



ENGINEERS
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Australian Engineering Employment Vacancies

July to December 2021

January 2022



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Introduction

The second half of 2021 was dominated by continuing uncertainty around the global pandemic. Gross Domestic Product (GDP) fell 1.9 per cent in the September quarter due to lockdowns in New South Wales, Victoria and the Australian Capital Territory triggered by the Delta outbreak of COVID-19.¹ In the September quarter, high vaccination rates were ultimately achieved, the outbreak subsided, lockdowns eased, and recovery commenced. But the recent emergence of the Omicron variant has left most governments struggling to balance their public health response with a firm desire not to resume lockdowns.

Reduced restrictions post-Delta were expected to support further economic recovery.² In November 2021, the Reserve Bank of Australia reported growth rates consistent with those prior to the Delta outbreak. It projected growth of approximately 3 per cent in 2021, and about five and a half percent in 2022.³ However, the Omicron outbreak has seen both spending and consumer confidence severely impacted. Thousands of businesses have also been forced to close temporarily as the pathogen spreads at rates not seen in Australia since its emergence. The precise impact of the current outbreak on the economy is not yet clear. Nonetheless, the expectation that the outbreak may peak in January offers hope of mitigation.

The engineering profession continues to adapt to the challenges of the pandemic, supported by investment and policy initiatives from government. Engineers have remained in the spotlight with several major stimulus projects from the Commonwealth relying on the profession's skills and expertise.

Nationally, only a small increase in vacancies was recorded in the second half of 2021, though vacancy rates remained high for the year as a whole - increasing by 50 per cent year-on-year. State and Territory trends were similar: While all major states reported increased vacancies for the year, many registered declines in the September and December quarters.

Continued demand has also fuelled the ongoing engineering skills shortage, with the shortfall especially pronounced for niche engineering skills and skills in high demand due to major stimulus projects. This issue is multifaceted. The immediate shortfall stems from increased demand while international borders have been effectively closed for nearly two years - limiting skilled migration. When borders reopen, these pressures will ease. However, strong demand for engineers is by no means unique to Australia, with heightened efforts to attract engineering talent across the region and the world. In the medium to long-term, Australia must reconsider the extent of its reliance on further migration to address skills supply issues. Engineers Australia research has shown there is a significant cohort of migrant engineers already in Australia who have long-term difficulties securing employment appropriate to their experience.⁴ Tapping into this latent supply offers one means of easing skills shortages.

Summary

- High vaccination rates facilitated an easing of lockdowns in the September quarter, fuelling economic recovery.
- While GDP had been expected to grow by approximately 3.0 per cent in 2021, and by about five and a half percent in 2022,⁵ the Omicron outbreak has clouded the macroeconomic outlook.
- Engineering vacancies increased nationally in 2021 despite growing only 4 per cent in the second half of the year.
- Major states reported increased vacancies for the year, though they recorded limited or negative growth in the September and December quarters.
- The engineering profession remains resilient amid the pandemic. On the back of considerable fiscal stimulus and reopening, its outlook remains positive.

¹ 'Statement on Monetary Policy - November 2021' *Reserve Bank of Australia* (accessed 19 January 2022)
<<https://www.rba.gov.au/publications/smp/2021/nov/overview.html>>

² *ibid*

³ *ibid*

⁴ Romanis, J 'Barriers to Employment for Migrant Engineers; Research Report' *Engineers Australia* (accessed 23 November 2021)
<<https://engineersaustralia.org.au/sites/default/files/resource-files/2021-10/barriers-employment-migrant-engineers.pdf>>

⁵ *ibid*

- However, the profession is reporting a skills shortage throughout Australia, due to a shortfall of international migrants and increased projects requiring engineering skills.

Data source and methodology

This report investigates engineering employment trends in Australia through analysis of engineering vacancies data produced by the Department of Employment, Skills, Small and Family Business (the Department).

The Department published a monthly Internet Vacancy Index (IVI), analysing job vacancy trends over the preceding 12 months using advertisements published on *CareerOne*, *Seek* and *JobSearch*. This most recent data released was for the period to December 2021.

Advertised vacancies provide a valuable gauge of the labour market. In general, as vacancies increase, unemployment falls and vice versa (the 'Beveridge Curve'), providing a broad indication of the direction of the engineering labour market. This should not be read as a report on specific job numbers but rather as a valuable analysis of vacancy trends which provides a broad indication of the direction of the engineering labour market. It includes Australian, state and territory trends as well as trends in a range of specific engineering occupations. The index includes data on all major engineering occupations:

- Civil engineering professionals⁶
- Chemical and materials engineers⁷
- Electrical engineers⁸
- Electronics engineers⁹
- Engineering managers¹⁰
- Information and Communication Technologies (ICT) support and test engineers¹¹
- Industrial, mechanical and production engineers¹²
- Mining engineers¹³
- Telecommunications engineers¹⁴
- Other engineering professionals¹⁵

Some occupations where the number of employed persons is too small to allow for meaningful analysis may be excluded from this analysis.

⁶ The IVI's 'Unit group 2332' - including civil engineers, geotechnical engineers, quantity surveyors, structural engineers and transport engineers

⁷ Unit group 2331 - including chemical engineers and materials engineers

⁸ Unit group 2333

⁹ Unit group 2334

¹⁰ Unit group 1332

¹¹ Unit group 2632 - including ICT quality assurance engineers, ICT support engineers and ICT systems test engineers. Some caution should be taken with this data, as whether relevant employment constitutes engineering-specific work is often difficult to gauge.

¹² Unit group 2335 - including industrial engineers, mechanical engineers and production or plant engineers

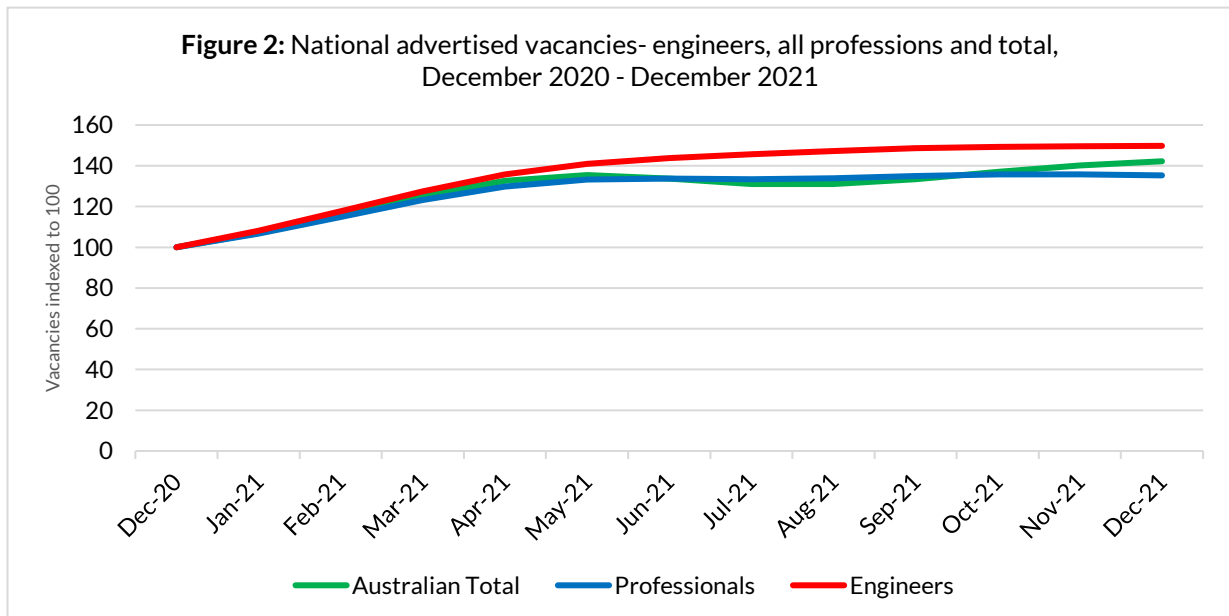
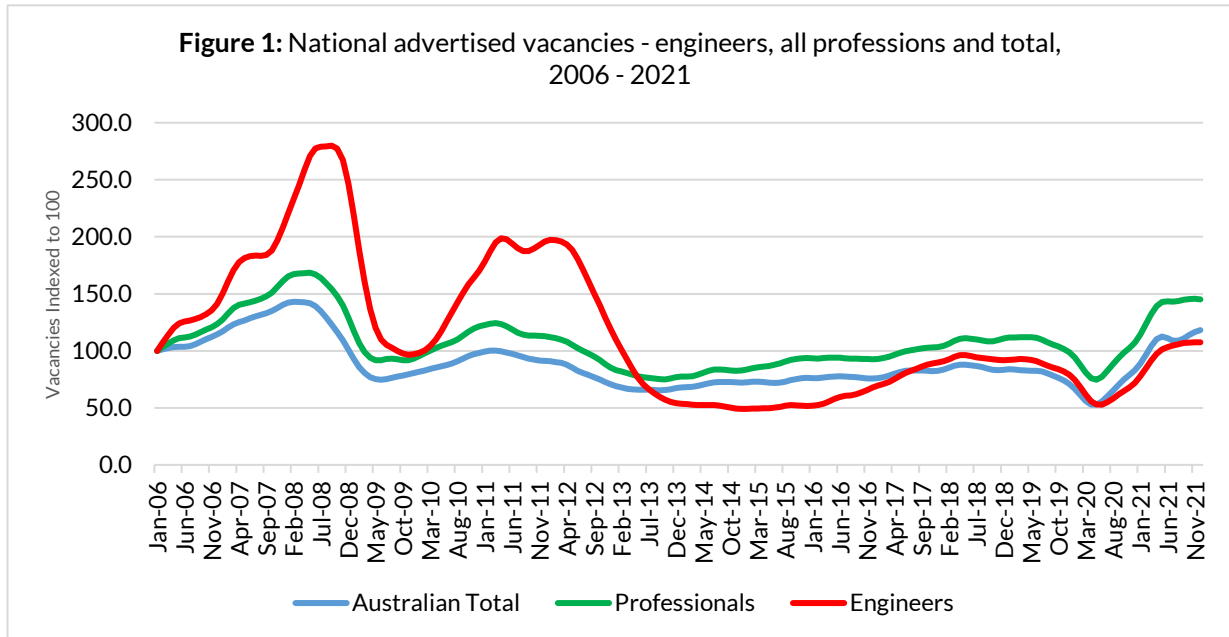
¹³ Unit group 2336 - including petroleum engineers

¹⁴ Unit group 2633 - including telecommunications engineers and telecommunications network engineers

¹⁵ Unit group 2339 - including aeronautical engineers, agricultural engineers, biomedical engineers, engineering technologists, environmental engineers, naval architects and engineering professionals not elsewhere classified

Australia

The second half of 2021 saw limited growth in engineering vacancies across Australia, with an increase of only 4 per cent nationally. Vacancy growth stagnated in the December quarter following the emergence of the COVID-19 Omicron variant. Nonetheless, vacancy numbers remained high relative to the pre-pandemic period, with an increase of 50 per cent year-on-year. Employment prospects for engineers remains positive, with demand outstripping supply in some sectors. This trend is largely consistent with that observed in other professions and the labour market as a whole.



- **12 month** engineering vacancy growth rate¹⁶: **+50%**
- **6 month** engineering vacancy growth rate: **+4%**
- **3 month** engineering vacancy growth rate: **+0%**

¹⁶ All growth rate figures cited in this report are for growth in engineering vacancies to December 2021.

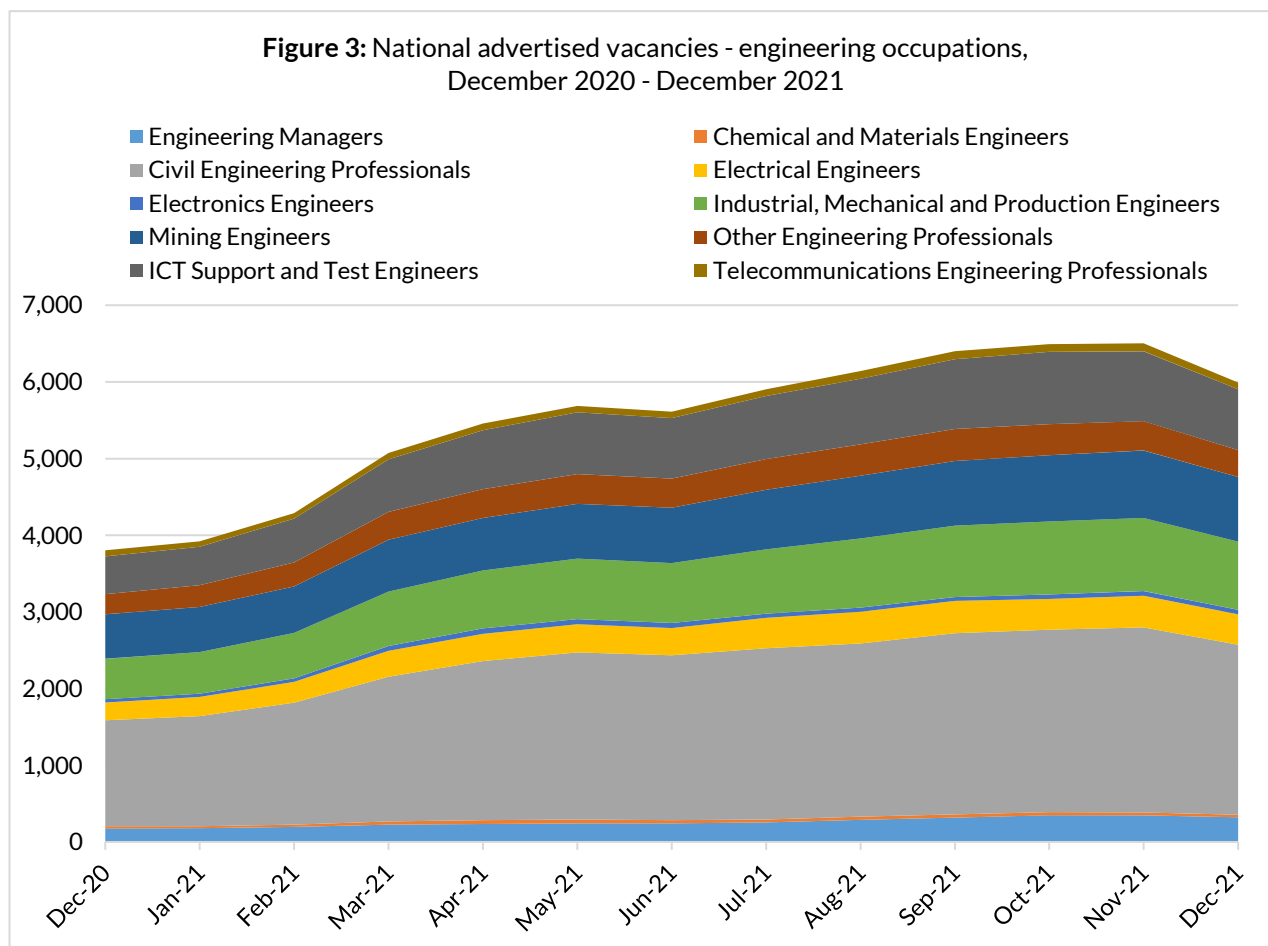
Vacancies by engineering occupation

Total engineering vacancies rose through most of 2021, though the emergence of the Omicron variant in November and December corresponded with a modest reversal.

At the occupation level, civil engineers were most in demand during the second half of 2021. Demand for civil engineers was highest in the second half of the year, correlating with the delivery of government stimulus in response to COVID-19.¹⁷ Nonetheless, demand remained strong throughout the year and sees civil engineering as one of 44 occupations on the Australia Government’s Priority Migration Skilled Occupation List¹⁸.

Industrial, mechanical and production engineers also continued as next most in demand from July 2021. A contributing factor to this demand was an increase in commodity prices, with the World Bank reporting natural gas and coal prices reaching record highs in 2021 due to supply constraints and a higher demand for electricity.¹⁹

Vacancies for ICT support and test engineers were the third most in demand in the second half of the year, overtaking mining engineers. This demand is expected to remain strong as ICT support and test skills are sought in many priority stimulus areas, including infrastructure and manufacturing.



¹⁷ 'Infrastructure investment response to COVID-19' Australian Government Department of Infrastructure, Transport, Regional Development and Communications <https://investment.infrastructure.gov.au/infrastructure_investment/infrastructure_investment_response_covid-19/>

¹⁸ 'Priority Migration Skilled Occupation List' Australian Government Department of Home Affairs (accessed 21 January 2022) <<https://immi.homeaffairs.gov.au/visas/employing-and-sponsoring-someone/sponsoring-workers/pmsol>>

¹⁹ 'Soaring Energy Prices Pose Inflation Risks as Supply Constraints Persist' The World Bank (accessed 25 January 2022) <<https://www.worldbank.org/en/news/press-release/2021/10/21/soaring-energy-prices-pose-inflation-risks-as-supply-constraints-persist>>

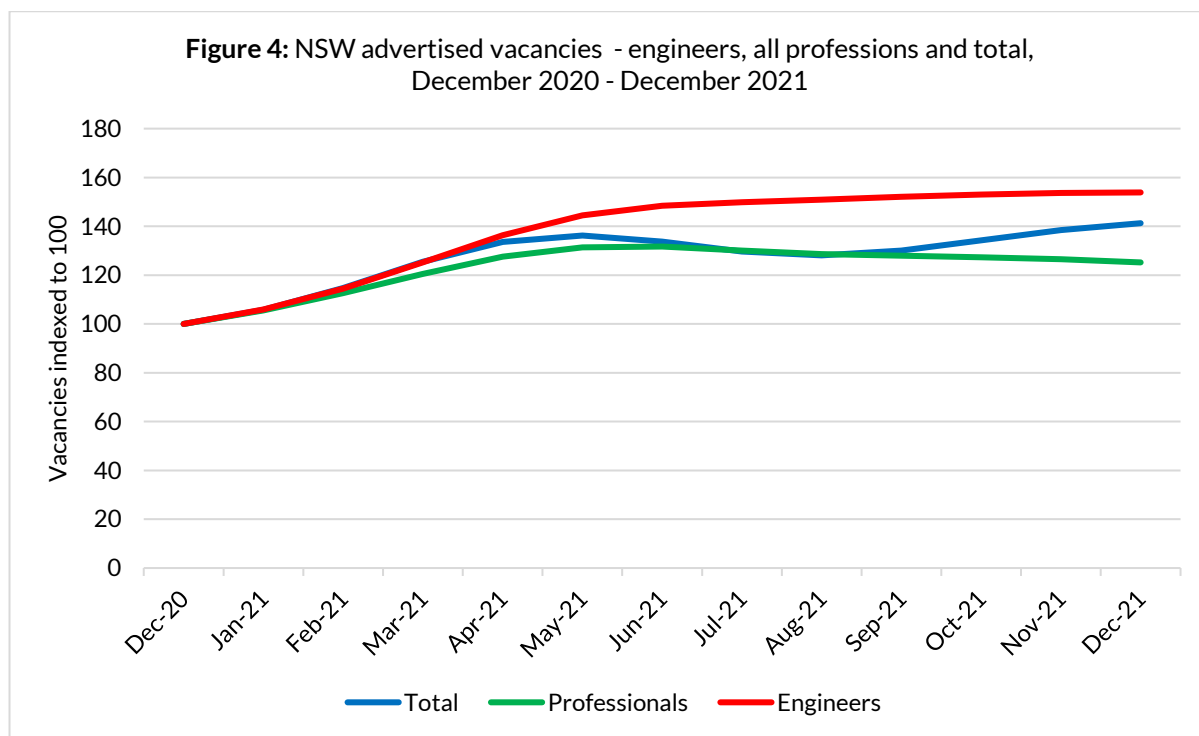
New South Wales

The COVID-19 Delta outbreak and the associated 107-day lockdown had a profound impact on the NSW economy in the second half of 2021. Around 235,000 jobs were lost during this period. While eased restrictions and a high vaccination rate were expected to drive recovery,²⁰ the onset of the Omicron variant in December has rendered a prompt rebound unlikely.

Despite tumultuous September and December quarters, demand for engineering skills remained strong – recording a small increase in vacancies (three per cent), even as both professional vacancies and total vacancies declined. Existing NSW Government measures to support economic recovery, which includes \$3.6 billion in infrastructure and capital maintenance works, continued to provide resilience to the economy.²¹

Omicron, however, brings new uncertainties: The NSW Government remains determined to impose few restrictions, though deaths have risen to their highest point in the pandemic and the state’s per capita infection rate has been among the highest on earth.²²

Despite an uncertain macroeconomic outlook, steady demand for engineers throughout the Delta outbreak, as well as the ongoing rollout of state-level stimulus bode well for a positive if delayed rebound.



- **12 month** engineering vacancy growth rate: **+54%**
- **6 month** engineering vacancy growth rate: **+3%**
- **3 month** engineering vacancy growth rate: **+1%**

²⁰ COVID-19 Economic Recovery Strategy: A bright future for NSW' NSW Government (accessed 21 January 2022) <https://www.nsw.gov.au/sites/default/files/2021-10/economic-recovery-report_211021.pdf>

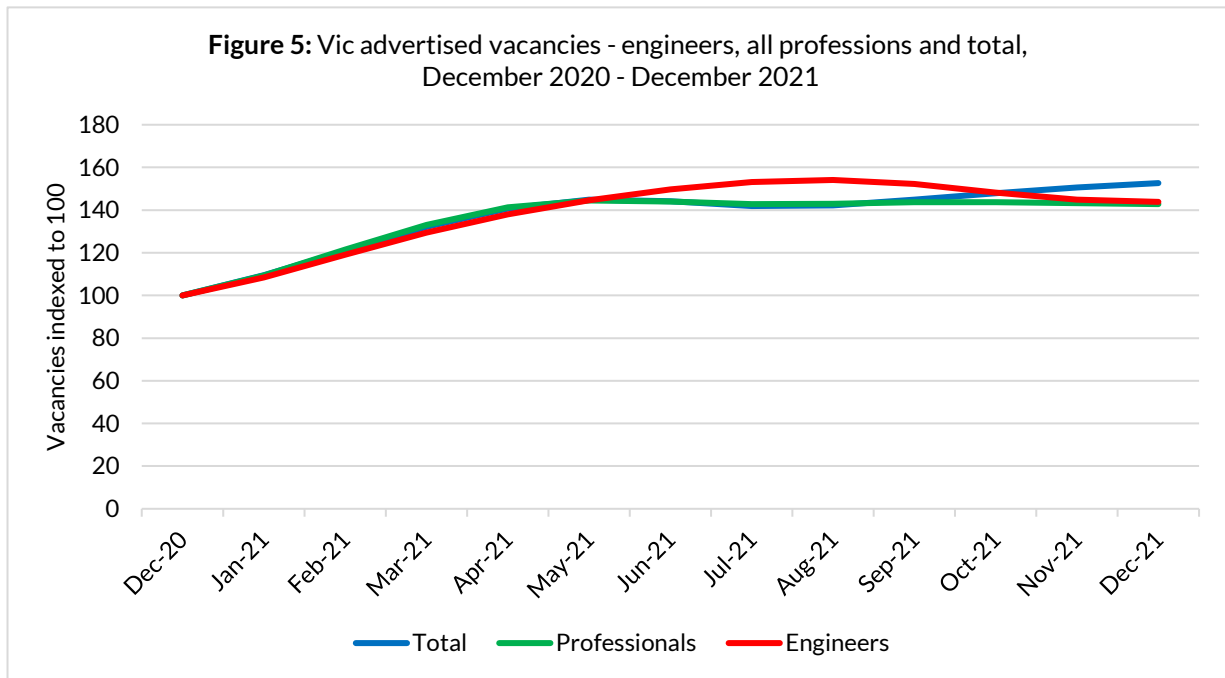
²¹ ibid

²² Cait Kelly, Josh Nicholas and Andy Ball 'Australia's Covid surge in four charts: NSW now has one of world's highest infection rates' *The Guardian* (December 2021) <<https://www.theguardian.com/australia-news/datablog/2021/dec/31/australias-covid-surge-in-four-charts-nsw-now-has-one-of-worlds-highest-infection-rates>> (accessed 25 January 2022)

Victoria

Victoria is one of three states to experience a decline in vacancies in the second half of 2021 as the Delta outbreak took hold (the other two are South Australia and Tasmania). In August, employment had risen by 288,000 since September 2020, with unemployment low at 4.1 per cent and workforce participation at a record high.²³ However, restrictions were reimposed from August to October to contain the Delta strain. Vacancies declined from this point, though the fall was mitigated by a gradual easing of restrictions as the outbreak subsided.

The Victorian Government expected employment to recover strongly as restrictions eased, with high labour demand as output increased. State investment in infrastructure, digital skills and R&D is also expected to benefit the engineering profession.²⁴ Ultimately, however, the Omicron outbreak has again muddied projections for the first half of this year.



- **12 month** engineering vacancy growth rate: **+44%**
- **6 month** engineering vacancy growth rate: **-6%**
- **3 month** engineering vacancy growth rate: **-3%**

²³ 'Victoria Budget 2021/22: Creating Jobs, Caring for Victorians: 2021/22 Budget Update' *Victoria State Government* (accessed 21 January 2022) <<https://www.dtf.vic.gov.au/sites/default/files/document/2021-22%20Budget%20Update.pdf>>

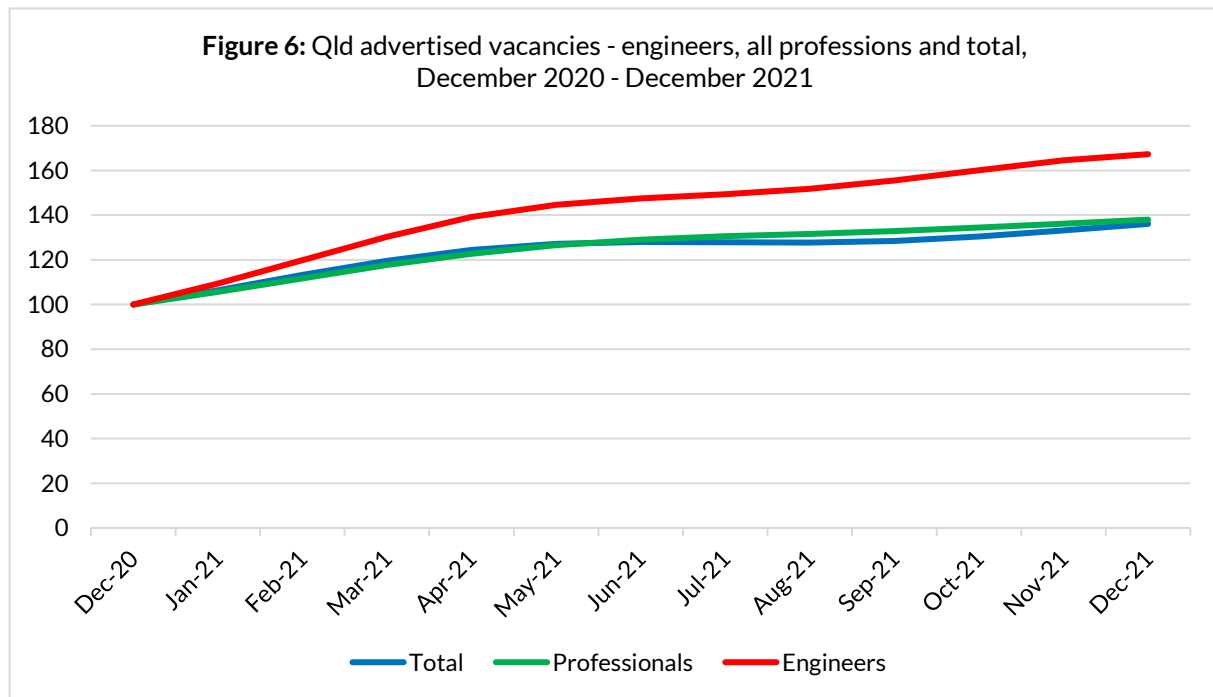
²⁴ 'Victorian Budget 2020/21: Putting people first' *Victorian Government* (accessed 21 July 2021) <<https://s3-ap-southeast-2.amazonaws.com/budgetfiles202021.budget.vic.gov.au/2020-21+State+Budget++Budget+Overview.pdf>>

Queensland

Engineering vacancy growth in Queensland continued to rise in the second half of 2021 with a 12 per cent increase continuing to outpace both professional and total vacancies.

The Queensland economy fared well in the second half of the year, with employment rising by 90,000 people on pre-COVID levels as of October 2021.²⁵ High vaccination rates allowed the state to avoid prolonged lockdowns and re-open borders to interstate travellers in December.²⁶

Strong commodity prices and export projections, \$50 billion in planned infrastructure expenditure to 2025, and a decade-long pipeline of works connected to the 2032 Olympic and Paralympic Games are expected to support Queensland through challenging times. While ongoing uncertainties surrounding the pandemic make firm predictions difficult, the sunshine state appears well positioned for continued growth.



- **12 month** engineering vacancy growth rate: **+67%**
- **6 month** engineering vacancy growth rate: **+12%**
- **3 month** engineering vacancy growth rate: **+4%**

²⁵ '2021-22 Budget Update: Mid-year fiscal and economic review' *Queensland Government (Queensland Treasury)* (accessed 21 January 2022) <https://s3.treasury.qld.gov.au/files/2021-22_Budget-Update_web.pdf>

²⁶ *ibid*

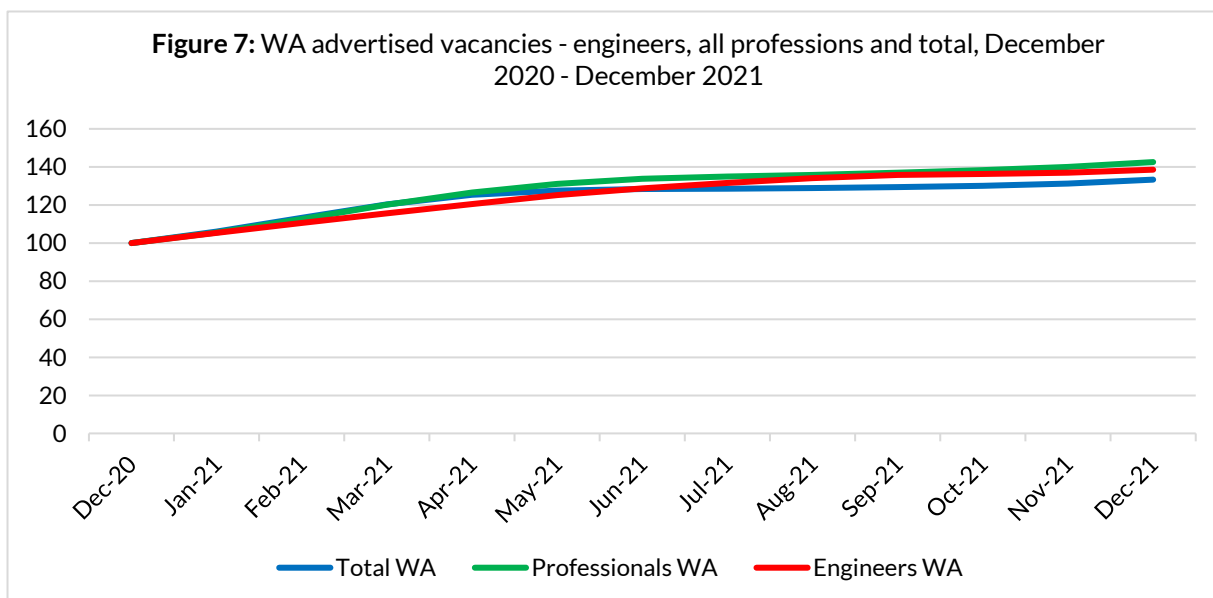
Western Australia

Western Australians continued to live without COVID-19 for most of 2021. Geographic isolation and the decision to pursue an aggressive COVID elimination strategy has meant WA ran largely as normal in 2021, with minimal lockdowns and other restrictions on day-to-day activities. The state also benefited from an increase in iron ore prices as demand for Chinese steel surged amid supply chain disruption in Brazil.²⁷ Indeed, the state recorded the lowest unemployment rate of any Australian jurisdiction since July 2012- joblessness falling to 3.9 per cent in October 2021.²⁸

Engineering vacancies registered growth of 5 per cent in the second half of the year. This closely corresponds with growth in professional and total vacancies in the same period.

With West Australian minerals and energy products accounting for around half of Australia’s exports, the forecast increase in total exports to a record \$379 billion in 2021-22 is positive news for the state’s economy. This should contribute to continued strong employment outcomes, including in engineering.²⁹ As the world’s largest producer of mined lithium, Western Australia is also uniquely placed to benefit from rising global uptake of electric vehicles and battery storage systems.³⁰

Nonetheless, some risk remains for the year ahead. While a planned reopening of state and international borders has been delayed indefinitely, Western Australia has experienced a small COVID outbreak. But if this can be curbed, ongoing growth and a positive export climate is likely to drive continued demand for engineering labour and skills.



- **12 month** engineering vacancy growth rate: **+39%**
- **6 month** engineering vacancy growth rate: **+5%**
- **3 month** engineering vacancy growth rate: **+2%**

²⁷ 'Western Australia Iron Ore Profile – December 2021' *Government of Western Australia* (accessed 21 January 2022) <<https://www.wa.gov.au/government/publications/western-australias-economy-and-international-trade>>

²⁸ 'Western Australia’s economy and international trade' *Government of Western Australia* (accessed 21 January 2022) <<https://www.wa.gov.au/government/publications/western-australias-economy-and-international-trade>>

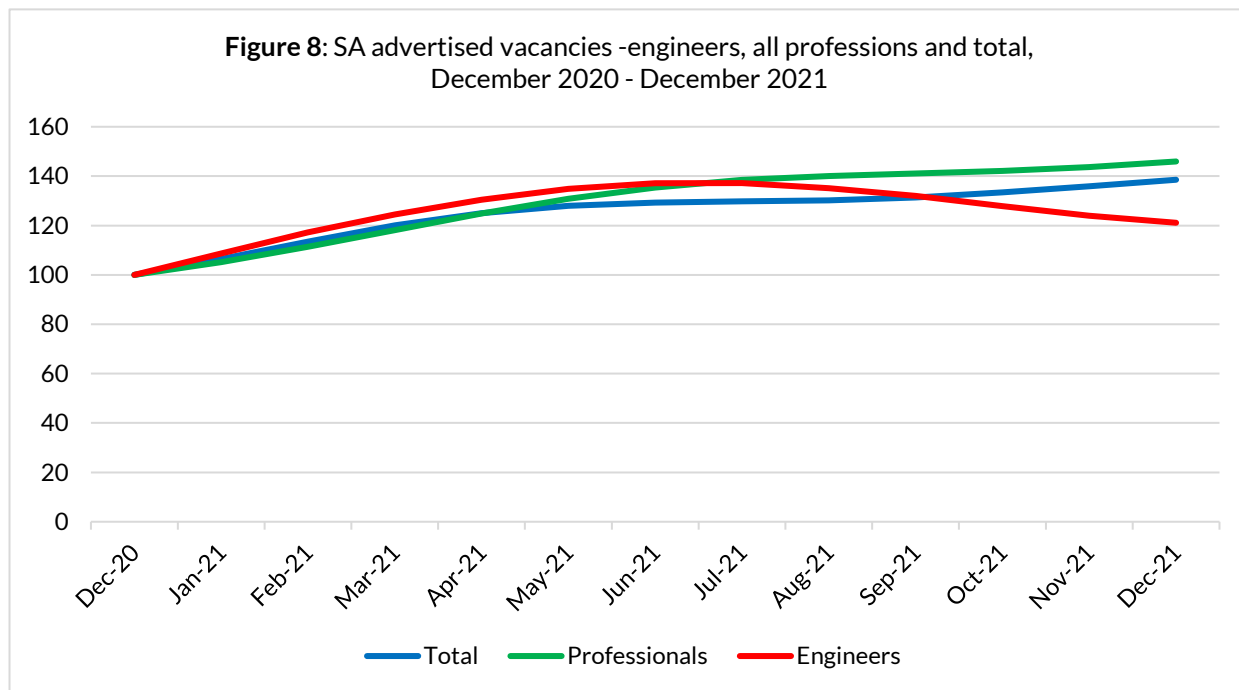
²⁹ 'Resources and Energy Quarterly – December 2021' *Australian Government Department of Industry, Science, Energy and Resources* (accessed 21 January 2022) <<https://publications.industry.gov.au/publications/resourcesandenergyquarterlydecember2021/index.html>>

³⁰ 'Western Australia Battery Minerals Profile – December 2021' *Government of Western Australia Department of Jobs, Tourism, Science and Innovation* (downloaded 21 January 2022) <<https://www.wa.gov.au/government/publications/western-australias-economy-and-international-trade>>

South Australia

Though engineering vacancies in South Australian trended upward in the first half of 2021, the second half of the year saw a 12 per cent decline. The decline began in July as the state entered lockdown to combat an outbreak of the COVID-19 Delta strain. High vaccination rates saw the state reopen borders in November – though the Omicron outbreak commenced shortly thereafter. Ultimately, engineering vacancies still recorded an increase year-on-year, but the rise was smaller than for both professionals and the total labour market.

A combination of strong health sector interventions, public investment in infrastructure, hospitals, business hubs and other stimulus measures have fostered confidence in South Australia and helped private investment rebound.³¹ The state recorded a fall in the unemployment rate to 3.9 percent in December 2021 – the lowest monthly jobless rate on record.³² Ongoing government investment in renewables, space and defence offers further cause for bullishness on engineering employment in 2022.



- **12 month** engineering vacancy growth rate: **+21%**
- **6 month** engineering vacancy growth rate: **-12%**
- **3 month** engineering vacancy growth rate: **-5%**

³¹ 'SA's 'excellent run through COVID continues': Deloitte' *Government of South Australia, Steven Marshall, Premier of South Australia Media Release* (accessed 21 January 2022) <https://www.premier.sa.gov.au/news/media-releases/news/sas-excellent-run-through-covid-continues-deloitte>

³² 'SA's unemployment rate lowest since records began' *Government of South Australia, Steven Marshall, Premier of South Australia Media Release* (accessed 21 January 2022) <<https://www.premier.sa.gov.au/news/media-releases/news/sas-unemployment-rate-lowest-since-records-began>>

Tasmania and the territories

The number of engineering vacancies recorded in each of Tasmania, the Northern Territory and the Australian Capital Territory is consistently low. Trend analysis for these jurisdictions have therefore been combined and compared to the national total (see Figure 9).

Tasmania and the territories have all been dealing with outbreaks of the Delta and Omicron variants of COVID-19. This has seen a decline in engineering and total vacancies in both Tasmania and the ACT. Nonetheless, all three governments have resolved to respond to the most recent outbreak with fewer restrictions. While projecting the trend for the first half of 2022 is challenging, a marked increase appears unlikely.

Tasmania

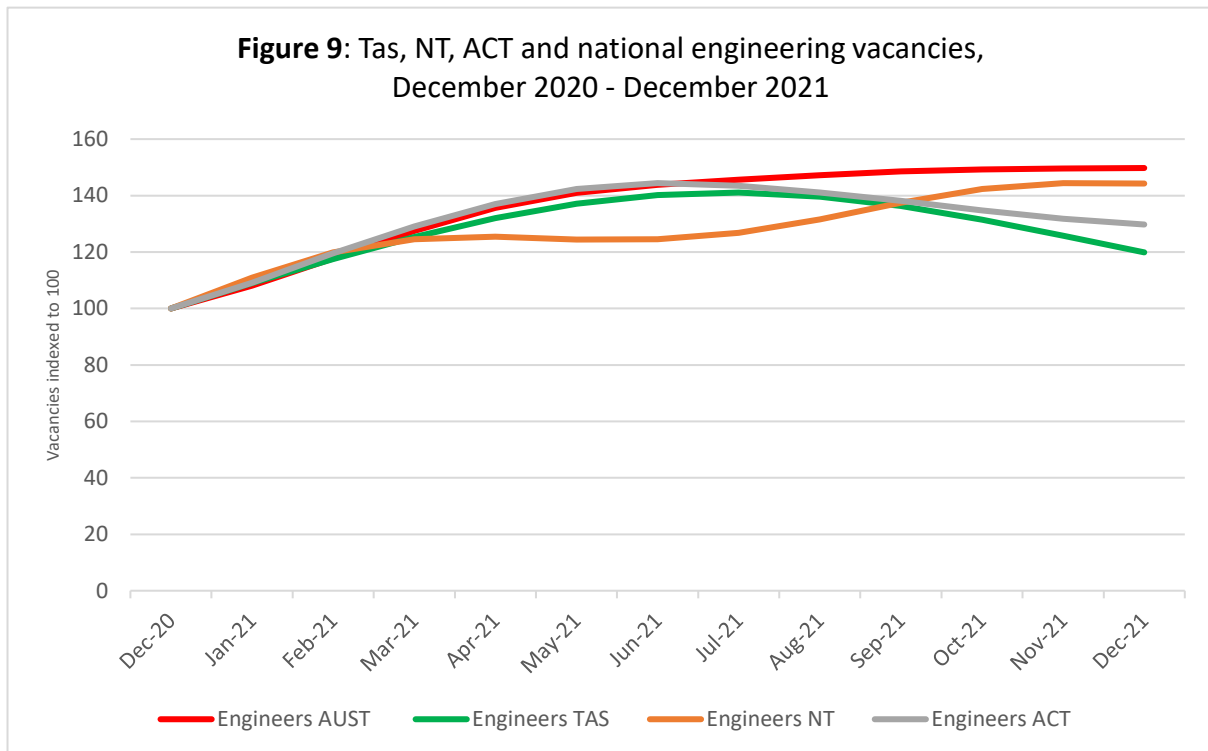
Engineering vacancies in Tasmania declined by 15 per cent in the second half of 2021. Despite vacancy growth peaking for the year in July, a 9 per cent decline occurred across the December quarter. With the apple isle experiencing a major Omicron outbreak in December, vacancies are likely to continue to decline.

Northern Territory

The Northern Territory recorded 44 per cent growth in engineering vacancies in 2021 albeit on low vacancy numbers overall. The second half of the year saw vacancies grow steadily at 14 per cent, but the December quarter saw an increase of just 1 per cent. The Omicron outbreak makes negative growth in vacancies in the 2022 March quarter likely.

Australian Capital Territory

The Australian Capital Territory experienced an increase in vacancies in the first half of 2021. However, the second half of the year registered a 10 per cent decline, as vacancies began to fall in July following the Delta outbreak. The subsequent and ongoing Omicron outbreak will likely see this trend continue.





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