

# MINING MOMENTUM

## HIGHEST-GRADE GOLD MINES FOR 2017

by Vladimir Basov

*In Q4 2017, these mines had the highest gold grades coming out of their mills*

Gold has been and still is a favoured investment commodity around the globe. But in today's challenging mineral commodity markets, investors are highly sensitive to a mine's production costs.

Gold grade is a profitability driver for a mine; lower ore grades have a significant impact on production costs. According to GFMS' 2013 Gold Survey, the large increase in cash costs for the top gold miners in the world in the years leading up to 2013 was due to a decline in gold grades.

All things being equal, higher gold grades, therefore, mean lower production costs per ounce/pound/tonne mined. Thus, high-grade gold operations should attract mining investors as their returns are good under most market conditions.

While reported gold grades for ore reserves and resources are important to understand the potential size of a mine, these grades are based on geostatistical evaluation of data, which can change as more data is gathered. The direct measurement of gold grade in milled ore is a more precise reflection of a change in the economic "wellbeing" of a mine.

The following analysis covers the highest-grade operating gold mines in the world, that are separate reporting "units," and have Q4 2017 milled ore grade figures disclosed by the owners/operators.

For a more accurate comparison, the gold mines have been separated into underground and open-pit operations, as these mining methods utilize different techniques and equipment. Where possible, by-product cash cost indicators have been omitted.

## Top 5 highest-grade underground gold operations

Mine	Country	Owner	Au Grade in Milled Ore Q4 2017 g/t	Au Cash Costs Q4 2017 \$USD/ozt
<b>Fosterville</b>	Australia	Kirkland Lake	<b>21.50</b>	<b>\$226.00</b>
<b>Yaramoko</b>	Burkina Faso	Roxgold	<b>17.60</b>	<b>\$417.00</b>
<b>Segovia</b>	Colombia	Gran Colombia Gold	<b>17.48</b>	<b>\$662.00</b>
<b>Cerro Negro</b>	Argentina	Goldcorp	<b>16.74</b>	<b>\$457.00</b>
<b>Turquoise Ridge</b>	USA	Barrick Gold	<b>15.22</b>	<b>\$550.00</b>

## Top 5 highest-grade open-pit gold operations

Mine	Country	Owner	Au grade in milled ore Q4 2017 g/t	Au cash costs in Q4 2017 \$USD/ozt
<b>Way Linggo</b>	Indonesia	Kingsrose Mining	<b>7.60</b>	<b>\$455.00</b>
<b>Mt Carlton</b>	Australia	Evolution Mining	<b>5.86</b>	<b>\$226.00</b>
<b>Albazino*</b>	Russia	Polymetal	<b>5.10</b>	<b>\$676.00</b>
<b>Pueblo Viejo</b>	Dominican Republic	Barrick	<b>4.52</b>	<b>\$344.00</b>
<b>Goukoto</b>	Mali	Randgold	<b>4.50</b>	<b>\$524.00</b>

\*Average cash costs for the whole 2017 year

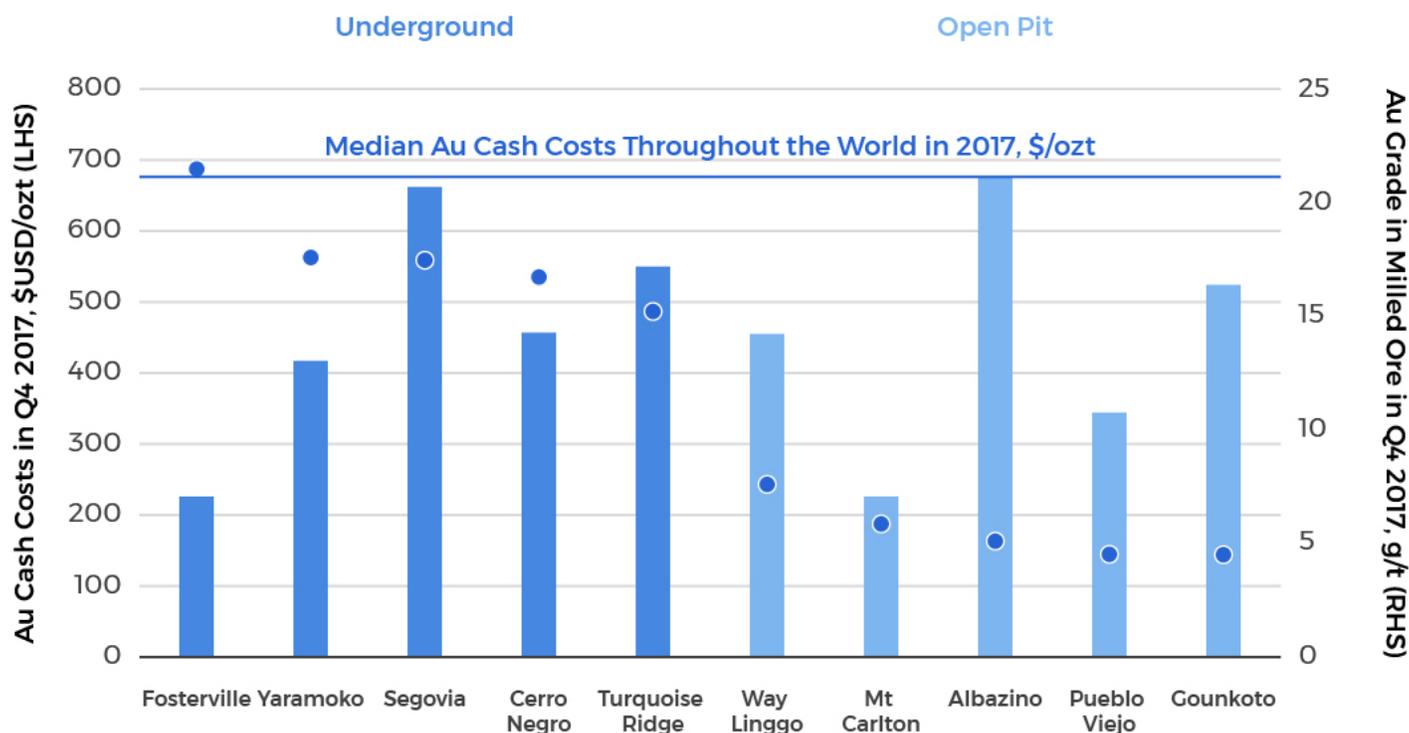
In Q4 2017, Kirkland Lake Gold's Fosterville Mine in Australia had the most impressive grade with 21.5 grams of gold per tonne of milled ore. Combined with a cash cost of \$226/ozt, Fosterville is one of the world's most remarkable underground gold mines right now.

At 7.6 g/t grams of gold per tonne of milled ore, the Way Linggo mine, owned and operated by Kingsrose Mining and located in Indonesia, is the highest-grade open-pit gold

mine. An interesting fact is that the open-pit operations are mining the remaining ore that was left behind by the historic Way Linggo underground mine.

When benchmarking the cash costs of these highest-grade gold mines, we can see that most of the mines have cash costs that are significantly lower than a median weighted-average gold cash costs throughout the world (see graph below). These mines could be viewed as cash cows!

## Gold grades per tonne of milled ore vs. cash costs for highest-grade UG and OP gold mines



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