



# A Golden Opportunity In South America

**Minera IRL, Peru,** provides an outline of the history and prospects of the Ollachea Gold Project.

**T**he Ollachea Gold Project is located in the Puno Region, Southern Peru, approximately 250 km north of Lake Titicaca in the Eastern Andes. Minera IRL's interest in the project began in 2006, when the original Ollachea concessions were acquired from Rio Tinto. Since then, a number of exploration drilling programmes and technical and financial studies have been completed to advance Ollachea, including a definitive feasibility study produced by AMEC Peru and Coffey Mining Pty Ltd in 2012.

Most recently, Australian engineering and mining consulting firm, Mining Plus, completed the preliminary economic assessment (PEA) for Ollachea, in accordance with National Instrument 43-101 (NI 43-101) Standards of Disclosure for Mineral Projects. The PEA was filed on 1 September 2021, and considers an underground mine, gravity concentration and carbon-in-leach (CIL) plant, designed to treat 1500 tpd over the first three years, before ramping up to 3000 tpd in year four.

Ollachea consists of 18 mining concessions, covering approximately 9899 ha., and benefits from an accessible electricity source and consistent water supply. In addition, critical-path milestones have been accomplished in advance of development, including a 30-year surface rights agreement signed with the Ollachea community in 2012, an environmental and social impact assessment approved by Peruvian authorities, and a 1.2 km production tunnel and site access roads completed in 2013.

## **Mineral resource estimates**

Mineral resources at Ollachea are considered as potentially mineable by a sub-level stoping underground method, and are estimated based on drilling conducted prior to 4Q16. The total mineral resource estimate includes an updated resource estimate for the Minapampa Zone and a maiden resource estimate for the Minapampa Far East (MFE) Zone. The mineral resource is reportedly found inside optimised underground stope shapes, which are based on a cut-off grade of 1.4 g/t gold (Au) and a gold price of US\$1700.

Summarised as of 30 June 2021, the mineral resource has been estimated in alignment with the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) Estimation of Mineral Resource and Mineral Reserves Best Practices Guidelines (CIM, 2019) and reported in accordance with NI 43-101.

Mining Plus has estimated an indicated mineral resource of 1.13 million oz Au contained in 10.7 million t at 3.28 g/t Au. The inferred mineral resource comprises 0.6 million oz Au contained in 7.3 million t at 2.7 g/t Au within the Ollachea property limits. The details of the mineral resource estimate are shown in Table 1.

The Minapampa Zone mineral resource has been estimated with a conventional estimation methodology, consisting of 3D wireframing of mineralisation domains and ordinary kriging of the grade within each domain. The updated interpretation has now incorporated a high-grade domain, in order to facilitate optimisation

and scheduling of high-grade material earlier in the proposed mine life, when compared to the mineral resource estimate that supported the 2012 definitive feasibility study.

The high-grade domain has been modelled by conventional wireframing methods at a nominal grade threshold of  $\geq 4$  g/t Au. The  $\geq 4$  g/t Au high-grade domain has been modelled by Mining Plus in the central Minapampa Zone. Mining Plus considers that this area has sufficient continuity between drill hole sections at  $\geq 4$  g/t Au, and is the only portion of the deposit that could potentially support an elevated mining cut-off grade for a reasonable period of time (3 – 4 years) at the proposed initial mining rate of 1500 tpd.

Additionally, Mining Plus has noted that the newer MFE Zone mineralisation interpretation overlaps part of the mineral resource estimate that supported the 2012 definitive feasibility study. As the MFE Zone has been interpreted from closer-spaced drilling and improved geological understanding, it has replaced the Minapampa Zone interpretation where the two overlapped. That overlapping part of the Minapampa Zone, comprising approximately 20 000 oz Au, has been effectively subtracted from the Minapampa Zone and now forms part of the MFE Zone, with no change in the mineral resource classification.

Mining Plus has reported the mineral resource inside optimised stope shapes in order to satisfy the “reasonable prospects for eventual economic extraction” requirement, in accordance with NI 43-101 and the Mineral Resource and Mineral Reserves Best Practices Guidelines (CIM, 2019). These optimised shapes may include material  $< 1.4$  g/t Au; however, the average grade of the complete stope is  $\geq 1.4$  g/t Au cut-off grade. Similarly, outside of the optimised shapes, there are blocks with grades  $\geq 1.4$  g/t; however, by applying reasonable mining parameters, they have become diluted to the point that they do meet the



Figure 1. Location – Ollachea Gold Project.

Table 1. Mineral resource estimate for the Minapampa and MFE zones within the Ollachea Project (June 2021)						
Zone	Indicated			Inferred		
	Tonnes (million t)	Au g/t	Au ounces (million oz)	Tonnes (million t)	Au g/t	Au ounces (million oz)
Minapampa	10.7	3.28	1.13	1.8	3.0	0.2
Minapampa Far East	-	-	-	5.5	2.6	0.5
Total	10.7	3.28	1.13	7.3	2.7	0.6

1. Mineral resources are not mineral reserves and do not have demonstrated economic viability.
2. All figures have been rounded to reflect the relative accuracy of the estimates. Totals may not sum due to rounding.
3. The mineral resource was estimated by Maria Muñoz and reviewed by Dr A. Fowler, MAusIMM, CP(Geo), Independent Qualified Person under NI 43-101, of Mining Plus Consultants who takes responsibility for it.
4. Composites were capped, where appropriate.
5. Mineral resources have been diluted and reported within optimised underground stope shapes.
6. The optimisation was based on a cut-off grade of 1.4 g/t Au, considering metal prices of US\$1700/oz Au, assuming metal recovery of 87% for gold, and total operating costs of US\$61.18/t.
7. Tonnages reported are metric tonnes and ounces of contained gold are troy ounces.
8. Mining Plus is not aware of any environmental, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues that could materially affect the potential development of the mineral resource estimate.

Head grade	Recovery rate
3.3 g/t	86.2%
4.3 g/t	90.3%

Key assumptions		
Base case gold price	per oz	US\$1600
Mining and processing		
Life of mine (LOM)	years	11
Total mineralised material mined	million t	9.6
LOM gold production	oz	876 200
Average annual gold production, years 1 – 4	oz	66 000
Peak gold production in year 5	oz	111 000
Head grade, years 1 – 4	g/t Au	4.0
Head grade, over remaining LOM	g/t Au	3.0
Gold recovery, years 1 – 3	%	90.3
Gold recovery, over remaining LOM	%	86.2
Operating costs		
LOM average operating cost <sup>1</sup>	per oz	US\$688
LOM average cash cost <sup>2</sup>	per oz	US\$792
LOM all-in sustaining cost (AISC) <sup>3</sup>	per oz	US\$794
Capital costs		
Start-up CAPEX <sup>4</sup>	US\$ million	US\$89
Expansion CAPEX <sup>5</sup>	US\$ million	US\$37

1. Consists of mining and processing costs, tailings, and waste rock disposal and on-site G&A.
2. Consists of operating costs plus treatment and refining charges, government and NSR royalties, and community interest (5%).
3. Consists of cash costs plus sustaining capital (mining and processing).
4. Includes mine development and plant construction with a design capacity of 1500 tpd.
5. Includes tailings storage facility construction and process plant ramp-up to 3000 tpd.

reasonable prospects for eventual economic extraction criterion.

The MFE drilling programme was completed in 4Q16 and was designed to test the extensions to the Minapampa mineral reserve. The programme successfully demonstrated that the mineralisation continues for >500 m to the east of the existing mineral resource estimate, and that the mineralisation is still open to the east and at depth.

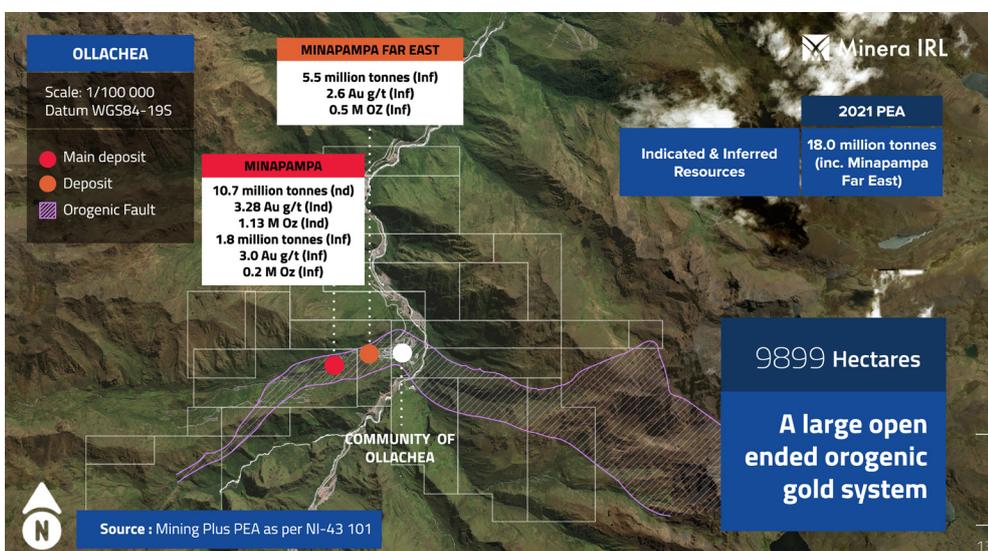
The drilling results have been used to estimate an inferred mineral resource for the MFE Zone of 0.5 million oz Au contained in 5.5 million t at 2.6 g/t Au. As noted above, the mineral resource has been reported inside optimised stope shapes, based on a cut-off grade of 1.4 g/t Au.

## Mining and processing

Mining Plus identified high-grade areas within the deposit that can be mined preferentially in an efficient manner at 1500 tpd, without compromising the remaining mineralised material. This higher-grade section can be mined at an elevated cut-off grade without breaking it up into isolated stopes, making it an ideal area to target early in the mine life and deliver the highest possible grade to the processing plant during the first three years.

The plant design includes a crushing and grinding circuit, followed by gravity concentration. The gravity concentrate is processed in a CIL circuit and gold is recovered from the loaded carbon in a conventional elution-electrowinning plant with smelting of the gold to a Dore bullion. The process also includes effluent treatment, tailings filtration, and preparation of cemented paste backfill required during mining operations.

Overall gold recoveries are shown in Table 2 and are based on metallurgical test work completed between 2017 and 2021 by Sepro Laboratories (Met-Solve).



## Ollachea PEA assumptions and economic results

The main parameters and economics of the Ollachea PEA are summarised in Table 3.

## Conclusion

With the Ollachea PEA filed on 1 September 2021, Minera IRL has focused on engaging with parties that have shown an interest in enabling the development of Ollachea. This is a priority objective of Minera IRL. **GMR**

Figure 2. Ollachea Property – indicated and inferred resources.