

Australian & New Zealand Gold Operations

June Quarter 2024

Overview

The average All-in Sustaining Cost (AISC) for Australia and New Zealand was A\$2,041/oz, which is down 0.6% (A\$13/oz) on the previous quarter average AISC of A\$2,054/oz. Evolution Mining's Ernest Henry and North Parkes operations were the lowest cost producers reporting an AISC of **-A\$2,975/oz**, **-A\$1,146/oz** respectively followed by Aurelia Metals' Peak operations with an AISC of A\$115/oz. The average gold spot price for the quarter was A\$3,546/oz (US\$2,338/oz). It should be noted that Ernest Henry, North Parkes and Peak benefit from significant base metal by-products. Aurum Analytics' estimate of these operations AISC on a co-product basis (Co-AISC) is as follows; Ernest Henry Co-AISC of A\$1,880/oz, North Parkes Co-AISC of A\$2,457/oz and Peak Co-AISC of A\$1,783/oz. The lowest cost "gold only" operations were Ramelius Resource's Mt Magnet operations with an AISC of A\$982, Evolution Mining's Cowal operations (A\$1,316/oz), followed by Westgold Resources' Bryah mine (A\$1,348/oz).

Newmont's Boddington operation took out top spot as Australia's largest gold producer with 147,000 oz for the quarter, followed by their Cadia Valley operations (117,000 oz) and Northern Star's KCGM operations (116,690 oz). Of the mines where gold is a by-product, BHP's Olympic Dam produced the most gold 49,139 oz followed by their Carrapateena mine with 26,688 oz, then their Prominent Hill mine with 25,357 oz.

Grade wise for the companies that report AISC, the average reported mill head/feed grade was 2.47 g/t (Open Pit (OP) - 0.84 g/t, Underground (UG) – 3.66 g/t, Open Pit & Underground (OP/UG) - 1.94 g/t) which was up on the previous quarter, 2.41 g/t (2.5%). Mandalay Resources' Costerfield mine took out the honour as the operation with the highest average feed grade with 12.07 g/t, followed by Gold Fields' Agnew mine 5.66 g/t. The lowest grade mine was Evolution's North Parkes mine processing an average head grade of 0.34 g/t. The high-grade operations that do not report an AISC were Agnico Eagle's Fosterville mine with 9.06 g/t and Bellevue Golds' Bellevue mine with 6.10 g/t.

Top 10 Gold Producing Operations

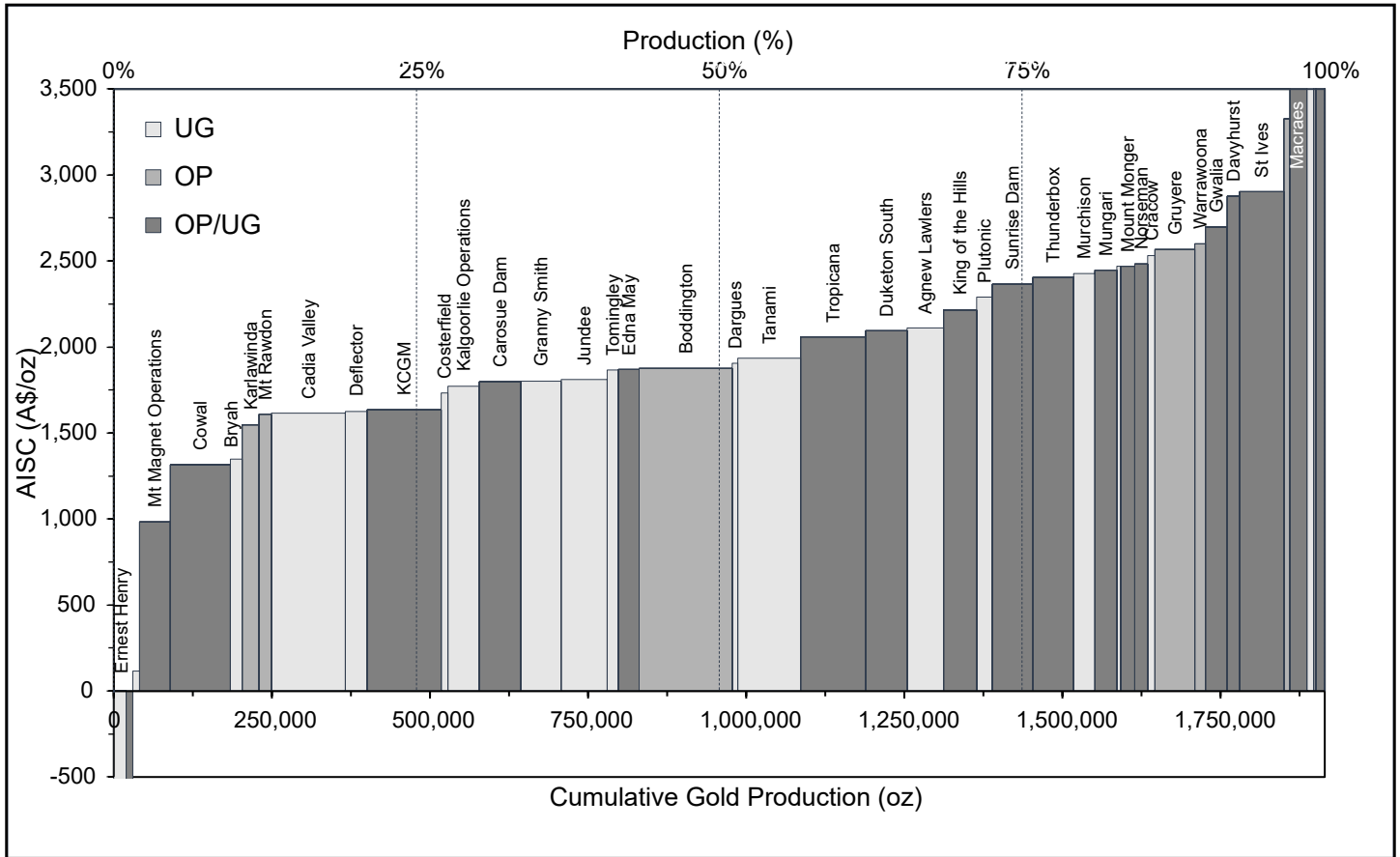
Rank	Operation	Company	Mine Type	Au Produced (oz)
1	Boddington	Newmont Corporation	OP	147,000
2	Cadia Valley	Newmont Corporation	UG	117,000
3	KCGM	Northern Star Resources Limited	OP/UG	116,690
4	Tropicana	JV AngloGold Ashanti Limited/Regis Resources Limited	OP/UG	102,763
5	Tanami	Newmont Corporation	UG	99,000
6	Cowal	Evolution Mining Limited	OP/UG	94,826
7	Jundee	Northern Star Resources Limited	UG	72,661
8	St Ives	Gold Fields Limited	OP/UG	70,147
9	Duketon South	Regis Resources Limited	OP/UG	66,102
10	Fosterville	Agnico Eagle Mines Limited	UG	65,963

Gold Operations That Report AISC

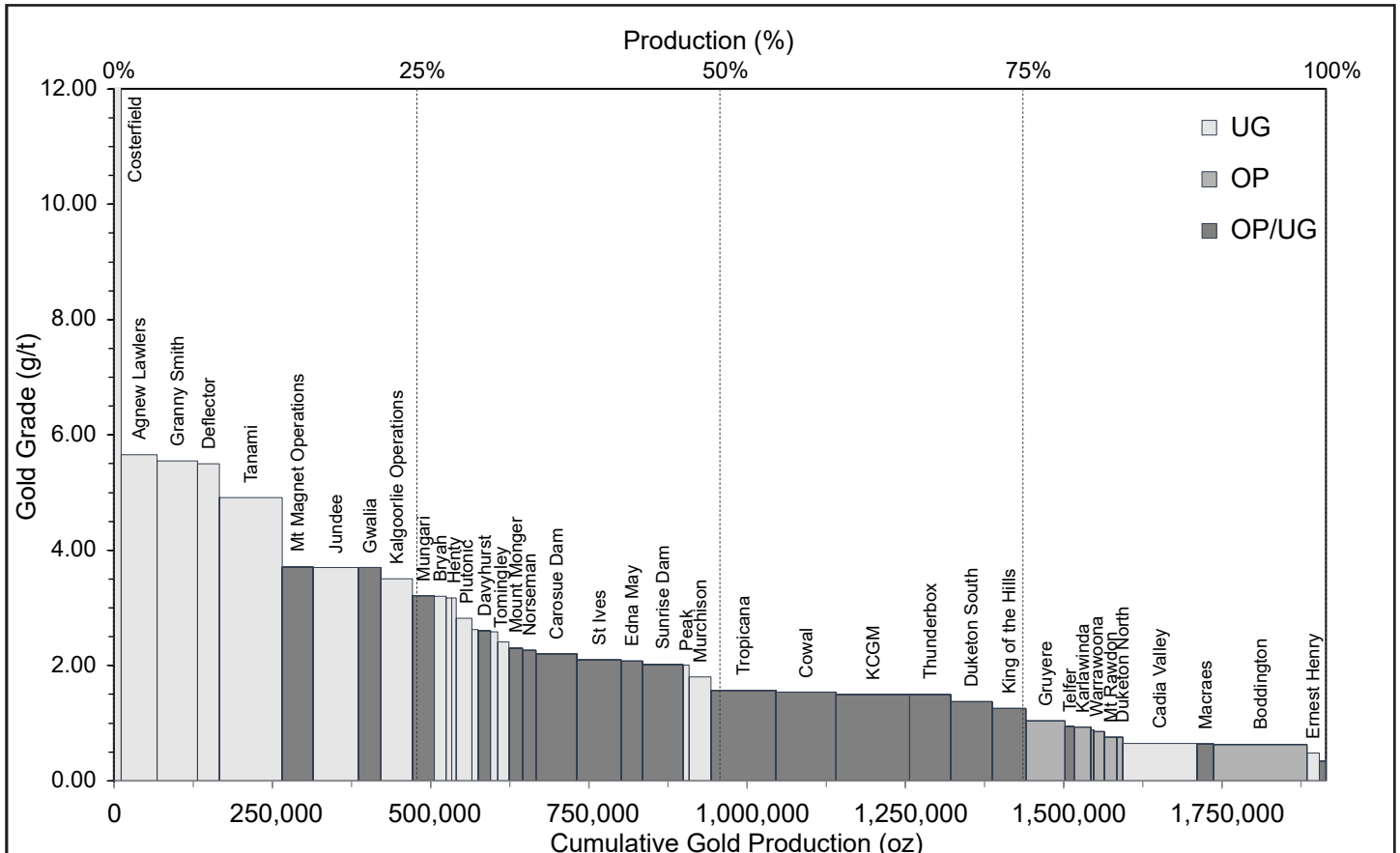
AISC Rank	Operation	Company	Mine Type	AISC (A\$/oz)	Grade (g/t)	Grade Rank	Au Produced (oz)
1	Ernest Henry	Evolution Mining Limited	UG	-2,975	0.48	43	19,458
2	North Parkes	Evolution Mining Limited	OP/UG	-1,146	0.34	44	10,871
3	Peak	Aurelia Metals Limited	UG	115	2.01	25	10,173
4	Mt Magnet Operations	Ramelius Resources Limited	OP/UG	982	3.71	6	48,775
5	Cowal	Evolution Mining Limited	OP/UG	1,316	1.54	28	94,826
6	Bryah	Westgold Resources Limited	UG	1,348	3.20	11	18,902
7	Karlawinda	Capricorn Metals Limited	OP	1,548	0.93	35	26,835
8	Mt Rawdon	Evolution Mining Limited	OP	1,608	0.76	38=	19,544
9	Cadia Valley	Newmont Corporation	UG	1,615	0.65	40	117,000
10	Deflector	Red 5 Limited	UG	1,626	5.50	4	34,111
11	KCGM	Northern Star Resources Limited	OP/UG	1,636	1.50	29=	116,690
12	Costerfield	Mandalay Resources Limited	UG	1,732	12.07	1	11,027
13	Kalgoorlie Operations	Northern Star Resources Limited	UG	1,771	3.50	9	50,067
14	Carosue Dam	Northern Star Resources Limited	OP/UG	1,798	2.20	21	64,857
15	Granny Smith	Gold Fields Limited	UG	1,802	5.55	3	64,250
16	Jundee	Northern Star Resources Limited	UG	1,812	3.70	7=	72,661
17	Tomingley	Alkane Resources Limited	UG	1,867	2.41	18	17,319
18	Edna May	Ramelius Resources Limited	OP/UG	1,870	2.08	23	33,283
19	Boddington	Newmont Corporation	OP	1,876	0.63	42	147,000
20	Dargues	Aurelia Metals Limited	UG	1,906	3.17	12=	8,930
21	Tanami	Newmont Corporation	UG	1,935	4.91	5	99,000
22	Tropicana	JV AngloGold/Regis Resources	OP/UG	2,059	1.57	27	102,763
23	Duketon South	Regis Resources Limited	OP/UG	2,094	1.37	31	66,102
24	Agnew Lawlers	Gold Fields Limited	UG	2,110	5.66	2	56,990
25	King of the Hills	Red 5 Limited	OP/UG	2,216	1.25	32	52,780
26	Plutonic	Catalyst Metals Limited	UG	2,291	2.82	14	24,576
27	Sunrise Dam	AngloGold Ashanti Limited	OP/UG	2,365	2.02	24	64,000
28	Thunderbox	Northern Star Resources Limited	OP/UG	2,405	1.50	29=	64,245
29	Murchison	Westgold Resources Limited	UG	2,427	1.80	26	33,893
30	Mungari	Evolution Mining Limited	OP/UG	2,446	3.21	10	34,378
31=	Henty	Catalyst Metals Limited	UG	2,469	3.17	12=	6,926
31=	Mount Monger	Red 5 Limited	OP/UG	2,469	2.30	19	21,802
33	Norseman	Pantoro Limited	OP/UG	2,481	2.26	20	20,805
34	Cracow	Aeris Resources Limited	UG	2,533	2.58	17	11,600
35	Gruyere	JV Gold Fields/Gold Road	OP	2,566	1.04	33	62,535
36	Warrawoona	Calidus Resources Limited	OP	2,601	0.85	37	16,905
37	Gwalia	Genesis Minerals Limited	OP/UG	2,698	3.70	7=	34,617
38	Davyhurst	Ora Banda Mining Limited	OP/UG	2,878	2.60	16	19,271
39	St Ives	Gold Fields Limited	OP/UG	2,903	2.10	22	70,147
40	Duketon North	Regis Resources Limited	OP	3,328	0.76	38=	9,501
41	Macraes	OceanaGold Corporation	OP/UG	3,517	0.64	41	26,900
42	Waihi	OceanaGold Corporation	UG	3,692	2.62	15	10,400
43	Jaurdi	Beacon Minerals Limited	OP	4,593	0.88	36	3,930
44	Telfer	Newmont Corporation	OP/UG	4,630	0.94	34	14,000

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 ¹	UG	9.06	65,963
2	Bellevue	Bellevue Gold Limited	UG	6.10	42,705
3	Kundana EKJV	JV Tribune Resources Limited/Rand Mining Limited	UG	5.82	8,853
4	Coolgardie	Focus Minerals Limited	OP	0.83	6,841
5	A1	Kaiser Reef Limited	UG	5.40	1,330
NR	Higginsville Operations	Karora Resources Inc ²	OP/UG	NA	NA
NR	Marvel Loch	Minjar Gold Pty Ltd ³	OP/UG	NA	NA
NR	Paddington	Zijin Mining Group Company Limited ³	OP/UG	NA	NA
NR	Pajingo	Minjar Gold Pty Ltd ³	UG	NA	NA
NR	Ravenswood	EMR Capital ³	OP/UG	NA	NA

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

2. Karora Resources Inc didn't report their quarterly production before Westgold Resources Limited completed its takeover on 1 August 2024.

3. 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	49,139
2	Carrapateena	BHP Group Limited	UG	26,688
3	Prominent Hill	BHP Group Limited	UG	25,357
4	Ernest Henry	Evolution Mining Limited	UG	19,458
5	North Parkes ¹	Evolution Mining Limited	OP/UG	10,871
6	Rosebery	MMG Limited	UG	8,275
7	Golden Grove	29Metals Limited	UG	6,367
8	Tritton	Aeris Resources Limited	UG	1,500
9	Eloise	AIC Mines Limited	UG	1,427
10	Mt Colin	Aeris Resources Limited	UG	1,200

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) ¹	2,041	-0.6%	2.47	2.5%
Average (Weighted) ²	1,964	0.2%	1.37	3.2%
Minimum	-2,975	31.4%	0.34	21.4%
First Quartile ³	1,636	7.5%	1.26	15.6%
Median ³	1,876	-0.6%	1.57	-1.9%
Third Quartile ³	2,365	-2.9%	3.21	9.9%
Maximum	4,630	1.0%	12.07	-2.7%

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	147,000	1	Cadia Valley	1,615
2	Cadia Valley	117,000	2	KCGM	1,636
3	KCGM	116,690	3	Kalgoorlie Operations	1,771
4	Tanami	99,000	4	Carosue Dam	1,798
5	Tropicana (70% AngloGold Ashanti Limited) ¹	73,000	5	Granny Smith	1,802

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	94,826	1	Ernest Henry	-2,975
2	Duketon South	66,102	2	North Parkes	-1,146
3	King of the Hills	52,780	3	Mt Magnet Operations	982
4	Mt Magnet Operations	48,775	4	Cowal	1,316
5	Mungari	34,378	5	Bryah	1,348

Top 5 Gold Operations - Junior Gold Miners

Gold Production (Attributable)			All-in Sustaining Costs		
Rank	Operation	oz	Rank	Operation	A\$/oz
1	Bellevue	42,705	1	Peak	115
2	Gwalia	34,617	2	Karlawinda	1,548
3	Gruyere (50% Gold Road Resources Limited) ¹	31,268	3	Costerfield	1,732
4	Karlawinda	26,835	4	Tomingley	1,867
5	Plutonic	24,576	5	Dargues	1,906

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	KCGM	116,690	1	Mt Magnet Operations	982
2	Tropicana ¹	102,763	2	Cowal	1,316
3	Tanami	99,000	3	Bryah	1,348
4	Cowal	94,826	4	Karlawinda	1,548
5	Jundee	72,661	5	Mt Rawdon	1,608

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 (0.6593) from the Reserve Bank of Australia was used.

Disclaimer

The information contained in this report is provided for information purposes only. Accordingly, it is provided on the basis of no liability whatsoever to Aurum Analytics, or the directors, officers and employees of Aurum Analytics who will not be responsible for any damages arising from any use made of the information herein. While all care has been taken in its preparation, this information has not been independently audited and Aurum Analytics, or the directors, officers and employees of Aurum Analytics make no representation and give no warranty or undertaking, express or implied, nor assume any responsibility for the authenticity, origin, validity, accuracy or completeness, or for any errors or omissions contained in the information. The assumptions that were made in its preparation were based on publicly available information which has not been verified by Aurum Analytics, or formally audited.



ARGONAUT
The Natural Choice in Resources

About Argonaut

Argonaut is a full-service corporate finance, stockbroking and investment house based in Perth with a Foreign Broker-Dealer Agreement for the USA and an International Dealer Exemption for Canada. Argonaut is technically driven & focused on natural resource companies & businesses that service the metals, mining, energy, industrial and agri-business sectors. Argonaut is led by an experienced executive team with deep industry knowledge, who have previously held senior executive roles at leading international investment and securities houses. In our target markets, Argonaut is recognised as a trusted, independent corporate advisor with a strong track record of success. Argonaut has proven expertise across the full capital spectrum, being able to deliver optimal financing solutions during a company's entire life cycle.



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."

Contact

Sam Ulrich

Aurum Analytics

E sam@aurumanalytics.com.au
W www.aurumanalytics.com.au
T +61 439 997 814

Liam Twigger

Argonaut Group

E ltwigger@argonaut.com
W www.argonaut.com
T +61 8 9224 6888