

RESOURCES AND ENERGY WORKFORCE FORECAST

2023–2028



Volume 4 – September 2023

 **AREA**
AUSTRALIAN RESOURCES & ENERGY EMPLOYER ASSOCIATION

ABOUT AREEA



AREEA is the Australian Resources and Energy Employer Association – the national association for all employers connected to Australia’s resources and energy.

Since 1918, AREEA has worked to ensure Australia’s resources and energy industry is an attractive place to invest, employ and contribute to the nation’s economic prosperity. In doing so, AREEA helps the industry to create a brighter future for all Australians.

AREEA provides particular expertise, influence,

advocacy, leadership and support in key workforce areas including workplace relations, human resources, diversity and inclusion, workforce development, mental health and psychological safety.

Through its support on employment, skills and other people matters, AREEA is a source of considerable assistance for Australia’s resources and energy employers to meet their commercial objectives, overcome operating challenges, and run productive, competitive and socially responsible businesses.

METHODOLOGY

Resources and Energy Workforce Forecast (2023-2028) estimates the workforce and skills demands of prospective mining and oil and gas projects in Australia’s development pipeline.

Only projects that have been committed by the proponents / investors or have been assessed by AREEA’s analysts as advanced and likely to proceed, are included in this forecast series.

Further, this forecast is for the long-term operational phase of these projects, with workforce demand listed in the year they are scheduled to enter full production. It does not include the short-term construction workforces involved in building the projects in the years prior.

A variety of modelling techniques is applied to present as accurate a forecast as possible, including:

- Applying average productivity ratios (commodity volume produced per employee) from official State Government production and reported employee figures.
- Applying workforce planning formulas and occupation breakdown ratios provided to AREEA by leading employers in each commodity group.

- Cross-referencing workforce estimates in company issued formal and public statements or via direct feedback from company representatives.
- Verification of forecasts by key industry participants in each commodity.

Formulas have been applied consistently within each commodity group to average out variances in project design, quality of resource, terrain and locality, technology and the other myriad factors which can impact total workforce numbers.

Across all modelling AREEA has been conservative. It is assumed new resources and energy projects will sit at the higher end of current industry productivity levels and improving technology may reduce the ratio of on-site operators to centralised white collar roles.

For expansion projects, only the actual increase on current workforce numbers is included in the forecasts. Therefore, expansions designed to maintain current production and workforce numbers have new workforce demand listed as nil.

AREEA thanks the various member representatives who assisted in this industry forecasting project.

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Lead analyst / author: Tom Reid, Director Industry & Advocacy

Email: policy@areea.com.au | Phone: 1800 627 771 | Website: www.areea.com.au

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FOREWORD

As it has throughout history, the resilience of Australia's resources and energy industry continues to rise above all. In the face of domestic policy pressures and global economic and geopolitical headwinds, the number of projects, jobs and capital investment on the horizon, is only trending upwards.

This AREEA forecasting report shows there are 103 major resources and energy projects in Australia's investment pipeline, either already committed or considered advanced by AREEA's analysts, likely to enter production between the second half of 2023 and end of 2028.

While the overall number of projects is roughly on par with last year's edition (107 projects), investment and employment values have seen healthy growth.

The 2023-2028 forecasted projects are worth roughly \$142 billion in capital value (up from \$130bn last year) and promise some 28,260 new production-related jobs (up from 24,000).

In an equally important sign, the growth in projections is well dispersed across the nation.

The strength of Western Australia's resources sector should come as no surprise. Yet while overwhelmingly the largest and most mature jurisdiction, the big 'resource state' has still increased its projected workforce growth by 14% since last year's report.

But the real surprises are in the form of the smaller resources regions where several significant projects have had positive movement in the past 12 months.

South Australia has tripled its projected workforce growth, Victoria's numbers are up seven-fold and the Northern Territory has seen an increase of 25%.

The mining investment story is not all positive for all states, with Queensland surprisingly emerging

as the problem child. This year's report is the first in AREEA's four-year-old series where Queensland has gone backwards, both in terms of project capital (down 15%) and prospective employment growth (down 20% on last year's numbers).

While still a healthy pipeline, clearly the Qld Government's snap decision to massively increase coal royalties has taken its toll on investor confidence.

This has seen, also for the first time in four years, New South Wales take the mantle as the second most favoured jurisdiction in the country for mining and energy investment and associated jobs growth over the five-year projected period.

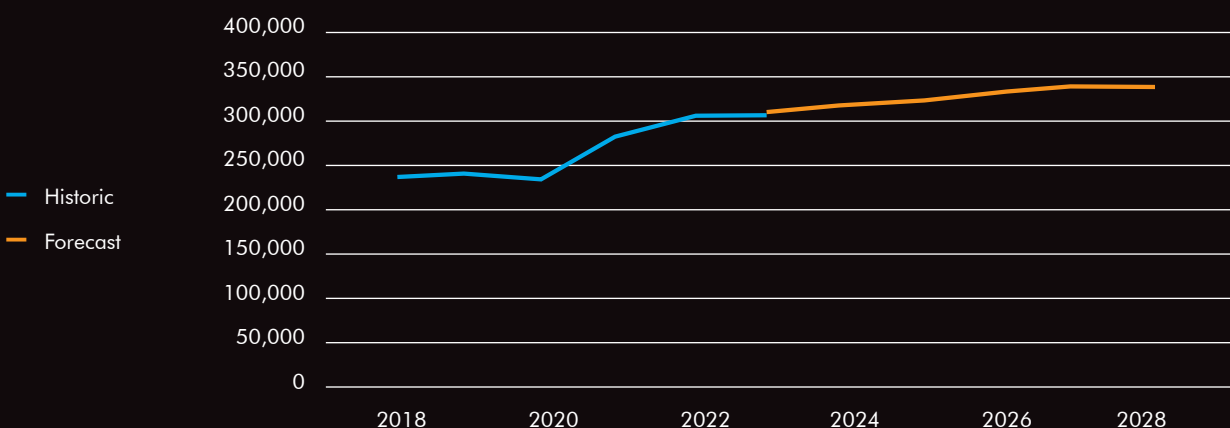
Nationally, direct employment in Australia's resources and energy sector, which in 2022 smashed through the historic 300,000 milestone, is not slowing down.

Queensland is, however, a timely reminder to policymakers that the strength and contribution of the industry cannot be taken for granted. Mooted changes to federal taxation, environmental and energy policy must be treated with equal caution.

AREEA is proud to present Volume Four in its *Workforce Forecast* series. As always, we hope this tool adds value to member companies and their requirements across labour market analysis, workplace planning and talent retention strategies.

THE AREEA TEAM

Resources and energy direct workforce (2018-2028): National





NATIONAL SUMMARY



103
Projects

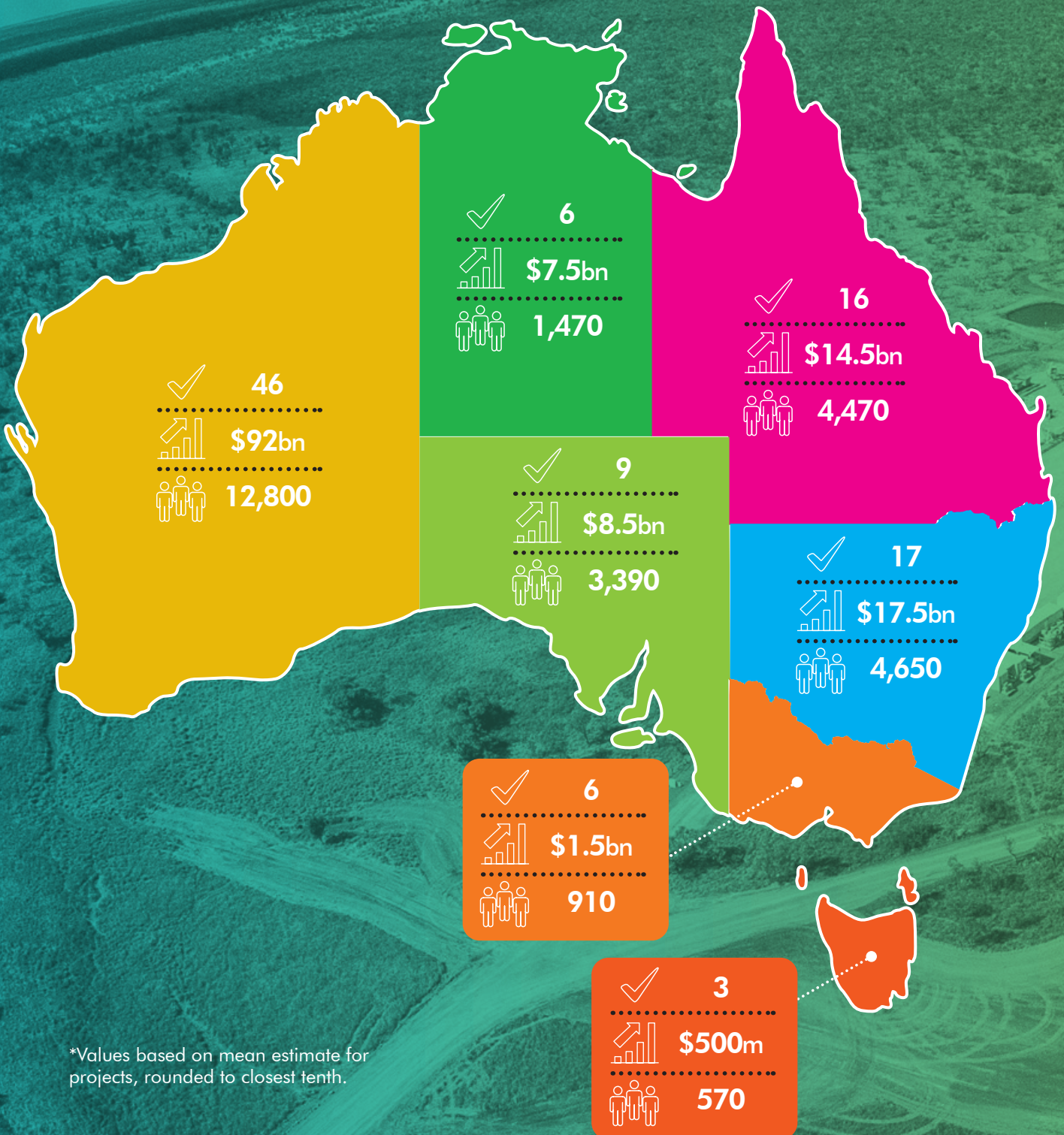


\$142
billion value*



28,260

Additional workforce demand



*Values based on mean estimate for projects, rounded to closest tenth.

AGGREGATE FIGURES



103 Projects



28,260 Employees

Nationally, the industry has 69 new projects, 27 expansions and 7 reactivations either committed or likely to proceed between 2023-2028. Total estimated value is \$142bn.

19 Gas / LNG / Oil	15 Critical Minerals/ Rare Earths
13 Coal	11 Gold
10 Lithium	8 "Other Commodities" (Alumina Phosphate, Sulphate, Uranium, Tin).
9 Iron Ore	9 Copper
5 Nickel / Cobalt	4 Lead / Silver

The total new operating workforce required by these projects is an estimated 28,260. Broken down into the below skills groups, demand will include:

MINING OCCUPATIONS	ENERGY OCCUPATIONS
10155 plant operators	950 production technicians / general service operators
3400 heavy diesel fitters	158 control room operators
1025 other trades (electrical, maintenance)	1703 trade technicians (maintenance, instruments, electrical)
4860 supervisors, management, administration	871 management (supervisors, plant and supply chain, HSE)
4860 mine engineering, technical, geology	278 engineers, geologists, lab analysts

COMMENTARY

The Australian resources and energy industry directly employs 310,900 people. As previously forecast, employment surpassed the 300,000 mark for this first time in mid-2022 and has only grown further since.

Looking forward, the 103 mining, oil and gas projects considered likely to proceed by 2028 will demand an estimated 28,260 new production roles, growing the workforce by a further 9% over five-years.

Demand from the 84 mining projects modelled (see 'mining occupations') will be around 24,300 workers. As is typical with the mining projections, the bulk of this demand will come over the next three years, with over 19,000 workers expected to be needed by the end of 2025.

Coal (13 projects for 5000 workers) and iron ore (9 projects for 4235 workers) retain their longstanding positions as key employment and economic generators.

The resurgence in gold also continues, with 11 projects set to create 2500 new employment demand over three years – with more prospective projects on the horizon.

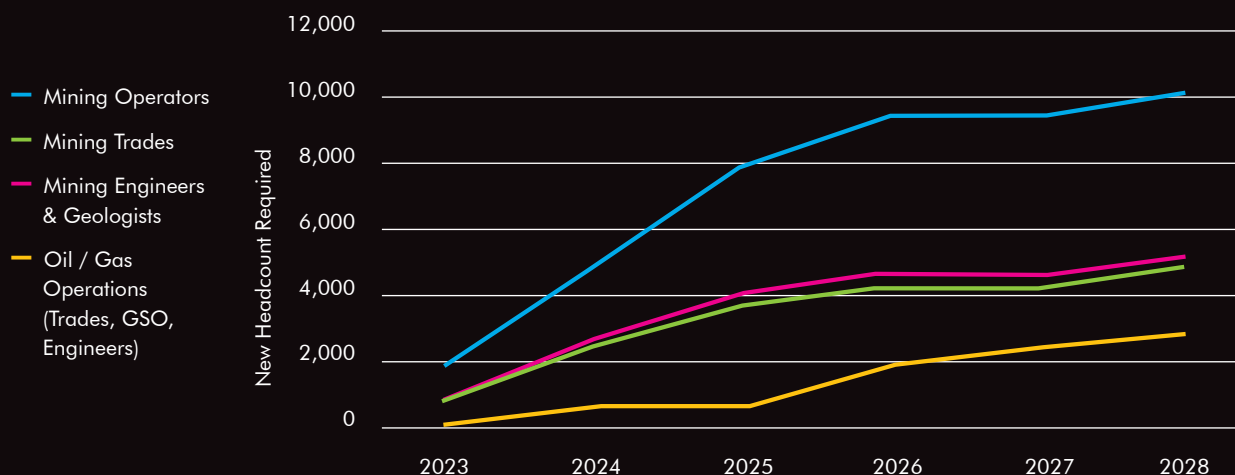
The Australian Government's focus on the critical minerals sector appears justified by market potential. Counting lithium, other critical metals and rare earths, an astounding 25 projects are advanced and likely to enter production by the end of 2028, forecast to create some 4400 jobs.

At the same time, copper (9 projects, 2630 workers); nickel/cobalt (5 projects 1400 workers); and lead, zinc, silver (4 projects, 1100 workers), continue to drive employment growth across the sector.

The oil and gas industry is also undergoing the closest thing to a new investment boom.

19 projects – of which 15 are new developments – are in the pipeline over the next five years. If all are built, they would inject an incredible \$80bn into Australia's engineering, construction and related industries by 2028, and would require nearly 4000 new production workers in the natural gas industry to operate them over the long term.

New workforce demand (2023-2028): Australia (by skills group, accumulative)





WESTERN AUSTRALIA

CRUX LNG (Shell)

- 3mtpa gas/LNG
- Est. start-up: 2027
- Est. workforce: 250

SCARBOROUGH (Woodside)

- 8.4mtpa gas/LNG
- Est. start-up: 2026
- Est. workforce: 600

PLUTO EXPANSION (Woodside)

- 5mtpa gas/LNG
- Est. start-up: 2026
- Est. workforce: 600

BROWSE AND NWS EXTENSION (Woodside)

- 11.4mtpa gas/LNG
- Est. start-up: 2028
- Est. workforce: 720

YANGIBANA (Hastings Technology)

- 8.5kt rare earth oxide
- Est. start-up: 2025
- Est. workforce: 250

ONSLOW IRON PROJECT (Mineral Resources)

- 35mtpa iron ore
- Est. start-up: 2024
- Est. workforce: 1200

AUSTRALIAN VANADIUM PROJECT

- 11kt Vanadium oxide
- Est. start-up: 2025
- Est. workforce: 500

KALGOORLIE NICKEL PROJECT / GOONGARRIE HUB (Ardea)

- 24.5kt nickel / cobalt
- Est. start-up: 2026
- Est. workforce: 300

ENEABBA RARE EARTHS PROCESSING PLANT (Iluka Resources)

- 17.5kt rare earths
- Est. start-up: 2025
- Est. workforce: 270

WEST MUSGRAVE (Oz Minerals)

- 41kt copper / nickel
- Est. start-up: 2025
- Est. workforce: 400

MOUNT HOLLAND MINE & KWINANA PLANT (Covalent Lithium)

- 45kt lithium hydroxide
- Est. start-up: 2024
- Est. workforce: 300

SOUTHDOWN MAGNETITE PROJECT (Grange Resources)

- 5mtpa iron ore (magnetite)
- Est. start-up: 2026
- Est. workforce: 500

AGGREGATE FIGURES



46 Projects



12,800 Employees

Western Australia has 34 new projects, 9 expansions and 3 reactivations either committed or likely to proceed between 2023-2028. Total est. value is \$92bn.

10 Gas / LNG / Oil	9 Lithium
8 Critical Minerals / Rare Earths	6 Iron Ore
4 Gold	3 Copper
3 Nickel / Cobalt	2 Lead / Silver
1 Sulphate & Potash	

The total new operating workforce required by these projects is an estimated 12,800. Broken down into the below skills groups, demand will include:

MINING OCCUPATIONS	ENERGY OCCUPATIONS
4155 plant operators	679 production technicians / general service operators
1380 heavy diesel fitters	113 control room operators
460 other trades (electrical, maintenance)	1215 trade technicians (maintenance, instruments, electrical)
1994 supervisors, management, administration	622 management (supervisors, plant and supply chain, HSE)
1994 mine engineering, technical, geology	198 engineers, geologists, lab analysts

COMMENTARY

Western Australia's resources and energy industry directly employs 166,000 people.

This accounts for 53% of the sector's national workforce – a growing proportion. Over the past two years, incredibly, WA has added over 45,000 new employees to its resources industry.

Looking back over the past five years, WA's resources workforce has grown an average of 12% or nearly 13,000 employees each year.

Growth will continue over the forecast next five years, albeit forecast at a more modest rate of 12,800 employees or 7.7% total, driven by 36 mining and 10 energy projects. This rate may escalate considerably should more projects become committed.

Energy sector growth is headlined in the short-term by Woodside's Scarborough and Pluto Expansion projects, and in the longer-term new major projects in Browse and Crux LNG.

Collectively, the offshore industry has nearly \$63bn in capital investment ready to go, requiring just under 3000 new production workers should they proceed through construction.

Mining demand is concentrated over the next three years and will see 36 projects require just under 10,000 new employment demand.

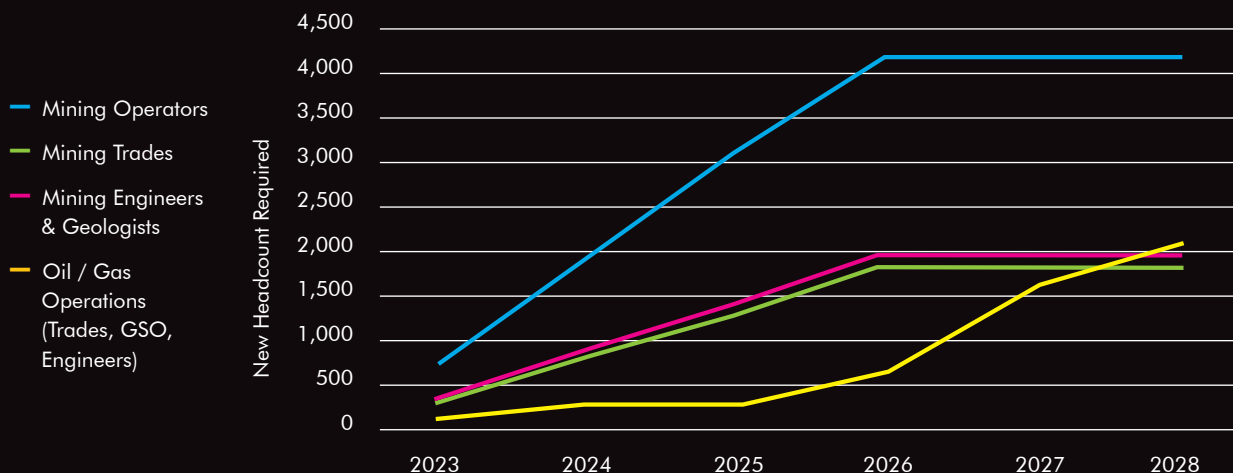
Lithium (9 projects) alongside other critical and rare earth metals (8 projects) lead the raw project numbers, but with moderate long-term workforce demands, totalling an expected 2900 workers.

Iron ore remains the strongest sole driver of employment with 6 projects likely to require 3900 employees by 2026, with Rio Tinto's Mesa expansions and Mineral Resources' Onslow Iron the largest projects on the horizon.

The WA gold industry has seen 10 new and expansion projects completed over the past year. Another four projects set to add 950 new employees to the sector are expected by 2026.

Projects focused on other metals – copper, silver, nickel and so forth – also continue to come online and are expected to create 2200 jobs by late 2026.

New workforce demand (2023-2028) by skills group: Western Australia





QUEENSLAND

PARADISE SOUTH / D-TREE (Phosphate International)

- 1mtpa phosphate
- Est. start-up: 2024
- Est. workforce: 250

EVA COPPER PROJECT (CMMC)

- 45ktpa copper
- Est start-up: 2025
- Est. workforce: 460

SAINT ELMO (Multicom Resources)

- 5kt vanadium oxide
- Est start-up: 2024
- Est. workforce: 150

OLIVE DOWNS (Pembroke Resources)

- 15mtpa coking coal
- Est. start-up: 2024
- Est. workforce: 1000

NEW ACLAND STAGE 3 (New Hope Group)

- 4mtpa thermal coal
- Est. start-up: 2024
- Est. workforce: 260

SURAT GAS PROJECT (Arrow Energy)

- Gas, 400 TJ/day
- Est. start-up: 2026
- Est. workforce: 200

SCONI NICKEL PROJECT (Australian Mines Limited)

- 46kt Nickel
- Est start-up: 2024
- Est. workforce: 300

RAVENSWOOD (EMR, GEAR)

- 115,000oz gold expansion
- Est start-up: 2023
- Est. workforce: 160

HILLALONG (Shandong Energy)

- 4.2mtpa thermal and coking coal
- Est. start-up: 2024
- Est. workforce: 400

AGGREGATE FIGURES



16 Projects



4,470 Employees

Queensland has 11 new projects, 5 expansions and 1 reactivation either committed or likely to proceed between 2023-2028. Total est. value is \$14.5bn.

6 Coal	2 Gold
3 Gas / LNG / Oil	1 Copper
1 Phosphate	1 Alumina
1 Nickel / Cobalt	1 Critical Minerals

The total new operating workforce required by these projects is an estimated 4470 workers. Broken down into the below skills groups, demand will include:

MINING OCCUPATIONS	ENERGY OCCUPATIONS
1764 plant operators	60 production technicians / general service operators
589 heavy diesel fitters	10 control room operators
177 other trades (electrical, maintenance)	107 trade technicians (maintenance, instruments, electrical)
845 supervisors, management, administration	55 management (supervisors, plant and supply chain, HSE)
845 mine engineering, technical, geology	18 engineers, geologists, lab analysts

COMMENTARY

Queensland's resources and energy industry directly employs 70,100 people, or roughly 23% of the national workforce.

This is a declining number, given the prior two years the state's resources workforce averaged 87,000 workers or 24% higher than today's level. This may be a slight correction to COVID-19 impacts, given the circa 70k mark is where Qld's workforce sat prior to the pandemic.

Nonetheless, this decline is concerning for what should be Australia's second big "mining state". Qld is the only state to have reduced major project workforce numbers in this year's forecasting report compared to last year.

While the overall number of projects (16) remains the same as 2022, the number of forecast new jobs over the projected five-year period is down from 5560 in last year's report to 4470 this year.

This appears to primarily come from reduced coal project investment. Following the Qld Government's coal royalties hike, several large projects were cancelled or deferred indefinitely.

Last year AREEA forecast 10 coal projects would create demand for 4400 jobs over five years. This year, that number is 6 coal projects with forecast workforce demand near halving at 2600.

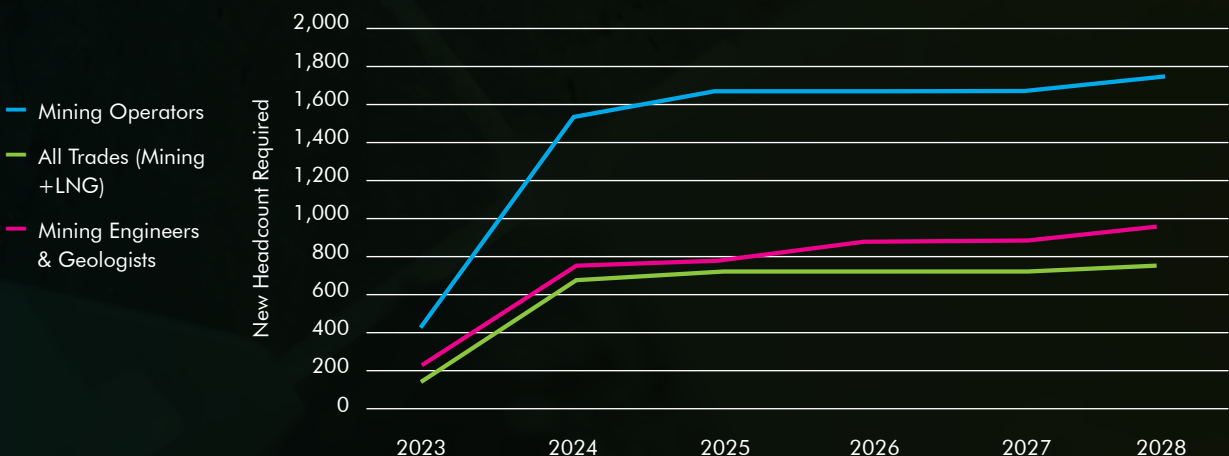
Thankfully projects like Olive Downs, Hillalong and Wilkie Creek are keeping the sector alive and well – hopefully until the Qld Government reconsiders its short-sighted approach.

Other sectors remain somewhat healthy. There are 6 projects in the 'non-coal mining' sectors set to drive nearly 1400 new jobs over the next two years, highlighted by Eva Copper, Ravenswood expansion and Saint Elmo.

Another – the Sconi Nickel Project is further out on the timeline and promises 300 jobs.

There are three onshore CSG/LNG projects expected to come online by late 2027, two owned by Arrow Energy including Surat Gas, which is yet to reach FID but promises 200 energy sector jobs.

New workforce demand (2023-2028) by skills group: Queensland





NEW SOUTH WALES

HAWSONS (Carpentaria Exploration)

- 10mtpa iron ore
- Est. start-up: 2025
- Est. workforce: 500

BROKEN HILL COBALT (Cobalt Blue)

- 3.55kt cobalt
- Est. start-up: 2025
- Est. workforce: 400

VICKERY (Whitehaven)

- 1mtpa thermal and coking coal
- Est. start-up: 2025
- Est. workforce: 100

NARRABRI CSG PROJECT (Santos)

- Gas, 200 TJ/day
- Est. start-up: 2025
- Est. workforce: 200

MT PLEASANT OPTIMISATION (Mach Energy)

- 7.5mtpa thermal coal
- Est. start-up: 2026
- Est. workforce: 500

MAXWELL UNDERGROUND MINE (Malabar Resources)

- 4.7mtpa coal
- Est. start-up: 2023
- Est. workforce: 400

DARTBROOK (Australia Pacific Coal)

- 7.5mtpa coal expansion
- Est. start-up: 2023
- Est. workforce: 470

COWAL (Evolution)

- 350k oz gold expansion
- Est. start-up: 2023
- Est. workforce: 230

WALLARAH 2 (Korean Resources Corp)

- 4mtpa coal
- Est. start-up: 2028
- Est. workforce: 300

MCPHILLAMYS (Regis Resources)

- 192k oz gold
- Est. start-up: 2025
- Est. workforce: 260

BOWDENS (Silver Mines)

- Silver, zinc, lead
- Est. start-up: 2025
- Est. workforce: 230

AGGREGATE FIGURES



17 Projects



4,650 Employees

New South Wales has 10 new projects and 7 expansions either committed or likely to proceed between 2023-2028. Total est. value is \$17.5bn.

7 Coal	3 Gold
2 Gas / LNG / Oil	2 Critical Minerals
1 Iron Ore	1 Lead, Zinc, Silver
1 Nickel / Cobalt	

The total new operating workforce required by these projects is an estimated 4650. Broken down into the below skills groups, demand will include:

MINING OCCUPATIONS	ENERGY OCCUPATIONS
1790 plant operators	59 production technicians / general service operators
601 heavy diesel fitters	10 control room operators
294 other trades (electrical, maintenance)	105 trade technicians (maintenance, instruments, electrical)
880 supervisors, management, administration	54 management (supervisors, plant and supply chain, HSE)
880 mine engineering, technical, geology	17 engineers, geologists, lab analysts

COMMENTARY

New South Wales' resources and energy industry directly employs 40,800 workers, some 5900 or 17% more than just one year ago.

This represents strong growth and a promising turnaround from the previous four years, which saw a slight decline in the state.

Further highlighting NSW's resurgence and, potentially, more favourable regularly regime, this year's report is the first time NSW has had greater workforce projections over the forward five-year period than Queensland.

These growth prospects are also across a more balanced portfolio of commodities. While last year coal represented 12 of 19 projects in the pipeline, this year coal represents 7 of 17 projects.

These are, however, significant projects and will drive demand for an estimated 2500 workers over the next five years, led by Dartbrook, Maxwell and Mt Pleasant.

Gold is the next strongest performer with almost 500 jobs potentially coming through two new projects (Cowal, McPhillamys) and one expansion (Cadia) to sustain workforce numbers at the sector's best known mine.

1100 additional jobs are in the pipeline through silver (Bowdens), iron ore (Hawsons) and the Broken Hill Cobalt Project.

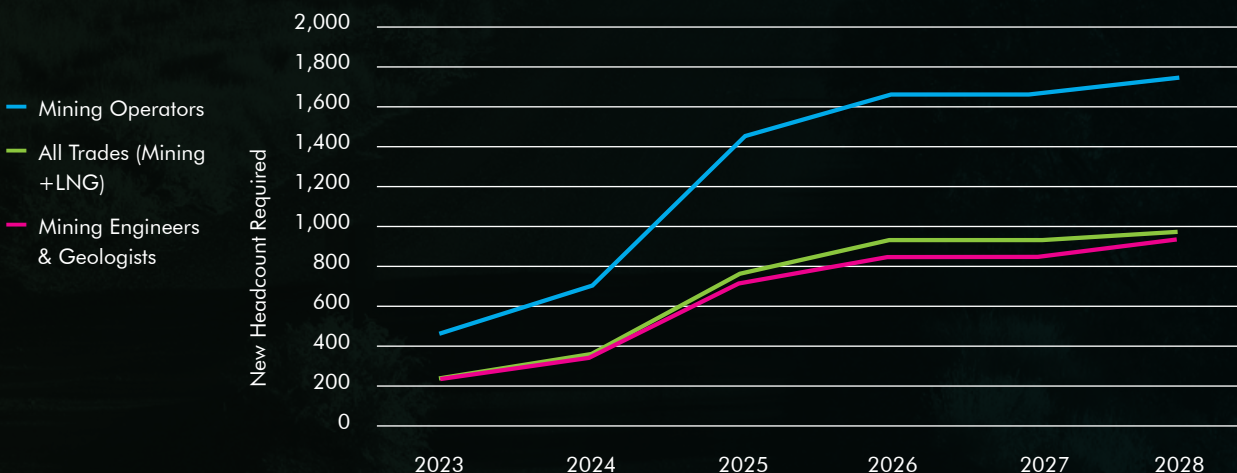
This year also sees NSW enter the critical minerals race, with the Dubbo and Balranald projects awaiting FID and promising around 300 new jobs.

In the oil and gas sector, Santos is nearing final approvals for its long-anticipated Narrabri CSG project, with 200 production jobs (and 1300 construction jobs) on standby.

Squadron Energy is advancing the state's first LNG import terminal at Port Kembla.

In terms of capital investment, NSW has increased the value of its project pipeline from \$14.5bn to \$17.5bn, with more projects earlier in feasibility.

New workforce demand (2023-2028) by skills group: New South Wales





VICTORIA & TASMANIA

GOSCHEN PROJECT (VHM Limited)

- Rare earths and mineral sands
- Est. start-up: 2028
- Est. workforce: 300

DONALD PROJECT (Astron Corporation)

- Rare earths and mineral sands
- Est. start-up: 2025
- Est. workforce: 75

OTWAY PHASE 3 (Cooper Energy)

- Gas, 150 TJ/d
- Est. start-up: 2024
- Est. workforce: 165

DOLPHIN PROJECT (Group 6 Metals)

- 2ktpa tungsten reactivation
- Est. start-up: 2023
- Est. workforce: 65

STOCKMAN (Aeris Resources)

- 15kt copper
- Est. start-up: 2023
- Est. workforce: 250

ENTERPRISE PROJECT (Beach Energy)

- Gas, 20 mmboe
- Est. start-up: 2024
- Est. workforce: 120

HOBART ZINC WORKS ELECTROLYSIS PLANT (Nyrstar)

- Zinc smelter
- Est. start-up: 2024
- Est. workforce: 500

AGGREGATE FIGURES



9 Projects



1,480 Employees

Victoria and Tasmania combined have 9 projects either committed or likely to proceed between 2023-2028. Total est. value is \$2bn.

3 Gas / LNG / Oil	2 Critical Minerals
1 Copper	1 Lead, Zinc, Silver
1 Tin	1 Tungsten

The total new operating workforce required by these projects is an estimated 1480 employees. Broken down into the below skills groups, demand will include:

MINING OCCUPATIONS	ENERGY OCCUPATIONS
485 plant operators	66 production technicians / general service operators
152 heavy diesel fitters	11 control room operators
79 other trades (electrical, maintenance)	124 trade technicians (maintenance, instruments, electrical)
239 supervisors, management, administration	61 management (supervisors, plant and supply chain, HSE)
239 mine engineering, technical, geology	20 engineers, geologists, lab analysts

COMMENTARY

Victoria's resources and energy sector directly employs 10,200 people, up an encouraging 20% on last year, however still well below its pre-COVID peak of 16,000.

The state does have stronger growth potential in its five-year pipeline than in recent years. Three oil and gas projects offer around 300 new production jobs and a \$350m capital injection in the state by late 2025.

An additional three mining projects, covering copper, mineral sands and rare earths, offer another 625 jobs by 2028.

With this minimum investment alone, the state will add nearly 1000 jobs or 10% more employment opportunities.

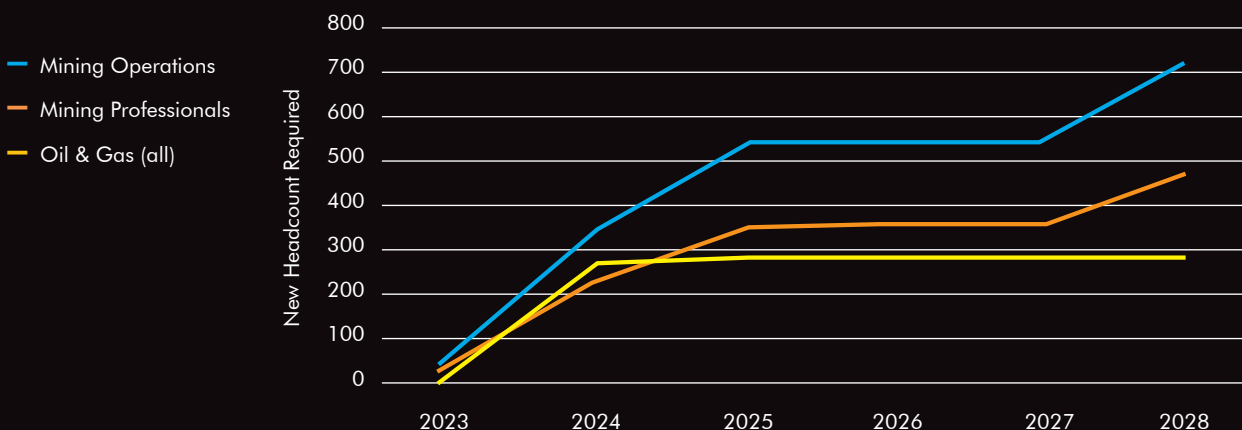
Should the state seek to implement a more attractive investment platform for new projects, including opening up for onshore gas development, these numbers could be far stronger in the near future.

Tasmania's resources and energy industry employs just 3000 people directly. This has been steady over the past three years and some promising projects lay ahead.

The Dolphin Tungsten project is now committed and expected to be completed by the end of this year, whilst the Hobart Zinc Works Electrolysis Plant is expected to go ahead and may offer some 500 operational jobs.

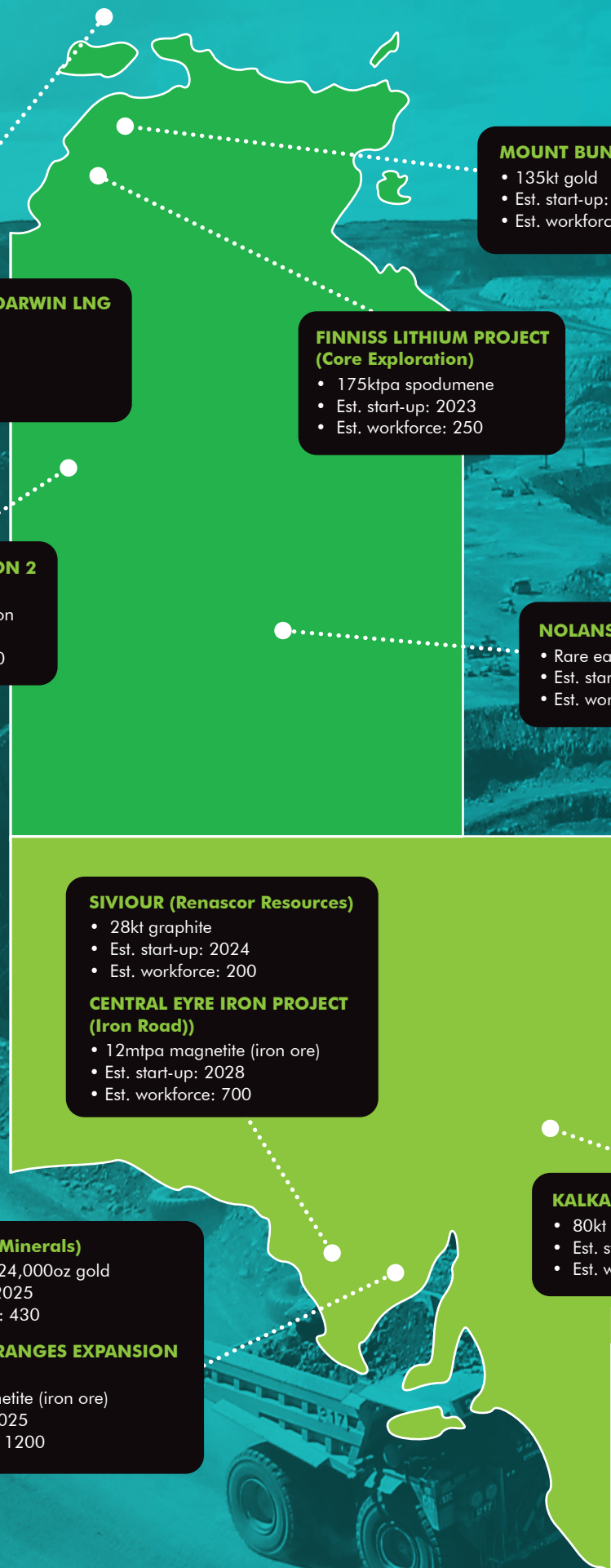
Investment prospects longer term are modest, but the state's existing mines and small number of new projects retain the state's importance to the East Coast mining workforce.

New workforce demand (2023-2028) by occupation group: Victoria & Tasmania





NORTHERN TERRITORY & SOUTH AUSTRALIA



MOUNT BUNDY (Primary Gold)

- 135kt gold
- Est. start-up: 2025
- Est. workforce: 300

BAROSSA BACKFILL TO DARWIN LNG (Santos)

- 380 t/d Gas/LNG
- Est. start-up: 2026
- Est. workforce: 350

FINNISS LITHIUM PROJECT (Core Exploration)

- 175ktpa spodumene
- Est. start-up: 2023
- Est. workforce: 250

TANAMI EXPANSION 2 (Newmont)

- 58,000oz expansion
- Est. start-up: 2025
- Est. workforce: 180

NOLANS (Arufa)

- Rare earths
- Est. start-up: 2025
- Est. workforce: 366

SIVIOUR (Renascor Resources)

- 28kt graphite
- Est. start-up: 2024
- Est. workforce: 200

CENTRAL EYRE IRON PROJECT (Iron Road)

- 12mtpa magnetite (iron ore)
- Est. start-up: 2028
- Est. workforce: 700

KALKAROO (Havilah Resources)

- 80kt copper, 72,000oz gold
- Est. start-up: 2025
- Est. workforce: 260

HILLSIDE (Rex Minerals)

- 35kt copper/ 24,000oz gold
- Est. start-up: 2025
- Est. workforce: 430

MIDDLEBACK RANGES EXPANSION (SIMIC)

- 2.5mtpa magnetite (iron ore)
- Est. start-up: 2025
- Est. workforce: 1200



AGGREGATE FIGURES



15 Projects



4,860 Employees

Northern Territory and South Australia combined have 9 projects either committed or likely to proceed between 2022-2027. Total est. value is \$16bn.

4 Copper	2 Critical Minerals / Rare Earths
3 Other Commodities	2 Gold
2 Iron Ore	1 Gas / LNG / Oil
1 Lithium	

The total new operating workforce required by these projects is an estimated 4860 employees. Broken down into the below skills groups, demand will include:

MINING OCCUPATIONS	ENERGY OCCUPATIONS
1886 plant operators	84 production technicians / general service operators
630 heavy diesel fitters	14 control room operators
189 other trades (electrical, maintenance)	151 trade technicians (maintenance, instruments, electrical)
902 supervisors, management, administration	77 management (supervisors, plant and supply chain, HSE)
902 mine engineering, technical, geology	25 engineers, geologists, lab analysts

COMMENTARY

The Northern Territory directly employs 4900 people in resources and energy.

This is double that recorded in 2022 and may indicate a post-COVID correction in the ABS data, given no new projects have been completed in the Territory during that time.

Notwithstanding the NT still only comprises around 1.5% of the national resources sector workforce, growth prospects are stronger now than they have been in years.

Five projects primarily across gold and various critical minerals, promise over 1100 mining new jobs in the Territory, potentially growing its mining workforce by 20% over the next three years.

This includes Mt Bundy (gold – 300 jobs), Nolans (critical minerals – 280 jobs) and Finniss Lithium Project (250 jobs).

The NT's sole gas project, Barossa, remains tied up in legal challenges. Should it go ahead as planned, the project offers 350 additional production jobs and an injection of nearly \$5bn in capital spend.

The real surprise package in this 2023 workforce forecast report is South Australia.

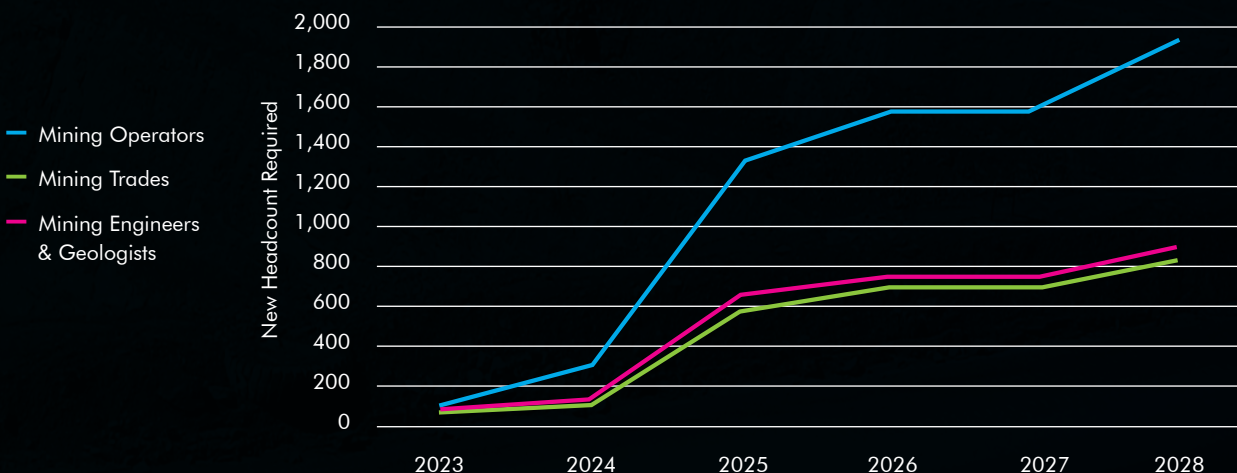
The state has already grown its resources workforce by 3000 people over the past year – up to now 15,700.

In this year's edition there are 9 projective mining projects promising nearly 3400 new jobs over the next five years. This is up from 4 projects offering 690 jobs in last year's edition.

Projects now advanced in SA's pipeline include Central Eye Iron, Hillside, Kalkaroo and Siviour Graphite.

Should these projects come to fruition, SA should expect about \$8.5bn in capital investment and a 22% increase in its direct mining workforce.

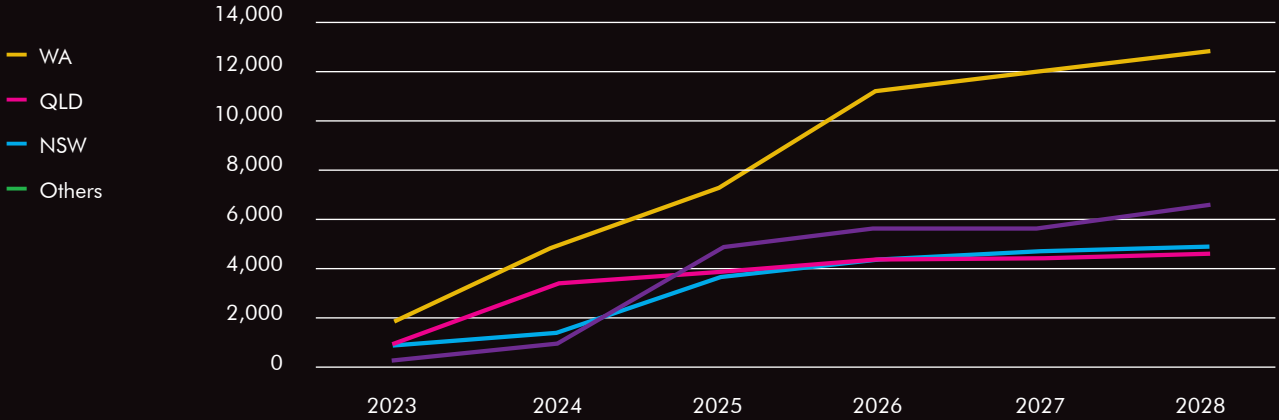
New workforce demand (2023-2028) by skills group: Northern Territory and South Australia



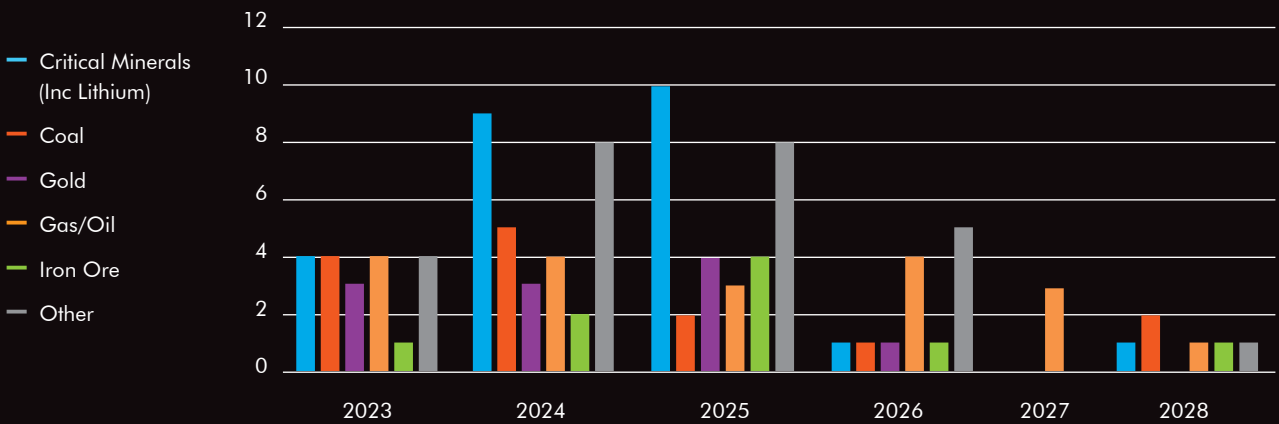


ADDITIONAL DATA BREAKDOWN

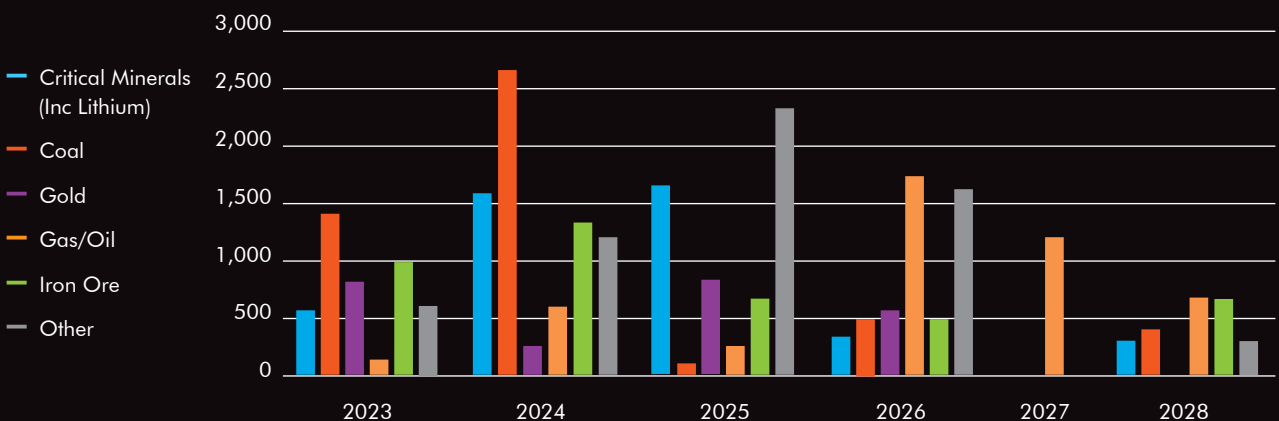
New workforce demand (by state / territory, accumulative)



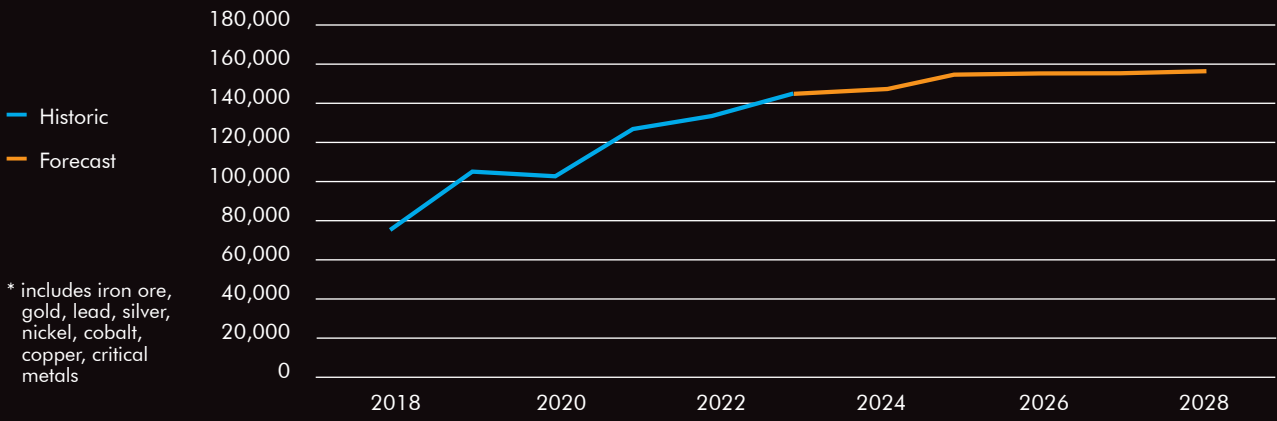
Projects: Commodity Breakdown (by year expected first production)



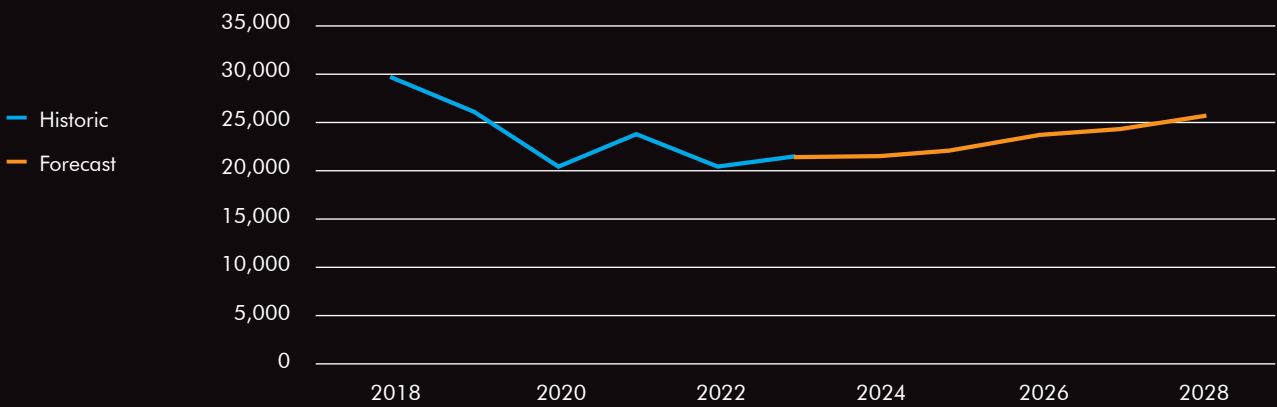
Workforce: Commodity Breakdown (by year expected demand)



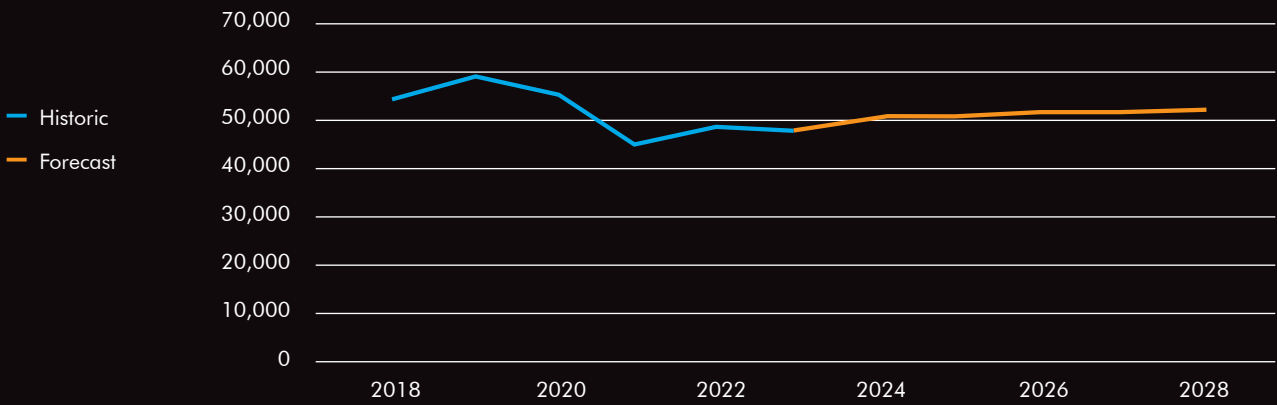
Metal ore mining* workforce (2018-2028)



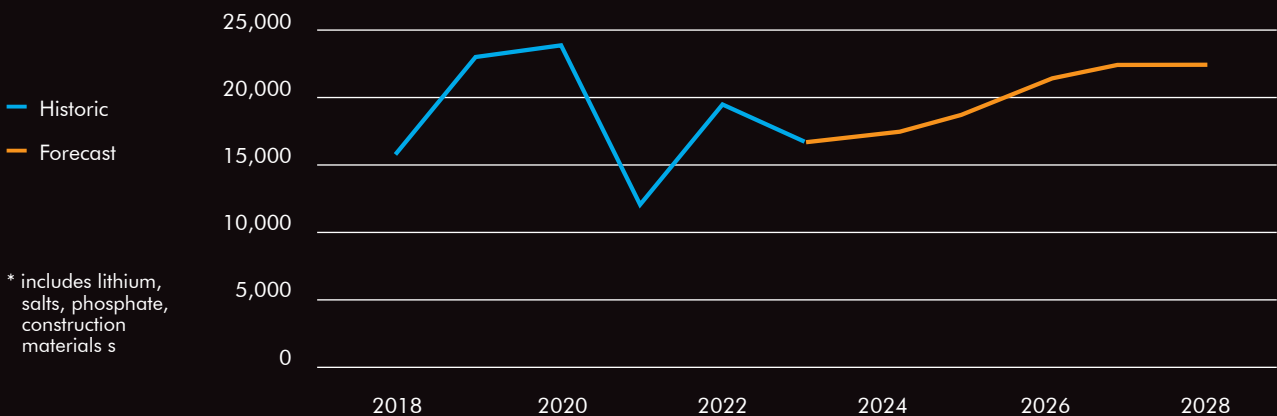
Oil and gas extraction workforce (2018-2028)



Coal mining workforce (2018-2028)



Non-metallic mining* workforce (2018-2028)





PROJECTS

PROJECT	COMMODITY	YEAR	EST. WORKFORCE
WESTERN AUSTRALIA			
Abra Lead-Silver Project	Lead, Zinc, Silver	2023	280
Australian Vanadium Project	Critical Minerals / Rare Earths	2025	240
Barrambie Titanium Project	Critical Minerals / Rare Earths	2024	120
Bellevue Gold Project	Gold	2023	300
Browse to North West Shelf	Oil & gas	2028	720
Caravel (Stage 1)	Copper	2026	450
Crux LNG	Oil & gas	2027	327
Dorado	Oil & gas	2024	266
Eneabba Rare Earths Processing Plant	Critical Minerals / Rare Earths	2025	270
Equus	Oil & gas	2027	142
Greenbushes Expansion CGP3	Lithium	2025	50
Kalgoorlie Nickel Project (Goongarrie Hub)	Nickel, cobalt	2026	300
Kalgoorlie Rare Earths Processing Facility	Critical Minerals / Rare Earths	2023	120
Katanning Gold Project (Reactivated)	Gold	2025	150
Kathleen Valley	Lithium	2024	350
KCGM optimisation	Gold	2026	600
Kemerton Lithium Plant Expansion	Lithium	2026	370
Kwinana Lithium Hydroxide Refinery	Lithium	2024	75
Kwinana Lithium Plant (Wes/SQM)	Lithium	2024	150
Lake Giles iron ore project (Moonshine and Ularring)	Iron Ore	2025	258
Mardie Salt & Potash Project	Other commodities	2024	200
McPhee Creek	Iron Ore	2024	145
Mesa B,C & H (Robe Valley)	Iron Ore	2023	1000
Mount Holland Lithium Mine	Lithium	2024	150
Mt Marion Lithium Stage 2	Lithium	2023	140
Mt Thirsty	Nickel, cobalt	2026	300
Mt Weld expansion	Critical Minerals / Rare Earths	2024	100
Murchison Technology Metals Project	Critical Minerals / Rare Earths	2025	120
Odysseus	Nickel, cobalt	2023	80
Onslow Iron Project	Iron Ore	2024	1200
Pilgangoora (P680)	Lithium	2023	43
Pilgangoora Lithium Salts Plant	Lithium	2025	45
Pluto expansion (Train 2)	Oil & gas	2026	400
Ravensthorpe Gold Project	Gold	2024	100
Scarborough	Oil & gas	2026	600
Sorby Hills	Lead, Zinc, Silver	2024	95
South Erregulla	Oil & gas	2025	20
Southdown	Iron Ore	2026	500
Thunderbird (Dampier)	Critical Minerals / Rare Earths	2024	300
Waitsia (Stage 2)	Oil & gas	2023	55
Walpyring	Oil & gas	2023	16
West Erregulla (Phase 1)	Oil & gas	2023	80
West Musgrave	Copper	2025	400
Western Range	Iron Ore	2025	800
Whim Creek	Copper	2025	120
Yangibana	Critical Minerals / Rare Earths	2025	250

PROJECT	COMMODITY	YEAR	EST. WORKFORCE
QUEENSLAND			
Curragh Extension Project	Coal	2023	228
D-Tree Project (Paradise Phosphate)	Other commodities	2024	250
Eva Copper Project	Copper	2025	280
Hillalong	Coal	2024	436
HPA First Project	Alumina	2024	120
Mahalo Gas project	Oil & gas	2023	30
Mount Morgan Tailings Project	Gold	2024	150
New Acland (Stage 3 extension)	Coal	2024	400
Olive Downs	Coal	2024	1000
Ravenswood Gold Mine	Gold	2023	430
Saint Elmo	Critical Minerals / Rare Earths	2024	150
Sconi	Nickel, cobalt	2028	300
Surat Gas Project (Phases 2-5)	Oil & gas	2026	200
Tipton	Oil & gas	2027	20
Wilkie Creek	Coal	2023	350
Wilton-Fairhill	Coal	2024	130
NEW SOUTH WALES			
Balranald Project	Critical Minerals / Rare Earths	2025	75
Bowdens Project	Lead, Zinc, Silver	2025	230
Broken Hill Cobalt Project	Nickel, cobalt	2025	400
Bulga Optimisation Project mod 3 and Bulga Underground mod 7	Coal	2028	50
Cadia PC 1-2	Gold	2024	Continuity
Cowal	Gold	2023	230
Dartbrook	Coal	2023	470
Dubbo Project	Critical Minerals / Rare Earths	2025	200
Hawsons Iron Project	Iron Ore	2025	500
LNG import terminal - Port Kembla Gas Terminal	Oil & gas	2024	45
Maxwell Underground Mine	Coal	2023	400
McPhillamys	Gold	2025	260
Mt Pleasant Optimisation Project	Coal	2026	500
Narrabri (Stage 3)	Coal	2024	685
Narrabri coal seam gas project	Oil & gas	2025	200
Vickery	Coal	2025	100
Wallarrah 2	Coal	2028	300
VICTORIA			
Donald Mineral Sands and Rare Earth Project (Stage 1)	Critical Minerals / Rare Earths	2025	75
Enterprise Project	Oil & gas	2024	120
Golden Beach Gas project	Oil & gas	2025	5
Goschen Project	Critical Minerals / Rare Earths	2028	300
Otway (Phase 3) Development Project	Oil & gas	2024	164
Stockman Project	Copper	2025	250
TASMANIA			
Dolphin Project	Other commodities	2023	65
Hobart zinc works electrolysis plant	Lead, Zinc, Silver	2024	500
Renison Expansion Project (Area 5)	Other commodities	2024	5
SOUTH AUSTRALIA			
Carrapateena Block Cave 1 Expansion	Copper	2026	440
Central Eyre Iron Project	Iron Ore	2028	700
Great White Kaolin Project (Stage 1)	Other commodities	2024	40
Hillside	Copper	2025	430
Honeymoon Uranium Mine	Other commodities	2023	120
Kalkaroo	Copper	2025	260
Magnetite Expansion Project, Middleback Ranges	Iron Ore	2025	1200
Prominent Hill - Wira Hoist Shaft - Life of Mine Extension & Expansion	Copper	2024	Continuity
Sivour Graphite Project (Stage 1)	Critical Minerals / Rare Earths	2024	200
NORTHERN TERRITORY			
Finniss Lithium project (Stage 1)	Lithium	2023	250
Barossa backfill to Darwin LNG	Oil & gas	2026	350
Mt Bundy	Gold	2025	300
Nolans	Critical Minerals / Rare Earths	2025	280
Tanami Expansion 2	Gold	2025	180
Wonarah	Other commodities	2026	110

