



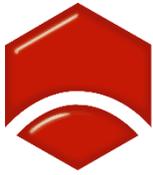
ENGINEERS  
AUSTRALIA

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# Engineering Vacancies Report

April 2017

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## Introduction

This policy report investigates the current state of engineering employment in Australia by analysing the direction of change in engineering vacancy numbers. The Australian Government Department of Employment has released its April 2017 Vacancies Report which covers trends in job vacancies to the end of April 2017, including revisions for previous months. The statistics presented are the department's revised and preferred trend series and allows analysis of engineering vacancies for beginning of 2017, and historical numbers reaching back over a decade. All the vacancy numbers and graphs presented in this report are in trend terms.

Job vacancies can provide a valuable gauge of the state of the labour market as vacancies are a key indicator of unmet demand for labour in the economy<sup>1</sup>. When the demand for labour is strong, the levels of vacancies will also generally rise. Analysing movements in engineering vacancies can provide a broad indication of the direction of the engineering labour market. This report will investigate vacancy trends in Australia as well each state and territory. Further analysis of engineering occupations is also investigated, and this is to Australian and New Zealand Standard Classifications of Occupations (ANZSCO) four-digit unit group classifications. This report will include trends in the engineering occupations of:

- *Engineering managers* (unit group 1332). This includes engineering managers only.
- *Chemical and materials engineers* (unit group 2331). This includes chemical engineers and materials engineers.
- *Civil engineering professionals* (unit group 2332). This includes civil engineers, geotechnical engineers, quantity surveyors, structural engineers and transport engineers.
- *Electrical engineers* (unit group 2333). This includes electrical engineers only.
- *Electronics engineers* (unit group 2334). This includes electronics engineers only.
- *Industrial, mechanical and production engineers* (unit group 2335). This includes industrial engineers, mechanical engineers and production or plant engineers.
- *Mining engineers* (unit group 2336). This includes mining engineers and petroleum engineers.
- *Other engineering professionals* (unit group 2339). This includes aeronautical engineers, agricultural engineers, biomedical engineers, engineering technologists, environmental engineers, naval architects and engineering professionals not elsewhere classified.
- *Telecommunications engineers* (unit group 2633). This includes telecommunications engineers and telecommunications network engineers.

This report will not include the occupations of ICT support and test engineers (unit group 2632). There are high numbers of vacancies recorded for these occupations, much higher than the vacancies recorded for electronics engineers. However, it is difficult to determine how many of the vacancies in these occupations are engineering specific, and for this unit group of occupations have been excluded from analysis in this report.

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<sup>1</sup> Edwards. K, and Gustafsson. L, 2013. Reserve Bank of Australia, Bulletin, September Quarter, *Indicators of Labour Demand*. [www.rba.gov.au](http://www.rba.gov.au)

# Australia

Engineering vacancies in Australia have historically shown a higher level of variance compared to job vacancies in Australia overall. Engineering job vacancies were heavily influenced by the construction phase of the resources boom and the Global Financial Crisis (GFC).

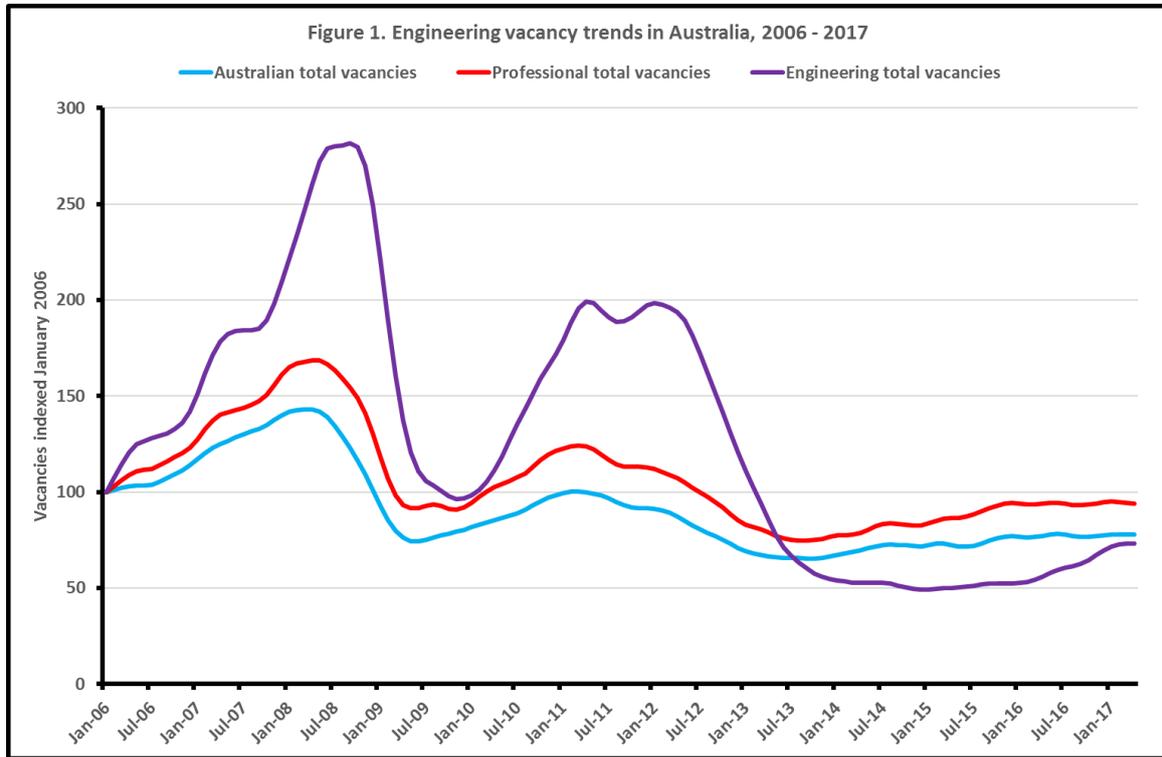


Figure 1 provides background information about the changes to the Australian labour force, the professional occupation labour force, and the engineering labour force over the last decade. As demonstrated above, engineering vacancies have been much more heavily influenced by economic forces. In 2006 Australia's engineering labour force grew significantly to meet the demand for engineers during the construction phase of the resources boom, peaking in 2008. The engineering labour force then weathered the GFC which soon followed, and a second period of strong job growth was seen in 2010 and 2011.

This recovery was short-lived and the engineering labour market began to deteriorate rapidly from December 2012 as engineering vacancies began a 30-month slide. This deterioration continued through to 2014 and engineering vacancies remained at low levels, until new signs of growth appeared again in 2016. In the first part of 2017 the growing trend has slowed and vacancies have been stable for the beginning of the year.

At its peak in September 2008, there was 13,005 vacancies recorded for engineers, while at its lowest point in December 2014, there was only 2,270 vacancies recorded for engineers.

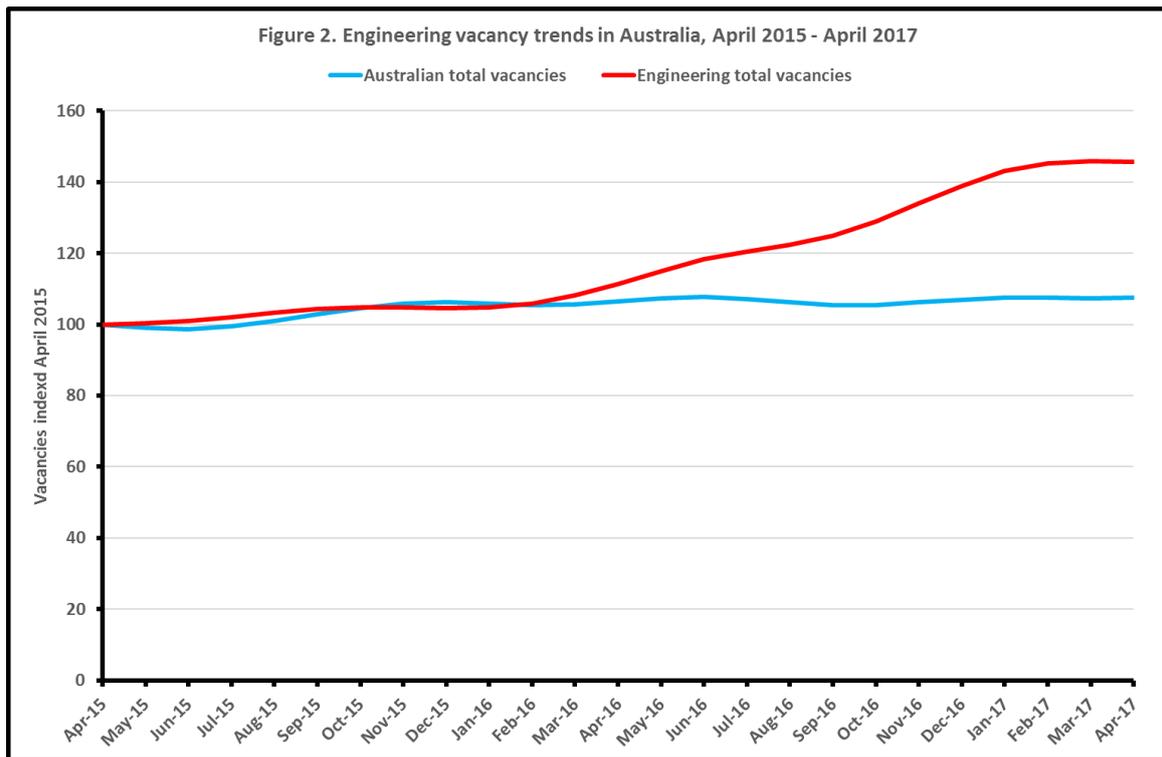


Figure 2 shows the growth of both Australian total vacancies and engineering vacancies in the last two years. Engineering vacancies grew at a higher rate than the total Australian labour force during this period with higher growth throughout 2016. Engineering vacancies grew from 2,314 in April 2015 to 2,578 in April 2016. This growth continued over the following 12 months with 3,371 engineering vacancies recorded in April 2017, growth of 30.8 per cent over that period. However, in the first few months of 2017 this has slowed with only 1.8 per cent growth over the first four months.

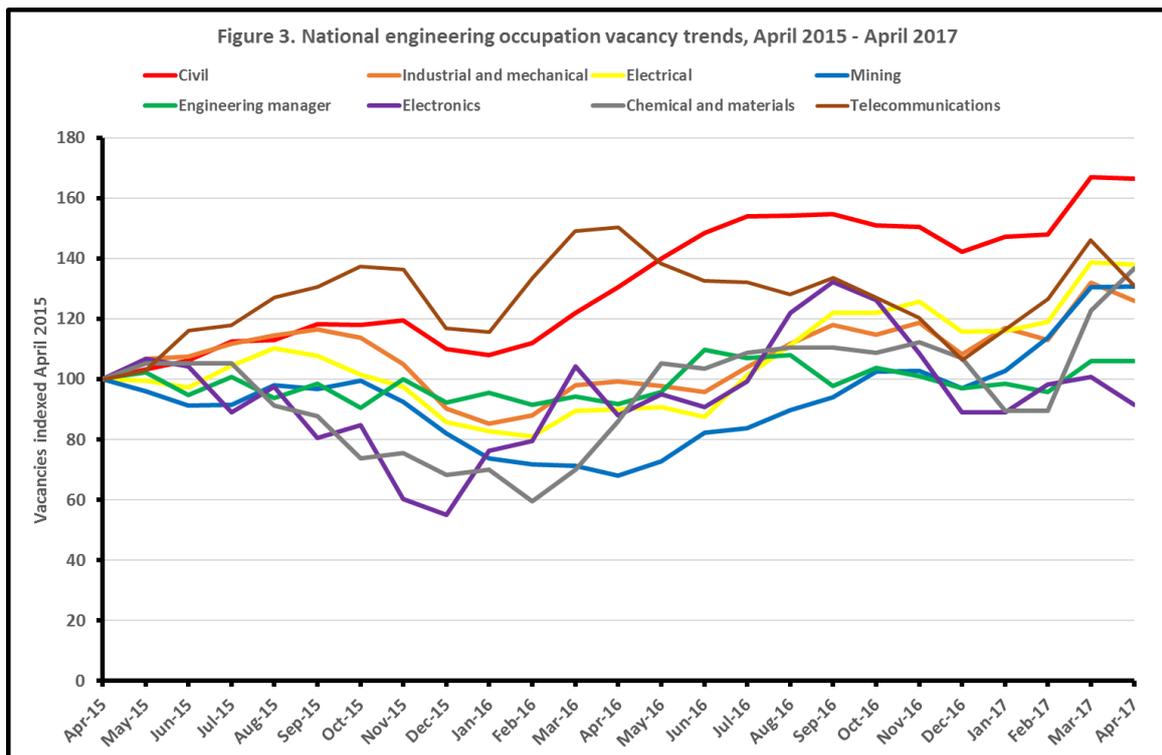


Figure 3 provides further insight to the growth trends of engineering occupations which fuelled the overall growth in engineering vacancies. Figure 3 shows trends for engineering occupations over the last two years, with the majority of occupations growing during 2016. Key points about engineering occupation vacancies are:

- Civil engineering occupations have been driving the majority of growth in overall engineering vacancies over the past 12 months. Civil engineering vacancies consistently record the highest number of all engineering vacancies with 1,905 vacancies recorded in April 2017. This is up from 1,685 recorded in January 2017, and much higher than the 1,144 recorded in April 2015.
- Vacancies for industrial and mechanical engineers has grown steadily over the last 12 months with 508 vacancies recorded in April 2017. This is up from 400 vacancies recorded a year ago in April 2016.
- Vacancy numbers for electrical engineers has seen consistent growth over the last 12 months, as the 164 vacancies recorded in April 2016 jumped to 252 vacancies recorded in April 2017.
- Mining engineering occupations have grown over the last 12 months, with bigger growth becoming more obvious in the first few months of 2017. In January of this year there was 298 vacancies recorded, which has quickly moved up to 379 recorded in April. This is also an improvement on the 197 vacancies recorded in April 2016.
- Engineering manager occupations have remained fairly consistent over the past two years. In April 2015 there were 127 vacancies recorded, and this is very close to the 134 vacancies recorded in April 2017.
- Telecommunications engineer vacancy numbers grew from 69 recorded in April 2015 up to 103 in April 2016. They have since dropped to 90 vacancies recorded in April 2017.
- Vacancies for chemical and materials engineers, as well as electronics engineers has been consistent over the past two years, but these occupations remain at lower levels when compared to the other occupations. In April 2017 there were 26 vacancies recorded for chemical and materials engineers, and 36 for electronics engineers.

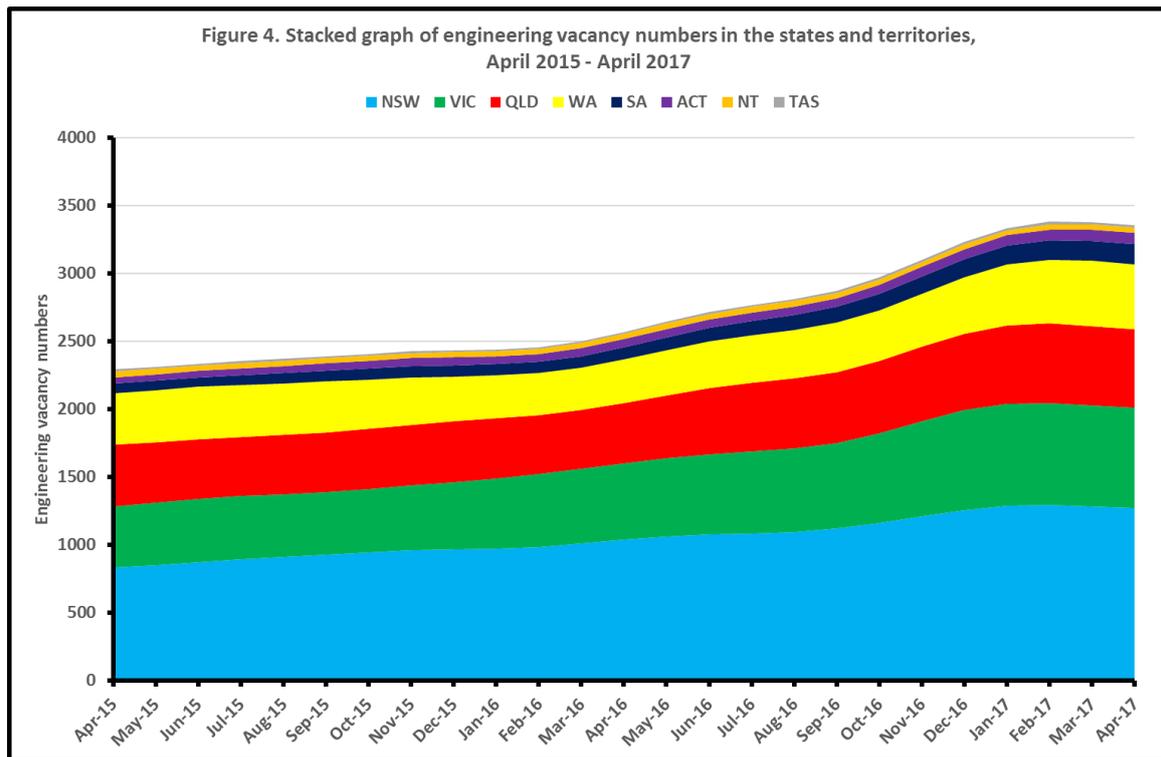


Figure 4 is a stacked graph which shows how engineering vacancies are shared throughout the states and territories. As seen in Figure 4 New South Wales is the state which consistently records the largest amount of engineering vacancies, followed by Victoria, Queensland and Western Australia. Most of the growth seen in the Australian engineering labour market can be attributed to increasing vacancy numbers seen in these larger states.

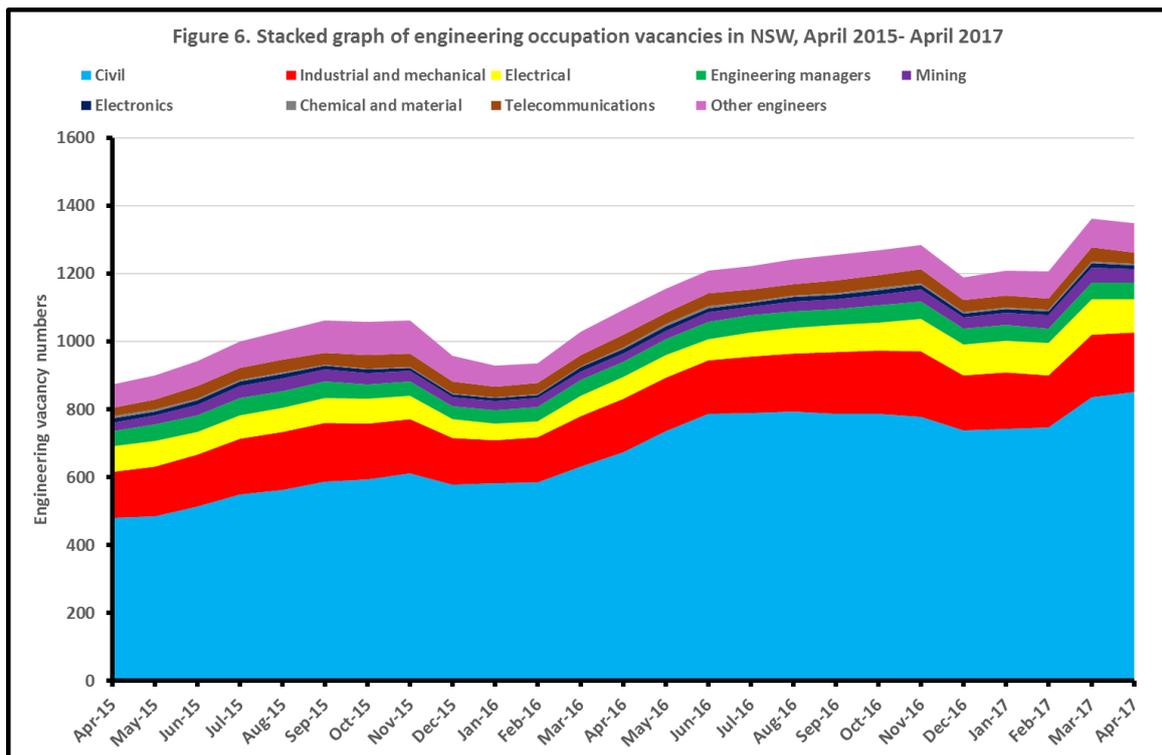
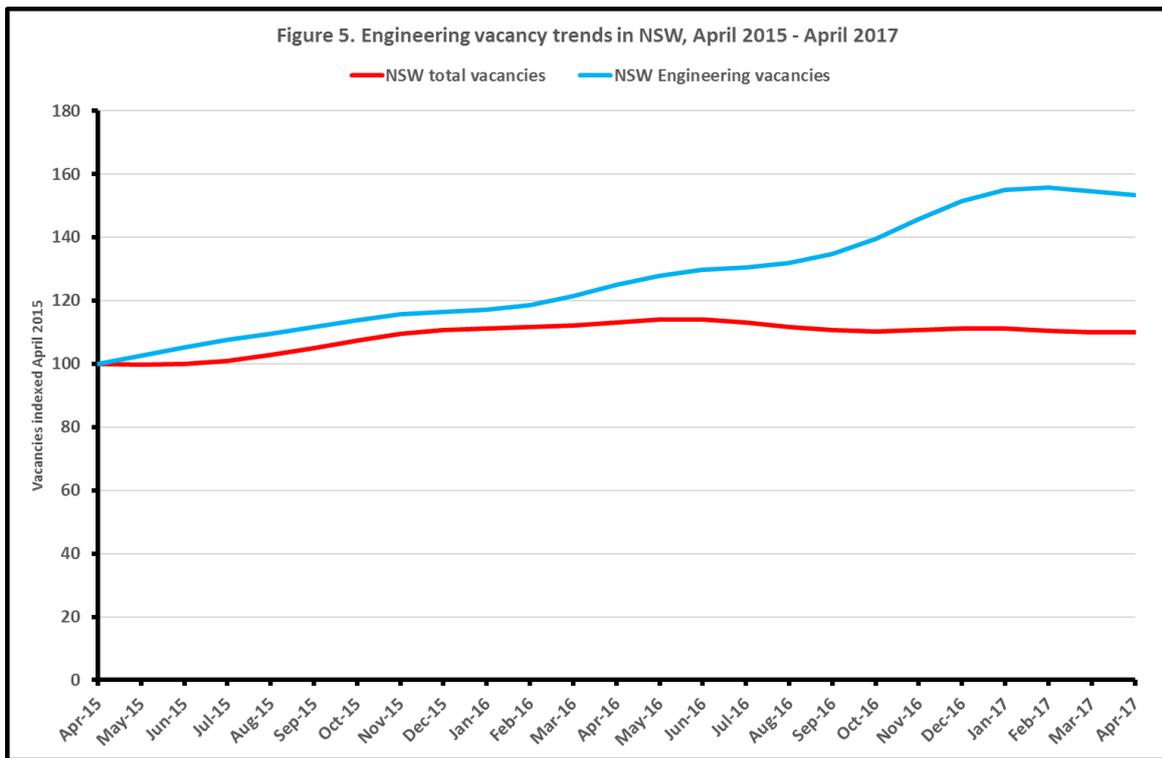
Growth during 2016 indicated that a recovery may be underway in the engineering labour market, however increases in vacancy numbers have stalled in the first few months of 2017.

The engineering vacancies in the states and territories is discussed in greater detail in each of the state sections below. This includes examining which engineering occupations are the leading drivers of job vacancy growth in each state:

- In New South Wales, Victoria and South Australia engineering vacancies are predominately moved by growth or contraction in civil engineering vacancies which make up the majority of vacancies recorded.
- In Queensland and Western Australia civil vacancies also play a big role in the movement of engineering vacancies, but there is also a big influence from mining engineering vacancies which have fluctuated over the last decade.
- In the smaller jurisdictions such as Tasmania, the Northern Territory and the Australian Capital Territory numbers are smaller than the other jurisdictions so engineering occupation data can be much more variable.

# New South Wales

New South Wales has consistently recorded the highest number of engineering vacancies in Australia. Figure 5 below shows engineering vacancy trends in NSW in comparison to overall vacancy trends in the state, while Figure 6 is a stacked graph of the engineering occupations in the state.



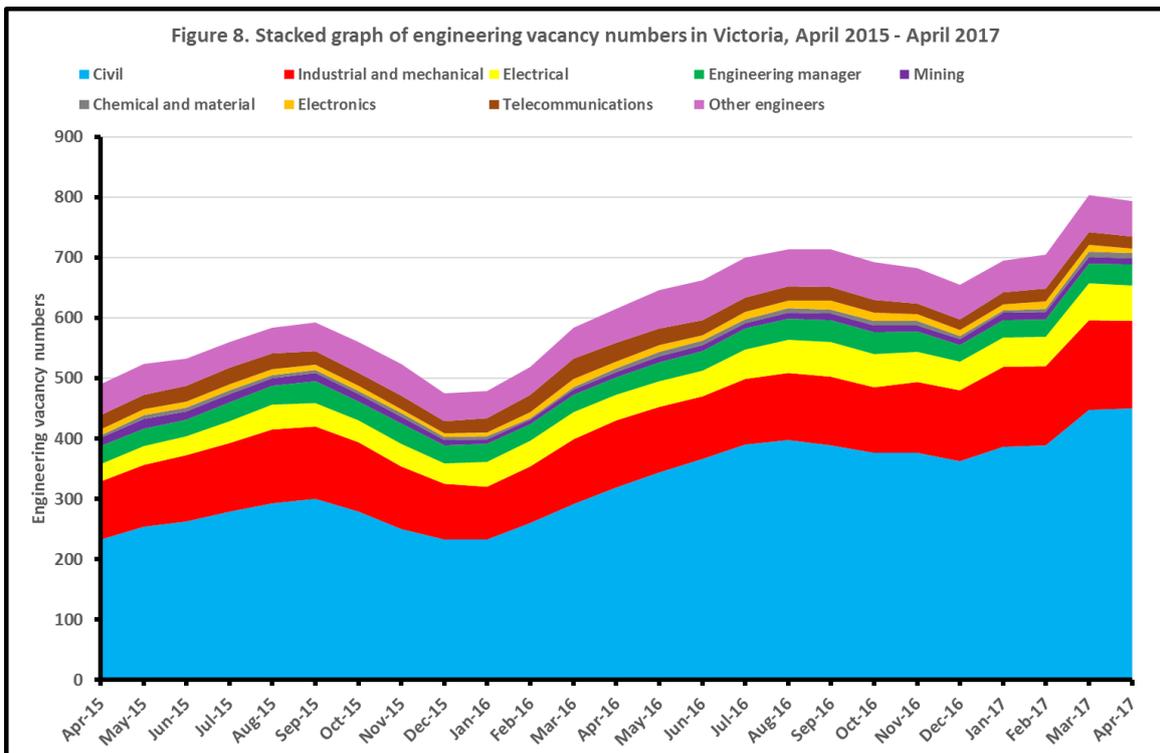
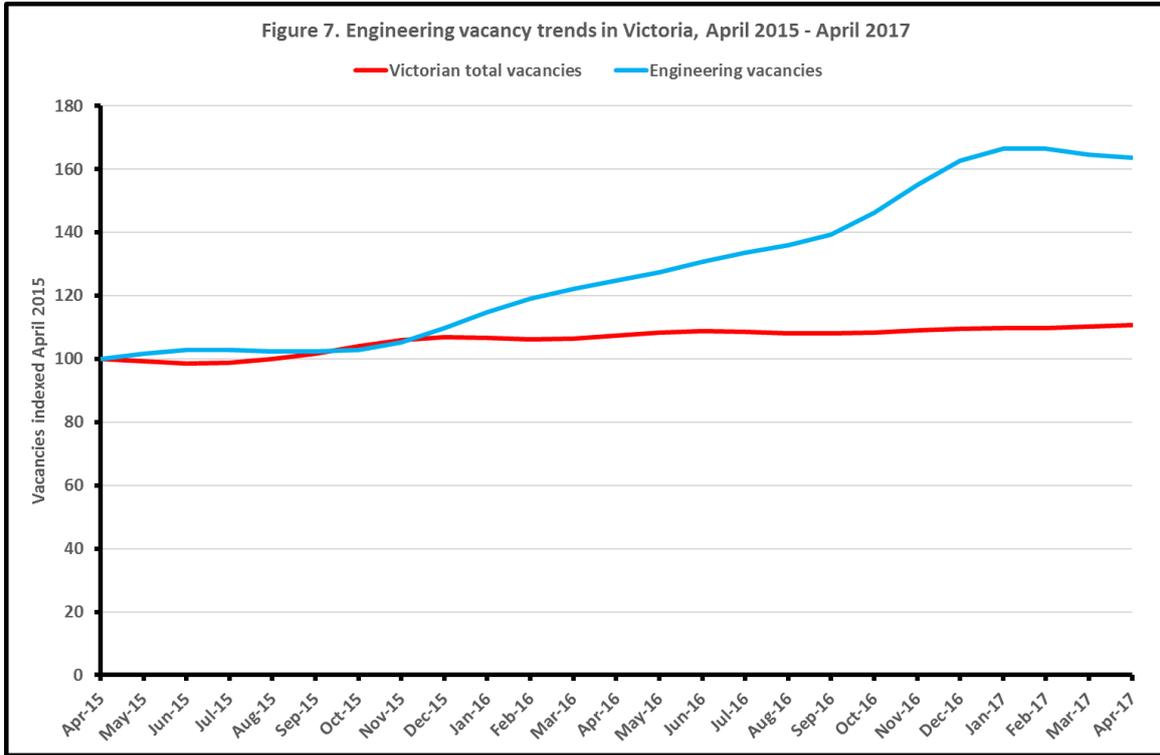
Engineering vacancy growth trends in NSW have consistently been higher than overall NSW vacancies for the last two years. Over the last two years total NSW vacancy numbers have grown by 10 per cent, compared to 53.3 per cent for NSW engineering vacancies over the same time period. In April 2015 there was 830 vacancies recorded for engineers, which has grown to 1,272 vacancies recorded in April 2017.

Engineering vacancy numbers in NSW are dominated by vacancies recorded in civil engineering occupations, which make up roughly two-thirds of all engineering vacancies in the state. Some points of note in NSW are:

- Civil engineering occupations continue to drive the increasing numbers in NSW engineering vacancies. In April 2015 there was 481 vacancies recorded, which has grown to 852 vacancies recorded in April 2017.
- Industrial and mechanical engineering occupations have grown slightly over the last two years, with the biggest growth occurring during 2016. In January 2016 there was 126 vacancies recorded which grew to 174 vacancies in April 2017.
- Electrical engineering occupations have also seen strong growth in numbers recorded during 2016, but have since been more steady in the first few months of 2017. In January 2016 there were 48 vacancies recorded for electrical engineers in NSW, growing to 95 in January 2017. In April 2017 there were 98 vacancies recorded.
- Engineering manager occupation vacancies have remained steady in NSW. In April 2015 there were 44 vacancies recorded which has gradually climbed to 50 vacancies recorded in April 2017.
- Vacancies for mining engineers in NSW have grown slightly over the two-year period. In April 2015 there were 25 vacancies for mining engineers, growing to 40 vacancies in April 2017.
- Vacancies for telecommunications engineers have hovered between 30 and 40 vacancies recorded per month for the majority of the last two years. In April 2017 there were 34 vacancies recorded for telecommunications engineers in NSW.
- Electronics and chemical and materials have consistently remained the two occupations with the lowest vacancy number in the state. Electronics engineering vacancies have remained stable with 11 vacancies recorded in April 2017, one less than recorded two years ago. Chemical and materials vacancies have slightly fallen from seven vacancies in April 2015, to five vacancies in April 2017.

# Victoria

Victoria has seen a rise in engineering vacancies over the last two years with strong growth throughout 2016. Figure 7 below shows the vacancy trends for engineering vacancies in Victoria in comparison to trends for all Victorian vacancies. Figure 8 is a stacked graph of the engineering occupations in the state.



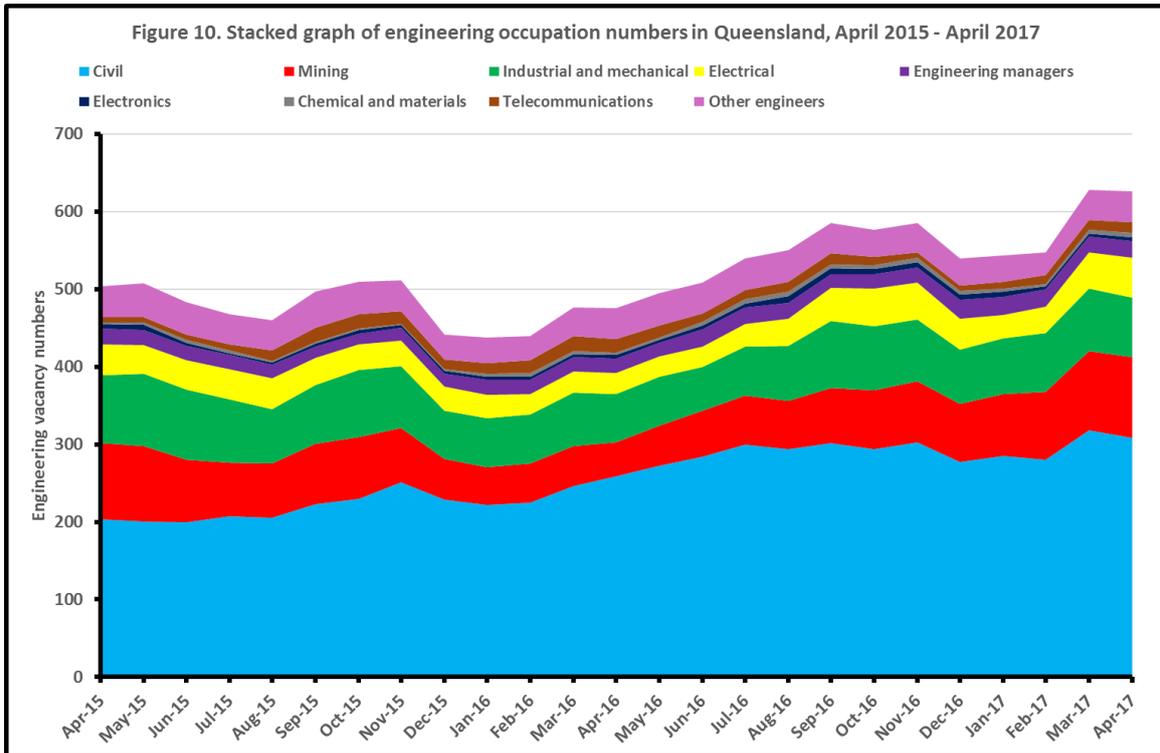
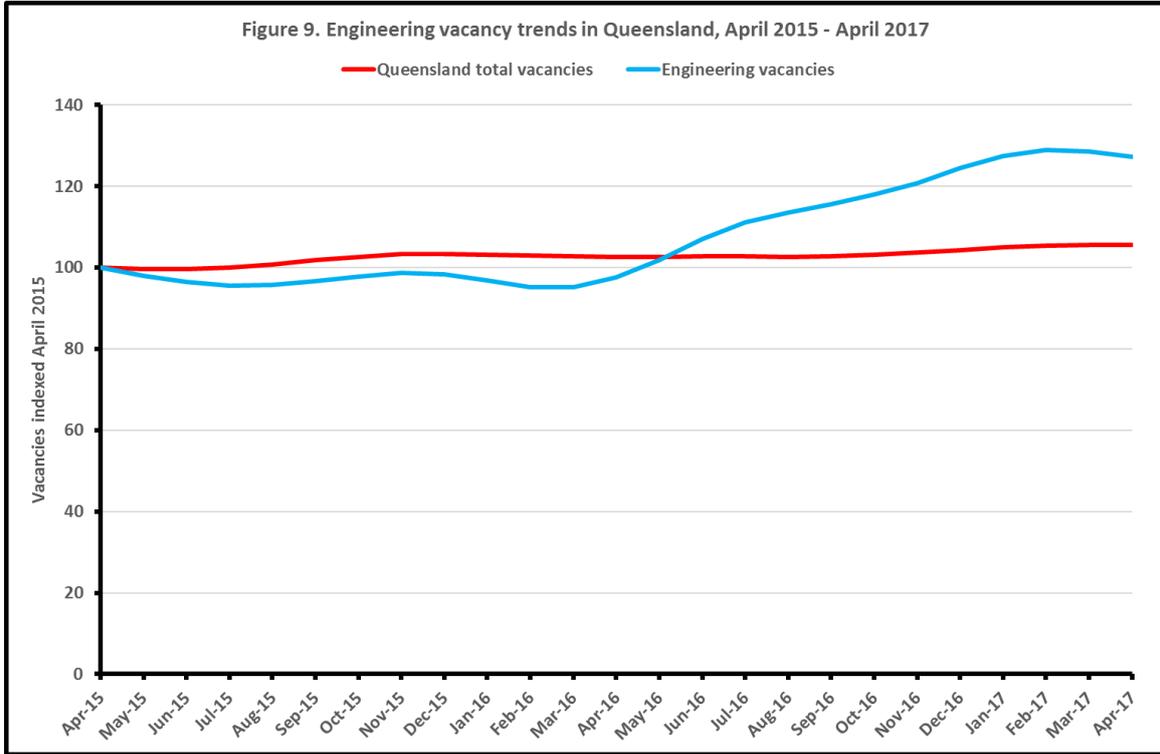
Engineering vacancy trends in Victoria have been higher than overall Victorian vacancies for most part of the last two years. During this time period total Victorian vacancies have grown by 10.7 per cent, compared to 63.5 per cent for engineers over the same time period. In April 2015 there was 452 vacancies recorded for engineers, which grew to 739 vacancies in April 2017.

Engineering vacancies in Victoria are dominated by vacancies recorded in Civil engineering occupations in the state as seen in figure 8. Some points of note in Victoria are:

- Civil engineering occupations have been the main driver in the growth of Victorian engineering vacancy numbers. In April 2015 there was 233 vacancies recorded for civil engineering professionals, which grew to 450 vacancies recorded in April 2017.
- Industrial and mechanical engineering occupations have grown slightly over the last two years, with the biggest increase in vacancies for these occupations occurring during 2016. In January 2016 there was 87 vacancies recorded which grew to 145 vacancies recorded in April 2017.
- Electrical engineering occupations have risen slowly over the two-year period, with a quick jump in vacancies recorded over the most recent months. In April 2015 there was 29 vacancies recorded, rising to 49 recorded in January and February 2017. However, by April 2017 this has risen further to 59 vacancies recorded.
- Engineering manager occupation vacancies have remained steady in Victoria. In April 2015 there were 30 vacancies recorded, climbing slowly to 35 vacancies recorded in April 2017.
- Vacancies for mining engineers in Victoria could be considered at low levels, especially when compared to NSW. Over the last two-year period vacancies recorded has hovered around 10 vacancies a month with no real growth over that period. In April 2017 there were 10 vacancies recorded.
- Telecommunications engineering vacancies have been variable in Victoria. In April 2015 there were 23 vacancies recorded, which grew to 34 recorded in March 2016. In December 2016 they dropped low to just 18 recorded, and in April 2017 there were 20 vacancies.
- Electronics and chemical and materials have consistently remained the two occupations with the lowest vacancies. Electronics engineering vacancies have remained stable with eight vacancies recorded in April 2017, two less than recorded two years ago. Chemical and materials vacancies have risen slightly from five vacancies in April 2015, to nine vacancies in April 2017.

# Queensland

Queensland engineering vacancies increased during the second half of 2016 after a long period of low numbers. Figure 9 below shows engineering vacancy trends in Queensland over the past two years, in comparison to Queensland total vacancies. Figure 10 is a stacked graph of the engineering occupation vacancies in the state.



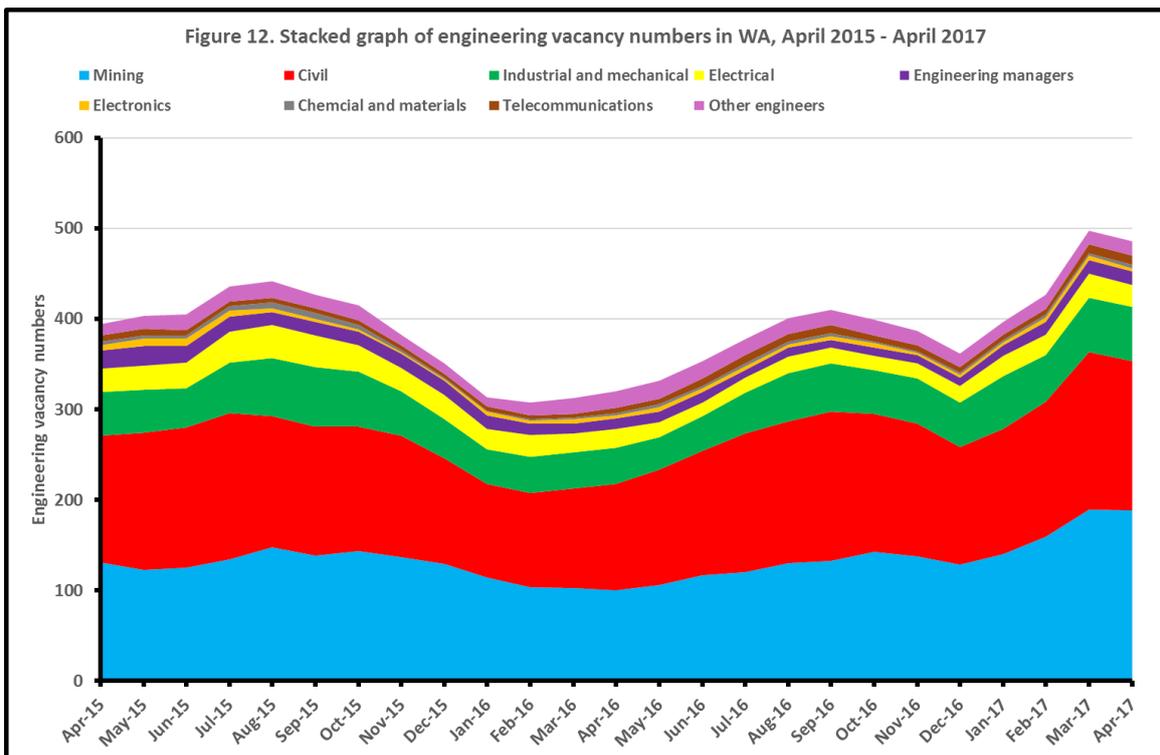
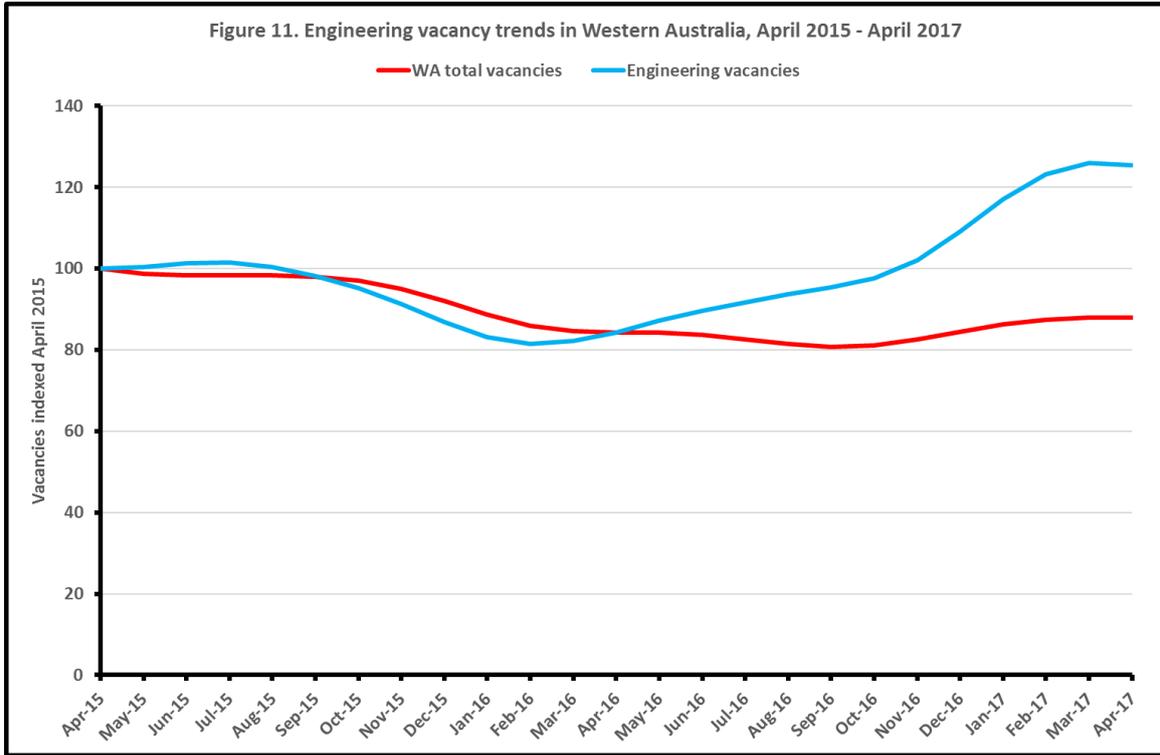
Engineering vacancy trends in Queensland remained low until mid-2016, when vacancy numbers grew at a higher rate than the Queensland total vacancies. From January 2016 to June 2016 engineering vacancies grew 3.4 per cent, however between June 2016 and April 2017 engineering vacancies grew 18.8 per cent. In April 2015 there was 455 vacancies for engineers, which has grown to 578 vacancies in April 2017.

Engineering vacancies in Queensland comprise a large portion of civil engineering occupations, which is followed by mining engineering occupations, and industrial and mechanical occupations as seen in figure 8. Some points of note in Queensland are:

- Civil engineering occupations have recorded the highest number of engineering vacancies in Queensland. In April 2015 there was 204 vacancies recorded, which grew to 309 vacancies recorded in April 2017.
- Vacancies for mining engineers in Queensland fell and then recovered during the last two years. In April 2015 there were 98 vacancies recorded which fell to just 44 vacancies in April 2016. However this number recovered strongly and numbers have more than doubled in the last 12 months with 104 vacancies recorded in April 2017.
- Industrial and mechanical engineering have remained fairly constant over the last two years, with a slight fall in numbers in this period. In April 2015 there was 88 vacancies recorded, falling to 76 recorded in April 2017.
- Electrical engineering vacancy numbers have been variable over the last two years, but there has been a jump in numbers seen in the last two months. In April 2015 there was 39 vacancies recorded, and this is slightly more than the 30 recorded in February 2017. However, by April of 2017 vacancy number have risen again to 52 vacancies recorded.
- Engineering manager occupation vacancies have remained steady in Queensland. Over the two-year period there has really only been slight movements above and below the 20 vacancy per month mark. In April 2017, 21 vacancies were recorded.
- Telecommunications engineering vacancies in Queensland grew from 7 recorded in April 2015 up to 18 recorded in April 2016. They have since dropped back to 13 recorded in April 2017.
- Electronics and chemical and materials have consistently remained the two occupations with the lowest vacancies. Electronics engineering vacancies have remained stable with five vacancies recorded in April 2017, one less than two years ago. Chemical and materials vacancies have risen slightly from two vacancies in April 2015, to six vacancies in April 2017.

# Western Australia

Western Australia engineering vacancies increased during the second half of 2016 after a period of falling numbers in late 2015. Figure 9 below shows engineering vacancy trends in WA over the past two years, in comparison to WA total vacancies. Figure 10 is a stacked graph of the engineering occupation vacancies in the state.



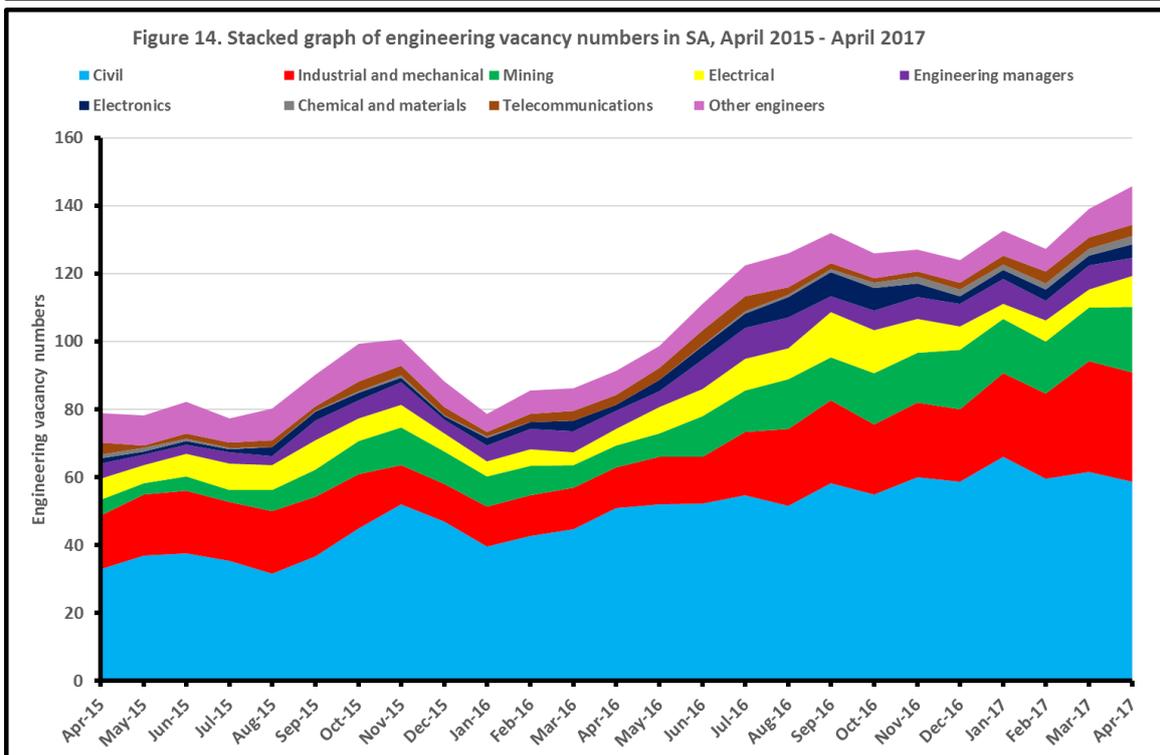
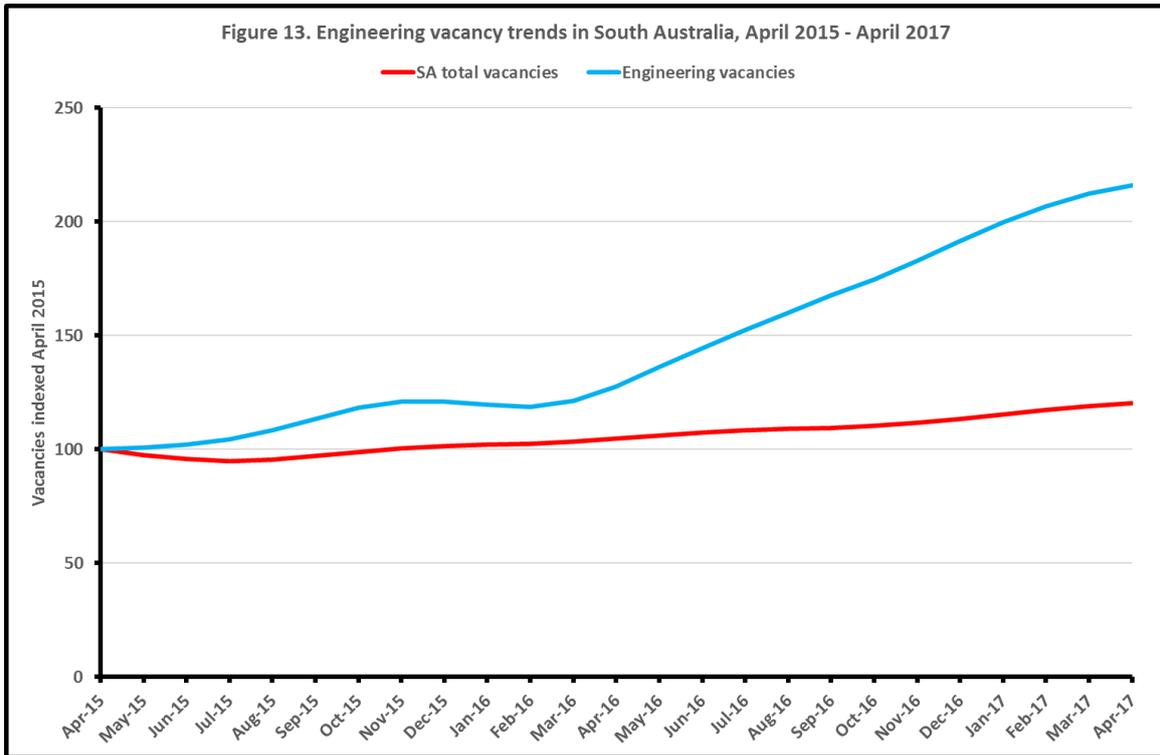
Engineering vacancy trends in WA fell in 2015, before recovering in 2016. From April 2015 to April 2016 engineering vacancies in the state fell from 381 to 321, a fall of 15.7 per cent. However, over the next 12 months engineering vacancy numbers grew to 478, a rise of 48.7 per cent. Total WA vacancies over the same 12-month period only grew at 4.4 per cent.

As seen in figure 12 Engineering vacancies in WA are predominately made up of mining and civil engineering occupations, followed by much smaller numbers in industrial and mechanical occupations, as well as electrical occupations. Some points of note in WA are:

- In April 2017 there were more vacancies recorded for mining engineers than any other occupation in WA. Vacancies fell from 131 in April 2015 to 101 in April 2016, before rising over the course of 2016 and early 2017 to 188 vacancies recorded in April 2017.
- Civil engineering occupations also fell in 2015, before rising in the beginning of 2016. However, civil vacancies have recorded variable numbers over the last 9 months. In April 2015 there was 140 vacancies recorded, falling to 117 in April 2016. This recovered to 165 vacancies recorded in September 2016, recording variable numbers in the months that followed, before recording 165 again in April 2017.
- Industrial and mechanical engineering have remained fairly constant over the last two years, recording higher numbers in late 2016 and early 2017. In April 2015 there were 48 vacancies recorded, falling to 39 vacancies in April 2016. Vacancy numbers have since risen again to 60 vacancies recorded in April 2017.
- Electrical engineering vacancy numbers have followed the same trends as other engineering occupations over the last two years, falling over 2015, and rising again in mid-2016. However electrical engineering vacancy numbers have only just started to return to the same number as two years ago, with 25 vacancies recorded in April 2015, compared to 24 recorded in April 2017.
- Engineering manager occupation vacancies have fallen in WA, only starting to rise again in the most recent two months. In April 2015 there were 21 vacancies recorded, falling to nine recorded in December 2016. As of April 2017 there were 15 vacancies for engineering managers recorded.
- Telecommunications engineering vacancies have been low in WA over the past two years. In April 2015 there were 7 vacancies recorded, dropping to only 4 recorded in March 2016. They have since grown to 11 vacancies recorded in April 2017.
- Electronics and chemical and materials have consistently remained the two occupations with the lowest vacancies. Electronics engineering vacancies have remained low with four vacancies recorded in April 2017, three less than two years ago. Chemical and materials vacancies have remained very low for two years with four vacancies in April 2017, the same as two years ago.

# South Australia

South Australia engineering vacancies have more than doubled over the past two years. Figure 13 shows the trend of engineering vacancies in SA in comparison to the trend of overall vacancies in the state. Figure 14 is a stacked graph of all of the engineering occupation vacancies in the state over the same time period.



Engineering vacancy trends in SA have consistently risen over the last two years, growing from 70 vacancies recorded in April 2015, up to 150 vacancies recorded in April 2017. In the last 12 months engineering vacancies in the state have risen 69.3 per cent, compared to 14.9 per cent in total SA vacancies.

Engineering vacancies rises in SA have been on the back of rises in Civil, industrial and mechanical, and mining occupations. Some points of note in SA are:

- Civil engineering occupations have consistently recorded the highest number of engineering vacancies in SA. In April 2015 there was 33 vacancies recorded, which grew to 59 vacancies in April 2017.
- Vacancies for Industrial and mechanical engineering occupations have grown from 16 recorded in April 2015, up to 32 vacancies recorded in April 2017.
- Mining engineering vacancy numbers have also grown over the two-year period. In April 2015 there was five vacancies for mining engineers in SA, which has since grown to 19 vacancies in April 2017.
- Electrical engineering vacancies, engineering manager, electronics engineers, telecommunications engineers and chemical and materials engineering occupations have remained low in SA over the last two years. In April 2017 there were nine vacancies for electrical engineers, five vacancies for engineering managers, three vacancies for telecommunications engineers, four vacancies for electronics engineers, and two vacancies for chemical and materials engineers.

# Tasmania and the territories

Vacancy numbers for Tasmania, the Northern Territory and the Australian Capital Territory are much smaller than the other states, which means the variability in the vacancy trends can be much greater than in the larger states. As occupation data in these jurisdictions is so small, only the two-year trend analyses is presented.

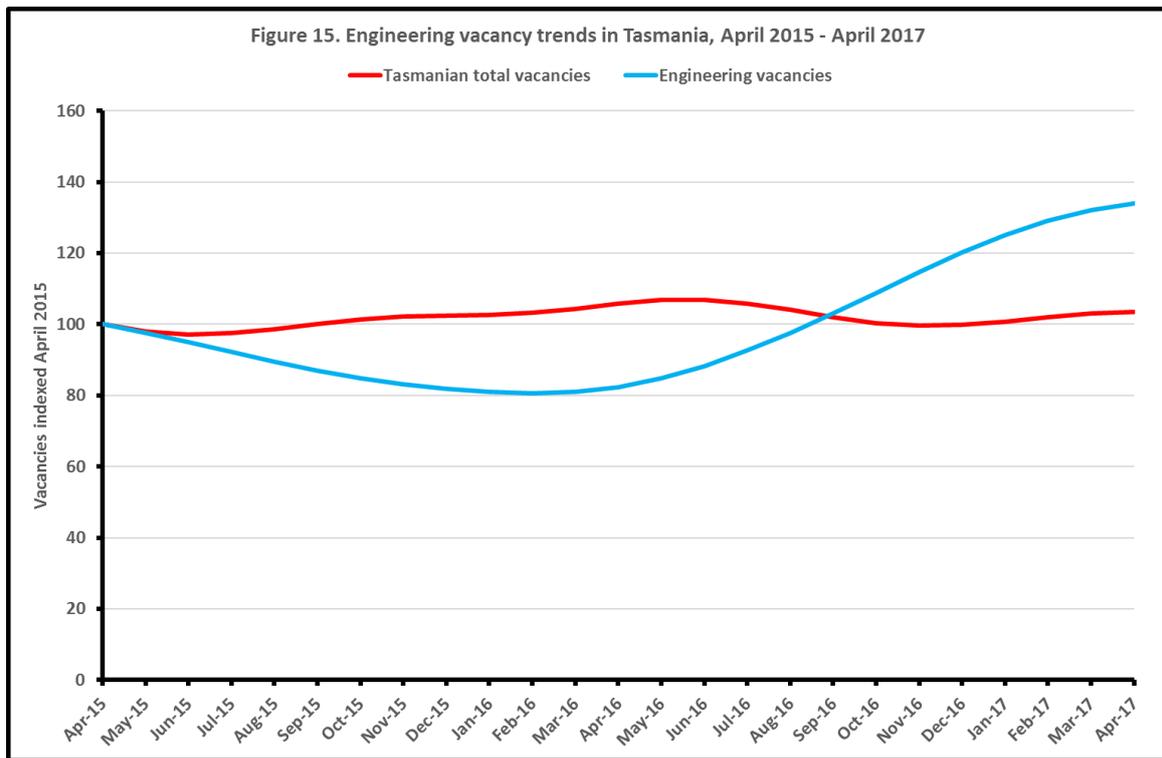


Figure 15 shows the two-year trend for engineering occupations in Tasmania in comparison to total Tasmanian vacancies. As seen in figure 15, engineering vacancies in Tasmania have been variable, but it must be remembered that this has been off a small base number. In April 2015 there were 14 vacancies recorded for engineers in Tasmania, and this fell to 11 vacancies in April 2016. However, there was some growth in engineering vacancies over the later months of 2016, and in April 2017, 18 vacancies were recorded. The majority of these engineering vacancies were civil engineering occupations, making up approximately half of all engineering vacancies.

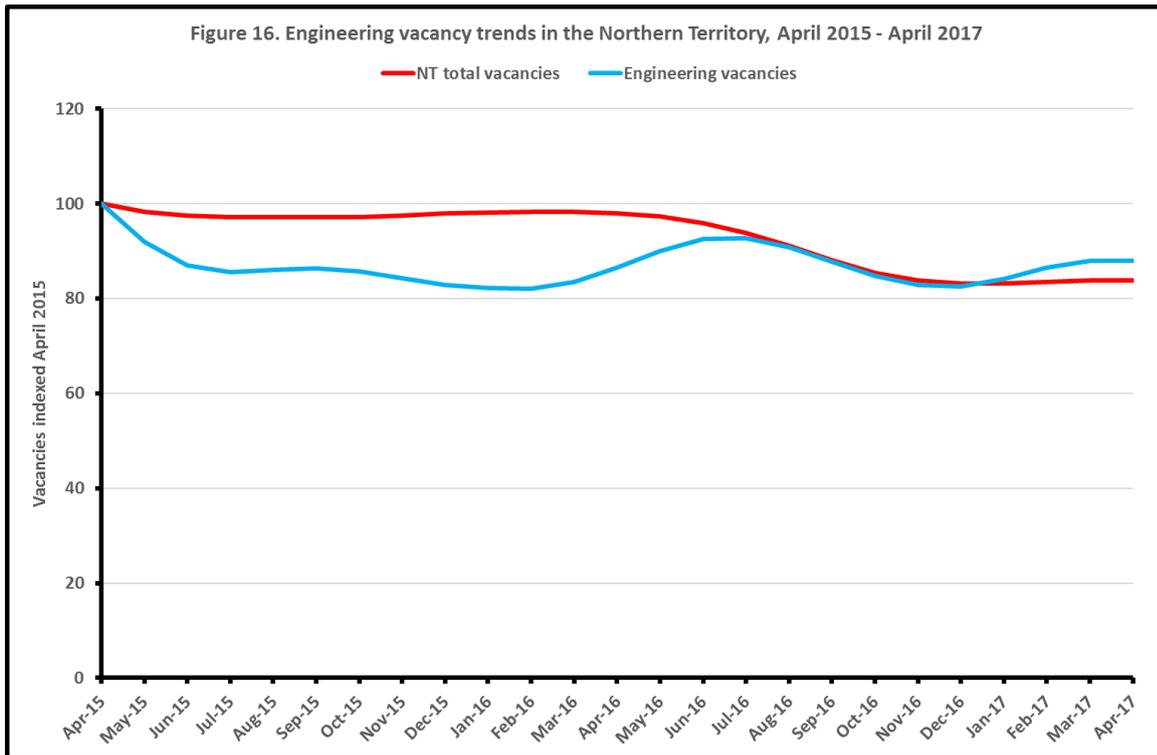


Figure 16 shows the two-year trend for engineering occupations in the NT in comparison to total NT vacancies. The NT was the only jurisdiction to record a fall in engineering vacancies over the two-year period. In April 2015 there was 45 vacancies recorded for engineers, falling in mid-2015 and remaining under the April 2015 number for the next two years. In April 2017 there were 40 engineering vacancies recorded. Civil engineering occupations are the engineering occupation with the most vacancies recorded, followed by mining engineering occupations.

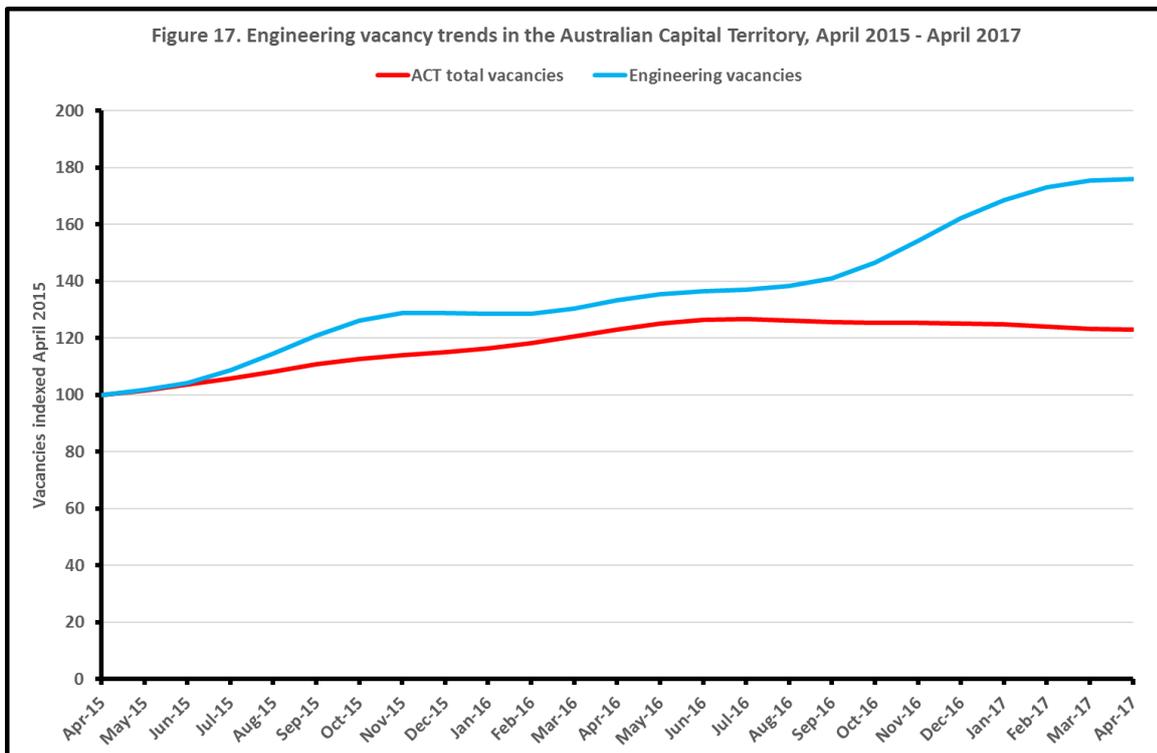


Figure 17 shows the two-year trend for engineering occupations in the ACT in comparison to total ACT vacancies. Engineering vacancies in the ACT have risen over the last two years, with consistent growth over that period. In April 2015 there was 46 vacancies recorded for engineers, growing to 61 vacancies in April 2016. This continued to rise to 81 vacancies recorded in April 2017, growth of 32 per cent for that 12-month period. In the ACT more than half of engineering vacancies in April 2017 were civil engineering occupations, with the next largest occupations being industrial and mechanical.



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