

# Australian & New Zealand Gold Operations

## September Quarter 2024

### Overview

The average All-in Sustaining Cost (AISC) for Australia and New Zealand was A\$2,150/oz, which is up 5.3% (A\$109/oz) on the previous quarter average AISC of A\$2,041/oz. Evolution Mining's North Parkes and Ernest Henry operations were the lowest cost producers reporting an AISC of -A\$1,815/oz, -A\$1,629/oz respectively followed by Ramelius Resources' Mt Magnet operations with an AISC of A\$1,525/oz. The average gold spot price for the quarter was A\$3,694/oz (US\$2,475/oz). It should be noted that North Parkes and Ernest Henry benefit from significant base metal by-products. Aurum Analytics' estimate of these operations AISC on a co-product basis (Co-AISC) is as follows; North Parkes Co-AISC of A\$1,829/oz and Ernest Henry Co-AISC of A\$2,167/oz. The lowest cost "gold only" operations were Ramelius Resource's Mt Magnet operations with an AISC of A\$1,525, Evolution Mining's Cowal operations (A\$1,581/oz), followed by Capricorn Metals' Karlawinda mine (A\$1,647/oz).

Newmont's Boddington operation took out top spot as Australia's largest gold producer with 137,000 oz for the quarter, followed by AngloGold Ashanti's and Regis Resources Tropicana operation (123,353 oz) and Newmont's Cadia operations (115,000 oz). Of the mines where gold is a by-product, BHP's Olympic Dam produced the most gold 37,385 oz followed by their Carrapateena mine with 25,476 oz, then their Prominent Hill mine with 20,976 oz.

Grade wise for the companies that report AISC, the average reported mill head/feed grade was 2.44 g/t (Open Pit (OP) - 0.83 g/t, Underground (UG) – 3.50 g/t, Open Pit & Underground (OP/UG) - 1.87 g/t) which was down on the previous quarter, 2.47 g/t (-0.9%). Mandalay Resources' Costerfield mine took out the honour as the operation with the highest average feed grade with 8.09 g/t, followed by Gold Fields' Agnew mine 6.35 g/t. The lowest grade mine was Evolution's North Parkes mine processing an average head grade of 0.31 g/t. The high-grade operations that do not report an AISC were Agnico Eagle's Fosterville mine with 8.61 g/t and Kaiser Reef's A1 mine with 7.64 g/t.

### Top 10 Gold Producing Operations

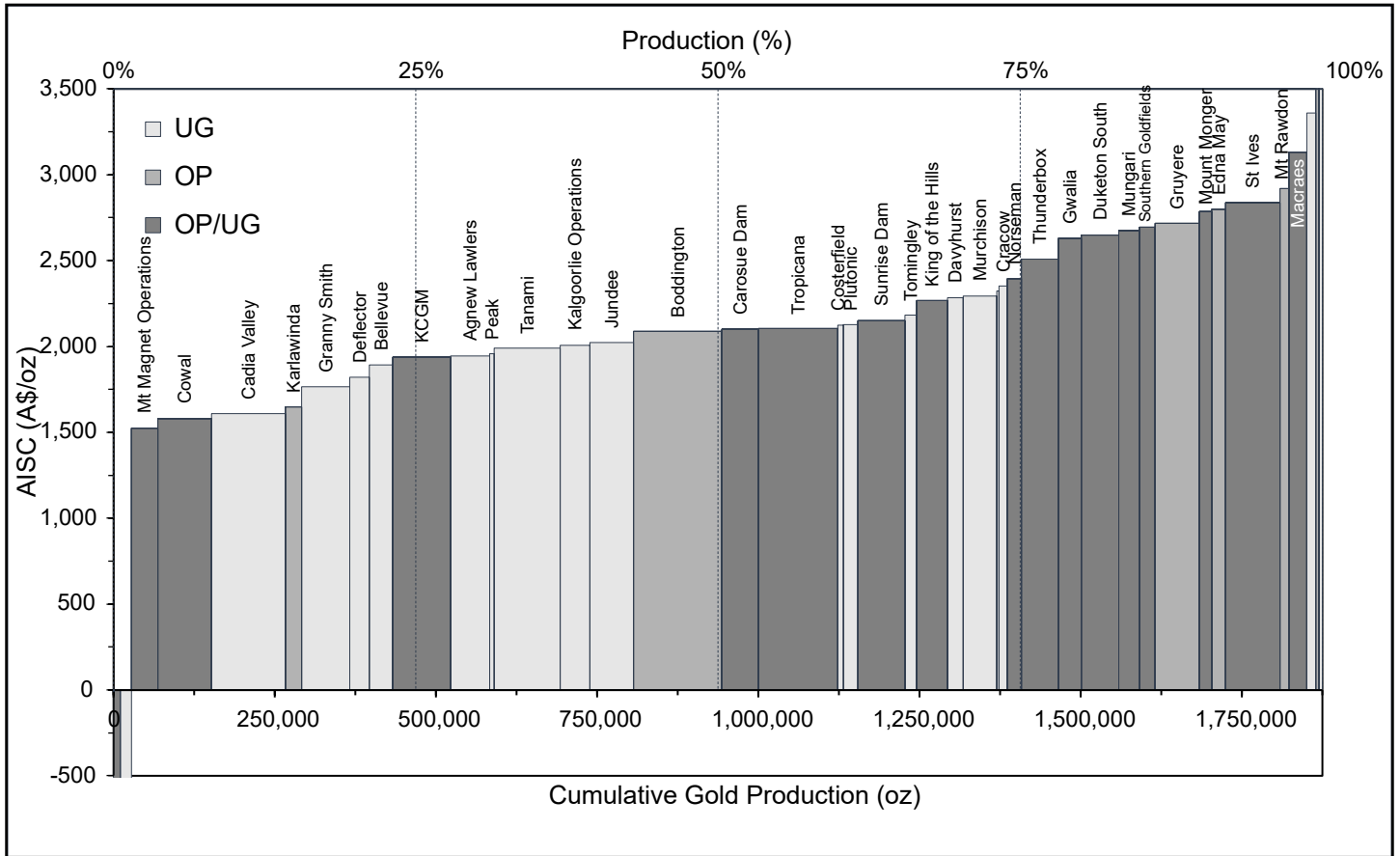
Rank	Operation	Company	Mine Type	Au Produced (oz)
1	Boddington	Newmont Corporation	OP	137,000
2	Tropicana	JV AngloGold Ashanti Limited/Regis Resources Limited	OP/UG	123,353
3	Cadia Valley	Newmont Corporation	UG	115,000
4	Tanami	Newmont Corporation	UG	102,000
5	KCGM	Northern Star Resources Limited	OP/UG	89,745
6	St Ives	Gold Fields Limited	OP/UG	83,800
7	Cowal	Evolution Mining Limited	OP/UG	83,245
8	Granny Smith	Gold Fields Limited	UG	74,400
9	Sunrise Dam	AngloGold Ashanti Limited	OP/UG	73,000
10	Gruyere	JV Gold Fields Limited/Gold Road Resources Limited	OP	68,781

## Gold Operations That Report AISC

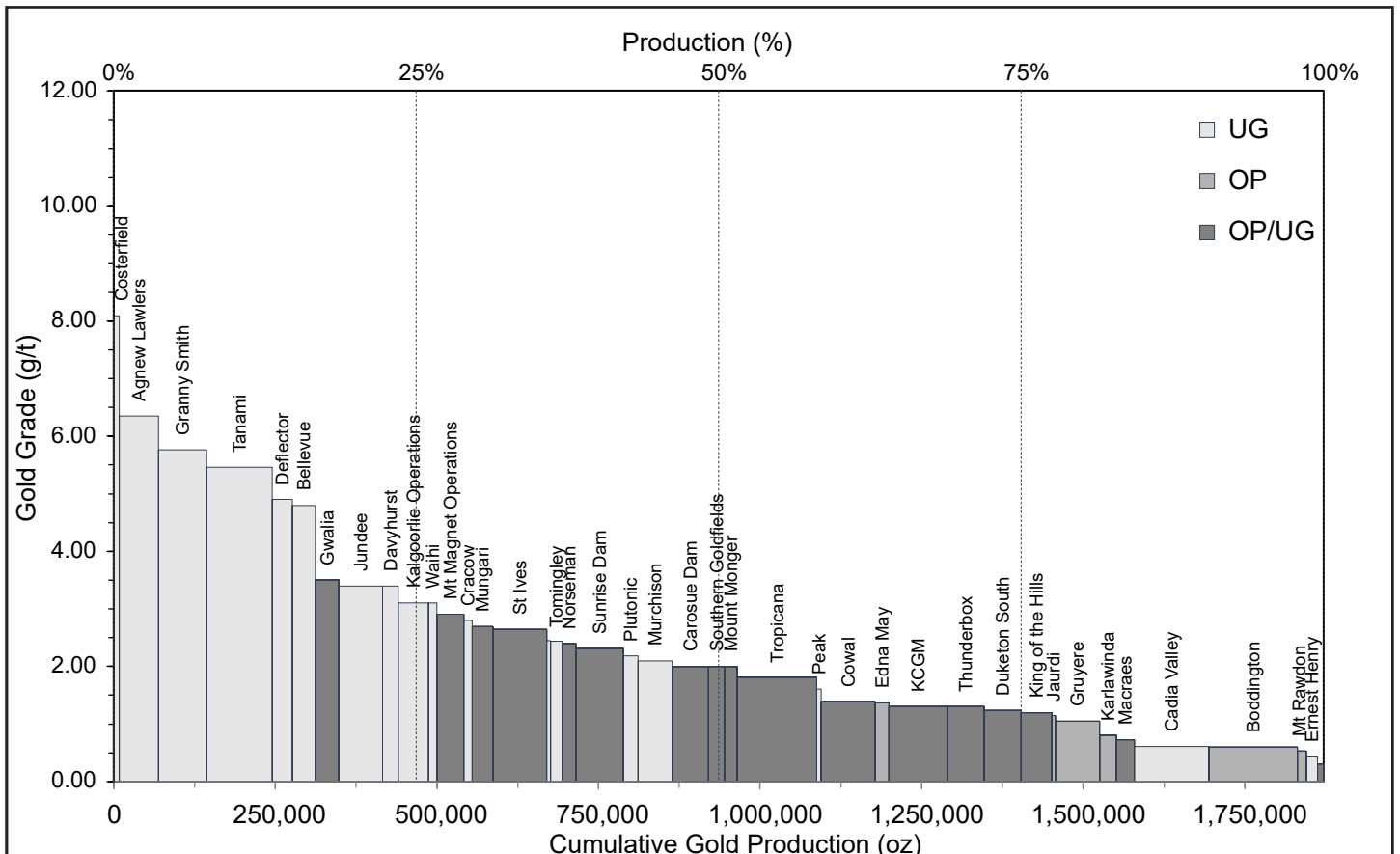
AISC Rank	Operation	Company	Mine Type	AISC (A\$/oz)	Grade (g/t)	Grade Rank	Au Produced (oz)
1	North Parkes	Evolution Mining Limited	OP/UG	-1,815	0.31	41	9,879
2	Ernest Henry	Evolution Mining Limited	UG	-1,629	0.44	40	17,200
3	Mt Magnet Operations	Ramelius Resources Limited	OP/UG	1,525	2.91	12	41,019
4	Cowal	Evolution Mining Limited	OP/UG	1,581	1.39	27	83,245
5	Cadia Valley	Newmont Corporation	UG	1,609	0.61	37	115,000
6	Karlawinda	Capricorn Metals Limited	OP	1,647	0.80	35	25,559
7	Granny Smith	Gold Fields Limited	UG	1,764	5.76	3	74,400
8	Deflector	Vault Mineral Limited	UG	1,820	4.90	5	30,591
9	Bellevue	Bellevue Gold Limited	UG	1,892	4.80	6	35,993
10	KCGM	Northern Star Resources Limited	OP/UG	1,937	1.30	29=	89,745
11	Agnew Lawlers	Gold Fields Limited	UG	1,945	6.35	2	60,900
12	Peak	Aurelia Metals Limited	UG	1,958	1.61	26	6,966
13	Tanami	Newmont Corporation	UG	1,991	5.46	4	102,000
14	Kalgoorlie Operations	Northern Star Resources Limited	UG	2,005	3.10	10=	46,094
15	Jundee	Northern Star Resources Limited	UG	2,023	3.40	8=	67,962
16	Boddington	Newmont Corporation	OP	2,087	0.60	38	137,000
17	Carosue Dam	Northern Star Resources Limited	OP/UG	2,100	2.00	22=	56,729
18	Tropicana	JV AngloGold/Regis Resources	OP/UG	2,103	1.81	25	123,353
19	Costerfield	Mandalay Resources Limited	UG	2,125	8.09	1	8,218
20	Plutonic	Catalyst Metals Limited	UG	2,128	2.18	20	22,602
21	Sunrise Dam	AngloGold Ashanti Limited	OP/UG	2,151	2.31	19	73,000
22	Tomingley	Alkane Resources Limited	UG	2,182	2.44	17	18,418
23	King of the Hills	Vault Mineral Limited	OP/UG	2,266	1.20	32	47,319
24	Davyhurst	Ora Banda Mining Limited	UG	2,285	3.40	8=	24,327
25	Murchison	Westgold Resources Limited	UG	2,294	2.10	21	52,889
26	Dargues	Aurelia Metals Limited	UG	2,322	NA	NR	3,537
27	Cracow	Aeris Resources Limited	UG	2,352	2.80	13	12,900
28	Norseman	Pantoro Limited	OP/UG	2,395	2.40	18	21,374
29	Thunderbox	Northern Star Resources Limited	OP/UG	2,509	1.30	29=	57,243
30	Gwalia	Genesis Minerals Limited	OP/UG	2,628	3.50	7	36,020
31=	Duketon South	Regis Resources Limited	OP/UG	2,650	1.24	31	57,501
31=	Mungari	Evolution Mining Limited	OP/UG	2,674	2.69	14	32,096
33	Southern Goldfields	Westgold Resources Limited	OP/UG	2,696	2.00	22=	24,480
34	Gruyere	JV Gold Fields/Gold Road	OP	2,718	1.05	34	68,781
35	Mount Monger	Vault Mineral Limited	OP/UG	2,785	2.00	22=	19,583
36	Edna May	Ramelius Resources Limited	NM	2,799	1.37	28	21,425
37	St Ives	Gold Fields Limited	OP/UG	2,838	2.64	15	83,800
38	Mt Rawdon	Evolution Mining Limited	OP	2,918	0.53	39	13,816
39	Macraes	OceanaGold Corporation	OP/UG	3,132	0.73	36	28,300
40	Waihi	OceanaGold Corporation	UG	3,361	3.10	10=	13,800
41	Jaurdi	Beacon Minerals Limited	OP	3,697	1.15	33	5,230
42	Henty	Catalyst Metals Limited	UG	3,867	2.45	16	5,389

Notes: Operations shown on a 100% basis, except North Parkes only Evolution's 80% interest is shown.

## Gold Production Cost Curve Ranked By Reported AISC



## Gold Production Grade Curve Ranked By Average Mill Feed/Head Grade



## Gold Mines That Did Not Report All-in Sustaining Costs

Rank	Operation	Company	Mine Type	Grade (g/t)	Au Produced (oz)
1	Fosterville	Agnico Eagle Mines Limited <sup>1</sup>	UG	8.61	65,532
2	Ravenswood	EMR Capital	OP	NA	54,000
3	Coolgardie	Focus Minerals Limited	OP	0.86	7,962
4	Telfer	Newmont Corporation	OP/UG	0.56	6,000
5	Kundana EKJV	JV Tribune Resources Limited/Rand Mining Limited	UG	4.58	6,880
6	Mineral Hill	Kingston Resources Limited	OP	1.51	1,868
7	A1	Kaiser Reef Limited	UG	7.64	1,312
NR	Paddington	Zijin Mining Group Company Limited <sup>2</sup>	OP/UG	NA	NA
NR	Marvel Loch	Barto Gold Pty Ltd <sup>2</sup>	OP/UG	NA	NA
NR	Pajingo	Minjar Gold Pty Ltd <sup>2</sup>	UG	NA	NA

1. Agnico Eagle Mines Limited does not report quarterly AISC values for individual mines.

2. These companies do not provide detailed quarterly production statistics.

## Mines Where Gold Is A By-Product

Rank	Operation	Company	Mine Type	Au Produced (oz)
1	Olympic Dam	BHP Group Limited	UG	37,385
2	Carrapateena	BHP Group Limited	UG	25,476
3	Prominent Hill	BHP Group Limited	UG	20,976
4	Ernest Henry	Evolution Mining Limited	UG	17,200
5	North Parkes <sup>1</sup>	Evolution Mining Limited	OP/UG	9,879
6	Rosebery	MMG Limited	UG	8,199
7	Golden Grove	29Metals Limited	UG	6,070
8	Tritton	Aeris Resources Limited	UG	1,500
9	Eloise	AIC Mines Limited	UG	1,370
10	Mt Colin	Aeris Resources Limited	UG	800
11	Kanmantoo	Hillgrove Resources Limited	UG	626

1. North Parkes is a joint venture between Evolution Mining Limited (80%) and Sumitomo Australia Pty Ltd (20%). Gold produced represents Evolutions 80% interest for part ownership of the quarter only.

## Quarter on Quarter Change in AISC and Grade

Statistic	AISC (A\$/oz)	Change (%)	Grade (g/t)	Change (%)
Average (Simple) <sup>1</sup>	2,150	5.3%	2.44	-0.9%
Average (Weighted) <sup>2</sup>	2,115	7.7%	1.36	-1.1%
Minimum	-1,815	39.0%	0.31	-8.8%
First Quartile <sup>3</sup>	1,937	18.4%	1.24	-1.6%
Median <sup>3</sup>	2,087	11.2%	2.00	27.4%
Third Quartile <sup>3</sup>	2,395	1.3%	3.10	-3.4%
Maximum	3,867	-16.5%	8.09	-33.0%

Notes: This table of statistics is only based on mines that report an AISC.

1. Simple averages done by number of mining operations.

2. AISC weighted by gold ounces produced, Au grade weighted by ore tonnes milled.

3. First Quartile, Median and Third Quartile values are based on production in the AISC Cost Curve and Grade Curve.

## Top 5 Gold Operations - Major Gold Miners

Gold Production (Attributable)			All-in Sustaining Costs		
Rank	Operation	oz	Rank	Operation	A\$/oz
1	Boddington	137,000	1	Cadia Valley	1,609
2	Cadia Valley	115,000	2	Granny Smith	1,764
3	Tanami	102,000	3	KCGM	1,937
4	KCGM	89,745	4	Agnew Lawlers	1,945
5	Tropicana (70% AngloGold Ashanti Limited) <sup>1</sup>	87,000	5	Tanami	1,991

1. Tropicana's gold produced represents AngloGold Ashanti Limited's 70% attributable interest.

## Top 5 Gold Operations - Mid-Tier Gold Miners

Gold Production (Attributable)			All-in Sustaining Costs		
Rank	Operation	oz	Rank	Operation	A\$/oz
1	Cowal	83,245	1	North Parkes	-1,815
2	Duketon South	57,501	2	Ernest Henry	-1,629
3	Ravenswood	54,000	3	Mt Magnet Operations	1,525
4	Murchison	52,889	4	Cowal	1,581
5	King of the Hills	47,319	5	Deflector	1,820

## Top 5 Gold Operations - Junior Gold Miners

Gold Production (Attributable)			All-in Sustaining Costs		
Rank	Operation	oz	Rank	Operation	A\$/oz
1	Gwalia	36,020	1	Karlawinda	1,647
2	Bellevue	35,993	2	Bellevue	1,892
3	Gruyere (50% Gold Road Resources Limited) <sup>1</sup>	34,391	3	Peak	1,958
4	Karlawinda	25,559	4	Costerfield	2,125
5	Davyhurst	24,327	5	Plutonic	2,128

1. Gruyere's gold produced represents Gold Road Resources Limited's 50% attributable interest.

## Top 5 Pure Gold Operations (No Base Metal By or Co-Products)

Gold Production (Total)			All-in Sustaining Costs		
Rank	Operation	oz	Rank	Operation	A\$/oz
1	Tropicana <sup>1</sup>	123,353	1	Mt Magnet Operations	1,525
2	Tanami	102,000	2	Cowal	1,581
3	KCGM	89,745	3	Karlawinda	1,647
4	St Ives	83,800	4	Granny Smith	1,764
5	Cowal	83,245	5	Bellevue	1,892

1. Tropicana is a joint venture between AngloGold Ashanti Limited (70%) and Regis Resources Limited (30%).

## General Notes

Data was sourced from company quarterly reports. Aurum Analytics created the cost and grade curves. Mine Type reflects the source of the ore mined for the quarter, OP - Open Pit, UG - Underground, OP/UG - Open Pit and Underground and NM - No Mining.

For operations in joint venture such as Gruyere and Tropicana AISC values were apportioned by equity ownership percentages.

Where AISC values were reported in US\$ and no A\$ equivalent provided, the quarterly average US\$/A\$ exchange rate (0.6700) from the Reserve Bank of Australia was used.

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## About Aurum Analytics

Aurum Analytics is an independent business providing information and analysis on the Australian and New Zealand gold industry. The information and analysis given is a by-product of Sam Ulrich's PhD research at The University of Western Australia's Centre for Exploration Targeting titled "Insights into the Economic Cost Structure of Gold Mining: From All-in Sustaining Costs to Quantifying Externalities."

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