewer ounces of gold. The difference is attributed to the fact that the 2023 estimate contained higher-grade face samples that were removed prior to the current estimate. As well, some depletion of the resource has occurred since February 2023 resulting in fewer tonnes and ounces of gold.

14.16 Risks

Other than the normal risks that are associated with all mineral exploration properties because of inherent uncertainties pertaining to continuity of mineralization, actual versus assumed grade variability, metal prices, and potential production costs, the author is not aware of any specific environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect this mineral resource estimate.

15.0 MINERAL RESERVE ESTIMATES

Not applicable. Note: Although Tuvatu is not an “advanced property”, and Items 15 through 22 are not required content, Lion One has included content in Sections 16 through 20 to describe the current status of the mine facilities.

16.0 MINING METHODS

Lion One commenced development of the Tuvatu underground in early 2022 with the main portal first blast commencing in June 2022. There has since been 859m of 4.5m wide x 4.8m high main decline development, 467m of horizontal ore drives being a combination of handheld and electric hydraulic jumbo works, and 235m of horizontal capital ventilation infrastructure drives. To date, 322m of handheld ladder raises have been driven for an overall development of 3,588m.

Production activities to date have been limited to handheld drilling methods and handheld stoping methods, accounting for 3,613t of mineralization produced.

The Tuvatu Project is an underground gold mine. As of June 2022, the underground is accessed through a 860-m decline. The previously developed 1997 adit is now an integral part of the fresh air (ventilation) system exhausting through the portal. To the end of April 2024, the mine has developed a total 3,588 m.

Carr Mining Services, an Australian Mine Services Contractor was brought on site to train a local work force and develop the underground in a safe and productive manner. Two challenges boldly faced the Service Contractor; the first, training of a national work force where an inexperienced national work force lacked underground miners familiar with modern mining methods and qualified journeymen is limited. Secondly, Fijian supply chain and industry are limited with respect to serving the mining industry.

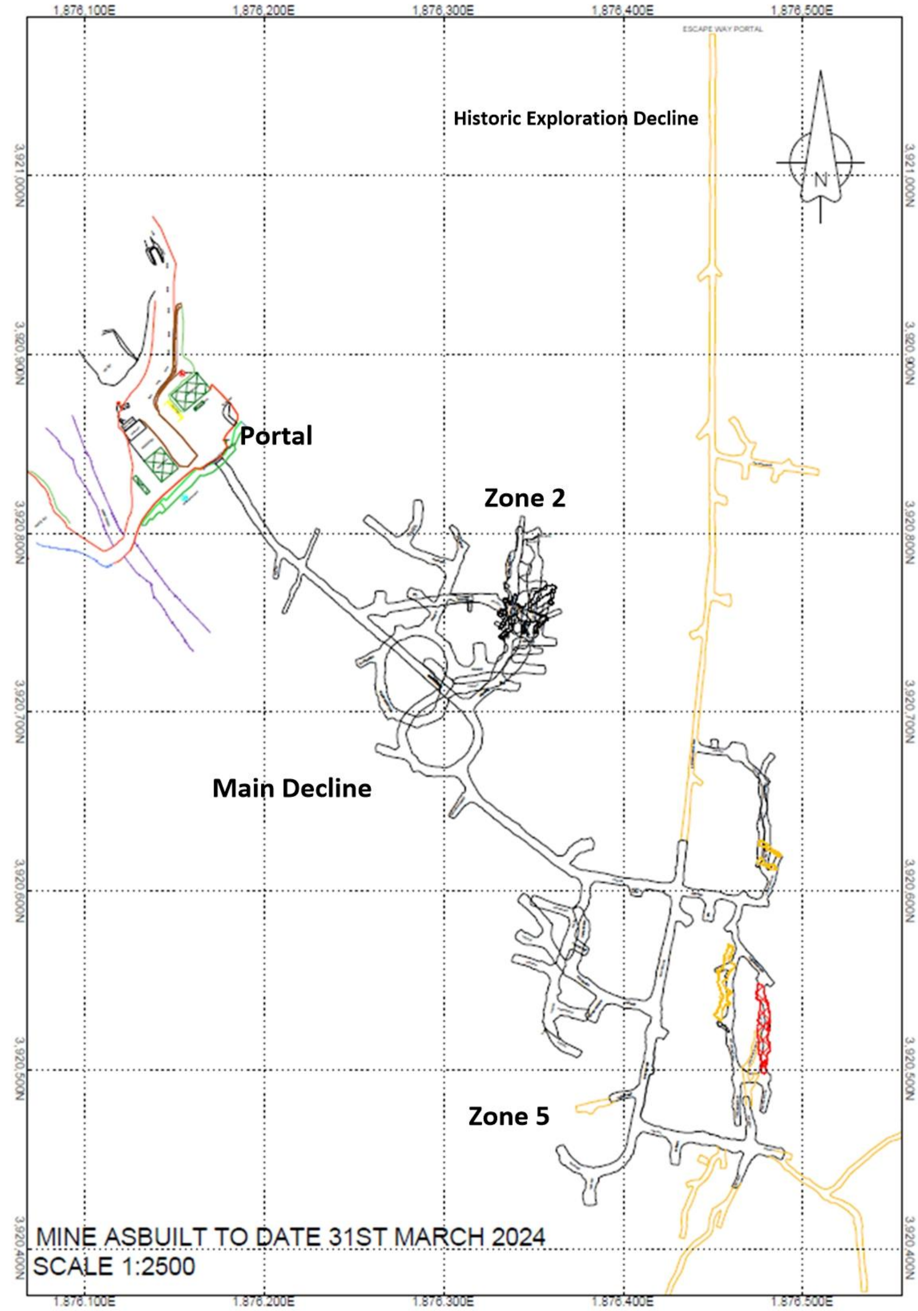
Lion One Metals Ltd. is continually building relationships with Australian, Canadian, and Chinese providers via sea freight. A very limited roster of Fijian service providers exists but not to the scale western miners require.

Currently, only development mining is taking place with ancillary equipment on pace with development. Underground diamond drill resource control drilling in concert with sludge ring drilling is active and in sequence with planned excavations for geological, structural and sampling purposes. Underground exploration drilling is also active.

Lion One has completed surface excavations and infrastructure to service men and equipment about the portal entrance.

Table 16.1 is a list of equipment employed in the Underground development. The equipment is all new to Lion One Metals Ltd. national work force. Tables 16.2 and 16.3 list the Expatriate and National manpower establishment at Tuvatu. The ratio between the National work force and Expatriate work force is 9:1. The ratio provides is providing coverage for the day-to-day execution of development plans and training programs.

Figure 16.1 Plan and Section View of Underground Development to April 2024



Source : Lion One 2024

Figure 16.2 Tuvatu Lion One Portal

Source : Lion One 2024

Table 16.1 Tuvatu Mining Equipment List

Tuvatu Underground Equipment	
Equipment	**Fleet**
U/G Truck	2
U/G Loader	7
U/G Twin-boom jumbo	2
U/G Single-boom jumbo	1
U/G Longhole drill	2
U/G Shotcrete sprayer	1
U/G Cement truck	1
U/G IT	2
U/G Light vehicle	9
U/G Diamond drill	3

Table 16.2 Underground Development Manning

Role	# of Employees	Days On : Days Off
Lion One Expatriate Mining Staff		
Mining Engineer	1	5:02
Senior Mine Geologist	1	5:02
Total Lion One Mining Staff	**2**	
Underground Mine Services Contractor		
Project Manager	1	28:07:00
Mine Foreman	1	5:02
Senior Mining Engineer	1	28:07:00
Mine Geologist	1	28:07:00
Supervisor trainer	1	28:14:00
Maintenance Planner	1	28:07:00
Jumbo Trainer	4	28:14:00
Geotechnical	1	7:46
Fitter Trainer	1	14:28
Electrical Trainer	1	28:14:00
Purchasing Specialist	1	6:01
Total Mine Services Contractor Staff	**14**	

Figure 16.3 Tuvatu Underground Sludge Sample Drilling

Source : Lion One 2024

Table 16.3 National Underground Development Manning

National Manning		
Role	**# Employees**	**Days on: Days off**
Production Drill Operator	4	6:03
Airleg Miner	11	6:03
Airleg Trainer	1	6:03
Driller	2	6:03
Junior Driller	4	6:03
Drilling Supervisor	3	6:03
Electrical Foreman	1	6:03
Electrical T/A	1	6:03
Mechanical Foreman	2	6:03
Mine Admin	1	5:02
Mine Foreman	1	5:02
Geologist	1	5:02
Senior Mine Surveyor	1	6:03
Mine Surveyor	1	6:03
Surveyor Assistant	3	6:03
Offsider	14	6:03
R1700 Loader Operator	3	6:03
Senior Driller	1	6:03
Senior Offsider	2	6:03
Service Crew	5	6:03
Service Crew Leading Hand	3	6:03
Service Crew - Truck	1	6:03
Shift Electrical	3	6:03
Shift Fitter	10	6:03
Shift Fitter - Leading Hand	3	6:03
Shift geology - Tech	9	6:03
Shift Lamp & Stores	3	6:03
Shift toolman	3	6:03
Shot firer	3	6:03
Single boom jumbo offsider	3	6:03
Single boom jumbo operator	2	6:03
Small loader operator	5	6:03
Storeman	1	5:02
Crew Supervisor	3	6:03
Trainee Driller	6	6:03
Senior Offsider	2	6:03
Drilling Admin	1	6:03
Drilling Admin Assistant	1	6:03
Trainee Offsider	7	6:03
Truck Operator	3	6:03
Truck Operator / Service Crew	1	6:03
Twin Boom Jumbo Offsider	1	6:03
Twin Boom Jumbo Operator	4	6:03
Welder	3	6:03
Total National Manning	**143**	

Figure 16.4 Tuvatu Underground Jumbo Development Drilling

Source : Lion One 2024

Figure 16.5 is a graph demonstrating through education, training and reinforcement the increasing efficiency of the national work force preparing for mine production.

Figure 16.5 Increasing Efficiency of National Labour Force

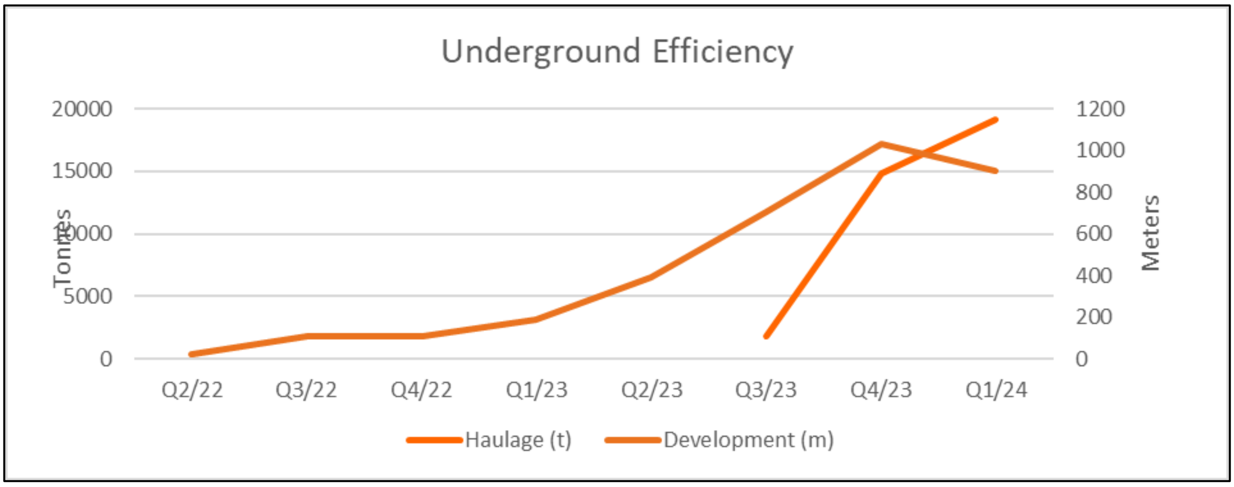
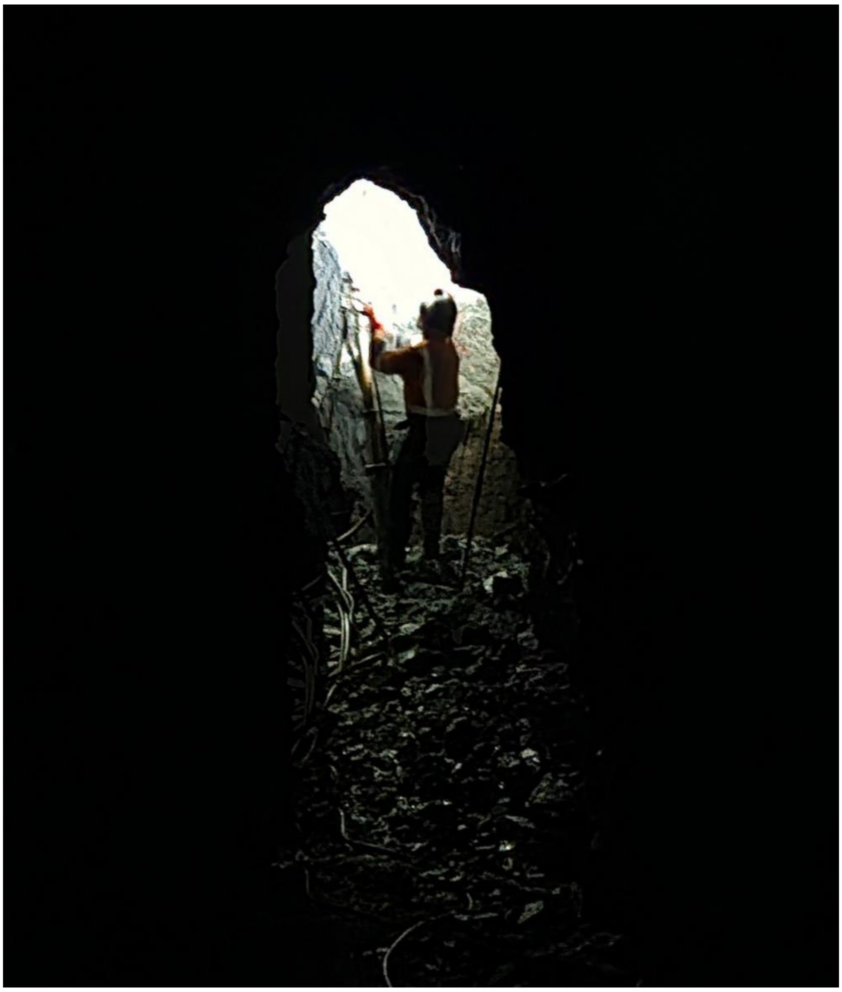


Figure 16.6 Tuvatu Underground Jackleg Mining



Source : Lion One 2024

17.0 RECOVERY METHODS

Lion One contracted Shandong Xinhai Mining Technology & Equipment Inc. ("Xinhai") to complete a process design for gold recovery from the Tuvatu mineralization. Sepro Mineral Systems Corp ("Sepro") was responsible for the design and supply of the gravity concentration and recovery systems. Xinhai is a process equipment manufacturer who has a technical support team for process design and was primarily responsible for the design and installation of the pilot plant. Xinhai completed the flowsheet development, mass balance, equipment sizing, general plant layouts, and circuit layouts except for the gravity concentration circuits. Independent consultants were also involved in the process design and review. Due to the complexity of the Tuvatu deposit, the pilot plant was designed to provide flexibility for testing different methods of gold recovery and for potential future expansion. The general process design and process description are discussed in the following sections.

The historical metallurgical test work results described in previous data collected from 1996 and as described in Section 13.0 were used to select the recovery method for the Project and to develop the process design criteria. The metallurgical test results indicate that the Tuvatu mineralization is amenable to a combined process of two stage gravity concentration and concentrate pre-treatment followed by cyanidation. The process facility, together with the process flowsheet, was designed based on the process design criteria.

Design factors, where applicable, are included in the equipment sizing and circuit design. The Pilot Plant is designed to process mineralized material at a rate of 300 t/d although at times, it has operated at more than 500 t/d. Depending on where the mineralized feed is coming from in the mine, and the configuration of the pilot plant, gold recovery has varied from 65% to almost 93%. The comminution circuits, including two-stage grinding circuit, grind the mill feed to a grind size of 80% passing (P80) 60 to 65 µm or finer. As the throughput increases, the P80 increases from approximately 74 µm to 105 µm. The coarser grind results in better gold recovery from the gravity circuits but reduces recovery in the CIL circuit.

The two-stage gravity separation circuit including intensive cyanidation of the primary concentrator concentrate is integrated with the secondary grinding mill to recover the coarse-free gold grains. Prior to the startup of the intensive cyanidation circuit, a concentrating table, similar to a Diester table (2.1 x 1.1 m), was used to recover gold prior to smelting in the electric gold furnace. The hydrocyclone overflow from the grinding circuit is concentrated by the secondary continuous gravity concentrator. The resulting secondary gravity concentrate is treated with a caustic pre-treatment prior to cyanide leaching. The secondary concentrator tailings is cyanide leached as well. Carbon-in-leach (CIL), treatment is used for extracting the gold from the mill product.

The loaded carbon is stripped, and the pregnant solution is treated by a heated and pressurized electrowinning circuit to recover the gold from the solution. The pregnant solution from the intensive cyanidation reactor is sent to a separate atmospheric electrowinning cell to recover gold and silver from the solution. The carbon stripping and gold electrowinning are operated in a closed circuit. Gold doré is produced from an electric furnace located on site. The leach residue is treated by cyanide destruction using the SO2/air process prior to being filtered and trucked to the Tailings Storage Facility ("TSF") for dry stacking. The crushing circuit was designed to operate during the day shift, while the milling and leaching circuits were designed to operate 24 h/d and 330 d/a, or 365 d/a with an availability of 90.4%. Carbon stripping and gold electrowinning circuits operate as necessary, and the cycle requires approximately 24 hours of operation to produce the gold sludge to feed the electric doré furnace.

17.1 Introduction

The Pilot Plant includes the following unit operations:

- Primary Crushing – A truck dump hopper with a fixed grizzly, a vibrating grizzly feeder, and a jaw crusher in open circuit producing a final product of 80% passing approximately 75 mm.
- Secondary Crushing – One cone crusher in closed circuit with a vibrating double deck screen to further reduce the particle size of the primary crushing discharge to approximately 80% passing 10 mm.
- Primary Grinding – The primary ball mill is in open circuit, discharging into a common pump box with the secondary ball mill.
- Gravity Separation – Integrated with the primary and secondary grinding mill discharge, a gravity separation circuit consisting of a screen and two batch type gravity concentrators receives approximately 100% of screen underflow to recover the free gold grains using two batch centrifugal concentrators.
- Primary Gravity Concentration Treatment - The primary concentrators' concentrate reports to a surge bin that batch feeds the intensive cyanide reactor (Sepro Leach Reactor or "SLR"). The primary concentrators were operational before the SLR was operational so a Diester style concentrating table was used to further clean the gravity concentrate for smelting.
- Secondary grinding – The secondary grinding mill receives the oversize from the primary gravity screen and the cyclone underflow to reduce the crushed materials to a product size of 80% passing approximately 60 to 65 µm. The throughput through the pilot plant has, at times, increased above 300 t/d to over 500 t/d resulting in a product size of 80% passing 85 to 105 µm.
- Primary Classification – The undersize from the primary classification cyclone was intended to report to the secondary continuous ("C") concentrator.
- Secondary Continuous Gravity Concentration – The concentrate from the C concentrator was intended to go to the caustic pre-treatment tank and the tailings were intended to go the leach thickener prior to the CIL circuit. Unfortunately, there have been mechanical, electrical and control issues, and the C concentrator has been bypassed. The cyclone undersize now reports directly to the leach feed thickener. The mechanical, electrical and instrumentation issues with the C concentrator circuit are being upgraded and the plant will operate as intended.
- Concentrate Regrinding – A regrind vertical mill together with integrated hydrocyclones in open circuit has been purchased but not installed in the pilot plant because of marginal difference in gold recovery in laboratory testing. Regrinding the concentrate to a particle size of 80% passing approximately 20 µm may slightly increase gold recovery by 1 or 2% based on samples taken from the cyclone undersize stream. Periodic laboratory tests are conducted to determine if regrinding would increase gold recovery.
- Cyanide Leaching – Gold leaching of the cyclone undersize product is thickened to approximately 45% w/w solids before entering the CIL circuit. The leach circuit is mechanically agitated and aerated with air.
- Carbon Desorption, and Refining – The loaded carbon from the CIL circuit is treated by elution to produce a gold rich solution for electrowinning and then melting the remaining gold enriched sludge to produce gold doré. The stripped carbon will be reused in the CIL circuit either after acid washing to remove inorganic contaminants and/or treated by thermal regeneration.
- Carbon Handling – Thermal regeneration of barren carbon to remove organic foulants and preparation of make-up new carbon by attrition and sizing.
- Cyanide Detoxification – Detoxification of cyanide leach residue slurry using the SO2/air process to destruct WAD cyanide to less than 1 ppm level prior to filtering of the detoxified tailings and trucked to the TSF.

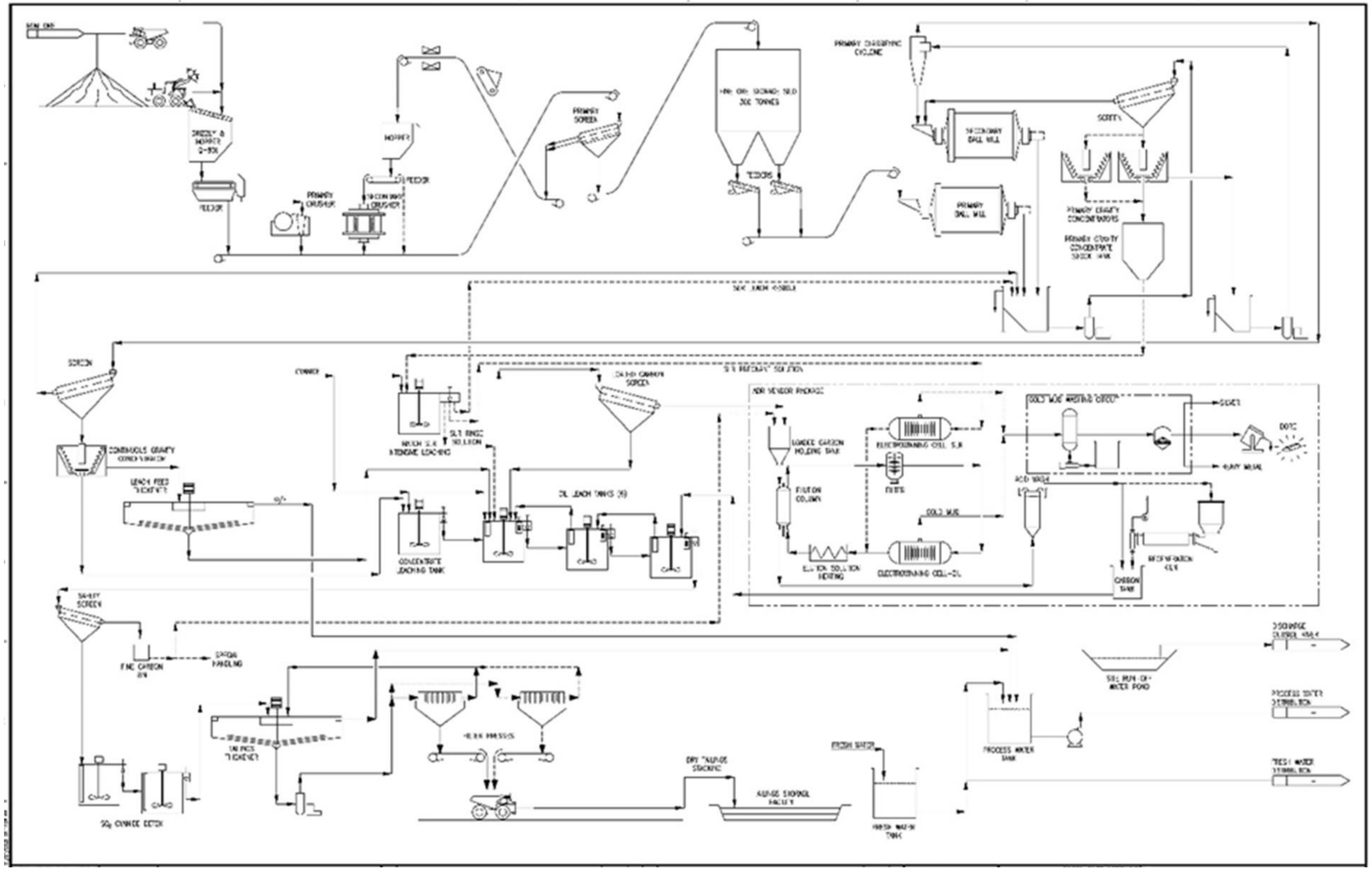
17.2 Process Design Criteria

The key process design criteria used by Xinhai are shown in Table 17.1.

Table 17.1 Major Process Design Criteria

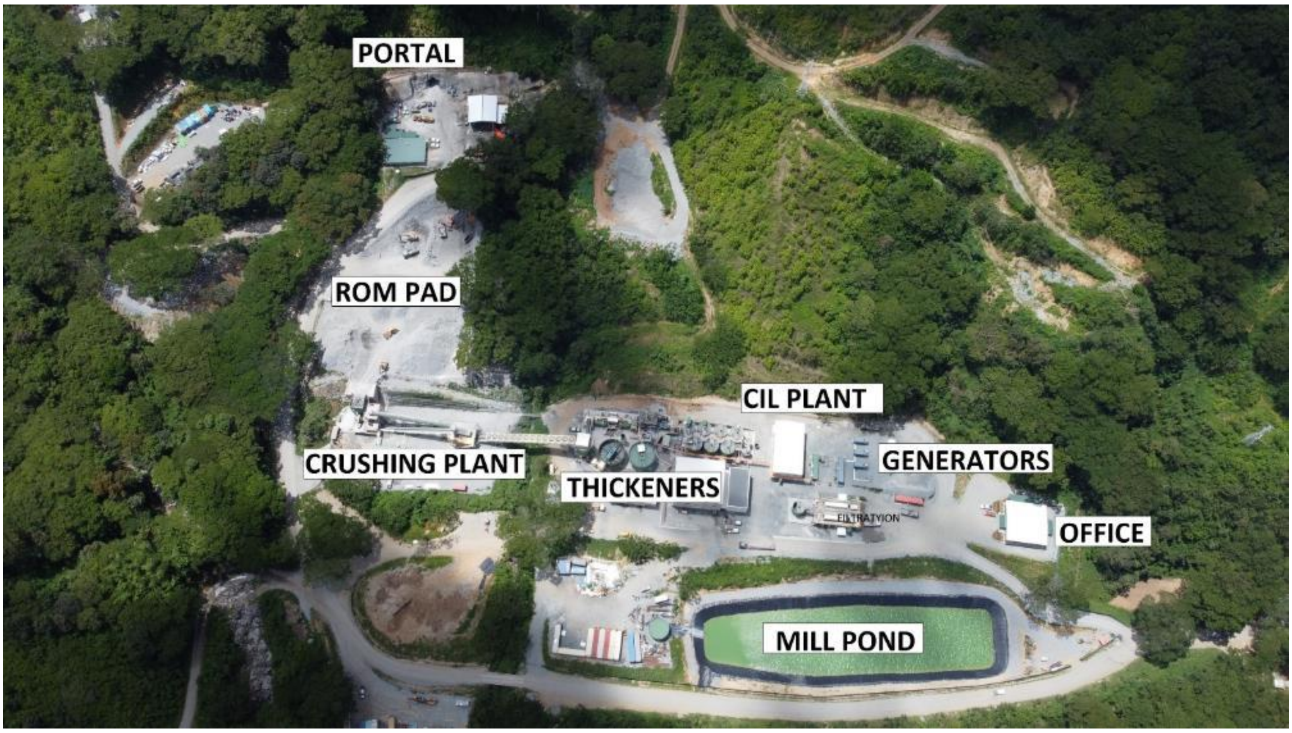
Criteria	Unit	Nominal Value
Ore Specific Gravity	g/cm^3	2.7
ROM Moisture	%	5
ROM Crusher Feed Size	mm	-350
Bulk Density	t/m^3	1.6
Crushing Work Index (CWi)	kWh/t	12.5
Abrasion Index (Ai)	kWh/t	0.184
Bond Rod Mill Work Index (RWi) (75^{th})	kWh/t	19.8
Bond Ball Mill Work Index (BWi) (75^{th})	kWh/t	18.6
LOM Average Gold Grade	g/t	8.6
Process Operating Days per Year	d/a	330
Pilot Plant Availability	%	90.4
Crushing Stages		2
Crushing Plant Shifts per day	Shift/d	2
Crushing Plant Product Size, P80	mm	10
Fine Ore Bin	t	300
Crushing Plant Product Storage Pile	t	600
Minimum Belt Conveyor Width	mm	760
Crushed Ore Storage Bin Capacity	t	300
Grinding, Gravity, and Leaching	Shift/d	2
ADR	Shift/d	2
Grinding Circuit Stages		2
Primary Mill Circuit (1 mill)		Open
Primary Mill Feed	mm	10
Primary Mill P80	µm	400
Secondary Mill Circuit (1 mill)		Closed
Secondary Mills P80	µm	60 - 74
Gravity Separation	Stages	2
Primary Gravity Separation		Batch
Primary Gravity Separator Mill Screen u/flow	%	100
Secondary Gravity Separation		Continuous
Secondary Gravity Feed Rate - Solids	t/d	300
Secondary Gravity Feed Rate - Solids	t/h	~12.5
Secondary Gravity Feed – Solids w/w	%	~20 - 30
Secondary Gravity Feed Volume	m^3/hr	~30 - 50
Secondary Gravity Concentrate	t/h	~1.2 – 1.9
Secondary Gravity Concentrate Mass Yield	%	15-Oct
Regrind Mill P80	µm	20 - 30
Gravity Concentration Au Recovery	%	50 - 55
Intensive Cyanide Leach NaCN Conc	g/l	20
Intensive Cyanide Leach	pH	11.5 - 12
Intensive Cyanide Leach Cycle Duration	h	10
CIL Leach Duration	h	48
CIL Leach	pH	12-Nov
CIL Leach Density	% w/w	45
CIL Leach NaCN Concentration	g/l	2
Overall NaCN Consumption	kg/t solids	0.7
Overall Lime Consumption	kg/t solids	0.25
Overall Au Recovery	%	90
Tailings Mill/Feed Ratio		1
Discharge Slurry Solid Content by Mass (Mass Solids/Mass Solids + Mass Water)	% (solids by mass)	50 to 55
Specific Gravity of Tailings Solids		2.77
Moisture Content of Filter Cake Dry Tailings	% (w/w)	~18 - 22
Undrained Settled Dry Density @ 50% solids	g/cm^3	1.03 - 1.06
Undrained Settled Dry Density @ 55% solids	g/cm^3	1.04 – 1.09

Figure 17.1 Simplified Process Flow Diagram



Source : Lion One 2024

Figure 17.2 Aerial View of the Mine Portal, ROM Pad and Pilot Plant



Source: Lion One 2024

17.3 Pilot Plant Description

17.3.1 Crushing

Run of Mine ("ROM") from the underground mining operation is hauled to the crushing area that consists of a ROM receiving/storage pad and a two-stage crushing circuit. The primary crusher is a Metso – Nordberg C96 jaw crusher is operated both day and night shifts depending on the availability of feed material from the mine or specific sample campaigns. The crushing plant produces a final product of approximately 80% passing 10 mm at 50 dt/h.

17.3.2 Primary Crushing

ROM material is either stockpiled on the ROM receiving pad and reclaimed by a front-end loader to a jaw crusher feed hopper located at the northeast edge of the pad or directly dumped into the dump hopper. The jaw crusher feed hopper is equipped with a static grizzly. Oversize material from the static grizzly is removed for particle size reduction using a rock breaker. The undersize material reporting to the dump hopper is reclaimed by a vibrating grizzly feeder at a rate of 100 t/h. All the vibrating grizzly discharge feeds directly into the jaw crusher with an installed power of 90 kW. The jaw crusher discharges onto a screen feed conveyor. The primary crushing reduces the feed particle size to 80% passing approximately 70 mm. The screen feed conveyor transfers the primary crushed product, together with the products from the secondary crusher to a double deck vibrating screen.

17.3.3 Secondary Crushing and Classification

The secondary crusher is in closed circuit with a double-deck screen. The materials from the upper deck and lower deck of the screen are separately conveyed to the secondary crusher. A metal detector and electric magnet to removes most metal from going to the secondary cone crusher. A second magnet is being installed to collect residual metal prior to the secondary crusher. The undersize fraction, with a particle size of 80%

passing approximately 10 mm from the screen lower deck, is the final product of the crushing circuit and is discharged onto the mill feed bin feed conveyor and then transferred to the bin. The secondary crusher is a Metso – Nordberg HP300 cone crusher with installed power of 250 kW. The crushed product from the secondary crusher returns to the screen feed conveyor and then to the double-deck screen.

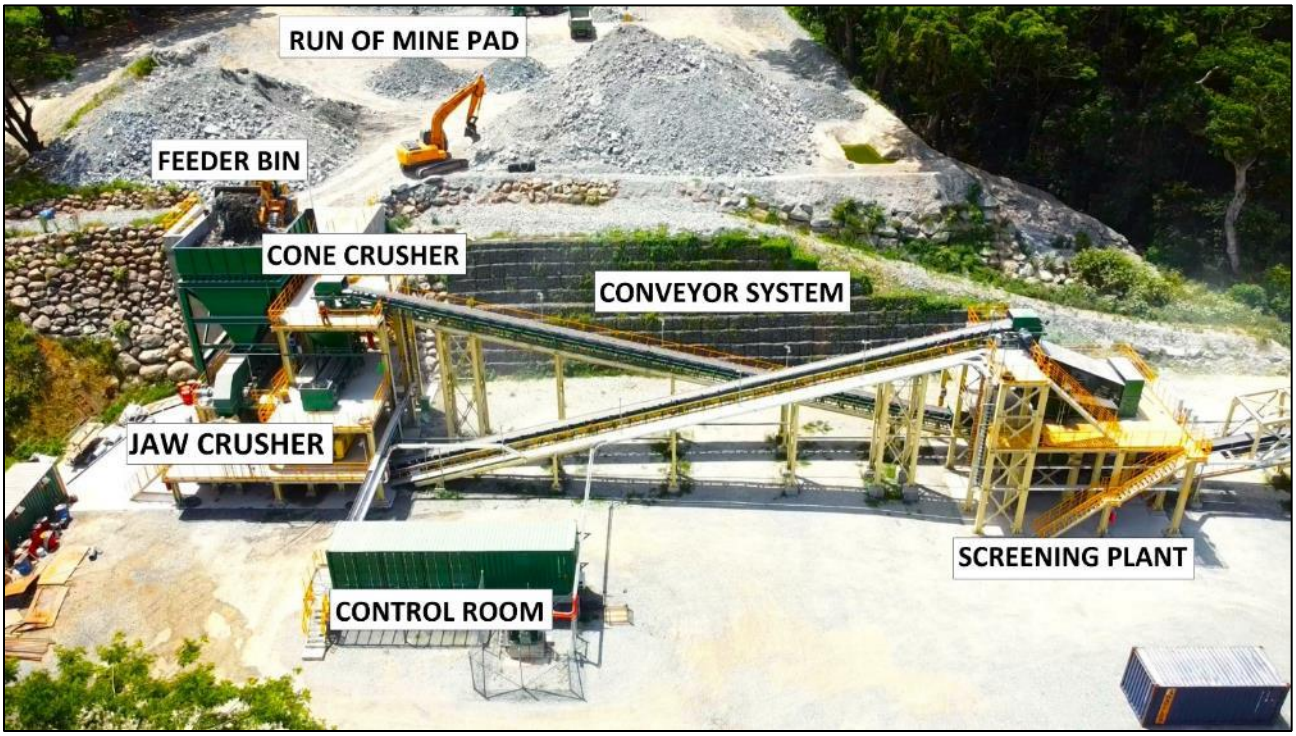
17.3.4 Mill Feed Bin

The double-deck screen undersize, with a particle size of 80% passing approximately 10 mm, is conveyed to the mill feed bin, which was designed to provide a live capacity of 300 t of the mill feed, or the equivalent of 24 hours of mill operation. Four belt feeders, together with a ball mill feed conveyor, are installed underneath the feed bin. Modifications to the internal layout of the bin is planned to reduce internal buildup of material and therefore reduced capacity. Each of the feeders was intended to provide the full feed rate when one of the feeders requires maintenance.

17.3.5 Grinding Circuit

The grinding circuit consists of two Xinhai Model MQGg2136 grinding mills in series to produce a product of P80 65 µm each supplied with 210 kW motors. The primary ball mill is in open circuit, discharging into a common pump box with the secondary ball mill. The secondary grinding mill receives the oversize from the primary gravity screen and the cyclone underflow to reduce the crushed materials to a product of 80% passing approximately 60 to 65 µm. The throughput through the pilot plant has, at times, increased above 300 t/d to over 500 t/d.

Figure 17.3 Aerial Photograph of the ROM Pad and Crushing Plant



Source : Lion One 2024

Figure 17.4 Aerial Photograph of the Grinding Circuit

Source: Lion One 2024

17.3.6 Gravity Separation

The gravity separation circuit consists of two gravity systems and the SLR intensive cyanidation in three compact modules. Refer to Figure 17.5. The primary gravity separation is handled by two Falcon SB batch gravity concentrators. All primary and secondary mill discharge is pumped to a classification screen. The oversize is fed by gravity to the secondary mill while the undersize goes to one of two batch gravity concentrators. The primary concentrate reports to the SLR batch tank while the tailings are pumped to a 3' x 8' (914mm x 2,438mm) vibrating trash screen ahead of the Falcon C1000 continuous concentrator. Unfortunately, there have been mechanical, electrical and control issues, and the C concentrator has been bypassed. The cyclone undersize now reports directly to the leach feed thickener. The mechanical, electrical and instrumentation issues with the C concentrator circuit are being upgraded and the plant should operate as intended.

Figure 17.5 Gravity Separation Modules

Source : Lion One 2024

17.3.7 Intensive Cyanidation of Gravity Concentrate ("SLR")

The intensive cyanidation circuit or SLR receives concentrate from the batch concentrators and has an overall capacity of 1,000 kg. The concentrate is deposited into a 1.2 m^3 decanting concentrate storage cone that feeds into the 2.8 m^3 leach tank. The intensive cyanidation takes approximately 12 to 16 hours using 20 g/L NaCN. Two peristaltic pumps are used to transport concentrate and final tailings. One additional peristaltic pump is used for the removal of pregnant solution to the SLR atmospheric electrowinning circuit. A small air compressor is included with the circuit to operate associated pneumatic actuated control valves.

17.3.8 Thickening

The pilot plant design intended for the tailings from the continuous C concentrator to the 12 m diameter leach feed thickener. Currently the primary cyclone overflow by-passes the continuous concentrator and goes directly to the leach feed thickener. Flocculant solution is added to the thickener feed to promote the settling of fine solids. The thickener increases the slurry solids content to approximately 45 % w/w solids. The thickener underflow is currently pumped to the pre-treatment tank prior to cyanide CIL circuit. The thickener overflow flows by gravity into the process water recycle tank and be used as make-up water. Once the continuous C concentrator is operational, the concentrate at approximately 45 % w/w solids goes to the pre-treatment tank and the tailings goes to the thickener.

17.3.9 Cyanide Leaching

The underflow from the thickener is pumped to the one of the seven 7 m diameter x 7 m high agitated and aerated leach tanks. The first tank is used for pretreatment of the leach feed with high concentrations of caustic at approximately pH 12 to 12.5. The pre-treated pulp flows by gravity to the remaining six CIL leach tanks. Air is sparged into the bottom of all the aeration and leaching tanks. As designed, the total leaching retention time for the concentrate is approximately 48 hours at 45 % w/w solids. With minor modifications to the leaching piping system, the leach circuit retention time can be adjusted to adapt to the mineralogical character feed or other requirements including pulp density.

Figure 17.6 Pre-treatment tank (foreground) and six CIL tanks

Source: Lion One 2024

Figure 17.7 Leach Tanks

Source: Lion One 2024

Activated carbon granules are added into the CIL tanks. The average carbon concentration in the CIL tanks is approximately 20 g/L. Each CIL tank is equipped with an inter-stage screen and a lift device to advance the loaded carbon into the preceding CIL tank. The loaded carbon leaves the first CIL tank and reports to a carbon screen. The loaded carbon is retained on top of the screen panel transferred into a loaded carbon storage tank in the ADR circuit in an enclosed building. The original design intended to use lime slurry added to the leach tanks to maintain protective alkalinity at a pH greater than 10.5, however, due to the presence of arsenian pyrite in the feed mineralization, the system was modified to use NaOH to maintain an overall pH of 12.0 to 12.5 and preventing the generation of hydrogen cyanide gas. The caustic is more effective in breaking down the arsenian pyrite and improving liberation of the associated gold. Sodium cyanide in the leach circuit at a concentration of less than 2 g/L is added to the cyanide leach to extract gold and silver from the leach feed.

17.3.10 ADR Plant

The ADR employs an alkaline, non-cyanide stripping/electrowinning process. The elution vessel and the electrowinning cell operate in a closed loop. The circuit operates at approximately 150°C under a pressured system of approximately 0.5 MPa.

The elution retention time is approximately 24 hours including transferring carbon, heating, and cooling. The loaded carbon from the loaded carbon storage bin is transferred into a closed elution vessel. The stripping circuit uses sodium hydroxide as a stripping media. The barren solution conditioned with sodium hydroxide is heated and circulated in the elution vessel. After the stripping solution is heated to approximately 110°C or higher, the pregnant solution from the elution vessel is sent to the electrowinning circuit. The barren solution from the electrowinning circuit is recycled back to the elution column in closed circuit through two electric heaters in series going to the electrowinning cell. The system temperature is maintained at approximately 150°C using electrical heating. The stripping is finished in approximately 12 hours after the system reaches the designed temperature. Sampling outlets are installed to collect representative pregnant and barren solutions for monitoring the elution and electrowinning circuit performance. The electrowinning circuit operates in a pressure vessel at a cell voltage of 3 to 4 V and a current density of 350 to 450 A.

After the ADR system is shut down and the system pressure is reduced to atmospheric pressure. The electrowinning cycle takes approximately 24 hours to cool and depressurize in order to be safely opened to collect the gold rich sludge. The gold-rich sludge is collected from the carbon mesh cathodes dried and mixed with melting flux prior to melting in an electric furnace at approximately 1,200 to 1,300°C to produce gold doré. A similar process is used to melt the sludge from the separate atmospheric electrowinning cell from the SLR circuit. The gold doré is securely stored in a safety vault within a secure and supervised area. The gold sludge may be further treated by acid leaching to dissolve the heavy metals and silver that are plated onto cathodes together with the gold. The leach treatment will significantly improve the gold content of the gold doré. The wet treatment also recovers silver as metallic silver sludge in the final product.

As required, the eluted carbon is transferred to the carbon acid wash tank where diluted hydrochloric acid solution is added to remove calcium and other inorganic impurities picked up during the CIL process. The carbon is initially rinsed with fresh water. A diluted hydrochloric acid solution is pumped from the acid washing circulation tank, upward through the acid washing vessel, and overflow back to the acid washing circulation tank. The carbon is then rinsed with fresh water. After the acid wash, the stripped carbon is sent back to the CIL circuit for reuse.

Personal hydrogen cyanide gas detection devices and fixed hydrogen cyanide gas detection is also provided in the leach, reagent mixing and ADR areas to protect operators.

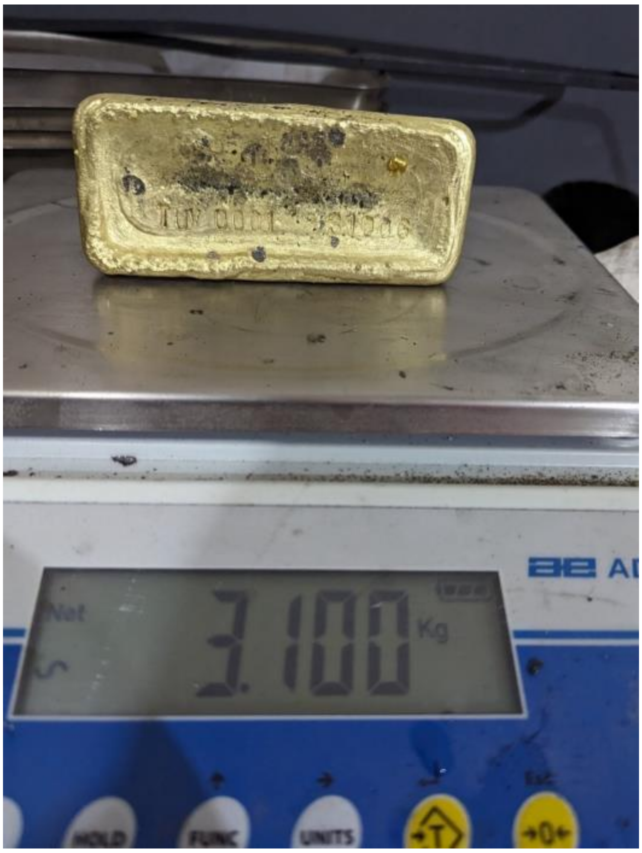
Figure 17.8 The Elution (upper background), Main Pressure Electrowinning Pressure Vessel (far right) and Atmospheric Electrowinning (white tank on the left)

Source: Lion One 2024

Figure 17.9 Doré Gold Pour with Electric Furnace

Source: Lion One 2024

Figure 17.10 Tuvatu Doré Gold Bar



Source: Lion One 2024

17.3.11 Carbon Reactivation

When the barren carbon loses its activity, the carbon is transferred to a carbon thermal regeneration system. The acid washed carbon is transferred to a carbon surge tank located at the head of the carbon regeneration kiln. The kiln is heated by electricity and operated at approximately 650°C in an inert atmosphere. The hot and reactivated carbon leaves the kiln and is quenched in a conical bottomed quench tank flooded with water before it is circulated back into the CIL circuit. The electric kiln requires 110 kW of power. The carbon regeneration circuit has not been used because the carbon is still fresh, and regeneration is not required yet.

Figure 17.11 Carbon Regeneration Kiln (upper left) and Atmospheric Electrowinning Cell (to the left)

Source : Lion One 2024

17.3.12 Leach Residue Cyanide Detoxification

The leach residue from the carbon safety screen in the CIL circuit flows by gravity to a residual cyanide detoxification system where WAD cyanide is destructed using the SO2/air process. The circuit consists of two, 4 m diameter x 4.5 m high mechanically agitated tanks. Although the current flowsheet shows two tanks operating in series, the system is being reconfigured with more powerful agitators and more aeration. The modifications are currently underway and only one detoxification tank is in operations. The reagents used include hydrated lime or NaOH, sodium metabisulphite, and copper sulphate. The reagent storage, preparation, and dosing systems for these reagents are provided in different isolated mixing areas of the pilot plant.

After detoxification, the tailings slurry is pumped to an agitated tank, pumped to the filtration plant, and trucked to the TSF.

17.4 Tailings Management

17.4.1 Filtered Tailings

To maximize the life and capacity of the Tailings Storage Facility, the processing operation is designed to produce filtered tailings. Two (2) plate and frame filter presses, each equipped with its own air compressor, are installed at the processing plant to remove as much water as possible from the solid tailings. The reclaimed water is pumped into the process water tank as make up water for the pilot plant. The two filter presses work alternatively with cycle time approximately 40 to 50 minutes and produce dry cake with moisture content between 20% to 25%. The filtered tailings are transported to the Tailings Storage Facility (TSF) with haul trucks and dumped into the tailings pond. Figure 17.12 shows the filter presses plant and a dump truck underneath one of the filter presses to receive the dry cake dropped from the filter press.

Figure 17.12 Filtration Plant with Two Plate and Frame Filters, Separate Air Compressors for Each Filter and Filter Cake Truck Loadout

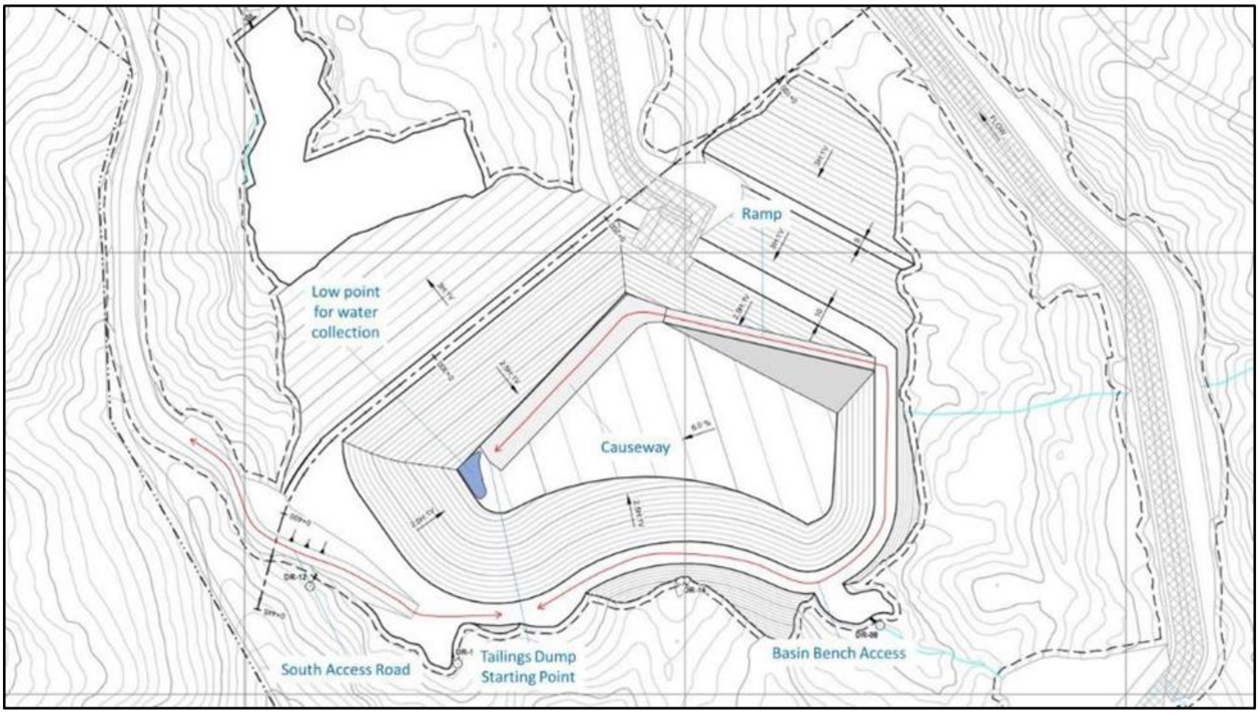
Source : Lion One 2024

17.4.2 TSF Description and Placement Schedule

The construction of Stage-1 TSF, which provides initial storage capacity of 144,000m^3, was completed in September 2023. Filtered tailings placement in the TSF started in November 2023 and has continue thereafter.

Filtered tailings are loaded from the filter presses directly into a dump truck at the plant and hauled to the TSF via the public Navilawa Road to the TSF Access Road into the TSF basin area along the South Access Road over the tailings dam crest and onto the TSF perimeter road where access into the lined basin area is provided by an access ramp, as shown on Figure 17.12.

Figure 17.13 Access for Filtered Tailings Placement – Stage 1 Basin (KP, 2023)



Source: Lion One 2024

The placement of the filtered tailings for the Stage 1 basin planned to be undertaken in three phases:

- Phase 1 - Establish a suitable access ramp and causeway to the TSF pond basin to allow all-weather access of machinery and haul trucks to the basin for placement and compaction of the tailings. Complete
- Phase 2 - Cover the entire basin floor with a layer of filtered tailings starting at the low point and building up in 1 meter level lifts. The surface of the compacted layer should be sloped towards the low point of the pond, so that water can be pumped to the Sediment Control Pond and maintain the tailings in the pond as practically dry as possible. In Progress.
- Phase 3 Continue filling of the Stage 1 basin to the maximum fill elevation of El. 112.0 m.

Figure 17.14 Aerial View of TSF and the local terrain.

Source: Lion One 2024

Figure 17.15 Aerial Photograph of Filtered Tailings placed in the TSF Pond to Build Ramp

Source : Lion One 2024

Table 17.2 summarizes the total truckloads per month transported to TSF from December 2023 through March 2024.

Table 17.2 Monthly Truckloads Transported to TSF

Month	Total Truckloads (month)	Tailings Placed in TSF (tonne)
23-Dec	986	6170.7
24-Jan	752	5408
24-Feb	851	6622.4
24-Mar	985	8896

17.5 Reagents Handling and Storage

Reagents are stored on site in locked shipping containers. Reagents are transported to their respective mixing areas as required by forklift. Mixing is completed using the buddy system and after mixing all packaging and wrapping is rinsed before disposal.

17.5.1 Major Process Consumables

The major process consumables are presented in Table 17.3. Diesel consumption for the generation of electricity averages about 16 L/t or 54 kWh/t.

Table 17.3 Major Process Consumables in kg/t

Consumable	Consumption (kg/t)			
Year or Month	2023	January 2024	February 2024	March 2024
Caustic	3.82	2.76	2.84	1.51
Cyanide (NaCN)	0.97	0.98	0.6	0.56
SMBS	4.28	3.13	2.02	4.64
Flocculant	0.08	0.63	0.02	0.05
Carbon	1.48	0	0	0.22
Lime	1.13	0	0	0
Hydrogen Peroxide	0	0.2	0.34	0.34
Grinding Media				
100mm	1.59	0.28	0.45	0.34
80mm	0.35	0.59	0.15	0
60mm	0.76	0.78	0.3	0.67
40mm	0.9	0.78	0.15	0

17.6 Pilot Plant Staffing

The staffing for the Pilot Plant is structured with 4 groups including Management, Metallurgy, Operations and Maintenance totalling 68 people and as presented in Table 17.4.

Table 17.4 Pilot Plant Staffing

Department	Position	Quantity
Management	2	
	Manager/Senior Metallurgist	1
	Administrator	1
Metallurgy	4	
	Metallurgical Technicians	3
	Gold Room Operator	1
Operations	47	
	Operations Superintendent	1
	Operations Trainer	1
	Foreman	3
	Crusher Operator	3
	Grinding Operator	3
	Leach Operator	3
	Reagent Operator	3
	Sampler	3
	Filter Press Operator	3
	Elution Operator	3
	General Operators	9
	TSF Equipment Operators	3
	TSF Truck Drivers	9
Maintenance	15	
	Maintenance Superintendent	1
	Maintenance Foreman	1
	Maintenance Planner	1
	Senior Millwright	1
	Senior Electrician	1
	Electricians	3
	Power Plant Operator	6
	Fitter	2
	Welder	3
	Hiab Truck Operator	1
	Maintenance Electricians	2
Total	68	

17.7 Pilot Plant Production Data

Production data from the operation of the pilot plant are generated and reported on a daily basis. The commission stage for the pilot plant was initiated in October and November and included testing and making modifications to the mechanical and electrical systems. Campaigns were run on some of the different geologic settings and there were further modifications made to the pilot plant. The monthly summation of data are presented here from December 2023, to May 2024. During this time further modifications for deficiencies in the pilot plant were made. Table 17.5 presents the average monthly operating data from December 2023 through April 2024. Table 17.6 presents the average monthly gold recovery and daily average feed milled from December 2023 through April 2024. Figure 17.16 illustrates the average monthly mill feed grade (g/t Au), calculated head grade (g/t Au) and solids tailings grade (g/t Au) for December 2023 through April 2024. Figure 17.17 illustrates the average monthly gold recovery (%) and average daily milled throughput (t/d) on a monthly basis from December 2023 through April 2024. Table 17.7 presents the monthly gold production in Troy ounces and the cumulative gold production from October 2023 (Start up of the pilot plant) through April 2024. Figure 17.18 illustrates the monthly and cumulative gold production from October 2023 through April 2024.

Table 17.5 Monthly Average Pilot Plant Operating Data

Month	Mill Feed Grade (g/t Au)	Calculated Au Head Grade (g/t Au)	Solid Tails Grade (g/t Au)	Total Au Recovery (%)	Average Daily Milled tonnes	Cyclone OF - P80
Dec-23	3.67	2.80	0.42	75%	234	77
Jan-24	3.28	2.86	0.62	68%	243	80
Feb-24	4.07	3.63	0.73	74%	248	75
Mar-24	3.06	2.83	0.64	65%	288	81
Apr-24	3.57	3.68	0.57	79%	325	74
5 Month Average	3.53	3.16	0.60	72%	268	77

Table 17.6 Monthly Average Daily Gold Recovery (%) and Daily Milled Tonnage

Month	Total Au Recovery (%)	Tonnes Milled
23-Dec	75%	234
24-Jan	68%	243
24-Feb	74%	248
24-Mar	65%	288
24-Apr	79%	325

Figure 17.16 Average Mill Feed Grade, Calculated Mill Feed, and Tailings Grade from December 2023 through April 2024.

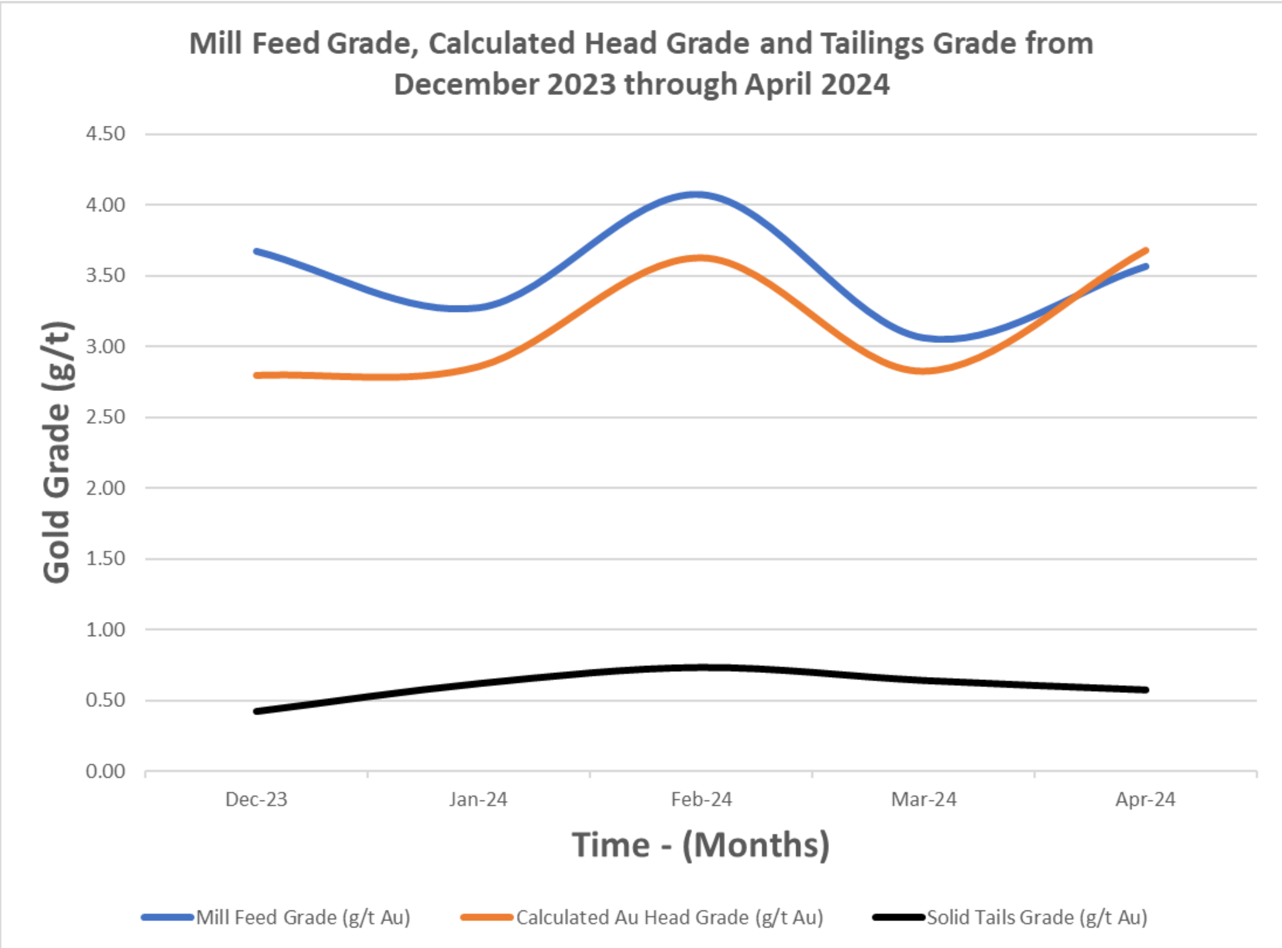


Figure 17.17 Average Monthly Gold Recovery (%) and Average Daily Milled Throughput (t/d) on a monthly basis from December 2023 through April 2024.

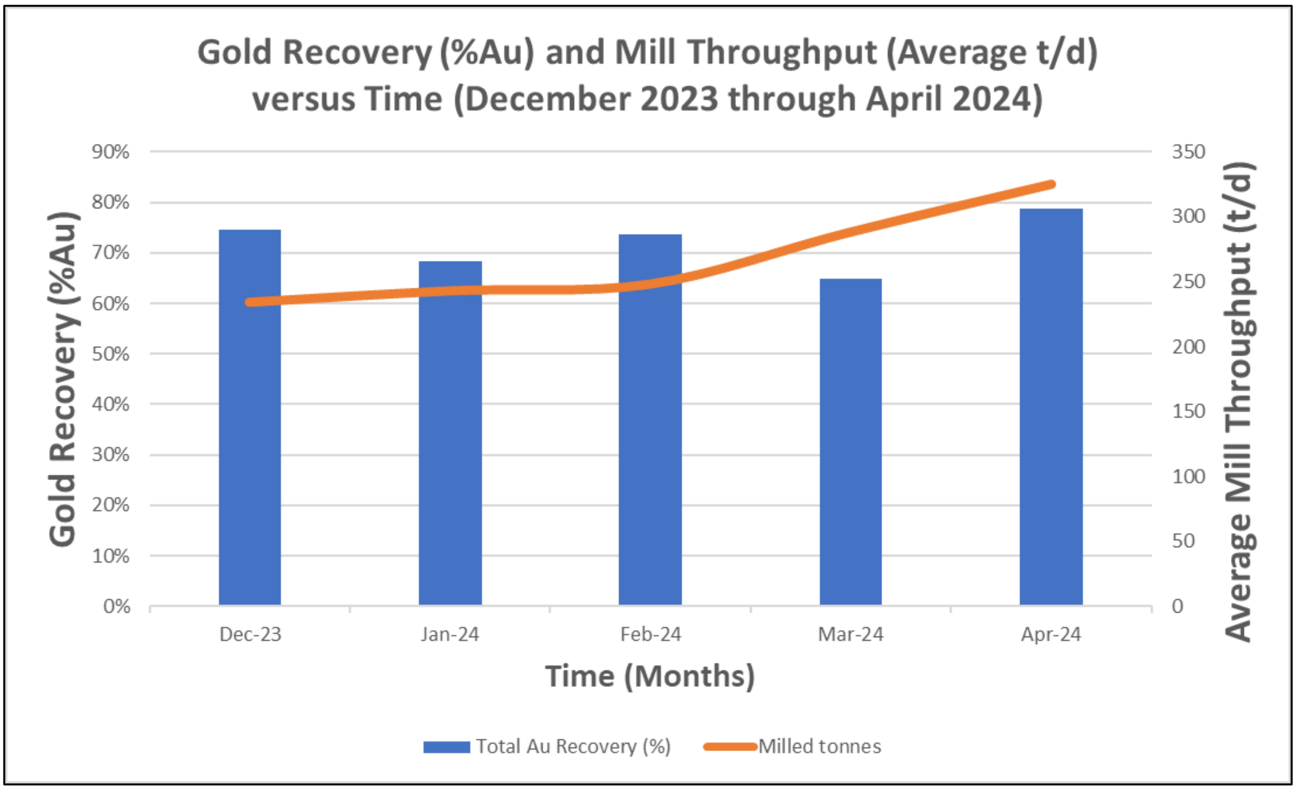


Table 17.7 Monthly and Cumulative Gold Poured at Tuvatu

	Gold Produced	Cumulative Gold
Month and Year	Troy Ozs	Troy Ozs
October 2023	23.2	23.2
November 2023	215.7	238.9
December 2023	341.5	580.4
January 2024	441.0	1,021.4
February 2024	435.0	1,456.4
March 2024	649.8	2,106.2
April 2024	661.2	2,767.4

Figure 17.18 Monthly and Cumulative Gold Poured at Tuvatu

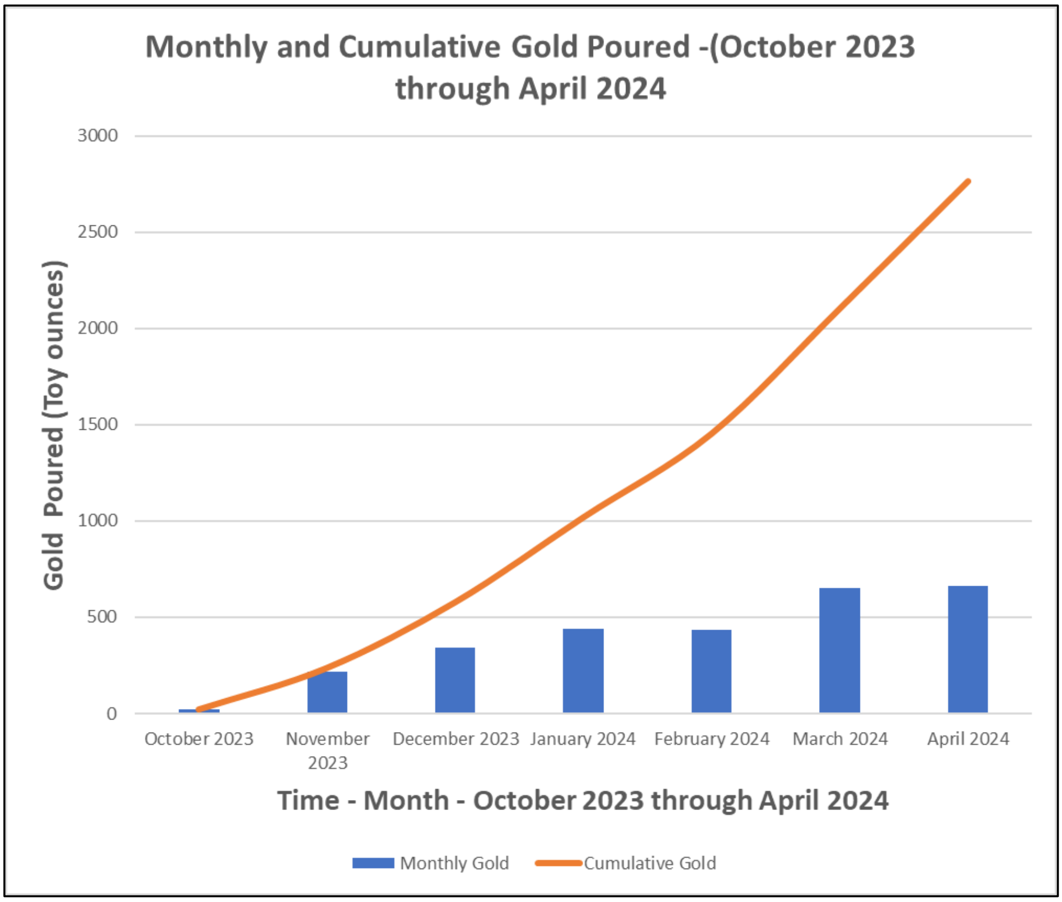


Figure 17.19 Gold Dore Bars Poured at Tuvatu

Source : Lion One 20243

17.8 Lion One Tuvatu Laboratory – Wailoloa, Fiji

The Lion One Tuvatu Lab is located approximately 18km from the Tuvatu mine and is in the head office complex in Wailoloa, Fiji adjacent to the Nadi International Airport. The facility consists of analytical laboratories and a metallurgical laboratory within approximately 465 square meters.

The analytical laboratories provide determinations as presented in Table 17.8.

Table 17.8 Tuvatu Analytical Determinations

Surface and Underground Drill Core	Grade Control – Underground Drill Core
Underground Rock Chip Channel Samples	Surface Rock Chip Channel Samples
Metallurgical Test Work Samples	Pilot Plant Samples
Environmental Water Samples	ICP – Multi-Element Analysis

The major Tuvatu laboratory equipment and instruments are presented in Table 17.9.

Table 17.9 Major Tuvatu Laboratory Equipment

No.	Equipment	Model
1	GRIEVE DRYER #1	TBH-550
2	GRIEVE DRYER#2	TBH-550
3	MORGAN DRYER#3	225L
4	MORGAN DRYER#4	225L
5	802 CUPELLATION FURNACE	802038035LBNO
6	815 CUPELLATION FURNACE	EMF-C
7	25 POTS ELECTRIC FURNACE	815038035ST10
8	60 POTS LPG FURNACE	60 PF
9	PULVERISING MILL	LM1
10	PULVERISING MILL LM2 #I	LM2
11	PULVERISING MILL LM2 #2	LM2
12	PULVERISING MILL LM2 #3	LM2
13	PULVERISING MILL LM2 #4	LM2
14	JAW CRUSHER #1	241-38X5
15	JAW CRUSHER#2	242-53
16	BOYD ELITE CRUSHER	MK4
17	BOYD RSD	MK4
18	INGERSOLL RAND COMPRESSOR	UP 6S-30-125
19	BAGHOUSE DUST COLLECTOR	1309-PTHH-120-6
20	FUME SCRIBBER	OMNI-V-8000
21	RO-TAP	RX-29-10
22	ICP-OES	Avio550max
23	ICP-OES	Avio 200
24	AAS PinAAcle 900F	PinAAcle 900F
25	AGILENT AA55B	AGILENT 55AA
26	Water Still Cascade	ROWE
27	ANALYTICAL BALANCE	Adam SAB 224e
28	ADAM BENCH TOP SCALE	LBK6a
29	PRECISION BALANCE A	ME1002
30	PRECISION BALANCE B	ME1002
31	PRECISION BALANCE C	ME1002
32	ADAM BALANCE	CpW plus-35
33	ULTRA MICROBALANCE	MSA2.7S-0TR-DM
34	ANALYTICAL BALANCE	XSR105
35	Digestor Block #1	
36	Digestor Block #2	
37	HOT PLATE (ALUMINIUM HOT PLATE 12"x24"240v,1ph)	HPA2240MQ
38	HOT PLATE (ALUMINIUM HOT PLATE 12"x24"240v,1ph)	HPA2240MQ
39	Fume Hood Cupboard #1	
40	Fume Hood Cupboard #2	
41	Fume Hood Cupboard #3	
42	Fume Hood Cupboard #4	
43	Fume Hood Cupboard #5	
44	RO SYSTEM 20 WATER PURIFICATION SYSTEM	Sepor
45	BOTTLE ROLLER - Metlab	
46	RO-TAP SHAKER - Metlab	RX-29-10

No.	Equipment	Model
47	Falcon L40 concentrator - Metlab	SEPOR
48	Flotation Machine - Metlab	SEPOR
49	Nelson Concentrator - Metlab	KC-MD3

The Tuvatu Laboratory is currently implementing an AssayNet – LIMS System to provide control and transparency to the laboratory, improving efficiency through better workload management and automated reporting, improving compliance, and minimizing human error. The laboratory is also in the process of earning ISO 17025 Certification. Omnex Inc. an external consulting firm is preparing the Quality Manual ("QM") for the laboratory. Dr. Barry W. Smee of Smee & Associates is advising Lion One with the certification of the Lion One Laboratory included the QM. The final QM will be submitted to International Accreditation New Zealand ("IANZ") the accreditation body for the Testing Laboratory Registration Council in New Zealand. The review and certification may take place during May and June 2024.

Figure 17.20 Aerial View of Waimalika Office and Laboratory Complex

Source : Lion One 2024

Figure 17.21 Aerial View of Lion One Geochemical & Metallurgical Laboratory

Source : Lion One 2024

Figure 17.22 Laboratory Sample Preparation

Source : Lion One 2024

Figure 17.23 Laboratory Fire Assay

Source : Lion One 2024

Figure 17.24 Laboratory Analytical Laboratory

Source : Lion One 2024

Figure 17.25 Laboratory Analytical Wet Laboratory

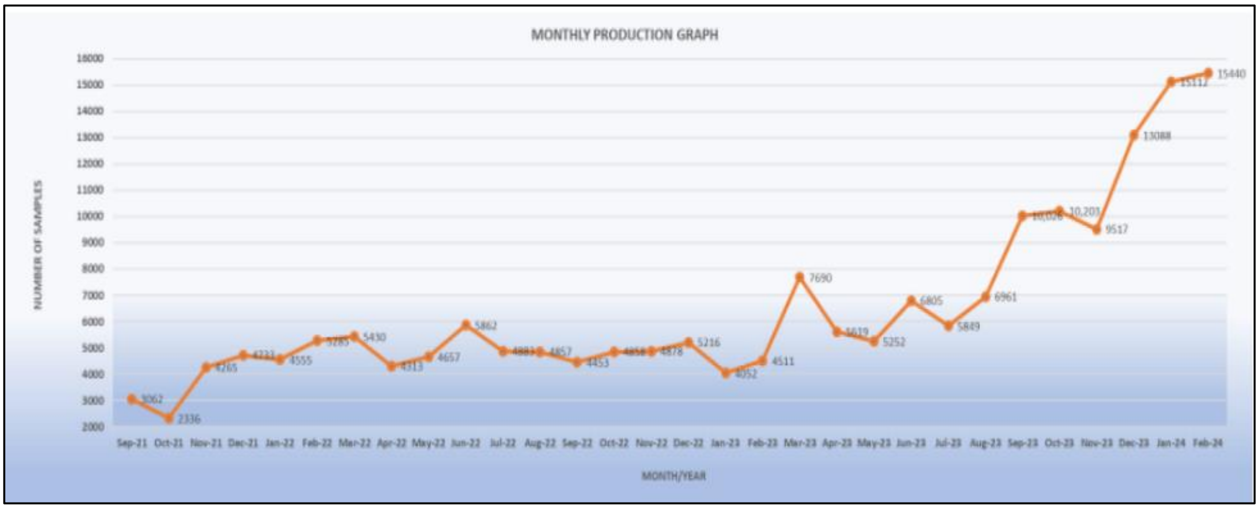
Source : Lion One 2024

Figure 17.26 Weigh Scale Laboratory

Source : Lion One 2024

The monthly production through the Tuvatu Lab has increased significantly since being commissioned in September 2021. The monthly production has increased from 3,062 in September 2022, to 15,440 samples per month in February 2024.

Figure 17.27 Monthly Laboratory Production Levels from September 2021 through February 2024.



Source : Lion One 2024

18.0 PROJECT INFRASTRUCTURE

18.1 Site Description

The Project is located 17 km by road from Nadi International Airport. The region is well serviced with port facilities at Ba and Lautoka. Lion One maintains an operations office in Nadi, including a geochemical and metallurgical laboratory to service site operations.

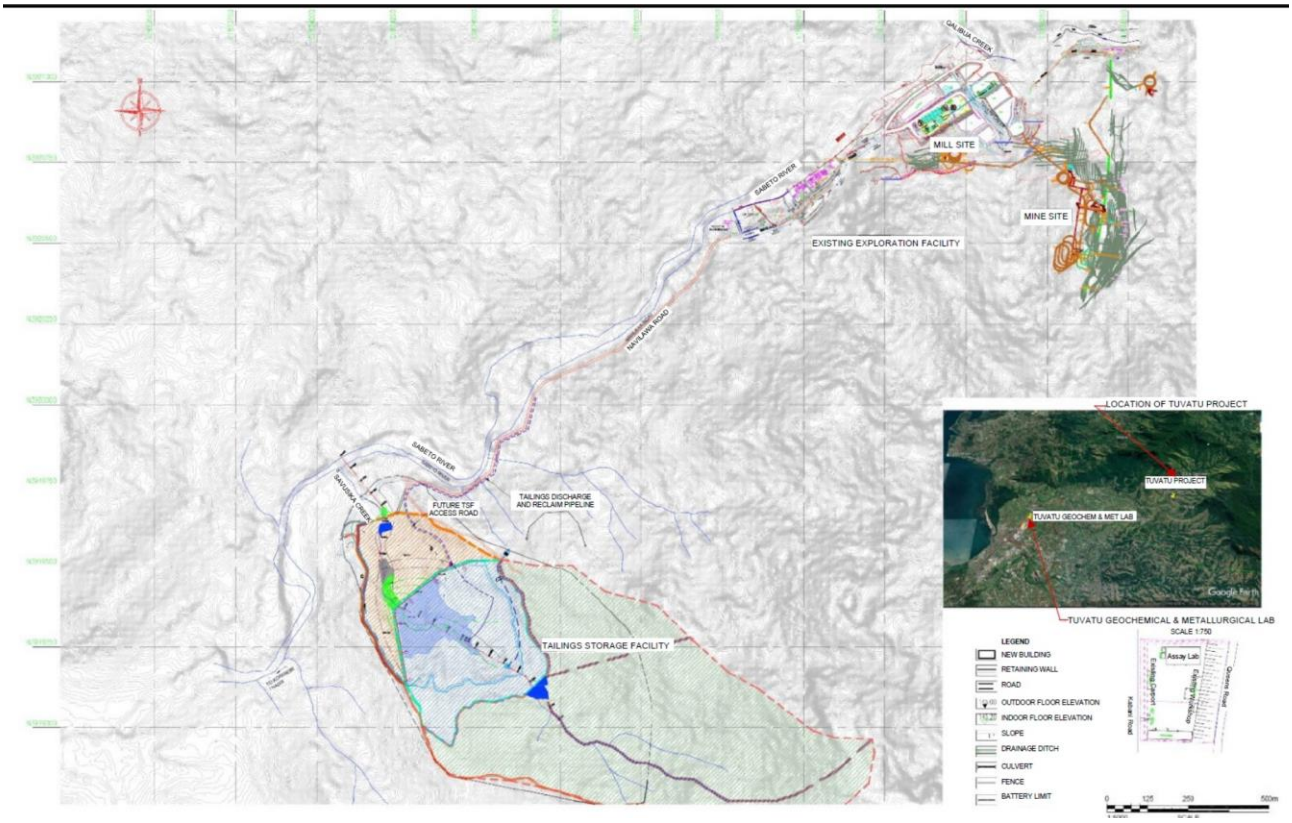
The Property is located in steep topography coupled with multiple creek lines that flow into the Sabeto River. The river supports community, agricultural, and tourist activities downstream. The core storage facility and associated infrastructure are maintained on site to service exploration activities. The mine decline is located to the west of the exploration decline driven by Emperor Gold Mining Company Limited in 1997

EFL’s transmission line crosses the Property but no dependable surplus power is available in the grid for use by the Project. EFL have consented to provide 500kva power from its Nagado substation to the mine for essential equipment and infrastructure. The transmission line is under construction.

18.2 Site Layout

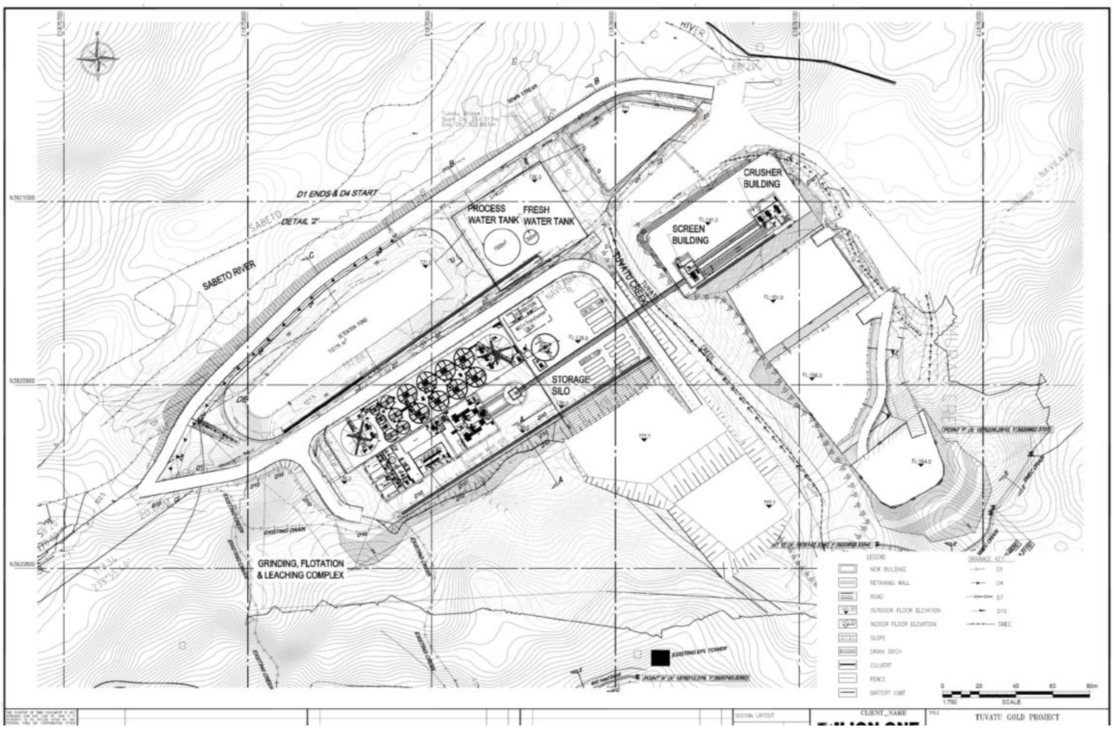
Figure 18.1 shows the general site layout and Figure 18.2 shows the plant layout. The mine commenced production in June 2023. The process plant poured first gold in October 2023 all the circuits were commissioned in November 2023. The mine and process plant currently operate at a throughput rate of 300 tonnes per day. Tailings are dewatered with two filter presses and then trucked to the tailings storage facility shown in Figure 18.1.

Figure 18.1 Tuvatu Mine General Site Layout



Source : Lion One 2024

Figure 18.2 Tuvatu Plantsite Layout



Source : Lion One 2024

18.3 Roads

The Tuvatu minesite is accessed via Sabeto Road, that follows the Sabeto River Valley from its junction with Queen's Road. From Queen's Road junction to Nagado Junction, approximately 9 km from the minesite, most of the road is paved and in good condition. The section of road from Nagado Junction to the minesite is a public road with a gravel covered surface. This section of the road is narrow and in relatively poor condition due to lack of regular maintenance. Lion One negotiated with Fiji Road Authority (FRA) to share the costs of upgrading the road and bridges to allow heavy freight to be transported to the proposed Project site and has completed reconstruction of the Nubuyagiyagi Bridge and another two culvert crossings, located approximately 3 km from the minesite, and FRA is currently upgrading sections of the road.

The section of the public road that previously ran through the minesite has been rerouted closer to the Sabeto River to eliminate public access to the site. A new bridge over Tuvatu Creek was constructed to accommodate the rerouted road.

Haul roads have been constructed to service the main portal and the exploration portal sites. Service roads have also been constructed to access the main diversion ditches above the process plant site and mine portals as well as road to link the access road to the tailings dam embankment.

18.4 Water Supply

The mine currently uses reclaim water and run-off water from nearby creek. Additional water can also be drawn from the Sabeto River and wells.

The freshwater is extracted from the Qalibua Creek either by a gravity feed pipeline from an intake structure installed 1.6km upstream, or a submersible pump installed near the waterfall next to the exploration portal. The freshwater is treated with a group of filters before entering the two (2) 9.7m diameter and 3.6m high freshwater tanks, which are located approximately 85m above the processing plant. One (1) 100mm diameter pipeline with outlets installed 1m above the bottoms of the freshwater tanks provide freshwater for mine and processing plant operation. A separate 100mm diameter fire water pipeline is installed at the bottoms of the tanks to ensure the lower 1m freshwater is only available for fire water. Filtrated freshwater is also used for mine showers, toilets and cleaning water in the workshops and site offices. Additional filtration and treatment will be required for potable water.

Currently, mine dewatering is discharged to three settling ponds located near the exploration decline portal. The decanted water from the settling ponds is released to the Sabeto River. For the process plant, the recycled water from the filter presses is rerouted by pumping from the sump underneath the filter presses to the process water storage tank adjacent to the storm water retention pond for use as the primary source of make-up water for the process plant. The preleaching thickener overflow is also directed into the process water tank by gravity for pumping back to the mills as makeup water. Excess water from the process water tank is released to the Sabeto River through the retention pond after settlement or pumping back to the processing plant as makeup water after filtration. During dry season, the storm water retention pond can be used as additional raw water storage.

Effluent from the mine change room and site office toilets and sinks is treated, via a low maintenance, biological-contactor-packaged wastewater treatment plant, and then discharged to the environment.

Surface water runoff from the process plant site and ROM pad is collected in the storm water retention pond to remove sediment. Decanted runoff is pumped back to the process plant and used for process make-up water requirements and dust suppression or released upon meeting the release criteria.

Clean mine water will be routed out of the underground workings and used for make-up water in the mill.

18.5 Power Supply

An 11 kV transmission line crosses the Project site from a nearby EFL hydroelectric generation facility but because of a national shortfall in power supply from the grid, the mine generates its own power by two (2) separate diesel generator power plants for the mine operation and processing plant operation separately. The mine power plant, which is located outside the exploration portal, consists of three (3) 800 kW containerized gensets (two in operation and one in standby). The plant power plant, located next to the filter press plant and consisting of 3x800kw and 1x1500kw diesel generators (either 2x800kw or 1x1500kw in operation and the others in standby), provide power for the processing plant and all other surface infrastructure. An 11kv transmission line from the EFL Nagado Substation to the mine site are under construction to supply 500kva grid power to the mill area, which will be used to energize the most critical process equipment and site admin office. Land has been secured for a solar power plant that will be capable of providing full power supply to the Project during daytime.

18.6 Communications

Vodafone, a local wireless communication provider, has upgraded the communication system, including installing a new microwave tower adjacent to the existing microwave tower above the mine site to improve mobile phone and internet service. The site mobile phone and internet systems have been upgraded and expanded for operation use.

The crushing plant control room and substation are linked by a hard-wired control network, with remote stop/start capability. Mobile phone and Wi-Fi system are used to communicate between the Tailings Storage Facility and the plant for emergency response.

Underground voice communications consist of primary head-end equipment and a radiating cable (leaky feeder) network system with capability for very-high frequency digital underground two channel operation. One underground channel will be linked to a surface channel. The radiating cable serves as the antenna for radio communication and also provides power for amplifiers and repeaters required to maintain signal integrity over the entire length of the radiating cable.

18.7 Administration, Security and Emergency Medical Facilities

The site administration building is located immediately east of the process plant and houses processing plant management, geology department, information technology, clerical, environmental, first aid and safety personnel. General administration, accounting, government and public relations, and geographic information systems, are housed in Lion One’s Nadi office.

Site security is maintained by gatehouses located at the west and east entrances to the minesite . A paramedic will be stationed on site at all times. The site ambulance and fire response vehicles will be parked in adjacent dedicated parking bays.

18.8 Maintenance Shop and Warehouse

The two bay exploration maintenance shops and warehouse are located adjacent to the coreshed. The exploration maintenance shop services light vehicles and provide general mechanical and electrical repair services for the drilling equipment. One bay of the maintenance shop will be used for tailings truck service and maintenance.

A mill maintenance shop and warehouse has been established next to the process water tank platform. The warehouse includes indoor storage and an outdoor, uncovered, fenced storage area. The welding shop, located on the crushing and screening plant area, will provide maintenance and welding services to the mill equipment.

18.9 Mine Infrastructure

The mine dry is located adjacent to the decline portal and across the yard from the mine workshop.

The mine dry is sized for 70 personnel per shift and is equipped with shower and toilet facilities, and lockers. The mine truck shop has one service bay with additional bays to be added in the future as required and includes lubricant/oil storage and a disposal storage area for waste oil. A vehicle wash area with wash water containment and treatment are located adjacent to the truck shop.

Mining explosives are housed in three separate sea containers converted to storage magazines that are located approximately 150 m east of the exploration portal, well away from the main process plant and public road. Access to the magazines is via a gate with security post. One magazine is used to store ammonium nitrate and fuel oil (ANFO), one to store detonators, and one to store primer/power gel. The ANFO and primer/power gel magazines are stored on one platform level separated by an earth bund. The detonator magazine is located on a separate platform elevated above the other magazines. Both explosives storage platforms are securely fenced with video monitoring. Lion One owns the storage magazines but the explosives vendor is responsible to supply, transport, and unload the explosives into the magazines.

18.10 Accommodation

Proximity to Nadi, Latouka, and local villages provides sufficient accommodation for contractors and mine operation personnel. The contractor workforce is sourced from local communities to the extent possible. Only key personnel or specialist personnel are mobilized from elsewhere and housed in nearby communities.

18.11 Tailing Storage Facility

The operating life of the mine is expected to be 7 to 9 years based on an initial throughput of 300 t/d from November 2023 and then upgrade to 600t/d in 2025. Operation is assumed to be nominally 24 h/d, 365 d/a. The primary purpose of the Tailings Storage Facility (TSF) is to impound and store the filtered tailings produced by the two (2) filter presses at the processing plant and then trucked to the TSF. The moisture content in the filtered tailings is between 20% to 25%. Ten years has been used to size the TSF storage capacity.

The following guidelines, technical bulletins, and standards are adapted in the detailed design of the TSF:

- Guidelines on Tailings Dams (ANCOLD, 2019).
- Guidelines on the Consequence Categories for Dams (ANCOLD, 2012).
- Dam Safety Guidelines (CDA, 2013).
- Technical Bulletin – Application of Dam Safety Guidelines to Mining Dams (CDA, 2019).
- GISTM (UNEP et al., 2020).

The TSF includes, but is not limited to the following structures:

- Tailings Dam
- Sediment Control Pond (SCP) Dam
- Diversion Dam
- North and South Diversion Channels
- Spillways
- Access roads

The Tailings Dam is proposed to be built in three (3) stages as below, to meet the mine operation requirements:

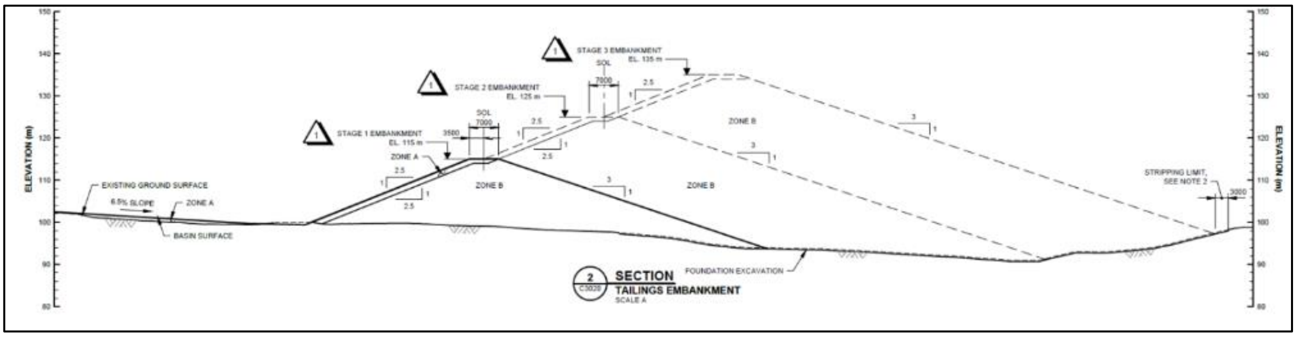
The Stage 1 Tailings Dam, which has been completed in 2023, was constructed with a fully lined upstream face and basin, serving as the starter dam for tailings impoundment up to El. 112.0 m within the TSF area. The construction of diversion dam, north and south diversion channels, sediment control pond (SCP), access roads, haul roads and the basin excavation had been taken in Stage 1 construction. The Stage 1 emergency spillway was constructed from the north side of the basin and extended down past the SCP Dam spillway. The Stage-1 TSF will provide filtered tailings storage capacity of 144,000m^3.

The Stage 2 works comprises excavation to the lines and grades shown on the Drawings, construction of the El. 125.0 m embankment, lining the Stage 2 basin prior to filling, and modifying the emergency spillway to have an inlet elevation of El. 122.0 m to align with the Stage 2 basin configuration. Stage-2 TSF will provide additional storage capacity of 509,000m^3.

The Stage 3 Tailings Dam crest elevation at El. 135.0 m, provides tailings storage for the current mineral resources and is the final Tailings Dam raise for the TSF. Stage-3 will provide another 1,184,000m^3 storage capacity.

The embankment elevation of each stage of the TSF construction is shown in Figure 18.3.

Figure 18.3 TSF Embankment Section



Source: Abstracted from Tuvatu Gold Project TSF IFC Design by Knight Piesold 2023

19.0 MARKET STUDIES AND CONTRACTS

Lion One has contracts for the sale of gravity concentrate, flotation concentrate, carbon fines, refinery products and doré. Each of these commodities is covered under a separate contract although all contracts are with Ocean Partners UK Limited. The contracts contain the standard items of a sales – purchase agreement including terms of payment, loss or partial loss of a consignment, insurance, weighing, sampling and moisture and successors and assignment.

Shipment of the various products from the mine are covered under a separate contract with IBI International Logistics, a firm based in the UK. This contract provides for the secure transportation of shipments and the matter of insurance in the event of loss while in transit.

20.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

An Environmental Impact Assessment (EIA) was completed for the Project and approved on September 27, 2013. Lion One agreed to prepare a Construction Environment Management Plan (CEMMP), based on the Terms of Reference provided by the Fiji Department of the Environment, as part of the approvals process. In April 2018, Lion One submitted a supplemental EIA to straighten Tuvatu Creek at the north side of the existing Navilawa Road for the rerouting of Navilawa Road and subsequent restriction of public access to the Tuvatu plant site. Approval of the Tuvatu Creek diversion EIA was granted on May 29, 2018.

Data have been collected that describe the physical, biological, and socio-cultural environments of the Project area as part of the EIA. The following sections present brief summaries of this information and are not intended to be comprehensive.

Both a Construction Environmental Management Plan and Operational Environmental Management Plan were submitted to the regulatory authorities and approved on July 30, 2014. A Rehabilitation and Closure Plan was also required to be submitted. This was submitted in 2014, though no formal approval was required. All three plans will need to be updated as the mining operation continues.

Quarterly surveys of the water quality and macroinvertebrate communities have been undertaken since September 2014 to determine the baseline condition of the watercourses located adjacent to the site.

A range of parameters were measured in the field at the time of sampling including pH, conductivity, temperature, and dissolved oxygen concentration. Dissolved oxygen saturations were later calculated based on field temperature.

Laboratory analysis of water samples collected was undertaken for total suspended solids, turbidity, ammonia, total oxidized nitrogen, total kjeldahl nitrogen, total nitrogen, dissolved reactive phosphorus, total phosphorus, sulphide, a range of total metals (arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, and zinc), and bacteria (*E. coli*, faecal coliforms, and total coliforms). Samples were collected under the guidance of Lion One's Environmental team and independent consultants from New Zealand.

21.0 CAPITAL AND OPERATING COSTS

Not applicable.

22.0 ECONOMIC ANALYSIS

Not applicable.

23.0 ADJACENT PROPERTIES

There are no adjacent properties.

24.0 OTHER RELEVANT DATA AND INFORMATION

There is no additional information or explanation that would make this technical report more understandable and not misleading.

25.0 INTERPRETATION AND CONCLUSIONS

The Lion One Property contains The Tuvatu mineral deposit comprised of numerous narrow, high-grade gold-bearing veins. As well, the Property also contains approximately 20 other occurrences that contain gold and copper. All significant mineralization found to date is contained within Navilawa monzonite intrusive (4.85 Ma).

Gold mineralization occurs in narrow quartz-carbonate-sulphide veins with local association with roscoelite. Individual veins and zones exhibit distinct variations in mineralogy and particularly in sulphide content (0-4%) and species. Mineralization occurs as an early, high-temperature porphyry style phase as indicated by coarse secondary biotite and potassic feldspar. The later, main epithermal phase of Au mineralization occurred as episodic 'flashing' of mineralizing fluids during uplift and unroofing of the monzonite. At least three distinct phases of epithermal vein events have been documented. This later epithermal mineralization may have been fed by fluids from a younger and deeper intrusion which exploited the same plumbing system provided by faults and pre-conditioned structures.

Gold occurs dominantly as native gold within the veins and coatings on the outside of sulphides. Total sulphide content is less than 4% overall. Some gold is associated with arsenian pyrite and also occurs as the gold telluride calaverite and other Te-bearing phases.

The dominant Upper Ridges (UR) lodes are oriented generally north with a steep east dip. These are intersected by east-striking structures such as the Murau lodes on the northwest portion of the deposit, and flat-lying to shallow-dipping narrow sets (SKL lodes) on the northeast portion of the deposit. The HT Zone to the north strikes NW and contains late gold emplaced within earlier, potassic altered (base-metal) mineralization. Individual veins and zones pinch and swell both along strike and down dip and can go from a zone several meters wide to a narrow veinlet over a short distance. The highest grade/widest zones, and hence potentially most productive zones, manifest as steep, southerly plunging stockwork/breccia pipes forming high-grade 'blow-out'/stockwork zones located at the intersection of multiple structures.

The main Tuvatu deposit is now being mined. To date, 69 veins and stockwork zones within the Tuvatu deposit have been recognized and modelled (69 Domains) and have been used as the basis of the MRE described in Section 14 of this report. In addition to the 69 Domains, peripheral mineralization that was not captured within the 69 Domains, has been modelled as a separate domain named Outside Domains. The underground development has been treated as a separate domain and has been subtracted from the resource estimated for the 69 Domains to represent depletion of those domains. The MRE is based on approximately 269,000 gold assays from more than 7,500 holes as of March 25, 2024.

The MRE was carried out using Ordinary Kriging and Inverse Distance Squared interpolation. Table 25.1 shows the MRE for the 69 Domains and Table 25.2 shows the MRE for the Outside Domains.

Table 25.1 Tuvatu 69 Domains Mineral Resource Estimate Summary Net of Underground Development

CutOff Au g/t	Classification	69 Domains Gross			Underground Development			69 Domains Net		
		Au g/t	Tonnes	Ounces	Au g/t	Tonnes	Ounces	Au g/t	Net Tonnes	Net Ounces
4	Indicated	9.95	500,000	160,000	5.00	8,000	1,300	10.05	492,000	159,000
4	Inferred	9.47	958,000	292,000	5.22	2,000	300	9.50	956,000	292,000
3	Indicated	8.41	655,000	177,000	4.44	14,000	2,000	8.48	642,000	175,000
3	Inferred	7.61	1,388,000	340,000	4.43	3,000	500	7.62	1,384,000	339,000
2	Indicated	6.89	880,000	195,000	3.84	19,000	2,300	6.97	861,000	193,000
2	Inferred	5.99	2,023,000	389,000	4.23	4,000	500	5.99	2,019,000	389,000

Table 25.2 Tuvatu Mineral Resource Summary for Outside Domains

CutOff Au g/t	Classification	Aug/t	Tonnes	Ounces Au
4	Inferred	11.72	8,000	3,000
3	Inferred	9.32	11,000	3,000
2	Inferred	7.47	15,000	4,000

a) Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.
b) There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves.
c) Mineral Resource tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers may not add due to rounding.
d) The base case is based a cutoff of 3 g/t gold, cost estimates for mining of US$56/tonne, processing of US$56/tonne and G&A of US$25/tonne; gold recovery of 80%; and a three-year trailing gold price of US$1,973/ounce.
e) Mineral Resource tonnage and grades are reported as undiluted.
f) The effective date of the mineral resource estimate is March 25, 2024

The 2023 MRE may ultimately be affected by a broad range of environmental, permitting, legal, title, socio economic, marketing, and political factors pertaining to the specific characteristics of the Tuvatu deposit including its scale, location, orientation, and metallurgical nature as well as its setting from a natural, social, jurisdictional, and political perspective. Factors that may affect the 2024 MRE include changes to the geological, geotechnical, and geometallurgical understanding of the deposit as a result of additional drilling or new studies and the discovery of extensions to known mineralization as a result of additional drilling. As well, the performance of both the pilot plant and underground mining relative to the design parameters may have an effect on the MRE.

26.0 RECOMMENDATIONS

26.1 Geology

1. Mine Area

   A program of diamond drilling is recommended to extend and better define the main zones of immediate mining interest within the mine. These include the West, SKL, Murau Extension, UR2 north of the Cabex Fault, and Zone 5. Table 26.1 summarizes the associated costs. This drilling is intended to identify short-term sources of mill feed as well as to expand the currently known resource.

Table 26.1 Mine Area Drilling Budget

Item	Units	Unit Cost CAD$	Total Units	Total Cost CAD$
Near Mine Drilling	Meters	$100	14,500	$1,450,000
Assaying	Samples	$32	48,000	1,536,000
			Total	$2,986,000

2. Regional Exploration

   Lion One has acquired a significant quantity of data from exploration programs conducted by previous operators and through its own exploration that provide insights into understanding the geology and mineral occurrences of the Property area. However, this data would be of greater benefit if it were integrated into a comprehensive dataset that shares a common set of coordinates and scales. This compilation program should be followed by ground assessment, including trenching, benching, and sampling of any targets that appear to have been overlooked or under evaluated. It is recommended that this program can be carried out by one geologist and an assistant. The budget is estimated at approximately CAD$30,000 per month or CAD$200,000 for the balance of 2024. and includes salaries, analytical costs, vehicle and equipment rental and fuel and office and software support. This program will provide a baseline for future exploration work on the Property.

26.2 Metallurgy and Processing

- Obtain mineralized samples from new types of mineralization found underground and conduct gravity, regrind, flotation, pre-treatment and leach tests using cyclone overflow pulp from the pilot plant.
- Initiate design of expanding the Pilot Plant to full scale operation at 600 to 700 t/d. The estimated cost for engineering by Xinhai in is approximately US$ 150,000. The flowsheet should include
    - the existing crushing plant (no modifications),
    - a new and larger primary grinding mill,
    - convert the existing mills to operate as secondary mills,
    - modifications to the gravity circuit,
    - replace the existing C gravity concentrator with a flotation circuit,
    - regrind the flotation circuit concentrate to P80 20µm with the tower mill currently at site,
    - pre-treat reground flotation concentrate with NaOH before the pulp reports to the CIL circuit,

- expand the CIL circuit for residence time at 48 hours for 700 t/d,
    - expand the detox circuit,
    - expand the tailings filtration and loadout system.
    - The estimated cost of a 700 t/d mill expansion is approximately US$10 to 11 million.
- Obtain costs for the design and expansion of the TSF.
- Prepare an independent Preliminary Economic Assessment (PEA).
- Conduct gravity and leach tests in the lab from cyclone overflow on a weekly or bi-weekly basis to define optimum recovery in the pilot plant.
- Conduct one stage gravity, flotation and leach lab tests monthly using a cyclone overflow sample for future process considerations.
- Conduct carbon activation tests and analysis with day shift and night shift carbon samples.
- Conduct vat style leach testing on oxide material to define a solution to the buildup of oxide contaminants in the pilot plant solutions.
- Modify the mill feed bin to increase active available storage volume and reduce hangups of feed in the bin. Reduce the number of draw points from four to two.
- Work with Sepro to improve the automation of the two stage gravity concentration circuits and modify the gravity circuits for 700 t/d capacity.
- Replace first fill activated carbon with higher quality carbon.
- Modify existing carbon screens in the CIL to reduce carbon losses and lower tailings grade and improved overall gold recovery.
- Replace acid wash tank and piping system to initiate carbon treatment prior to carbon reactivation.
- Modify the cyanide detox circuit to operate two tanks in parallel instead of in series. Increase agitation and airflow in the detox circuit.
- Install a second turbo style blower for the CIL and detox circuits.
- Order high quality replacement bearings for all agitated tanks so the installed low-quality bearings can be replaced as bearings fail.
- Hire an expat Maintenance Foreman to train and work with current work force to better understand the scope and depth of their work and responsibilities.

27.0 REFERENCES

ALS Metallurgy, Kamloops (October 2023) – Metallurgical Testing of a Composite From the Tuvatu Project Fiji

A-Izzeddin, D. (1997 & 1999). The Tuvatu Gold Project. Internal Reports. Tuvatu Gold Mining Company Pty Ltd

A-Izzeddin, D. (2000). Powerpoint presentations. Tuvatu Gold Mining Company Pty Ltd.

Alcaston Mining NL. October 30, 2006, Prospectus.

Baker, E. M. (1989). The bearing of fluid inclusion and isotope results on the economic potential of the Tuvatu Prospect, Fiji. Emperor Gold Mines / Geopacific Ltd. Fiji.

Begg, G., Gray, D.R., (2002). Arc dynamics and tectonic history of Fiji based on stress and kinematic analysis of dikes and faults of the Tavua Volcano, Viti Levu Island. Fiji. *Tectonics* 21 (4), 5–14. https://doi.org/10.1029/2000TC001259.

Bureau Veritas Commodities Canada Ltd. (June 2019). - Phase II metallurgical testing report – The Tuvatu Gold Project, Fiji. Project No. 1801807 & 1803310.

Canadian Institute for Mining, Metallurgy and Petroleum. (2014). CIM Definition Standards for Mineral Resources& Mineral Reserves.

Ciobanu, C. L., Cook, N. J., & Spry, P. G. (2006). Preface – Special Issue: Telluride and selenide minerals in gold deposits – how and why? Mineralogy and Petrology, 87(3), 163-169.

Clarke, R, Smith, D., Naden, J. (2022), Source controls on mineralisation: Regional geology and magmatic evolution of Fiji. *Lithos*., 432-433. 106897. https://doi.org/10.1016/j.lithos.2022.106897.

Clarke, R.H. (2022). Post-subduction magmatism and mineralization: the Tuvatu gold-telluride deposit, Fiji. Doctor of Philosophy Thesis. The University of Leicester.

Coanda Research & Development Corp. (December 2023) – Tuvatu Tailings Characterization for Slurry Pipeline Design CRDC 07508.2

Coanda Research & Development Corp. – Technical Note (October 2023) Tuvatu Tailing Slurry Rheology – Document CRDC07469, Project AER-SPTC-01

Fraser Institute, 2023 Annual Survey of Mining Companies

Hatcher, R. (1997). The Tuvatu epithermal gold prospect, Upper Sabeto Valley, Viti Levu, Fiji. Unpublished Summary Report on Honours Thesis. Queensland University of Technology, Queensland Australia.

Hathway, B. (1993). The Nadi Basin: Neogene strike-slip faulting and sedimentation in a fragmented arc, Western Viti Levu, Fiji. Journal of the Geological Society, London, 150, 563-581.

Hedenquist, J. W. (2000). Exploration for epithermal gold deposits. *Society of Economic Geology Reviews*, 3,245-277.

Hennigh, Q. (2019). Communication to executives during site visit March 2019. Lion One Metals Ltd.

Holden, D. (2019). Evidence assessment of an alkali gold system at Tuvatu. Internal Company Report, April 1, 2019.

Holden, D. (2018). Geospy Report #12, November 2018 Tuvatu Gold Project: Magmatic intrusion-related gold and implications for extensional and regional exploration. Lion One Ltd. Lion One.

Holm, R.J., Tapster, S., Jelsma, H.A., Rosenbaum, G., Mark, D.F., (2019). Tectonic evolution and copper-gold metallogenesis of the Papua New Guinea and Solomon Islands region. *Ore Geology Reviews* 104, 208–226. https://doi.org/10.1016/j.oregeorev.2018.11.007.

Jefferson J. (2023). Magmatic-Hydrothermal Evolution of the Tuvatu Alkalic Epithermal Au-Telluride Deposit. Master of Science Thesis. Colorado School of Mines.

Huang, J et al (2022) Technical Report and Preliminary Economic Assessment Update for the Tuvatu Gold Project, The Republic of Fiji. Report presented to Lion One Metals effective date 20 April 2022.

Jensen, E. P. & Barton, M. D. (2000). Gold deposits related to alkaline magmatism. *Society of Economic Geology Reviews*, 13, 279-314.

Kelley, K. D. & Luddington, S. (2002). Cripple Creek and other alkaline-related gold deposits in the SouthernRocky Mountains, USA: Influence of regional tectonics. *Mineralium Deposita*, 37, 38-60.

Kelley,K.D., & Spry, P., (2016) Critical Elements in Alkaline Igneous Rock-Related Epithermal Gold Deposits. In In book: Rare Earth and Critical Elements in Ore Deposits: Verplank, P.L., Hitzman, M.W. eds. *Society of Economic Geologists* Volume 18.

Kelley, K.D., Spry, P.G., McLemore, V.T., Fey, D.L., Anderson, E.D., (2020). Alkalic-Type Epithermal Gold Deposits. Chapter R of Mineral Deposit Models for Resources Estimate. United States Geological Survey. Scientific Investigations Report 2010-5070-R

Lion One Limited, Fiji. SPL1283, Compensation Agreement between Lion One Limited and the Mataqali Nacokula,Rawawaqa, Naboucawa, Nabouwalu, Natauvesi, Vadalo, Nawaqali and Natubakitoga. July 2013.

Lion One Limited, Fiji. SPL's 1283 and 1296, Tuvatu. Annual report (1st draft), Exploration Report for the PeriodJanuary 2008 to December 2008, Annual Report to Fiji Mineral Resources Department.

Lion One Metals – Memorandum Tuvatu Metallurgical Lab (October 2023) – Summary on Testwork

Lion One Metals – Memorandum Tuvatu Metallurgical Lab (January 2024) – Site Testwork Update – Mill Feed Sample

Lion One Metals – Memorandum Tuvatu Metallurgical Lab (April 2024) – Analysis on the effect of regrinding.

Lion One Metals – Internal Lab Assays from Metallurgical Lab Tests (October 2023 to May 2024)

Lion One Metals – Internal Pilot Plant Daily and Monthly Production Reports (October 2023 to May 2024)

Lion One Metals – Internal Pilot Plant Daily Shift KPI Reports (October 2023 to May 2024)

https://www.macrotrends.net/1333/historical-gold-prices-100-year-chart

McDougall, I (1963). Potassium–Argon Ages of Some Rocks from Viti Levu, Fiji, Nature, 198, 67.

Met-Solve Laboratories Inc. (June 2020). - MS1944 Lion One Metals report. Report No. MS1944

Mining Associates Pty Ltd. (March 2009). A technical review of exploration and resource estimates of the Tuvatugold deposit, Viti Levu, Republic of Fiji.

Mining Associates Pty Ltd. (January 2018). Tuvatu Gold mineralization model. Document No. MA1708-2-3,January 8, 2018.

Mining Associates Pty Ltd. (2014). Independent technical report and resource estimate on the Tuvatu gold deposit. Available Mining Associates Pty Ltd, Level 4, 67 St Paul's Terrace, Spring Hill QLD.

Ministry of Lands and Mineral Resources. (1997). Investment guide. Fiji Mineral Resources Department.

Ministry of Lands and Mineral Resources. (1998). Airborne geophysical signatures of localities of epithermal golddeposits in Fiji. Fiji Mineral Resources Department.

Mineral Resources Department, Fiji. (2020). Renewal of special prospecting license for Lion One Limited – SPL1283 Bebe. Letter, September 4, 2020.

Mineral Resources Department, Fiji. (2020). Renewal of special prospecting license for Lion One Limited – SPL1296 Yavuna. Letter, September 4, 2020.

P&E Mining Consultants Inc. (October 2010). Technical report and resource estimate on the Tuvatu Gold Property, Viti Levu, Fiji.

Planchuelo-Ravelo A.M. (September 1984). Agroclimatic survey of southern Pacific Island groups: Fiji, GilbertIslands (Kiribati), Solomon Islands, Tonga, Vanuatu – final report. USAID.

Richards, J. P., Bray, C. J., Channer, D. M. D., & Spooner, E. T. C. (1997). Fluid Chemistry and Processes at the Porgera Gold Deposit. *Mineralium Deposita*, (32), 119-132.

Richards, J. (2009). Postsubduction porphyry Cu-Au and epithermal Au deposits: Products of remelting of subduction-modified lithosphere. *Geology*, 37(3), 247-250. 10.1130/G25451A.1

RMS – Responsible Mining Solutions Corp. (May 2023) - Lion One Metals – Tuvatu Gold Testwork. Report No. RMS-22-066-TM-001-RO

Rodda, P. (May 1967). Outline of the geology of Viti Levu. Fiji Geological Survey, Suva, May 1967.

Scherbarth, N. L. & Spry, P. G. (2006). Mineralogical, petrological, stable isotope and fluid inclusion characteristics of the Tuvatu gold-silver-telluride deposit, Fiji: Comparisons with the Emperor Deposit. *Economic Geology*, 101, 135-158.

Scherbarth, N. L. & Spry, P. G. (2006). Mineralogical, petrological, stable isotope and fluid inclusion characteristics of the Tuvatu gold-silver-telluride deposit, Fiji: Comparisons with the Emperor Deposit. *Economic Geology*, 101, 135-158.

Schmidt, D. (2023) Petrographic Characterization and Evolution of the Alkalic-Type Epithermal Tuvatu Au-Te Deposit, Fiji. Master of Science Thesis. Colorado School of Mines.

Schwartz, M.O. (1986). Interpretation of the Conolly contour diagram of fault-related veins. *Mineralium Deposita*,21(1), 1-11.

Sillitoe, Richard H & Thompson, John (1999). Intrusion-related vein gold deposits: Types, tectono-magmatic settings, and difficulties of distinction from orogenic gold deposits. *Resource Geology*, 48(2), 237-250.

Sepro Laboratories Inc. (November 2022) - Royal Treatment Flowsheet Results Project MS2089

Sillitoe, Richard H. (2002). Some metallogenic features of gold and copper deposits related to alkaline rocks andconsequences for exploration. *Mineralium Deposita*, 37, 4-13.

Sillitoe, R. H. (2010). Porphyry Copper Systems. *Economic Geology*, 105(1), 3-41. 10.2113/gsecongeo.105.1.3

Spry, P. (2007). A genetic relationship among epithermal gold tellurides, calderas, and the Viti Levu lineament,Fiji, circum-pacific tectonics, geologic evolution, and ore deposits, A symposium in honor of William R.Dickinson, Tucson, Arizona, Arizona Geological Society.

Spry, P.G. & Scherbarth, N.L. (2002). The vanadium-tellurium-gold association at the epithermal Tuvatu gold deposit, Fiji: Implications for ore deposition [abs.]: Geological Society of Australia, Abstracts 67, p. 342. Mineralogy and Petrology (2006) 87: 171–186.

Tawake, A.K. (January 2005). Technical report on geological and geo-technical investigations of the semo quarry and selected aggregate sources in South and Western Viti Levu, Fiji. South Pacific Applied Geoscience Commission.

Tuvatu Gold Mining Co Ltd. (August 2000). In-house feasibility study. Internal Report.

Vigar & Associates Brisbane. (May 2000). Geology overview & resource estimate, Tuvatu Project, Fiji. Prepared for Tuvatu Gold Mining Co Ltd.

Vektore Ltd (2022). Structural vectoring in mineral exploration: Field visit report October 2022. Company Presentation.

Vigar, A.J. (March 2009). A technical review of exploration and resource estimates of the Tuvatu Gold Deposit VitiLevu, Republic of Fiji. Internal report prepared by Mining Associates Pty Ltd for American Eagle ResourcesInc and X-Tal Minerals Corp, dated March 30, 2009.

Vigar, A.J., (May 2005). Epithermal gold. Internal Report. Mining Associates Pty Ltd.

Vigar, A.J. (March 2009). A technical review of exploration and resource estimates of the Tuvatu Gold Deposit VitiLevu, Republic of Fiji. Internal report prepared by Mining Associates Pty Ltd for American Eagle Resources Inc and X-Tal Minerals Corp, dated March 30, 2009.

Weis, T. (2019). Tuvatu Fiji Project, Review of 3-D IP/resistivity inversion models for the Tuvatu Project. Fiji,August 15, 2019. Thomas V. Weis & Associates, Denver, CO, USA.

Weis, T. (2020). Tuvatu Fiji Project, CSAMT geophysical report. Internal Company Report for Lion One Ltd.

Weis, T. (2020). Tuvatu Fiji Project, CSAMT geophysical report prepared for Lion One Ltd,

Weis, T (2024). Tuvatu Fiji Project, CSAMT geophysical Report prepared for Lion One Ltd,

28.0 CERTIFICATES OF QUALIFIED PERSONS

28.1 Darren Holden, FAusIMM

I, Darren Holden, B.Sc. (Hons), Ph.D., FAusIMM, do hereby certify:

1. I am a Director and Principal Consultant with GeoSpy Pty Ltd. with a business address at 7d Amherst Street, Fremantle, Western Australia 6160.
2. This certificate applies to the technical report entitled "NI 43-101 Technical Report and Mineral Resource Estimate Tuvatu Gold Project" with an effective date of June 24, 2024 (the "Technical Report").
3. I am a graduate of The University of Western Australia (Bachelor of Science with Honours First Class, Geology, 1994) and The University of Notre Dame Australia (Doctor of Philosophy, History of Science, 2019). I am a Fellow in good standing of the Australasian Institute of Mining and Metallurgy (FAusIMM, #226201).
4. My relevant experience with respect to mineral exploration geology (including gold) includes more than 29 years of involvement as both a consultant and employee on various companies. I have worked as a mine-geologist in Western Australia and as an exploration geologist, including holding positions in companies such as Exploration Manager, Senior Modelling Geologist, Vice President Geoscience, Managing Director, and Chairman for exploration to discovery stage projects in Canada, the United States, Australia, and the Pacific. I am a "Qualified Person" for the purposes of National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101) for the sections of the Technical Report for which I am responsible.
5. I visited the Property that is the subject of this Technical Report on October 15 to October 22 2023, June 4 to June 11, 2022, February 16 to 23, 2020; December 1 to 7, 2019; October 27 to November 3, 2019; September 18 to 30, 2019; June 29 to July 7 2019; April 7 to 14, 2019; March 7 to 15, 2019; and a total of 12 other times, for about 7 to 10 days each time, between 2017 to 2018. The purpose of the visit is to conduct exploration, reconnaissance, data reviews, reporting, and targeting.
6. I am responsible for Sections 7, 8 and 9 as well as the relevant sub-sections of Sections 1, 25, 26, and 27 of this Technical Report.
7. I am not independent of Lion One Metals Limited as defined by Section 1.5 of NI 43-101.
8. My previous experience with the Property that is the subject of this Technical Report includes providing advisory services to Lion One Metals Limited for approximately 7 years.
9. I have read the Instrument, and the Technical Report has been prepared in compliance with the Instrument.
10. As at the effective date of the technical report, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Original Signed and Sealed

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Darren Holden, FAusIMM

Date: June 24, 2024

28.2 Gregory Mosher, P.Geo.

I, Gregory Z. Mosher, P. Geo., of North Vancouver, British Columbia, do hereby certify:

1. I am a geologist with a business address at #304-3373 Capilano Crescent North Vancouver, Canada, V7R 4W7.

2. This certificate applies to the technical report entitled "NI 43-101 Technical Report and Mineral Resource Estimate Tuvatu Gold Project", with an effective date of June 24, 2024 (the "Technical Report").

3. I am a graduate of Dalhousie University (B.Sc. Hons., 1970) and McGill University (M.Sc. Applied, 1973). I am a member in good stand of the Association of Professional Engineers and Geoscientists of British Columbia, License #19267.

4. My relevant experience with respect to gold deposits includes over 30 years of exploration for and evaluation of such deposits. I am a "Qualified Person" for the purposes of National Instrument 43-101 (the "Instrument").

5. My personal inspection of the Property was from March 26 to April 08, 2024 with a total of two days spent inspecting the mine, core processing and assay laboratory facilities.

6. I am responsible for sections 2,3, 4, 5, 6, 11, 12, 13, 14, 18, 19, 23, and 24 as well as portions of Sections 1, 25, 26 and 27 of the Technical Report.

7. I am independent of Lion One Metals Limited as defined by Section 1.5 of the Instrument.

8. I have had no prior involvement with the Property that is the subject of this Technical Report.

9. I have read the Instrument and the Technical Report has been prepared in compliance with the Instrument.

10. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed:

Original Signed and Sealed

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Greg Z. Mosher, P.Geo.
Date: June 24, 2024

28.3 William J Witte, P.Eng.

I, William J. Witte, P. Eng. do hereby certify:

1. I am a Principal Advisor with R.J. Anderson and Associates Ltd. with a business address at 4329 Keith Road, West Vancouver, BC, Canada, V7W 2L9.
2. This certificate applies to the technical report entitled "NI 43-101 Technical Report and Mineral Resource Estimate Tuvatu Gold Project" with an effective date of June 24, 2024 (the "Technical Report").
3. I am a graduate of the University of Nevada, Reno, Mackay School of Mines with degrees AS/Civil and Mining Engineering (1976) and University of Arizona, BS Mechanical (Process) Engineering (1978). I belong to the Canadian Institute of Mining and Metals (Mineral Processing) and a registered Professional Engineer with Engineers and Geoscientists, British Columbia ("EGBC").
4. My relevant experience with respect to the mining industry spans over 45 years and includes mine operations, starting up and operating a large metallurgical research and development laboratory and engineering, and construction management businesses. I have also owned businesses mostly involved with the development of novel metal recovery technology. I have been responsible for over 225 mining and processing projects around the world, many of which were for the recovery and production of precious metals. I have also been responsible for numerous comminution tests and development of projects in base metals, industrial minerals, diamonds, and rare earths. I have held positions including mill operations, senior management roles in junior mining companies including as vice president, president and CEO and numerous directorships of public junior mining companies.
5. I have provided corporate and technical assistance to Lion One Metals since April 2017 marking, to date, 7 years of service. I have been responsible for the metallurgical testing on the Property since 2018, design of the Tuvatu geochemical analytical and metallurgical laboratories, and the general process development of the pilot plant and some of the infrastructure supporting the plant and TSF.
6. I visited the Property twice since being involved with the Project. The first Property visit was from Tuesday, October 10, 2023, until Friday, October 27, 2023 (17 days). The second Property visit was from Tuesday, November 28, 2024, until Friday, December 1, 2023) (4 days). The first property visit was to review the overall mine operation with a special focus on pilot plant operations and deficiency reviews, the TSF and laboratory operations and procedures. The second property visit was to provide support for a due diligence review by outside consultants representing a lender.
7. I am responsible for Sections 13 and 17 as well as relevant sub-sections of Section 1, 25, 26 and 27 of this Technical Report.
8. I am not independent of Lion One Metals Limited as defined by Section 1.5 of NI 43-101 Policies.
9. I am a "Qualified Person" for the purposes of National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101) for the sections of the Technical Report that I am responsible for preparing.
10. My previous experience with the Property that is the subject of this Technical Report, includes providing advisory services to Lion One Metals Ltd for approximately 7 years.
11. I have read the Instrument and the associated policies, and the Technical Report has been prepared in compliance with the Instrument.
12. As at the effective date of the technical report, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Original Signed and Sealed

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William J. Witte, P.Eng.
Principal Advisor

R. J. Anderson and Associates Ltd.
Date: June 24, 2024