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# Labour Price Forecasts

Prepared for the Australian Energy Regulator

7 February 2018

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Access Economics

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Sophie Musker
A/g Assistant Director
Network Expenditure Team, Australian Energy Regulator
Level 35, 360 Elizabeth Street
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7 February 2018

Dear Sophie,

**Report on labour price forecasts**

I enclose Deloitte Access Economics' report on the Wage Price Index for New South Wales, Victoria, and South Australia prepared for the Australian Energy Regulator.

This report has been drafted on the basis of the material and data available that underpins the December 2017 quarter *Business Outlook* and *Investment Monitor* publications.

Yours sincerely

**Stephen Smith**
Lead Partner
Deloitte Access Economics Pty Ltd

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# Glossary

| | |
|---|---|
| AAWI | Average Annualised Wage Increase |
| ABS | Australian Bureau of Statistics |
| AEMC | Australian Energy Market Commission |
| AEMO | Australian Energy Market Operator |
| AER | Australian Energy Regulator |
| ANZSIC | Australia and New Zealand Standard Industry Classification |
| AWE | Average Weekly Earnings |
| AWOTE | Average Weekly Ordinary Time Earnings |
| CPI | Consumer Price Index |
| DAE | Deloitte Access Economics |
| EBA | Enterprise Bargaining Agreement |
| EEBTUM | Survey of Employee Earnings, Benefits and Trade Union Membership |
| EEH | Survey of Employee Earnings and Hours |
| GDP | Gross Domestic Product |
| GSP | Gross State Product |
| LNG | Liquefied Natural Gas |
| NEM | National Electricity Market |
| PV | Photovoltaics |
| RBA | Reserve Bank of Australia |
| WPI | Wage Price Index |

# Executive Summary

For the States covered in this report, the ABS only releases Wage Price Index (WPI) estimates in the utilities sector for Victoria and New South Wales. For the construction sector, the ABS releases WPI estimates in the construction sector for New South Wales, Victoria and Queensland. For those States where the ABS does not release WPI estimates, we use a range of related data to estimate the utilities sector WPI and the construction sector WPI.

## Australia's economic outlook continues to strengthen

Australian real gross domestic product (GDP) increased by 0.6% in the September quarter 2017, to be 2.8% higher over the same quarter a year earlier. Growth has been driven by a stronger global economy, higher public spending and record low interest rates.

The past year has seen two key trends in the global economy that have supported conditions in Australia: accelerating global growth and easing global inflation.

Australia's national income is closely linked to the health of the global economy, and of commodity prices in particular. Improved growth momentum in the Chinese economy prompted a lift in commodity prices in early 2017. While prices have since moderated somewhat, they remain elevated. National income increased by $95 billion in the year to September 2017, the largest such increase in more than five years.

The ongoing weakness in global inflation has also meant that Australian interest rates have remained low. This is particularly good news for Australian households who are experiencing weak growth in incomes and high levels of debt. Recent strength in housing market activity has pushed household debt to income ratios to a record high of 200%. As a result, future interest rate rises are likely to add significantly to the cost of mortgage repayments and weigh on household spending.

The housing construction cycle appears to have peaked earlier than previously expected. Dwelling investment has now fallen for the past three quarters, while house price growth has slowed and auction clearance rates are at their lowest levels since early 2016. That said, building approvals remain above their historical average suggesting that the pipeline of residential work will support activity for some time.

Labour market conditions have been particularly strong in 2017. There was a net gain of approximately 400,000 jobs in the past year, almost all of which were full-time positions. The distribution of where jobs are showing up at the industry level is broadly in line with longer term trends, that is, services tend to hold higher growth rates compared to goods-producing sectors. The participation rate has risen to its highest level since 2011, with a notable increase in the female participation rate. This has seen the unemployment rate fall from 5.8% in early 2017 to 5.5% in December.

Overall, output growth is expected to lift in the coming year as the drag from falling mining investment fades and public demand and non-mining business investment continue to grow. Real GDP is forecast to lift from 2.8% growth in 2017-18 to a gain of 3.1% in 2018-19.

## Utilities output growth to stabilise at moderate rates

Output in the utilities sector grew by 1.0% in the year ending September 2017, below the 2.2% growth in the wider economy. This continues a long-running trend which has seen the utilities sector decline as a share of Australia's economy for the past 25 years. In part this is due to the expansion of other sectors such as mining, health and finance. Another contributor is the structural change underway among energy users due to new technologies and policy priorities that have been increasing energy efficiency and the take up of distributed generation.

Consumption of electricity is expected to increase in Australia as both the population and economy continue to grow. That said, demand from the grid is estimated to have fallen in 2016-17. Households and businesses are increasingly controlling their electricity use and costs by:

- Adopting rooftop photovoltaics (PV), cogeneration, and other small scale technologies to generate their own electricity;
- Using more energy-efficient appliances, buildings and machinery; and
- Modifying behaviour to reduce electricity use where possible.

The Australian Energy Market Operator (AEMO) forecasts a 14.4% decrease in National Electricity Market (NEM) grid consumption from the residential sector over the next 20 years. Over the same period, electricity generated by rooftop PV is expected to almost triple. Rooftop PV installations reached a record high in 2017 and a survey by the Australian Energy Market Commission (AEMC) has found that a large proportion of households with solar plan to install batteries to store excess energy and reduce their demand from the grid.

A range of conditions are placing pressure on industrial energy users, including rising prices for electricity and gas, shorter contract terms and strong import competition. Contraction in parts of manufacturing and some elements of mining is also dampening industrial energy demand.

Technical and policy developments could further reduce sectoral demand. The retirement of ageing generators will reduce the supply of long term contracts available in the NEM. The price for contracts and hedging against volatile prices is likely to rise as a result, which may lead to higher electricity bills for consumers.

There are also a range of positives in the sector to monitor. The potential uptake of electric vehicles, elevated levels of housing construction and rising LNG output (which means more industrial demand for electricity) present positives for the sector. Australia is also experiencing strong population growth, which will support underlying household demand.

Output growth in the utilities sector is expected to lift in the short term, followed by modest growth over the forecast period to 2022-23. Growth in utilities is expected to remain weaker than growth in the Australian economy as a whole, meaning that the utilities sector will continue to shrink as a share of national activity.

### Australian wage growth remains near record lows

Wage growth remains subdued and close to record lows. The WPI grew by 0.5% in the September quarter of 2017, to be 2.0% higher over the year.

Wage gains are faster in sectors where the public sector plays a large role, with year-to gains of 2.7% in both healthcare and in arts and recreation, followed by the education sector at 2.4%. At the other end of the scale, wage gains are weakest in mining (1.2%) and professional services (1.5%). At the State level, wage gains are growing the fastest in Victoria, Queensland and Tasmania (all at 2.2%), closely flowed by New South Wales (2.1%). Wages grew the slowest in Western Australia (at 1.3%) and the Northern Territory (1.4%).

While wages are expected to pick-up over time, there are both temporary and structural factors that are limiting wage gains in Australia. These include spare capacity in the labour market, changes in relative bargaining power, new technologies and competitive pressures, as well as low growth in inflation and productivity.

Some important factors currently depressing wage growth look set to linger in the near future:

- The projected lift in inflation from current low levels is expected to be slow.
- In response to additional competition many businesses appear to be focused on containing costs. Paying higher wages to employees can often sit at odds with this approach. This is likely to mean that as labour market conditions tighten it is going to take longer for wages to lift.

- An ageing workforce and higher household debt means employees are often more interested in job security than increases to income, and are less likely to push for larger pay rises.
- Trends such as automation of work processes, an increase in contract work, and competitive pressures from the internationalisation of services trade have all combined to restrain workers' bargaining power. It is possible that these trends are making workers feel less secure about their future employment and are less likely to push for larger pay rises.

Although these trends will weigh on wage gains for some time, the traditional drivers of wage growth have not disappeared. For example, wage gains are currently faster in sectors and States that are experiencing stronger growth. In fact, the two necessary pre-conditions to a boost in wage gains are already in place:

- Business profits have increased; and
- Businesses are hiring people at near record rates.

The unemployment rate has declined and continued employment gains are expected to absorb remaining spare capacity in the labour market. Strong labour market conditions will to lead to gradual improvements in wage growth.

There is also likely to be upward pressure on wages from an improvement in inflation outcomes. A survey conducted by the Reserve Bank found that CPI was a primary determinant of wage-setting for two-fifths of firms. CPI is forecast to grow by 1.9% in 2017, after 1.3% growth in 2016. Further increases in CPI in 2018 are expected to flow through the higher wages.

Demographic factors are also expected to add to wage pressures. The increasing retirement among baby boomers is set to restrain growth in the number of potential workers. This should hand employees back some bargaining power in wage negotiations, contributing to higher wage outcomes.

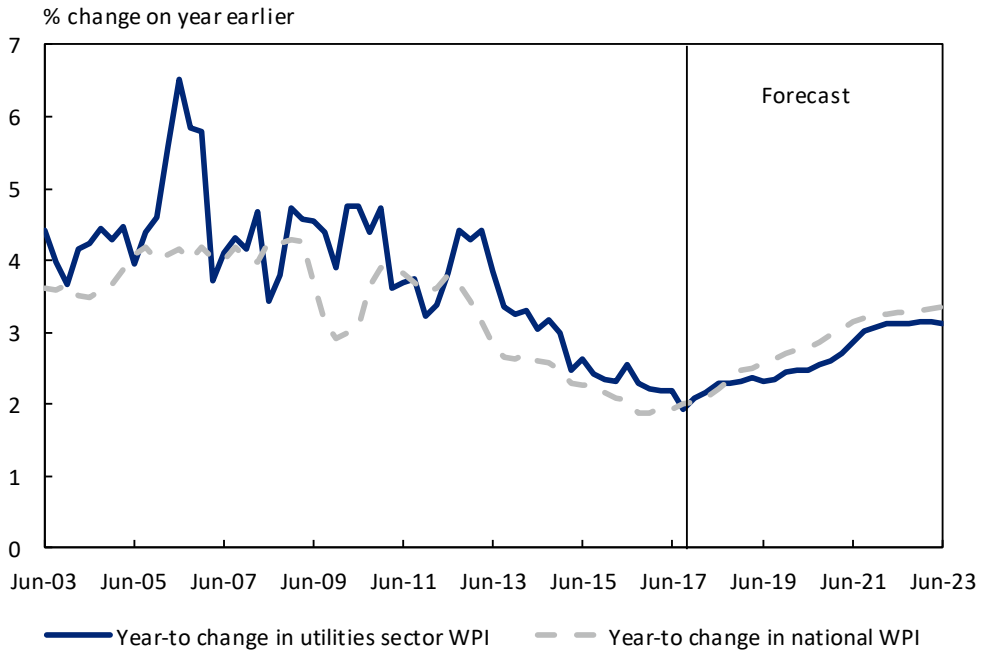
And lastly, the "income recession" of the post-2011 period has already started to give way to more settled gains in national income. The recent surge in national income was largely driven by higher commodity prices. And while commodity prices are no longer at the highs seen in late 2016 and early 2017, some of the improvement in national income is set to flow through to wages.

Deloitte Access Economics forecasts a gradual lift in wage growth. Nominal wages are forecast to grow 2.1% in 2017-18 before lifting to 2.5% in 2018-19. The pace of wage gains is then expected to reach 3.3% by 2022-23.

### Utilities wage growth to gradually recover

Utilities sector wages grew by 1.9% over the year to September 2017, the slowest increase since the WPI series began in 1997 (see Chart i). Wages are lower partly due to weakness in wage growth across all industries, but also partly due to lower output growth in the utilities sector and subdued demand in competing sectors such as manufacturing and construction.

Chart i Utilities Wage Price Index forecasts




Source: Australian Bureau of Statistics, Deloitte Access Economics

Following a peak of 4.4% growth in early 2013, wage growth outcomes in the utilities sector have trended lower but have largely outperformed gains across the wider economy. There has been a long-running trend of higher real wage growth (nominal wage growth adjusted for inflation) in the utilities sector relative to the wider economy. The reasons behind this trend are unclear – neither fundamentals (improved relative productivity making utilities workers more valuable than before) nor the business cycle (significant output growth in either the utilities or competitor sectors) were placing upwards pressure on wages:

- The utilities sector accounted for a peak of almost 4% of the Australian economy in the early 1990s, but has since fallen to around 2.4%.
- Labour productivity growth in the utilities sector has largely been negative over the past two decades. And although there has been a recovery since mid-2014, the fact that utilities wages outperformed the average across all sectors while productivity growth underperformed suggests that there is little linkage between changes in the overall productivity level and wages in the utilities sector.
- There has also been a slowdown in sectors that compete with utilities for workers. Firstly, the construction sector has been shrinking as a share of the Australian economy since mid-2014. Secondly, the passing of the heights of the mining boom (and associated construction) means the mining sector has also lost about a third of its national job share since the peak in 2012. Lastly, a further competitor is the manufacturing sector. As recently as the mid-1980s, one in every six workers in Australia was employed in manufacturing. Now that ratio is at one in every fourteen workers.

Over the year to September 2017 wages in the utilities sector grew slower than those in the wider economy for the first time in five years. Looking ahead, wage gains in the utilities sector are expected to be more modest than improvements across all industries. In part this represents a reversion of the previous trend discussed above, underpinned by the fact that output in the utilities sector is forecast to grow more slowly than the average across all sectors.

The utilities WPI is forecast to gradually recover from growth of 2.1% in 2017-18, to 2.3% in 2018-19, before reaching 3.1% by 2021-22. The gradual recovery in wage growth in the utilities sector is in line with the gradual recovery in Australian wages over the next few years, supported

by higher inflation, better news on national income, and a relative tightening in the availability of workers.

### Utilities wage growth at the State level will largely mirror national trends

The dominant drivers of State level utilities wage outcomes are a range of national trends. Yet State influences are also relevant.

Wage growth for the utilities sector in **New South Wales** was particularly low over the year to September 2017 at 1.0%:

- Wage growth for the New South Wales utilities sector has remained below the gains in the wider State economy since mid-2015, partly due to the relatively strong performance of sectors such as entertainment and recreation and healthcare.
- New South Wales utilities sector WPI relative to the national average has been in decline since early 2009. The initial fall occurred at a time where wage growth in resource-rich States was very high, leading to falls in relative WPI for the south-eastern States. More recently, the utilities sector has experienced relatively poor performance across much of the country.
- Wage growth for utilities in New South Wales is expected to return to a similar growth rate to Australia's from 2018-19. By 2022-23, annual wage growth of 3.2% and 3.1% are forecast for the New South Wales and Australian utilities sectors respectively.

Over the past year, utilities wages in **Victoria** have continued to increase faster than (1) wages in the national utilities sector, (2) the overall Victorian economy, and (3) the broader Australian economy.

- Wage gains in the Victorian utilities sector have largely outpaced those in the national utilities sector since 2011. Over the last six years Victorian utilities wages have increased by a compound annual growth rate of 3.5%, versus 2.9% growth in the Australian utilities sector.
- However, it is unlikely that recent trends will persist indefinitely. Wage price growth in the utilities sector is slowing, at 2.6% over the year ending September 2017 compared to 3.3% in the year prior.
- The transition underway in the NEM is also likely to have an impact on wages. The retirement of coal-fired power stations has a proportionally large impact on Victoria and may contribute to softer wage outcomes in the electricity supply sector. Adding to this, electricity demand is relatively stagnant in Victoria while new renewable generation typically has a lower requirement for ongoing employees than existing baseload generation.
- Against that backdrop, Victorian utilities WPI is expected to continue to grow at more moderate rates. The pace of wage gains in the Victorian utilities sector is forecast to fall back to broader WPI growth in the Victorian economy from late 2018.

Deloitte Access Economics estimates that the **South Australia** utilities WPI grew by 2.4% over the year to September 2017. This is slightly above average wage growth for the Australian utilities sector (at 1.9%), and above wage growth across all industries in South Australia (2.0%) and nationally (2.0%), over the same period.

- South Australia has been at the forefront of the push towards generating electricity from renewable energy sources. The South Australian Government has implemented a policy to see 50% of the State's energy requirements come from renewable sources by 2025. This has spurred investment in the sector, increasing demand for qualified technicians and other workers with the right skills, which may increase pressure on wages.
- However, this also presents a number of other challenges for existing investments in other power producing assets, as well as the electricity network. This will have implications for employment and wages elsewhere in the sector.

- Looking ahead, South Australian utilities WPI is expected to grow at rates largely in line with the broader South Australian economy, increasing by 2.2% in 2017-18 before lifting to a gain of 2.4% in 2018-19.

The following tables set out our forecasts in detail.

## Summary results

Table i State WPI forecasts, all sectors

**Yearly changes in nominal WPI**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| National | 1.9 | 2.1 | 2.5 | 2.7 | 3.0 | 3.2 | 3.3 |
| New South Wales | 2.1 | 2.2 | 2.4 | 2.6 | 2.9 | 3.1 | 3.2 |
| Victoria | 2.0 | 2.4 | 2.6 | 2.8 | 2.9 | 3.1 | 3.2 |
| South Australia* | 2.2 | 2.2 | 2.4 | 2.8 | 3.0 | 3.2 | 3.3 |

**Yearly changes in real WPI**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| National | 0.2 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 0.9 |
| New South Wales | 0.1 | 0.1 | 0.1 | 0.3 | 0.5 | 0.7 | 0.9 |
| Victoria | 0.1 | 0.5 | 0.6 | 0.6 | 0.5 | 0.7 | 0.8 |
| South Australia* | 0.7 | 0.1 | 0.5 | 0.6 | 0.6 | 0.7 | 0.9 |

*Historical data estimated using Deloitte Access Economics' labour cost model. Unavailable from the Australian Bureau of Statistics

Source: Australian Bureau of Statistics, Deloitte Access Economics

Table ii Summary results – key variables, Australia

**Financial year changes in key variables**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| Output | 2.0 | 2.8 | 3.1 | 2.9 | 2.9 | 3.0 | 2.7 |
| Consumer price index | 1.7 | 1.8 | 2.1 | 2.2 | 2.4 | 2.4 | 2.4 |
| Wage Price index | 1.9 | 2.1 | 2.5 | 2.7 | 3.0 | 3.2 | 3.3 |
| Ave. weekly earnings | 1.6 | 2.2 | 2.3 | 2.8 | 3.0 | 3.2 | 3.3 |
| Ave. weekly ordinary time earnings | 2.0 | 1.6 | 2.5 | 3.3 | 3.5 | 3.7 | 3.9 |

Source: Australian Bureau of Statistics, Deloitte Access Economics

Table iii Summary results – economic variables, Australia

| Financial year changes in key economic variables - annual % change (unless noted) | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| Consumption | | | | | | | |
| Private sector | 2.4 | 2.2 | 2.7 | 2.5 | 2.4 | 2.6 | 2.7 |
| Public sector | 3.8 | 3.1 | 3.1 | 2.9 | 2.6 | 2.8 | 2.7 |
| Private sector investment | | | | | | | |
| Non-business housing | 2.6 | -3.3 | -3.0 | 0.4 | 7.6 | 6.2 | -0.6 |
| Non-business real estate | 0.6 | 0.1 | -2.8 | 0.0 | 6.4 | 5.0 | -1.3 |
| Non-residential building | -6.5 | 7.5 | 12.3 | 9.6 | 7.0 | 3.7 | 2.5 |
| Engineering construction | -16.4 | 2.8 | -4.7 | -2.6 | 3.1 | 2.6 | 1.4 |
| Machinery and equipment | 1.7 | 5.0 | 6.6 | 4.9 | 7.5 | 5.6 | 4.5 |
| IP and livestock | 9.6 | 6.4 | 7.1 | 5.8 | 10.3 | 8.4 | 7.0 |
| Public investment | | | | | | | |
| General Government | 17.4 | 9.9 | 6.7 | 6.0 | 5.7 | 5.4 | 5.1 |
| Public enterprises | 12.8 | 4.6 | -1.0 | -5.8 | -5.7 | -1.3 | 1.6 |
| Domestic final demand | 2.1 | 2.8 | 2.7 | 2.7 | 3.4 | 3.3 | 2.7 |
| Private sector | 0.9 | 2.4 | 2.5 | 2.6 | 3.6 | 3.4 | 2.6 |
| Public sector | 6.2 | 4.2 | 3.4 | 2.9 | 2.7 | 3.0 | 3.1 |
| Gross national expenditure | 2.3 | 2.6 | 2.7 | 2.7 | 3.4 | 3.3 | 2.7 |
| International trade | | | | | | | |
| Exports | 5.4 | 5.7 | 5.0 | 4.7 | 2.9 | 3.6 | 5.3 |
| Imports | 4.8 | 5.6 | 3.0 | 3.7 | 5.1 | 5.0 | 5.0 |
| Net (% additon to growth) | -0.4 | 0.1 | 0.3 | -0.1 | -0.6 | -0.3 | 0.0 |
| Total output (GDP) | 2.0 | 2.8 | 3.1 | 2.9 | 2.9 | 3.0 | 2.7 |
| Non farm output | 1.7 | 3.0 | 3.3 | 2.8 | 3.0 | 3.0 | 2.8 |
| Employment | 1.3 | 2.9 | 1.6 | 1.3 | 1.3 | 1.3 | 1.2 |
| Unemployment rate (%) | 5.7 | 5.4 | 5.2 | 5.3 | 5.2 | 5.0 | 5.0 |

Source: Australian Bureau of Statistics, Deloitte Access Economics. All variables (except for population, employment and unemployment) expressed in inflation-adjusted terms

Table iv Summary results – wages and prices, Australia

| Financial year changes in national wage and prices variables | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| Consumer price index (CPI) | 1.7 | 1.8 | 2.1 | 2.2 | 2.4 | 2.4 | 2.4 |
| Wage price index (WPI) | | | | | | | |
| Nominal | 1.9 | 2.1 | 2.5 | 2.7 | 3.0 | 3.2 | 3.3 |
| Real | 0.2 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 0.9 |
| Average weekly earnings (AWE) | | | | | | | |
| Nominal | 1.6 | 2.2 | 2.3 | 2.8 | 3.0 | 3.2 | 3.3 |
| Real | -0.1 | 0.4 | 0.2 | 0.5 | 0.6 | 0.8 | 0.9 |
| Average weekly ordinary time earnings (AWOTE) | | | | | | | |
| Nominal | 2.0 | 1.6 | 2.5 | 3.3 | 3.5 | 3.7 | 3.9 |
| Real | 0.3 | -0.2 | 0.4 | 1.0 | 1.1 | 1.3 | 1.5 |
| Unit labour costs | | | | | | | |
| Nominal | 0.0 | 1.1 | 0.5 | 1.1 | 1.2 | 1.9 | 2.2 |
| Real | -1.7 | -0.7 | -1.6 | -1.1 | -1.2 | -0.5 | -0.2 |

Source: Australian Bureau of Statistics, Deloitte Access Economics

Table v Summary results – sectoral wages, Australia

**Financial year changes in nominal national industry sector WPI**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 1.9 | 2.1 | 2.5 | 2.7 | 3.0 | 3.2 | 3.3 |
| Utilities | 2.2 | 2.1 | 2.3 | 2.4 | 2.7 | 3.1 | 3.1 |
| Construction | 1.7 | 2.0 | 2.3 | 2.7 | 3.2 | 3.4 | 3.3 |

**Financial year changes in real national industry sector Wage Prices**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 0.2 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 0.9 |
| Utilities | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.6 | 0.7 |
| Construction | 0.0 | 0.2 | 0.1 | 0.5 | 0.7 | 1.0 | 0.9 |

Source: Australian Bureau of Statistics, Deloitte Access Economics

Table vi Summary results – State utilities sector nominal wages

**Yearly changes in nominal utilities sector WPI**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| National | 2.2 | 2.1 | 2.3 | 2.4 | 2.7 | 3.1 | 3.1 |
| New South Wales | 1.3 | 1.4 | 2.2 | 2.5 | 2.7 | 3.1 | 3.2 |
| Victoria | 3.0 | 2.6 | 2.6 | 2.6 | 2.7 | 3.0 | 3.0 |
| South Australia* | 1.9 | 2.7 | 2.3 | 2.7 | 2.8 | 3.1 | 3.2 |

*Historical data estimated using Deloitte Access Economics' labour cost model. Unavailable from the Australian Bureau of Statistics

Source: Australian Bureau of Statistics, Deloitte Access Economics

Table vii Summary results – State utilities sector real wages

**Yearly changes in real utilities sector WPI**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| National | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.6 | 0.7 |
| New South Wales | -0.7 | -0.7 | -0.1 | 0.2 | 0.3 | 0.8 | 0.9 |
| Victoria | 1.1 | 0.7 | 0.6 | 0.5 | 0.3 | 0.6 | 0.6 |
| South Australia* | 0.4 | 0.6 | 0.5 | 0.5 | 0.4 | 0.6 | 0.7 |

*Historical data estimated using Deloitte Access Economics' labour cost model. Unavailable from the Australian Bureau of Statistics

Source: Australian Bureau of Statistics, Deloitte Access Economics

# 1 Background

The Australian Energy Regulator (AER) commissioned Deloitte Access Economics to provide forecasts for labour cost growth for the electricity, gas, water and waste services (utilities) and construction industries for the following States:

- New South Wales to 2022-23;
- Victoria to 2022-23;
- South Australia to 2022-23; and
- Australia (national) to 2022-23.

Specifically, AER has requested:

- an analysis of forecast labour costs for the utilities industry in the above mentioned States;
- a comparative analysis of forecast labour costs for the construction industry;
- an analysis of forecast general labour cost growth in the above mentioned States; and
- a discussion of how market conditions are expected to affect the labour forecasts.

The report is organised as follows:

- **Discussion of the national economic outlook,** including a discussion of the utilities and construction sectors.
- The report then presents the **outlook for wages at the national level** followed by analysis at the industry level. This section includes **forecasts of wage growth in the utilities and construction industries** at the national level.
- **The discussion of the State economic outlooks** includes commentary on the utilities and construction sectors within the given State.
- The report then provides an overview of the **outlook for wages at the State and industry level.** This section includes **detailed forecasts at the State level of wage growth in the utilities and construction industries**.
- **The Appendices** cover regional and sectoral wage data availability, some rules of thumb for wage forecasting, an outline of the methodology used in the Deloitte Access Economics macroeconomic model and the Deloitte Access Economics labour cost model, and a discussion of different wage measures.

# 2 Australia

## 2.1 Economic outlook

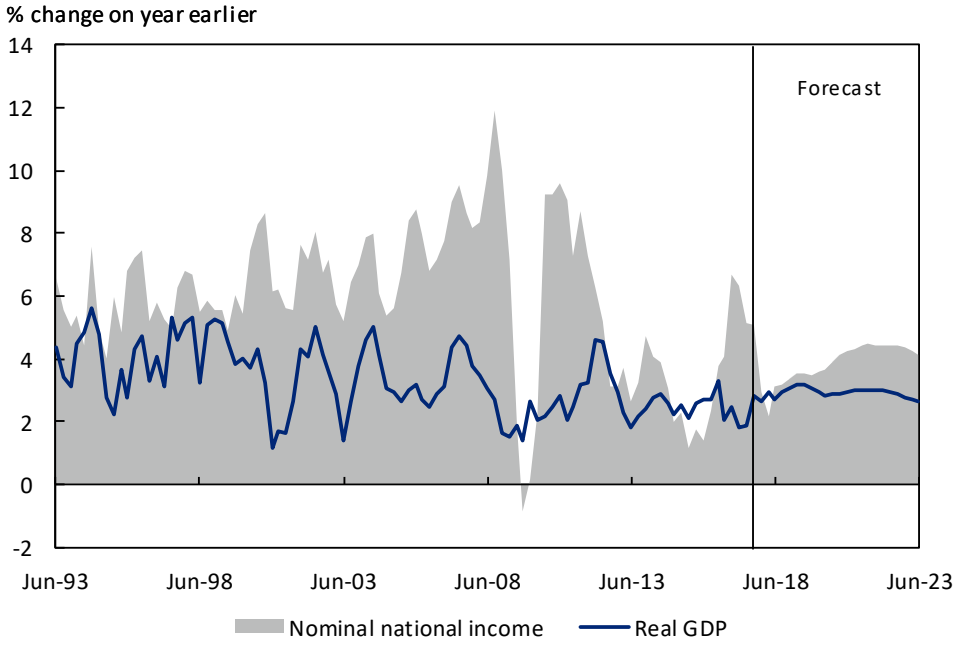
### 2.1.1 Overview

Australian real gross domestic product (GDP) increased by 0.6% in the September quarter 2017, to be 2.8% higher over the same quarter a year earlier. Growth has been driven by a stronger global economy, higher public spending and record low interest rates.

The past year has seen two key trends in the global economy that have supported conditions in Australia: accelerating global growth and easing global inflation.

Australia's national income is closely linked to the health of the global economy, and of commodity prices in particular. Improved growth momentum in the Chinese economy prompted a lift in commodity prices in early 2017. While prices have since moderated somewhat, they remain elevated. National income increased by $95 billion in the year to September 2017, the largest such increase in more than five years (see Chart 2.1).

Chart 2.1 Australian production and national income growth




Source: Australian Bureau of Statistics, Deloitte Access Economics

The ongoing weakness in global inflation has also meant that Australian interest rates have remained low. This is particularly good news for Australian households who are experiencing weak growth in incomes and high levels of debt. Recent strength in housing market activity has pushed household debt to income ratios to a record high of 200%. As a result, future interest rate rises are likely to add significantly to the cost of mortgage repayments and weigh on household spending.

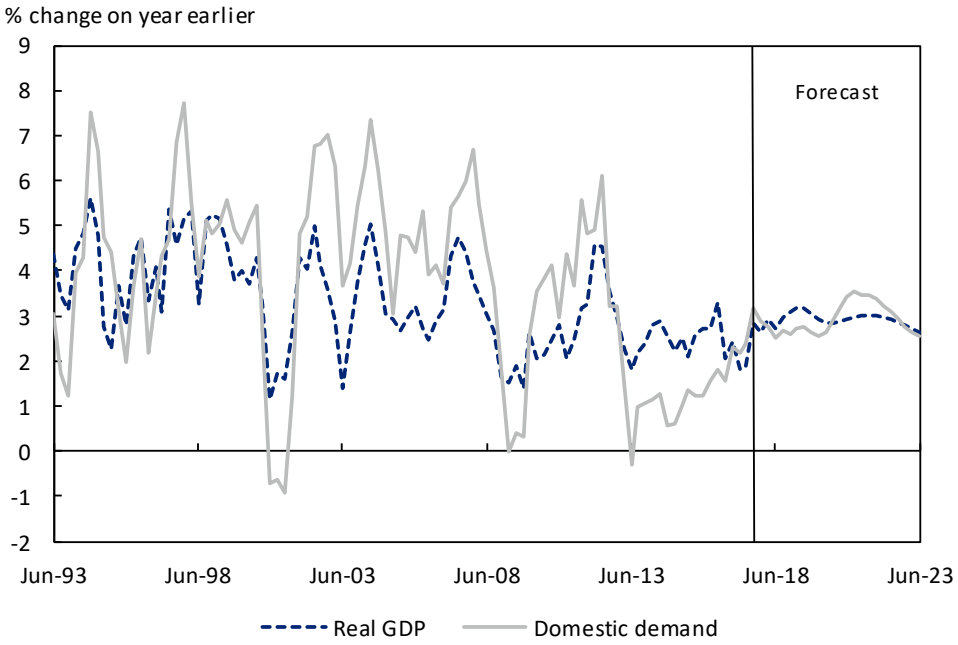
Domestic demand has also been supported by a stronger backdrop for private business investment. New engineering and commercial construction increased by 12% over the year to September 2017, reaching its highest level since the start of 2016. The improvement is partly due to the fact that the overhang of engineering work that commenced construction during the mining boom has finally

passed. It also reflects a greater willingness from businesses to once again spend money on expanding capacity and maintaining existing capacity.

The public sector has also been contributing to growth, with public final demand growing by 4.6% in the year to September 2017. This has been supported by continued growth in public consumption and a sharp lift in public investment. General government investment has increased by almost a fifth in the past year. Much of this increase has been due to investment in transport infrastructure in the nation's south and east. In the past year a total of $43 billion worth of engineering and non-residential construction work was done for the public sector, more than one quarter of which was in the transport sector in New South Wales and Victoria. Future work will be supported by around $140 billion worth of transport projects in planning across Australia.

The housing construction cycle appears to have peaked earlier than previously expected. Dwelling investment has now fallen for the past three quarters, while house price growth has slowed and auction clearance rates are at their lowest levels since early 2016. That said, building approvals remain above their historical average suggesting that the pipeline of residential work will support activity for some time.

Chart 2.2 Domestic demand and GDP




Source: Australian Bureau of Statistics, Deloitte Access Economics

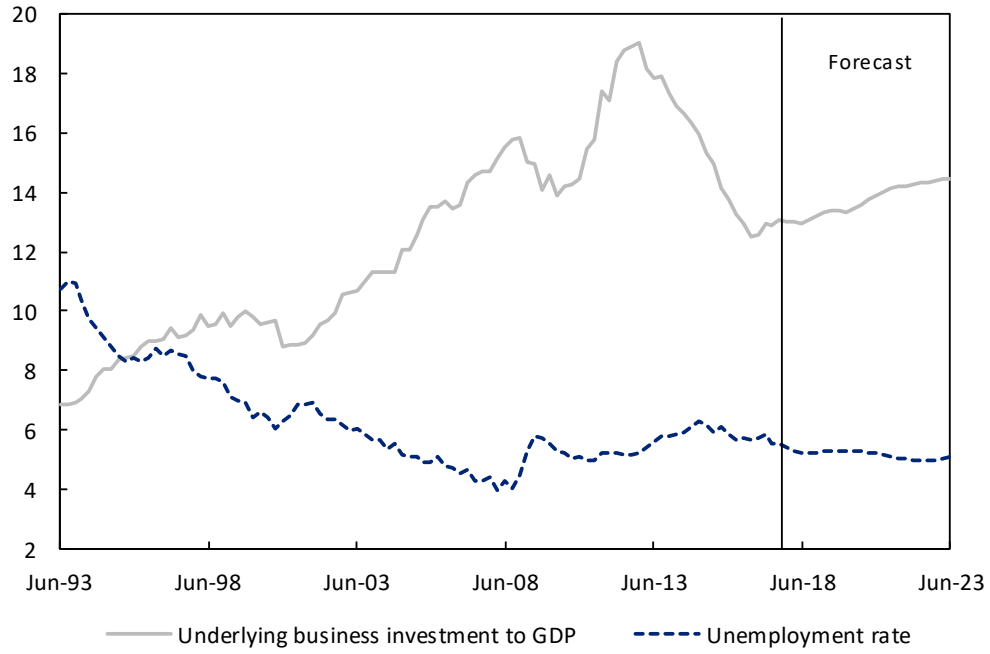
Inflation has lifted through 2017, but remains subdued. The Consumer Price Index (CPI) increased by 0.6% in the September quarter to be 1.8% higher over the year, with upward pressure coming from large increases in the cost of tobacco, electricity and petrol. That said, record low wage growth, heightened competition in the retail sector and downward pressure on rental growth are likely to contain inflation in the short term.

Deloitte Access Economics forecasts CPI to rise gradually in the short term, returning closer to the midpoint of the Reserve Bank's target band of inflation (2-3%) over the long term.

Labour market conditions have been particularly strong in 2017. There was a net gain of approximately 400,000 jobs in the past year, almost all of which were full-time positions. The distribution of where jobs are showing up at the industry level is broadly in line with longer term trends, that is, services hold higher growth rates compared to goods-producing sectors. The participation rate has risen to its highest level since 2011, with a notable increase in the female participation rate. This has seen the unemployment rate fall from 5.8% in early 2017 to 5.5% in December.

Overall, output growth is expected to lift in the coming year as the drag from falling mining investment fades and public demand and non-mining business investment continue to grow. Real GDP is forecast to lift from 2.8% growth in 2017-18 to a gain of 3.1% in 2018-19.

Chart 2.3 Business investment as a share of GDP and the unemployment rate




Source: Australian Bureau of Statistics, Deloitte Access Economics

### 2.1.2 Utilities sector

The 'utilities' sector is the broad term applying to the electricity, gas, water and waste services industry, which is Division D of the Australian and New Zealand Standard Industrial Classification (ANZSIC). The sector covers activity in the provision of electricity; gas through mains systems; water; drainage; and sewage services. Electricity (across the supply chain from generation to retail) accounts for around half the industry's employment, while water and waste services accounts for the second greatest share, and gas accounts for a minor share of the industry.

Output in the utilities sector grew by 1.0% in the year ending September 2017, below the 2.2% growth in the wider economy. This continues a long-running trend which has seen the utilities sector decline as a share of Australia's economy for the past 25 years. In part this is due to the expansion of other sectors such as mining, health and finance. Another contributor is the structural change underway among energy users due to new technologies and policy priorities that have been increasing energy efficiency and the take up of distributed generation.

Consumption of electricity is expected to increase in Australia as both the population and economy continue to grow. That said, demand from the grid is estimated to have fallen in 2016-17. Households and businesses are increasingly controlling their electricity use and costs by:

- Adopting rooftop photovoltaics (PV), cogeneration, and other small scale technologies to generate their own electricity;
- Using more energy-efficient appliances, buildings and machinery; and
- Modifying behaviour to reduce electricity use where possible.

The Australian Energy Market Operator (AEMO) forecasts a 14.4% decrease in National Electricity Market (NEM) grid consumption from the residential sector over the next 20 years. Over the same period, electricity generated by rooftop PV is expected to almost triple. Rooftop PV installations reached a record high in 2017 and a survey by the Australian Energy Market Commission (AEMC)

has found that a large proportion of households with solar plan to install batteries to store excess energy and reduce their demand from the grid.

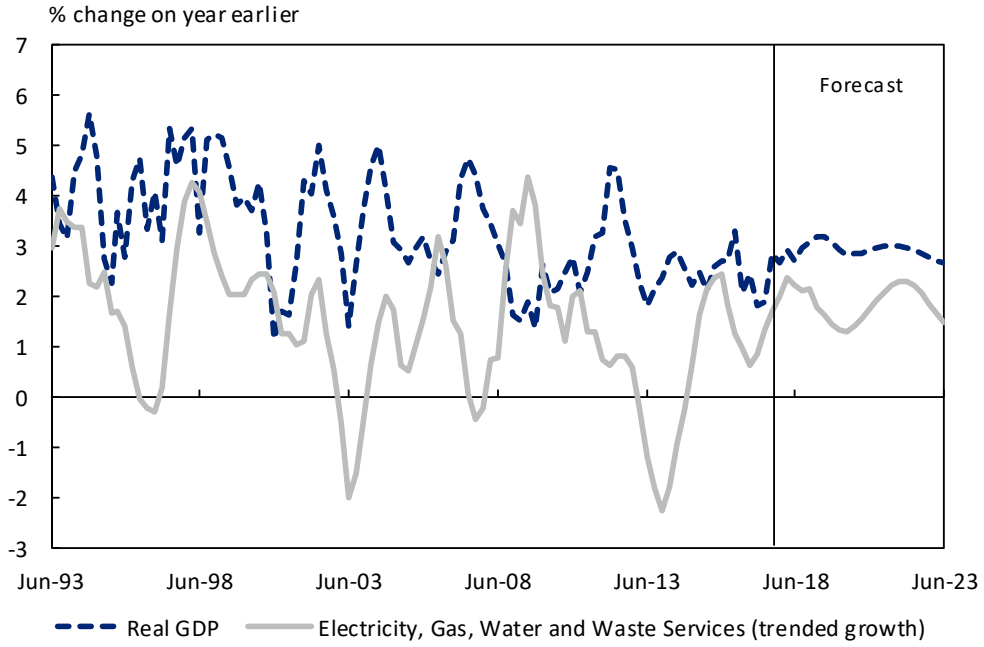
A range of conditions are placing pressure on industrial energy users, including rising prices for electricity and gas, shorter contract terms and strong import competition. Contraction in parts of manufacturing and some elements of mining is also dampening industrial energy demand.

Technical and policy developments could further reduce sectoral demand. The retirement of ageing generators will reduce the supply of long term contracts available in the NEM. The price for contracts and hedging against volatile prices is likely to rise as a result, which may lead to higher electricity bills for consumers.

There are also a range of positives in the sector to monitor. For example, the potential uptake of electric vehicles, elevated levels of housing construction and rising LNG output (which means more industrial demand for electricity) present positives for the sector. Australia is also experiencing strong population growth, which will support underlying household demand.

Output growth in the utilities sector is expected to lift in the short term, followed by modest growth over the forecast period to 2022-23.

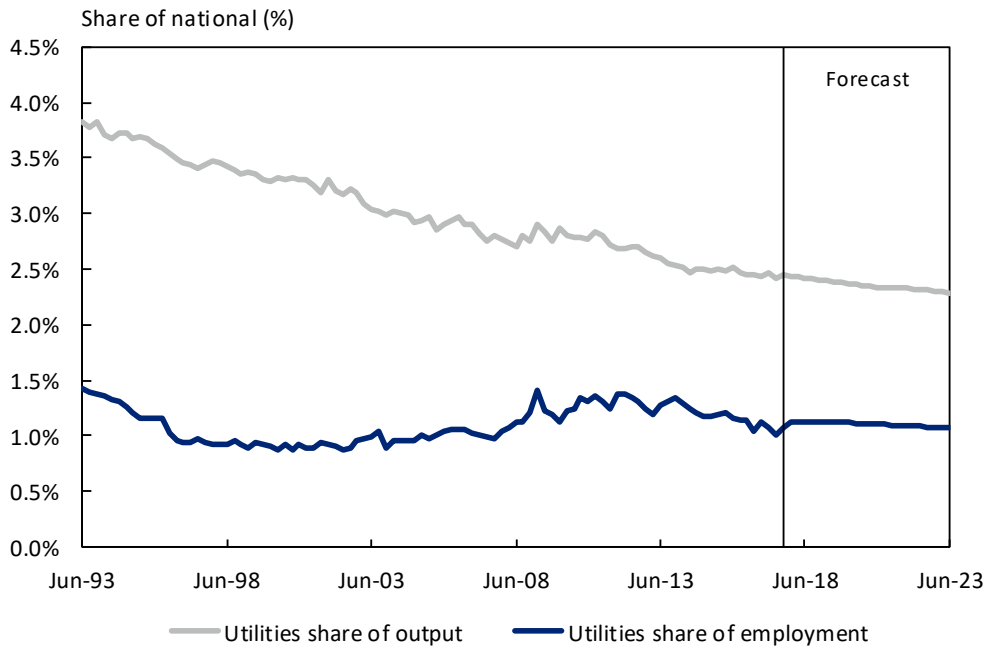
Chart 2.4 Utilities sector output and GDP




Source: Australian Bureau of Statistics, Deloitte Access Economics

Growth in utilities is expected to remain weaker than growth in the Australian economy as a whole (see Chart 2.5), meaning that the utilities sector will continue to shrink as a share of national activity.

Chart 2.5 Utilities share of national output and employment




Source: Australian Bureau of Statistics, Deloitte Access Economics

There are also a number of developments in the NEM that may impact on output over the coming years.

In late 2017 the Commonwealth Government accepted advice from the Energy Security Board and established a National Energy Guarantee (NEG). The NEG is designed to maintain reliability of the system and meet emissions reduction targets. Retailers are required to contract with or invest in generators in order to meet a minimum level of dispatchable electricity. Retailers must also keep their emissions below an agreed level.

The past year has also seen an agreement to move towards a 5-minute settlement period in the wholesale electricity market. It was argued that the current 30-minute settlement period does not favour responsive technologies such as storage and demand management. The new changes are expected to come into effect in July 2021.

Energy consumers are experiencing increases in retail energy prices across the NEM. Network infrastructure upgrades, low levels of competition in the retail sector and policy uncertainty have contributed to Australia having among the highest electricity prices in the developed world. The Australian Bureau of Statistics (ABS) inflation data released in September 2017 reveals that electricity prices have increased by almost a fifth in the past two years, while gas prices have increased by 10%. Households and businesses will react to persistently high inflation in electricity and gas costs, with the potential for further reductions in energy use.

The Australian Government has also implemented the Australian Domestic Gas Security Mechanism, which is aimed at ensuring sufficient gas supply in Australia. This may involve requiring LNG projects to limit exports or find offsetting sources of gas. The potential need to buy the amounts required to meet export contract commitments is underpinning an increase in domestic gas costs.

Looking ahead, there are potential positives with continued innovation in electricity markets which are not reflected in Deloitte Access Economics' forecasts:

- The roll out of smart meters around Australia will underpin the **development of better products for consumers and more efficient use of energy**.

- The introduction of cost reflective prices from 2017 will see **growth in peak demand slow** and reward smoother consumption throughout the day. In the long run, this will lead to more efficient use of existing network infrastructure.
- The continued decline in the cost of renewable energy will require the **integration of larger amounts of intermittent generation into the grid**. In the near term this will require additional investment to ensure sufficient system strength and inertia is available in the NEM. In the long run, this will assist to reduce emissions.

It is also true that these technologies are disruptive for utility businesses, and a number of negatives remain for the sector:

- Demand for energy will remain flat or decline as Australia's shift toward services led growth and **cost pressure on manufacturers and households continues**. Energy efficient appliances and take up of distributed generation with storage capacity will contribute to declining energy demand from the grid and possible deferral of network expansion.
- Policy uncertainty has limited commercial investment in **solutions to forecast reserve shortfalls** around the NEM over the next decade.
- As ageing generators exit the market and lower energy demand places cost reduction pressures on remaining businesses, **industrial action** like that seen in Victoria through early 2017 may place pressure on utilities in Enterprise Bargaining Agreement (EBA) negotiations through the transition to lower emissions.

These developments contribute to a degree of uncertainty in the outlook for the utilities sector. But it is worth reiterating that these are a risk rather than a base case, and are not reflected in Deloitte Access Economics' forecasts.

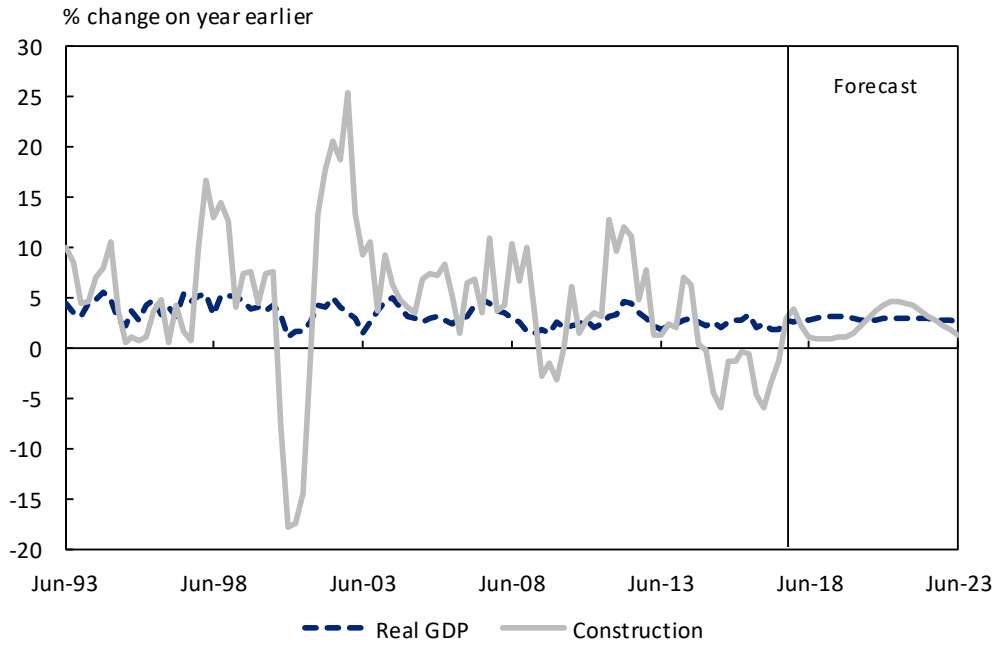
### 2.1.3 Construction sector

The construction sector comprises engineering construction, residential building and non-residential building (commercial construction), and each component is driven by a varied set of economic conditions.

The construction sector has underperformed the wider Australian economy since 2014 (see Chart 2.6). Output in the Australian construction sector was weighed down by large falls in engineering construction following the peak of the mining boom. These falls largely offset the impact of elevated levels of residential construction.

Looking ahead, the worst of the falls in mining investment have already occurred and demand for infrastructure and housing remains high. Construction sector output is forecast to grow by 2.5% in 2017-18, followed by growth of 0.9% in 2018-19.

Chart 2.6 Construction sector output and GDP




Source: Australian Bureau of Statistics, Deloitte Access Economics

The once-in-a-century mining construction boom drove **engineering construction** to record highs, and mining investment as a share of the total economy climbed to an unprecedented level of almost 10% in 2012-13. This was primarily driven by the rapid industrialisation and urbanisation of the Chinese economy, which fuelled demand for Australian commodities such as coal and iron ore.

The subsequent shift from the construction phase to the production phase of the mining boom left a large gap in the value of engineering construction in Australia. Private sector engineering activity fell from a peak of more than $100 billion in 2012-13 to around $55 billion in 2016-17.

The latest data from the ABS shows that engineering work done rose by more than one third in the September quarter of 2017, following gains of one fifth in the June quarter. While it is true that global economic conditions are strong, profits and commodity prices are up, and credit remains cheap, the recent jump in engineering activity is likely a one-off. Much of this increase has been due to the import of an offshore platform for the Ichthys project in May and the arrival of the Prelude Floating LNG vessel in July.

The value of public engineering construction has continued to lift, up by almost a fifth in the past year. Activity has been underpinned by investment in transport infrastructure in the nation's south and east. The recent strength in house prices not only fuelled housing construction and private consumption, but it also sent stamp duty revenues to record highs. State government finances have been supported by the sale of assets such as Ausgrid and Endeavour Energy in New South Wales, the Port of Melbourne in Victoria, and the land titles registries in both New South Wales and South Australia.

Much of the money has been spent on improving road and rail networks. In New South Wales, work is underway on the $16.8 billion WestConnex project linking Sydney's west to its CBD as well as the $8.3 billion Northwest section of the new Sydney Metro. Planned work in the State is led by the $12 billion Sydney Metro City and Southwest and the $11 billion Sydney Metro West – both scheduled to commence construction in 2018.

In Victoria, major work is set to start on the $11 billion Melbourne Metro Rail project, which will deliver a rapid transit system to Melbourne's inner suburbs in 2026. Planning is also underway on the $10 billion North East Link connecting Melbourne's north and south east. Elsewhere, the Federal

government have announced plans to develop an inland rail line from Melbourne to Brisbane at a cost of approximately $10 billion. Construction is also underway at the $5.4 billion Cross River Rail in Brisbane and the $3 billion first stage of the Perth METRONET development.

Table 2.1 Engineering construction projects (December 2017 levels and annual change), National

| | Definite | % change on Dec 2016 | In planning | % change on Dec 2016 | Total $m | % change on Dec 2016 |
|---|---|---|---|---|---|---|
| Manufacturing | 620 | -64% | 17,474 | 1% | 18,094 | -5% |
| Transport | 122,502 | 13% | 106,320 | -7% | 228,822 | 3% |
| Communication | 51,208 | 10% | 350 | 0% | 51,558 | 10% |
| Mining | 103,376 | -41% | 195,480 | 5% | 298,856 | -17% |
| Power & water | 14,398 | 93% | 23,725 | 11% | 38,123 | 32% |
| Rural and forestry | 40 | -84% | 728 | 14% | 768 | -14% |
| **Total ($m)** | **292,144** | **-13.6%** | **344,077** | **1.1%** | **636,221** | **-6.2%** |

Source: Deloitte Access Economics *Investment Monitor* database

The value of **commercial construction** work done has grown by the fastest rate seen in approximately three years. Building approvals have also continued to lift, supported by strength in the office and industrial sectors. The improvement in activity comes as higher profits, cheap credit and a stronger economy have prompted businesses to spend money on maintaining or expanding existing capacity.

Looking ahead, there are two key sectors that are expected to drive new commercial construction activity:

- **Health and aged care** – Australia's population is getting older and living longer. This is likely to see a rise in demand for hospitals and aged care facilities such as hospices and nursing homes. Construction has wrapped up at the new $2.3 billion Royal Adelaide Hospital and the $1.9 billion Sunshine Coast University, while work is all but complete at the $1.2 billion new Perth Children's Hospital. Adding to this, the value of work done in the aged care sector has been growing strongly for the past five years.
- **Tourism and short term accommodation** – growth in Australia's tourism sector has continued to outpace growth in the rest of the economy. Australia remains a top destination for holiday makers, and we're especially well placed to make the most of the rising Asian middle class. Almost eight million international visitors came to Australia in 2016-17, spending almost $40 billion during their travels. And Tourism Research Australia are forecasting that total overnight spending will increase by half over the next decade. That will spur investment in tourism-related sectors, especially retail, dining, and entertainment and recreation.

Table 2.2 Commercial construction (December 2017 levels and annual change), National

| | Definite $m | % change on Dec 2016 | In planning | % change on Dec 2016 | Total $m | % change on Dec 2016 |
|---|---|---|---|---|---|---|
| Trade | 6,816 | -15% | 4,962 | -33% | 11,778 | -24% |
| Business parks | 2,610 | -11% | 330 | 43% | 2,940 | -7% |
| Hotels and Resorts | 5,836 | 8% | 13,567 | 18% | 19,403 | 15% |
| Offices | 3,790 | 29% | 5,853 | 10% | 9,643 | 17% |
| Education | 2,111 | -6% | 1,760 | -16% | 3,871 | -11% |
| Health and community services | 8,682 | -40% | 5,216 | 24% | 13,898 | -26% |
| Culture, recreation & other | 8,756 | 10% | 8,968 | 46% | 17,724 | 26% |
| Business services | 490 | -25% | 2,275 | 0% | 2,765 | -6% |
| Government | 2,007 | 17% | 280 | 12% | 2,287 | 16% |
| Mixed use | 19,925 | 27% | 3,304 | 24% | 23,229 | 27% |
| **Total in $m** | **61,023** | **-1.7%** | **46,515** | **10.6%** | **107,538** | **3.3%** |

Source: Deloitte Access Economics Investment Monitor database

In recent years strength in **residential construction** has been a key driver of growth in Australia, helping to support activity as mining construction activity slowed. But a number of signs now suggest that the peak in residential construction has passed. While there are public policies at play – from planning reforms to tax reforms – the prospects for the residential property market hinge on three key questions: Will mortgage rates rise? Will foreign investors continue to pour into the housing market? Has apartment oversupply already happened, and if not now, when?

First, mortgage rates have already risen, mostly on investor loans as the Australian Prudential Regulatory Authority (APRA) introduced limits on investor lending. The RBA will eventually move to normalise official interest rates, following in the wake of its global counterparts at the US Fed, the Bank of England, and the Bank of Canada. Having said that, Deloitte Access Economics does not expect the RBA to begin that process until the last months of this year, or in early 2019.

Second, Chinese demand for Australian housing has helped drive prices higher, and spurred construction, especially of apartment buildings in our inner-cities. But the demand from foreign investors may be set to fall as the Chinese government tightens restrictions around capital outflows, and Australian State governments introduce (or raise existing) specific stamp duty rates for foreign buyers. Adding to that, Australian banks have clamped down on lending to overseas investors.

Finally, there are also risks of oversupply in some markets. On the one hand, Australia remains an attractive destination for migrants, which has given Australia one of the fastest-growing populations among the world's developed countries. That is unlikely to change and results in underlying demand for residential dwellings. On the other hand, the Brisbane apartment market has already suffered the effects of building too quickly, and there are risks around this happening in other inner-city pockets as well.

In summary, residential construction is forecast to slow at a gradual pace. Deloitte Access Economics' outlook for the construction sector is modest. A strong pipeline of infrastructure developments is expected to partly offset the impact of a cooling property market and the end of mining construction projects.

## 2.2 The outlook for wages

### 2.2.1 All industries

Wage growth remains subdued and close to record lows. The Wage Price Index (WPI) grew by 0.5% in the September quarter of 2017, to be 2.0% higher over the year.

Wage gains are faster in sectors where the public sector plays a large role, with year-to gains of 2.7% in both healthcare and in arts and recreation, followed by the education sector at 2.4%. At the other end of the scale, wage gains are weakest in mining (1.2%) and professional services (1.5%). At the State level, wage gains are growing the fastest in Victoria, Queensland and Tasmania (all at 2.2%), closely flowed by New South Wales (2.1%). Wages grew the slowest in Western Australia (at 1.3%) and the Northern Territory (1.4%).

While wages are expected to pick up, there are both temporary and structural factors that are limiting wage gains in Australia. As the latest *RBA Statement on Monetary Policy* noted on page 42 (see http://www.rba.gov.au/publications/smp/2017/nov/) "Spare capacity in the labour market continues to contribute to low wage growth…A number of other factors are potentially associated with the low level of wage growth including a lower level of job mobility, concerns around job security, changes in relative bargaining power, trends in labour productivity and structural change in the economy associated with technological change and increased competitive pressures from the internationalisation of services trade."

Some important factors currently depressing wage growth look set to linger in the near future:

- The projected lift in inflation from current low levels is expected to be slow.

- In response to additional competition many businesses appear to be focused on containing costs. Paying higher wages to employees can often sit at odds with this approach. This is likely to mean that as labour market conditions tighten it is going to take longer for wages to lift.
- An ageing workforce and higher household debt means employees are often more interested in job security than increases to income, and are less likely to push for larger pay rises.
- Trends such as automation of work processes, an increase in contract work, and competitive pressures from the internationalisation of services trade have all combined to restrain workers' bargaining power. It is possible that these trends are making workers feel less secure about their future employment and are less likely to push for larger pay rises.

Although these trends will weigh on wage gains for some time, the traditional drivers of wage growth have not disappeared. For example, wage gains are currently faster in sectors and States that are experiencing stronger growth. In fact, the two necessary pre-conditions to a boost in wage gains are already in place:

- Business profits have increased; and
- Businesses are hiring people at near record rates.

The unemployment rate has declined and continued employment gains are expected to absorb remaining spare capacity in the labour market. Strong labour market conditions will lead to gradual improvements in wage growth.

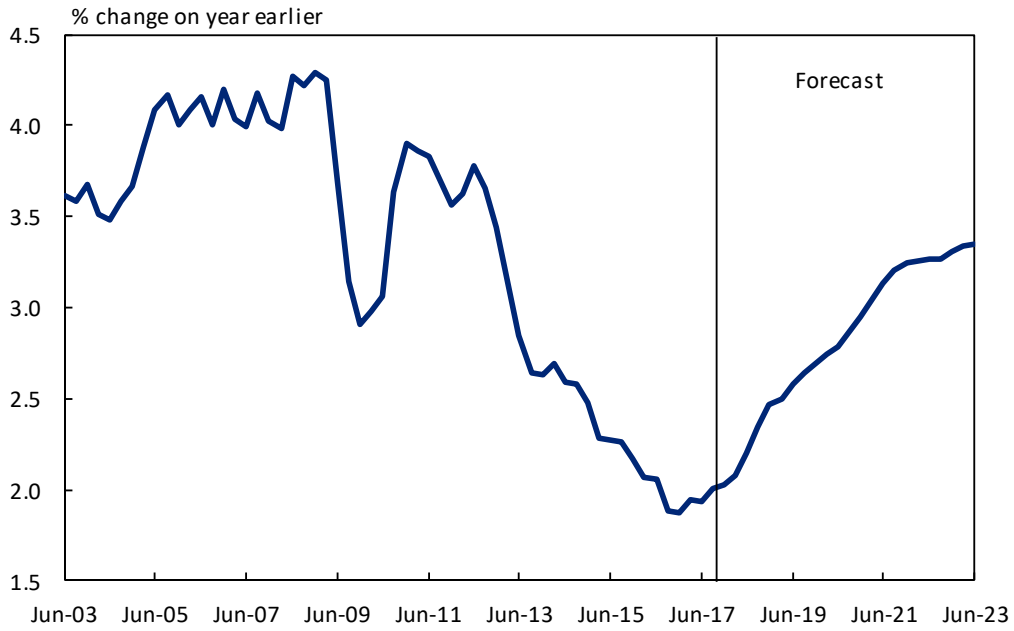
There is likely to be upward pressure on wages from an improvement in inflation outcomes. A survey conducted by the Reserve Bank found that CPI was a primary determinant of wage-setting for two-fifths of firms. CPI is forecast to grow by 1.9% in 2017, after 1.3% growth in 2016. Further increases in CPI in 2018 are expected to flow through the higher wages.

Demographic factors are also expected to add to wage pressures. The increasing retirement among baby boomers is set to restrain growth in the number of potential workers. This should hand employees back some bargaining power in wage negotiations, contributing to higher wage outcomes.

And lastly, the "income recession" of the post-2011 period has already started to give way to more settled gains in national income. The recent surge in national income was largely driven by higher commodity prices. And while commodity prices are no longer at the highs seen in late 2016 and early 2017, some of the improvement in national income is set to flow through to wages.

Deloitte Access Economics forecasts a gradual lift in wage growth. Nominal wages are forecast to grow 2.1% in 2017-18 before lifting to 2.5% in 2018-19. The pace of wage gains is then expected to reach 3.3% by 2022-23.

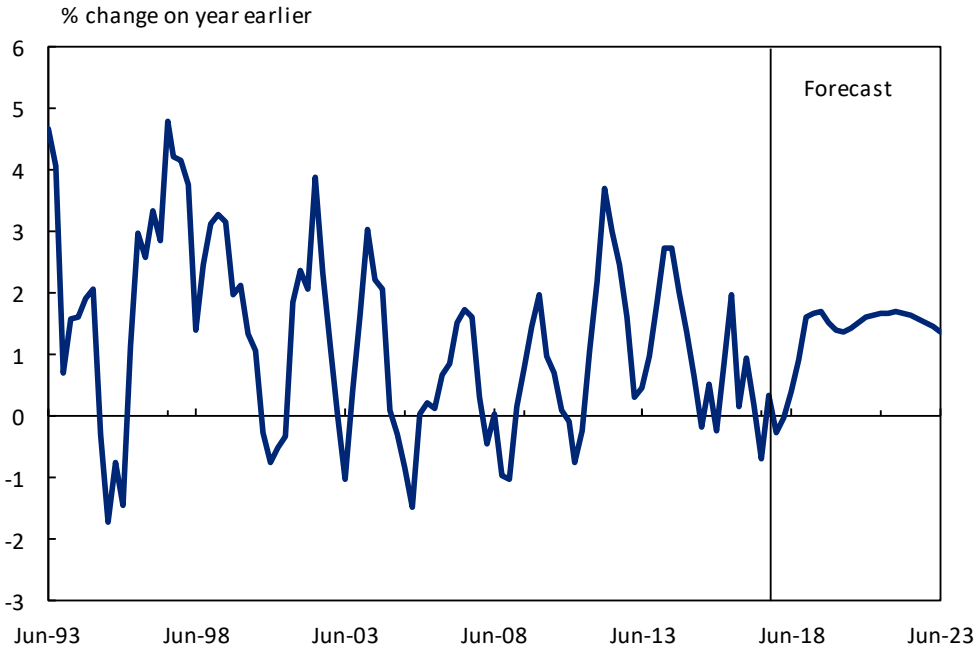
Chart 2.7 National WPI forecasts




Source: Australian Bureau of Statistics, Deloitte Access Economics

Over recent years, modest wage gains have largely been offset by the greater efficiency with which employees are working, helping to put downward pressure on labour costs. Looking ahead, Deloitte Access Economics expects wage growth to start to outstrip labour productivity growth (measured as output per worker) – see Chart 2.8.

Chart 2.8 Productivity growth




Source: Australian Bureau of Statistics

Table 2.3 National wage forecasts

**Financial year nominal wages forecasts**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| Wage price index | 1.9 | 2.1 | 2.5 | 2.7 | 3.0 | 3.2 | 3.3 |
| Average weekly earnings | 1.6 | 2.2 | 2.3 | 2.8 | 3.0 | 3.2 | 3.3 |
| Ordinary time earnings | 2.0 | 1.6 | 2.5 | 3.3 | 3.5 | 3.7 | 3.9 |
| Unit labour costs | 0.0 | 1.1 | 0.5 | 1.1 | 1.2 | 1.9 | 2.2 |

**Financial year real wages forecasts**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| Wage price index | 0.2 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 0.9 |
| Average weekly earnings | -0.1 | 0.4 | 0.2 | 0.5 | 0.6 | 0.8 | 0.9 |
| Ordinary time earnings | 0.3 | -0.2 | 0.4 | 1.0 | 1.1 | 1.3 | 1.5 |
| Unit labour costs | -1.7 | -0.7 | -1.6 | -1.1 | -1.2 | -0.5 | -0.2 |

Source: Australian Bureau of Statistics, Deloitte Access Economics

### 2.2.2 Utilities sector wages

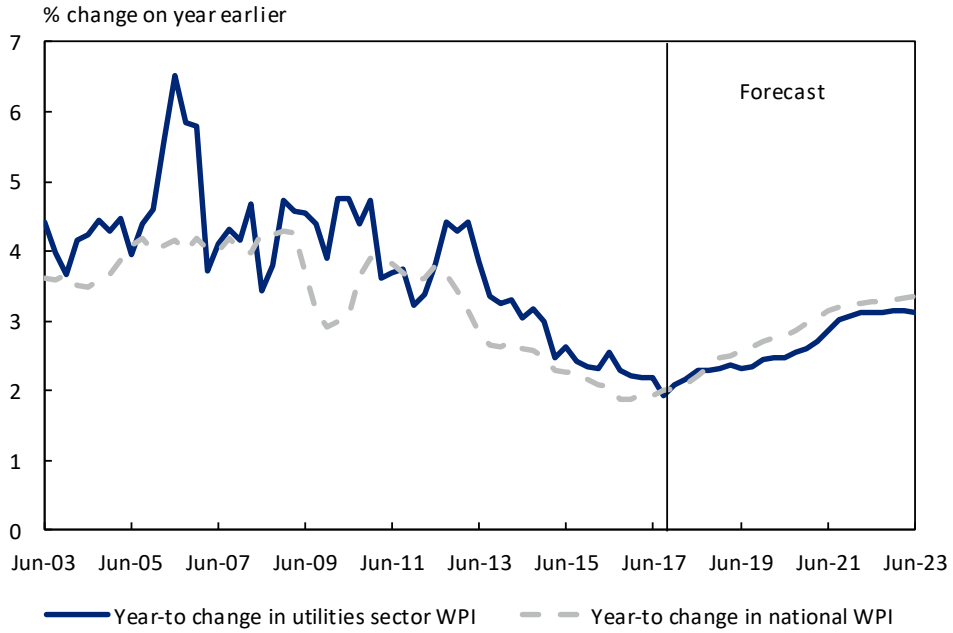
Utilities sector wages grew by 1.9% over the year to September 2017, the slowest increase since the WPI series began in 1997. Wages are lower partly due to weakness in wage growth across all industries, but also partly due to lower output growth in the utilities sector and subdued demand in competing sectors such as manufacturing and construction.

Following a peak of 4.4% growth in early 2013, wage outcomes in the utilities sector have largely outperformed gains across the wider economy (see Chart 2.9). There has been a long-running trend of higher real wage growth (nominal wage growth adjusted for inflation) in the utilities sector relative to the wider economy. The reasons behind this trend are unclear – neither fundamentals (improved relative productivity making utilities workers more valuable than before) nor the business cycle (significant output growth in either the utilities or competitor sectors) were placing upwards pressure on wages:

- The utilities sector accounted for a peak of almost 4% of the Australian economy in the early 1990s, but has since fallen to around 2.4%.
- Labour productivity growth in the utilities sector has largely been negative over the past two decades.[1] And although there has been a recovery since mid-2014, the fact that utilities wages outperformed the average across all sectors while productivity growth underperformed suggests that there is little linkage between changes in the overall productivity level and wages in the utilities sector.
- There has also been a slowdown in sectors that compete with utilities for workers. Firstly, the construction sector has been shrinking as a share of the Australian economy since mid-2014. Secondly, the passing of the heights of the mining boom (and associated construction) means the mining sector has also lost about a third of its national job share since the peak in 2012. Lastly, a further competitor is the manufacturing sector. As recently as the mid-1980s, one in every six workers in Australia was employed in manufacturing. Now that ratio is at one in every fourteen workers.

[1] Analysis by the Productivity Commission concluded that this was due to an increase in the ratio of peak to average electricity demand (which lowered rates of capacity utilisation), investment in capital assets (which temporarily increased inputs prior to growth in output), undergrounding electricity cabling (which raised costs but not the volume of output) and a policy shift in favour of cleaner energy generation (which were initially higher-cost forms of generation).

Chart 2.9 National utilities sector Wage Price Index forecasts

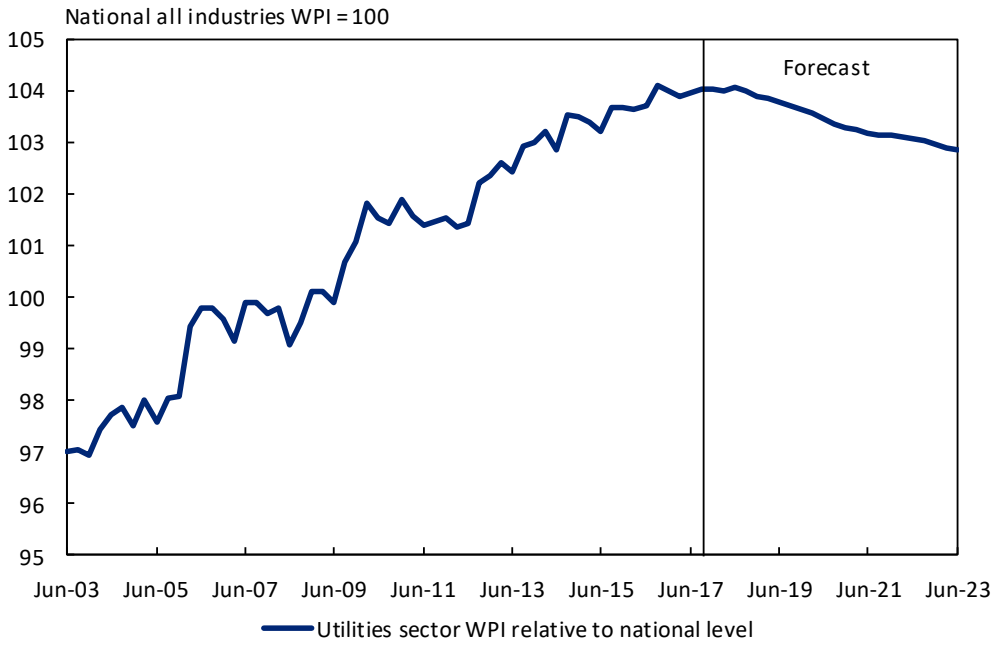



Source: Australian Bureau of Statistics, Deloitte Access Economics

Over the year to September 2017 wages in the utilities sector grew slower than those in the wider economy for the first time in five years. Looking ahead, wage gains in the utilities sector are expected to be more modest than improvements across all industries. In part this represents a reversion of the previous trend discussed above, underpinned by the fact that output in the utilities sector is forecast to grow more slowly than the average across all sectors.

The utilities WPI is forecast to gradually recover from growth of 2.1% in 2017-18, to 2.3% in 2018-19, before reaching 3.1% by 2021-22. The gradual recovery in wage growth in the utilities sector is in line with the gradual recovery in Australian wages over the next few years, supported by higher inflation, better news on national income, and a relative tightening in the availability of workers.

Chart 2.10 Utilities Wage Price Index relative to National Wage Price Index



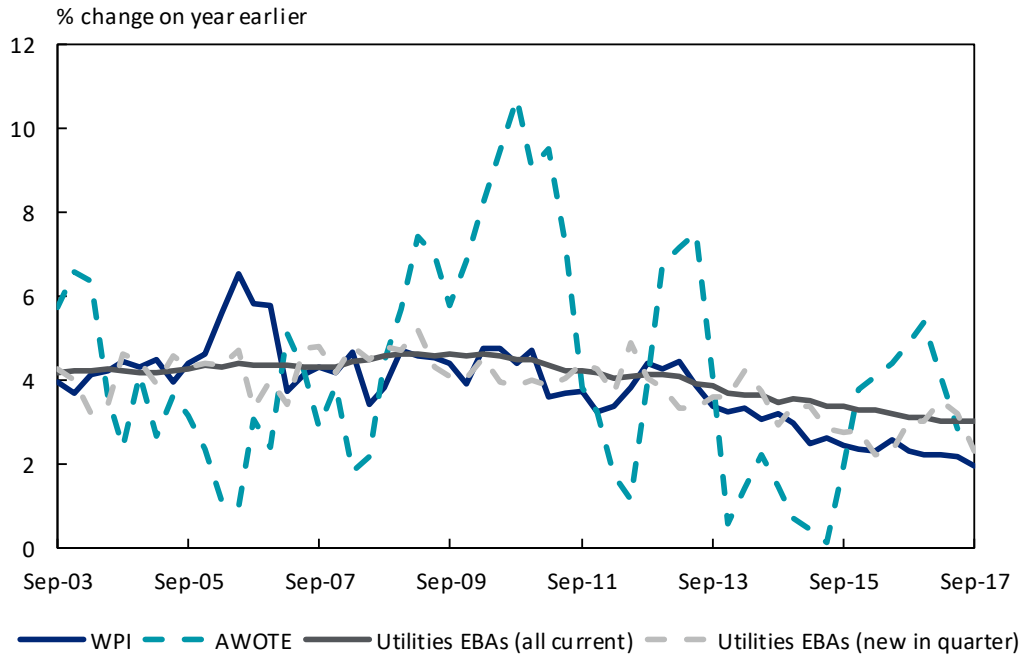

Source: Australian Bureau of Statistics, Deloitte Access Economics

#### 2.2.2.2 Comparison with results from enterprise bargaining agreements.

A number of wage growth measures have signalled lower wage growth in the utilities sector. Chart 2.11 shows that, despite volatility in Average Weekly Ordinary Time Earnings (AWOTE – the least informative of the wage measures considered below), the downward trend in utilities WPI is mirrored by several other wage growth measures that are produced on a regular basis.

These include Enterprise Bargaining Agreements (EBAs, sourced from the *Trends in Federal Enterprise Bargaining* publication produced by the Department of Employment).

Chart 2.11 Measures of utilities sector wage growth




Source: Australian Bureau of Statistics, Department of Employment

The AWOTE series fluctuates considerably and is consequently limited in its use in forecasting wage growth. In the latest Average Weekly Earnings publication released in May 2017, the ABS indicated that the biannual survey was *'designed to provide estimates of the level of average earnings at a point in time and, while not designed for movements in earnings, the frequency of collection supports a time series of these level estimates'*. Data on the average level of earnings is useful for comparing what an individual earns relative to the average. It is therefore used in the Deloitte Access Economics labour cost model as an indicator only.

The utilities EBA data provides a good partial indicator of the future trend growth in the utilities WPI measure.[2]

As at the September quarter of 2017, there were 354 EBAs active in the utilities sector, covering some 38,500 employees. In brief:

- Wages in 'all current EBAs' grew at 3.0% for the utilities sector in the September quarter of 2017, the slowest rate of increase since 1993. That said, the utilities sector had the fourth highest Average Annualised Wage Increase (AAWI) across all sectors over the year to September 2017.

[2] Deloitte Access Economics' forecasts are developed using a more formal modelling approach rather than a more 'institution-based' approach which is based on increases in minimum wages and collective agreements. As such, while EBA data is taken into account, it is not the primary driver of our model.

- Wage growth in new utilities sector EBAs was 2.3% in the September quarter of 2017, below the 3.0% rate observed in September 2016. This is also below the average growth rate over the past five years of 3.2%.

#### 2.2.2.3 Forecasting wages – the role of EBAs

Although EBAs feed into Deloitte Access Economics' short term forecasts for wage gains, there are important reasons why EBA data is not the sole driver of utilities wage movements going forward:

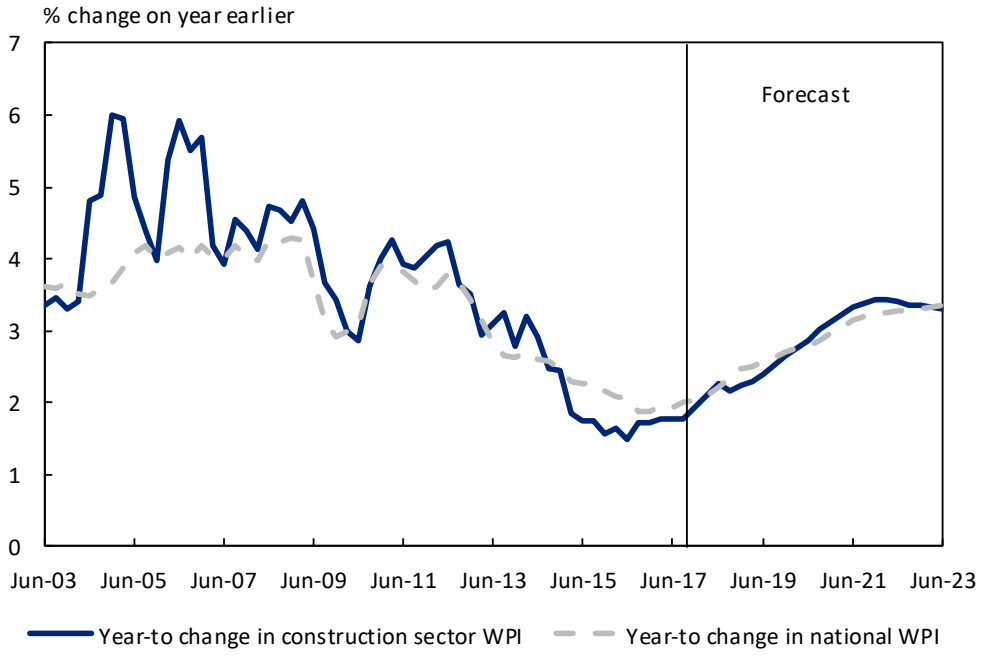
- **Coverage issues** – EBA data includes only those employees who are covered under an agreement. While the percentage of those covered by EBAs will vary from State to State, the EBA database indicates that 38,500 utilities employees were covered by an EBA in September 2017. According to the latest labour force data there are approximately 139,700 individuals employed in the utilities industry nationwide, meaning that approximately one quarter of workers in the utilities sector are employed under EBAs.
- The 'all current' EBA series depicts wage growth under all EBAs current during the quarter – this series broadly follows the WPI. The 'new in quarter' EBA series shows annual wage growth under any agreements commencing in the quarter. Thus, this series is a fairly good predictor of future trends in the 'all current' EBA series, although, depending on the number of new EBAs struck in the quarter, the number of employees covered by new agreements can be quite small.
- **Circularity issues** – There is a risk that relying too heavily on EBA data to forecast wage growth could result in a level of 'circularity'. Wage costs of businesses whose employees are covered by the enterprise bargaining system will rise at a similar rate to EBAs, particularly those that have been negotiated more recently (as a result, in the short term our expected rate of overall EBA growth will move towards the rates seen in more recent agreements). However, newer EBAs themselves will be affected by economic developments over the forecast period, as well as trends in competitor industries and demand for utilities services.
- **Forward looking inputs** – More broadly, Deloitte Access Economics' forecasts – of the Australian and global economies, of the utilities sector, and of factors affecting wage trends – are important inputs to our forecasts of wage growth in the utilities sector. To rely too much on EBAs would be to miss the benefits of those forward looking inputs.

Greater detail on the methodology used and related issues are covered in Appendix D.

### 2.2.3 Construction sector wages

Construction sector wages grew by 1.8% over the year to September 2017, above the low of 1.5% observed in mid-2016. Despite this improvement, construction sector wages continue to increase at a slower rate than wages across all industries. Wage gains in the construction sector have remained below those in the broader Australian economy since late 2014 (see Chart 2.12).

Chart 2.12 National construction sector Wage Price Index forecasts




Source: Australian Bureau of Statistics, Deloitte Access Economics

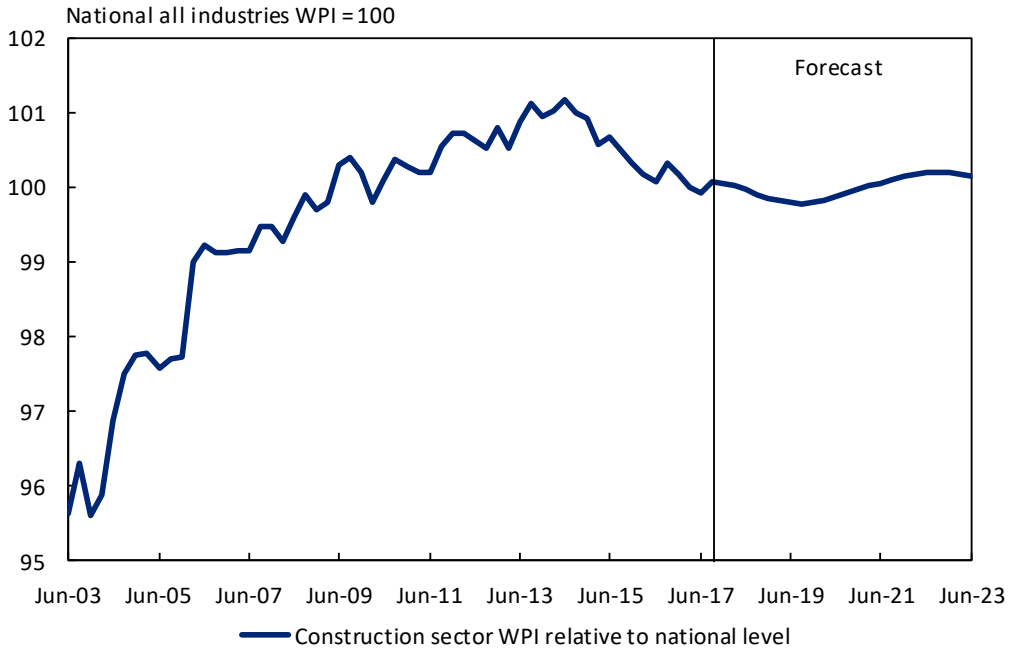
Prior to 2014, wage gains in the construction sector largely ran ahead of the national average. This was initially supported by the mining construction boom, where a surge in the terms of trade allowed firms to pay high wages to attract workers and increase production. The subsequent completion of construction at a number of large mining projects across the country has contributed to falling engineering construction activity and related weakness in commercial construction. These large falls in activity have weighed on output and wage outcomes in the construction sector.

The increase in residential construction activity provided some upwards pressure for wages, but this appears to have been outweighed by the drag on wages from falling business investment. That said, the worst of the falls in engineering construction have already occurred and private business investment is expected to stop detracting from growth in the years ahead.

The housing construction cycle appears to have peaked earlier than previously expected. Dwelling investment has now fallen for the past three quarters, while house price growth has slowed and auction clearance rates are at their lowest levels since early 2016. And while softer residential construction activity will weigh on wage growth, it is forecast to be partly offset by improvements in non-residential and engineering construction.

Looking ahead, the construction sector nominal WPI is expected to grow by 2.0% in 2017-18, before lifting to 2.3% in 2018-19. Wage growth in the sector is projected to reach 3.3% by the end of the forecast period in 2022-23.

Chart 2.13 Construction WPI relative to national WPI




Source: Australian Bureau of Statistics, Deloitte Access Economics

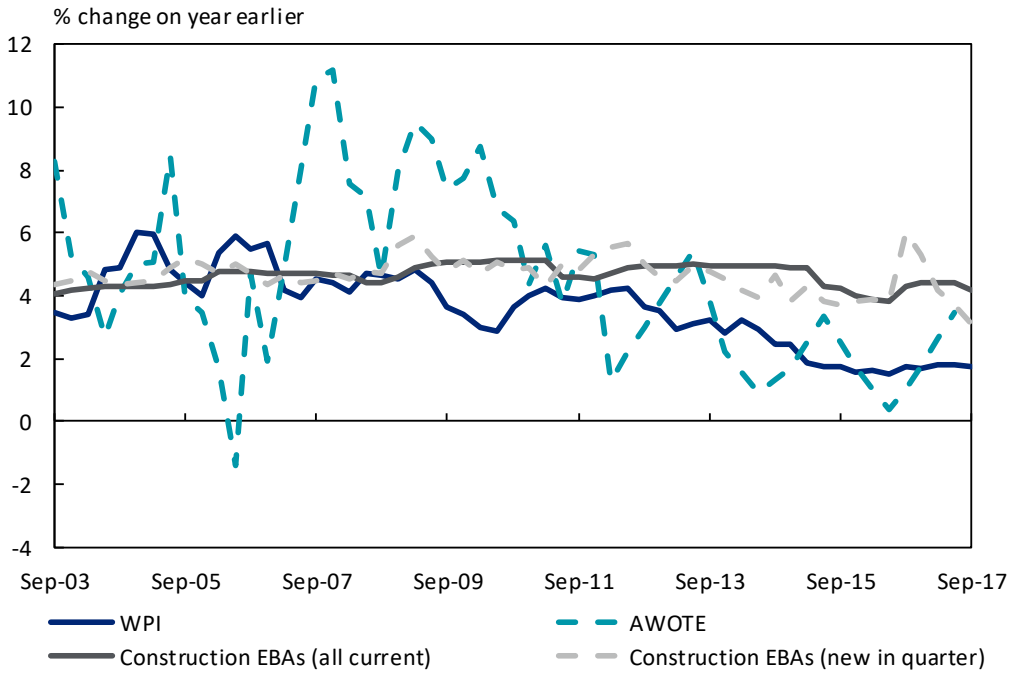
#### 2.2.3.2 Comparison with EBA results

The continued slowdown in construction sector output and WPI has been mirrored in other measures of wage growth (see Chart 2.14).

Current EBAs continue to yield higher wage outcomes in the construction sector than indicated by either the WPI or AWOTE measures:

- In the September quarter of 2017, wages in all current EBAs grew at 4.2% for the construction sector. This is the fastest AAWI recorded across all sectors, and is well above the 3.0% growth recorded in the utilities sector over the same period.
- New EBAs, however, serve as a better indicator of future wage trends. Wage growth in new construction sector EBAs was 3.1% in the year to September 2017, a significant slowdown from the 6.0% growth recorded in the year to September 2016. That said, the AAWI for new construction EBAs remains the highest across all sectors.
- The gap between the WPI and EBA measures has largely widened over the past five years (seen in Chart 2.14), in part reflecting the strength of construction sector unions. In September 2017, around 95,500 construction sector employees were covered by EBAs, while labour force data indicates that around 1.2 million people are employed in the sector across Australia. With less than a tenth of workers represented, WPI may have a closer resemblance to the trends in the wider construction industry.

Chart 2.14 Measures of national construction sector wage growth




Source: Australian Bureau of Statistics, Department of Employment

### 2.2.4 Summary results

Forecasts for national and sectoral wage growth are shown in Table 2.4. Forecast components include real (inflation-adjusted) and nominal WPI, and real and nominal productivity-adjusted WPI.

Table 2.4 National sectoral wage forecasts

**Financial year changes in nominal national industry sector WPI**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 1.9 | 2.1 | 2.5 | 2.7 | 3.0 | 3.2 | 3.3 |
| Utilities | 2.2 | 2.1 | 2.3 | 2.4 | 2.7 | 3.1 | 3.1 |
| Construction | 1.7 | 2.0 | 2.3 | 2.7 | 3.2 | 3.4 | 3.3 |

**Financial year changes in real national industry sector Wage Prices**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 0.2 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 0.9 |
| Utilities | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.6 | 0.7 |
| Construction | 0.0 | 0.2 | 0.1 | 0.5 | 0.7 | 1.0 | 0.9 |

**Financial year changes in nominal productivity adjusted Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 1.3 | 2.3 | 0.9 | 1.0 | 1.3 | 1.5 | 1.8 |
| Utilities | 1.2 | 2.4 | 0.9 | 0.9 | 1.0 | 1.3 | 1.6 |
| Construction | 1.9 | 2.5 | 0.4 | 1.0 | 1.5 | 1.7 | 1.8 |

**Financial year changes in real productivity adjusted Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | -0.4 | 0.5 | -1.2 | -1.2 | -1.1 | -0.9 | -0.6 |
| Utilities | -0.5 | 0.5 | -1.2 | -1.4 | -1.4 | -1.1 | -0.8 |
| Construction | 0.2 | 0.6 | -1.6 | -1.2 | -0.9 | -0.8 | -0.5 |

Source: Australian Bureau of Statistics, Deloitte Access Economics

# 3 New South Wales

## 3.1 Economic outlook

### 3.1.1 Overview

New South Wales has experienced strong economic growth in recent years, aided by record low interest rates which have supported strong growth in housing construction and a related lift in public infrastructure investment. The New South Wales economy grew by 2.9% in 2016-17, exceeding national average growth of 2.0%.

While dwelling approvals have passed their peak, housing construction continues to be supported by record low interest rates and a large number of approvals yet to enter the construction phase. The Reserve Bank has lowered their inflation forecasts, with underlying inflation projected to reach the middle of the 2 to 3 per cent target band in 2020. This inflation outlook means low interest rates are likely to remain in the near future. However, the Reserve Bank cash rate is not the only driver of borrowing for potential property buyers in New South Wales. Investor lending – a key driver of Sydney's housing market in recent years – is now being targeted by banking regulators amid high levels of debt. Tighter lending standards and restrictions on the share of 'interest only' loans have pushed up rates for investors, resulting in a cooling in market activity in recent months for New South Wales.

This is only partly offset by State Government policies aimed at assisting first home buyers to enter the market. As growth in the housing market begins to moderate, the incentive to continue building more dwellings will diminish. Growth in housing construction was flatter in 2017 after several years of strong growth. However, low interest rates remaining over 2018 means that a cooling house market is unlikely to substantially affect the New South Wales economy.

Additional stamp duty revenues generated from the elevated activity in the housing market, as well as the sale of a number of the State Government's assets (such as Ausgrid and Endeavour Energy) have led to Budget surpluses, no net debt, and a AAA credit rating. The New South Wales Government has committed to spending $80 billion on major infrastructure projects over the next four years. Spending is concentrated in the transport sector, with the $16.8 billion WestConnex and $8.3 billion Sydney Metro NorthWest the largest projects under construction. Construction has also begun on the Sydney Light Rail, valued at $2.1 billion. There are $41 billion worth of road and rail projects under construction in New South Wales, with a further $32 billion across various planning stages. Coming years will also see construction begin on the new Western Sydney Airport at Badgerys Creek. Strong infrastructure spending will support growth in the State and offset some of the decline in dwelling construction.

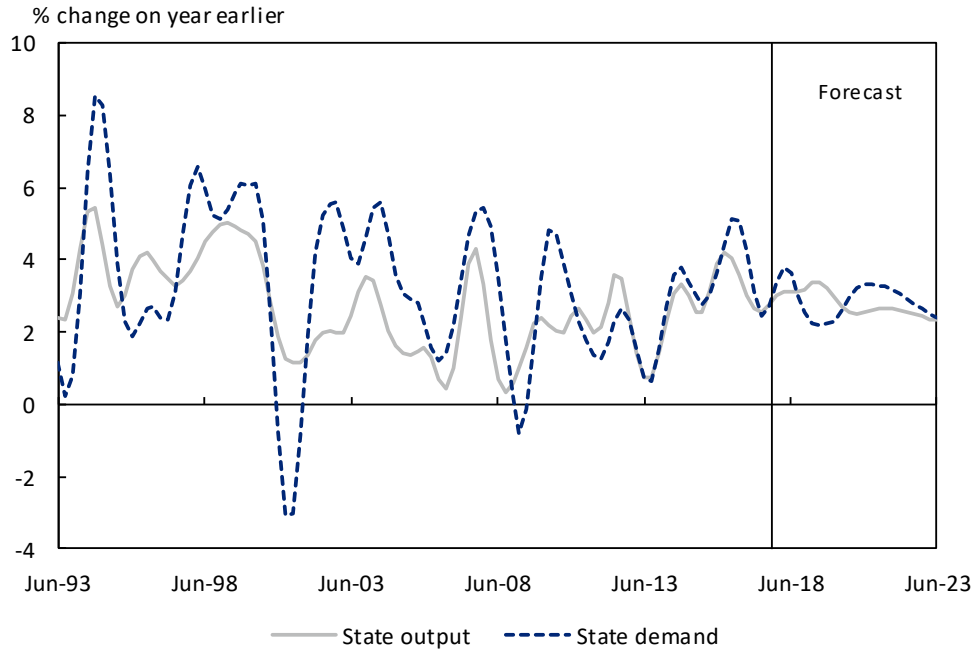
New South Wales has also benefited from the lower Australian dollar following the mining boom, providing support to the State's manufacturing, farming, tourism and education sectors. The number of tourists coming to New South Wales has continued to grow, up 7.1% over the year to November 2017. Increasing international student numbers are supporting the State's education sector, with growth in the number of students up 10.0% over the year to November 2017.

The New South Wales labour market is one of the healthiest in the country, with an unemployment rate of 4.9%. Deloitte Access Economics expects the unemployment rate to continue trending down over coming years. Population growth has increased in New South Wales, largely due to an increase in net migration as those elsewhere in Australia or the world seek employment opportunities Sydney's strong economy offers.

While better macroeconomic conditions in recent years have resulted in New South Wales being one of the strongest performing States, Deloitte Access Economics expects economic growth to ease over the near term. Growth has already begun to slow from a peak in 2015-16 of 3.9% to 2.9% in

2016-17 and is expected to remain around this level, averaging 2.9% over the five years to 2021-22 (see Chart 3.1).

Chart 3.1 Output and demand (change on year earlier), New South Wales




Source: Australian Bureau of Statistics, Deloitte Access Economics.

Table 3.1 sets out Deloitte Access Economics' current forecasts for the New South Wales economy between 2015-16 and 2022-23.

Table 3.1 New South Wales output and demand forecasts

**Financial year changes in New South Wales key economic variables**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| **Annual % change (unless noted)** | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** | **2021-22** | **2022-23** |
| Consumption | | | | | | | |
| Private sector | 2.5 | 2.4 | 2.3 | 2.0 | 2.0 | 2.2 | 2.5 |
| Public sector | 4.6 | 2.8 | 3.2 | 2.9 | 2.6 | 2.7 | 2.7 |
| Private sector investment | | | | | | | |
| Dwelling investment | 9.3 | -3.2 | -4.7 | -1.8 | 7.0 | 5.6 | -1.3 |
| Non-residential building | -3.1 | 17.9 | 9.3 | 8.5 | 7.7 | 4.6 | 2.7 |
| Engineering construction | 25.0 | 22.6 | -9.1 | -0.6 | 5.5 | 4.4 | 3.0 |
| Machinery and equipment | 2.8 | 5.7 | 10.6 | 7.1 | 8.8 | 5.9 | 4.7 |
| IP and livestock | 7.5 | 7.1 | 9.5 | 8.6 | 12.3 | 9.2 | 7.4 |
| Public investment | | | | | | | |
| General Government | 15.6 | 15.1 | 3.0 | 4.7 | 5.1 | 4.5 | 4.5 |
| Public enterprises | 2.9 | 11.5 | -5.3 | -9.0 | -6.3 | -1.7 | 1.3 |
| | | | | | | | |
| Real final demand | 3.6 | 3.4 | 2.6 | 2.5 | 3.3 | 3.1 | 2.6 |
| Private sector | 3.0 | 2.9 | 2.6 | 2.5 | 3.5 | 3.2 | 2.5 |
| Public sector | 6.0 | 5.4 | 2.5 | 2.3 | 2.4 | 2.8 | 2.9 |
| | | | | | | | |
| Gross State output | 2.9 | 3.1 | 3.2 | 2.8 | 2.6 | 2.6 | 2.4 |
| | | | | | | | |
| Employment | 0.7 | 2.8 | 1.7 | 1.4 | 1.4 | 1.3 | 1.2 |
| Unemployment rate (%) | 5.0 | 4.6 | 4.5 | 4.7 | 4.7 | 4.7 | 4.7 |

Note: All variables (except for jobs and unemployment) expressed in inflation adjusted terms.

Source: Australian Bureau of Statistics, Deloitte Access Economics.

### 3.1.2 Utilities sector

Similar to the experience in other parts of the country, the New South Wales utilities sector is under a range of cost and regulatory pressures among an environment of longer-term energy demand declines. The AEMO estimates that energy consumption in New South Wales fell by 2.8% over 2016-17. This is consistent with the longer term trend towards lower energy usage by households and businesses. This has been aided by technologies allowing for rooftop solar, cogeneration and more energy efficient household appliances.

New South Wales' use of renewable energies continues to increase, contributing almost a fifth of its energy usage in 2016. While the State's record infrastructure program will result in continued energy demand, the State Government has guaranteed to fully offset the operational electricity use of the Sydney Metro Northwest project with renewable energy. The share of energy coming from renewable sources in the State is also set to rise in the future with the replacement of Liddell Power Station with renewable energy by 2022. Snowy 2.0 is also expected to go ahead, however the cost has increased from $2 billion to $3.8 billion and the final investment decision is not expected until late-2018.

Over the longer term, tariff and regulation reform will encourage the use of energy in off-peak periods throughout all of Australia, deferring the need for significant network investment. With an outlook of lower demand and peak demand over the longer term, employment and wage growth in the utilities sector may be relatively modest.

### 3.1.3 Construction sector

Strength in New South Wales' construction sector in recent years has been concentrated in engineering and housing construction. The components of New South Wales' construction sector are discussed below.

Solid population growth, record low interest rates and elevated house prices have been supporting **housing construction** in New South Wales in recent years. This sector remains at an elevated level with a large number of dwelling approvals yet to enter the construction phase. However, approvals have peaked and housing construction is no longer expected to add significantly to the State's economic growth. On the other hand, growth in Sydney rents is among the highest in the country, and the New South Wales residential vacancy rate is among the lowest. Furthermore, population growth has been strong recently, which will help to absorb the largest increase in supply entering the market.

However, the outlook for residential building remains somewhat uncertain. Regulators aiming to restrain increases in debt through restrictions on investors have contributed to lower house price gains. Lower price growth may mean more individuals buying property (instead of building to avoid high prices), which may reduce the demand for further new builds into the future.

Infrastructure investment has surged in New South Wales, with the State government spending $80 billion on infrastructure projects over the next four years. A large share of this is for **engineering construction** developments in the transport sector. Major projects include the two largest road projects under construction in the country - the $16.8 billion WestConnex and $4.4 billion Pacific Highway upgrade. The $8.3 billion Sydney Metro Northwest is also the largest rail project in the country, while the CBD and South East light rail development contributes $2.1 billion to New South Wales' infrastructure listing.

While the value of **commercial construction** work done in New South Wales has fallen over the last year, there are several projects under construction and more in the planning phases. The $6 billion Barangaroo development leads current work in the State, and the $1.9 billion Wynyard Place project is set to provide a further 67,000 square metres of office space by 2020. The pipeline is looking healthy with the State Government announcing plans to spend over $2 billion redeveloping ANZ Stadium at Olympic Park and Allianz Stadium at Moore Park, as well as building a new Western Sydney stadium.

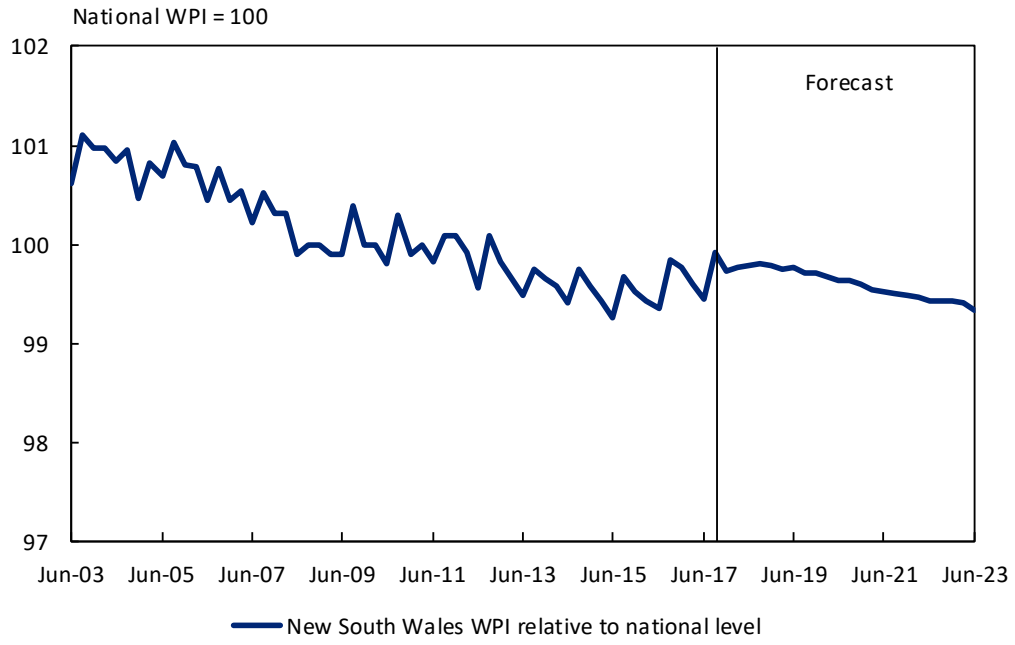
## 3.2 Outlook for wages

### 3.2.1 All industries

New South Wales wage growth was 2.1% over the year to September 2017, slightly higher than the national average of 2.0%. This follows an extended period of low wage growth across Australia.

Chart 3.2 shows movements in New South Wales' WPI relative to the national equivalent. Historical falls in the State's WPI relative to the national equivalent partly reflect rising wages in the resource rich States as a result of booming levels of economic activity. New South Wales WPI has shown signs of improvement in recent years, to be close to the national equivalent in September 2017.

Chart 3.2 New South Wales WPI relative to national WPI




Source: Australian Bureau of Statistics, Deloitte Access Economics.

Several positives have contributed to wage growth in New South Wales in recent years. Economic growth has been strong relative to the national average, remaining at 2.9% over 2016-17 compared with the national average of 2.0%. While New South Wales employment growth outperformed the national average in 2016, it pulled back in 2017 to 1.5% (compared to the national average of 2.2%). Record low interest rates, a housing construction boom and a large infrastructure investment program have all contributed to economic growth within the State. In addition, a lower Australian dollar, has provided a boost to the manufacturing, farming, tourism and education sectors.

The recovery of the New South Wales WPI relative to the national equivalent has also partly reflected extremely low wage gains in resource-rich States that experienced large falls in mining related engineering construction. Since New South Wales was not a large beneficiary of mining boom profits, it did not experience the large falls in activity that followed.

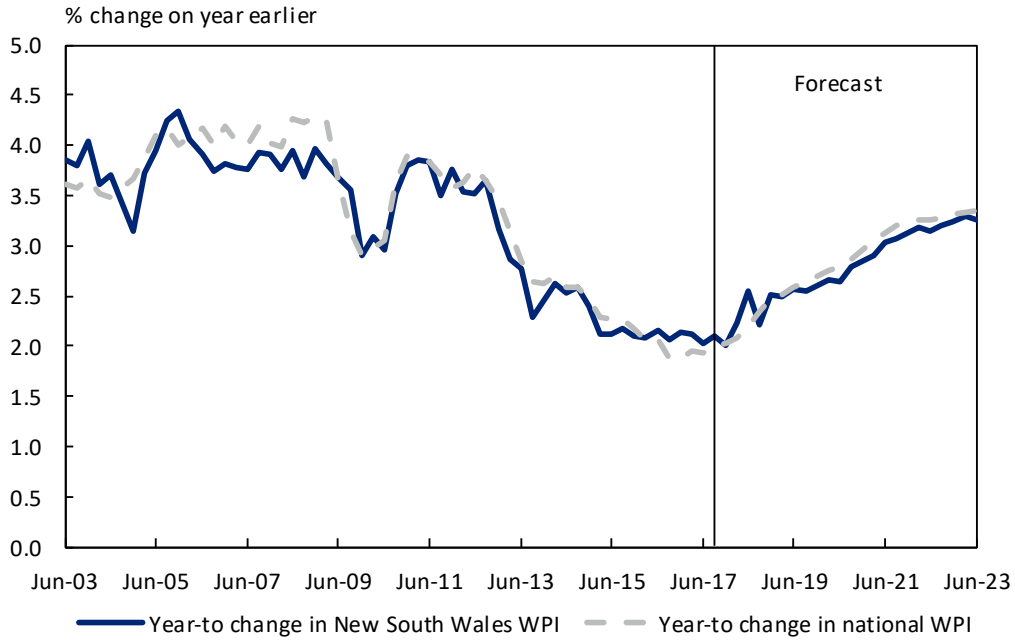
Despite these positive themes, wage growth in New South Wales remains low and upwards pressure is unlikely to significantly affect wage growth within the next year.

- **Economic growth for the State has been strong, but headwinds remain for the future.** Growth in New South Wales is expected to ease over the near term as housing shifts from a tailwind to a headwind, and high household debt (in conjunction with low wage growth) weighs on retail trade.
- **Low wage growth is being experienced across all of Australia.** Spare capacity in the Australian labour market (despite relatively strong jobs growth in 2017) results in low wage

growth across the nation. Low national wage growth is expected to continue to affect wages in New South Wales.

Wage growth in New South Wales is expected to slightly outperform in the near term before returning to a rate slightly below the national rate. Deloitte Access Economic expects the State's annual wage growth to return to 3.2% by 2022-23.

Chart 3.3 New South Wales general labour cost growth

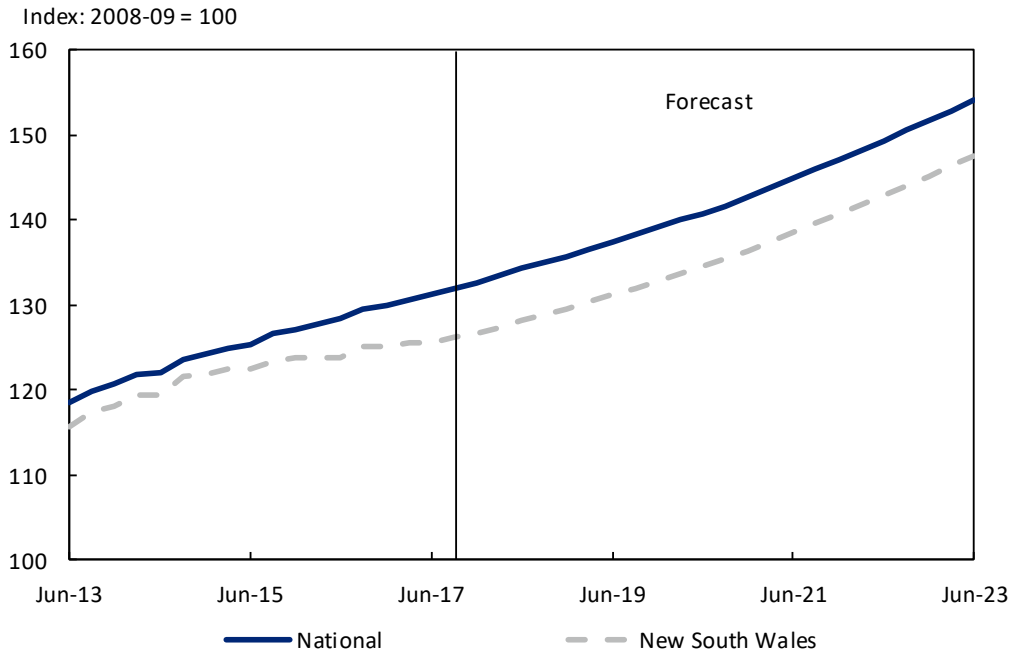



Source: Australian Bureau of Statistics, Deloitte Access Economics.

### 3.2.2 Utilities sector wages

New South Wales utilities sector wage growth follows that of the nation's relatively closely. However recent years have seen slower growth for New South Wales, as shown in Chart 3.4. Relatively similar wage growth across States is to be expected as wages for the utilities sector are typically regulated at the national level. However, additional volatility may be present at the State level, causing significant movements over short periods of time.

Chart 3.4 Utilities sector WPI forecasts, New South Wales and national

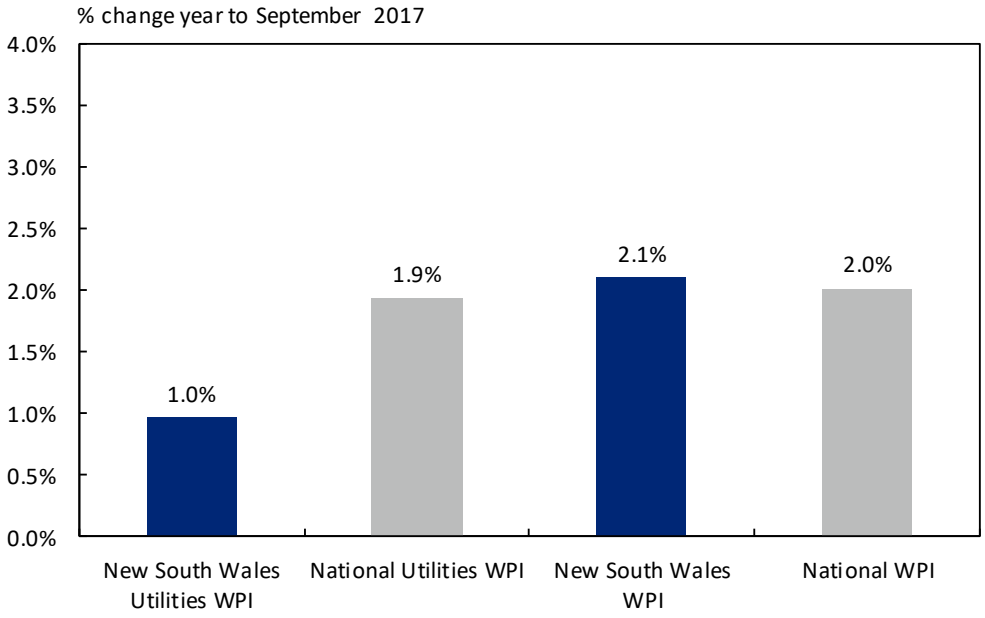



Source: Australian Bureau of Statistics, Deloitte Access Economics.

Wage growth for utilities in New South Wales is expected to return to a similar growth rate to Australia's from 2018-19. By 2022-23, annual wage growth of 3.2% and 3.1% are forecast for the New South Wales and Australian utilities sectors respectively.

Chart 3.5 shows wage growth for the utilities sector in New South Wales was particularly low over the year to September 2017 at 1.0%. This compares to the national average for the sector of 1.9% and the State's all industry average of 2.1%.

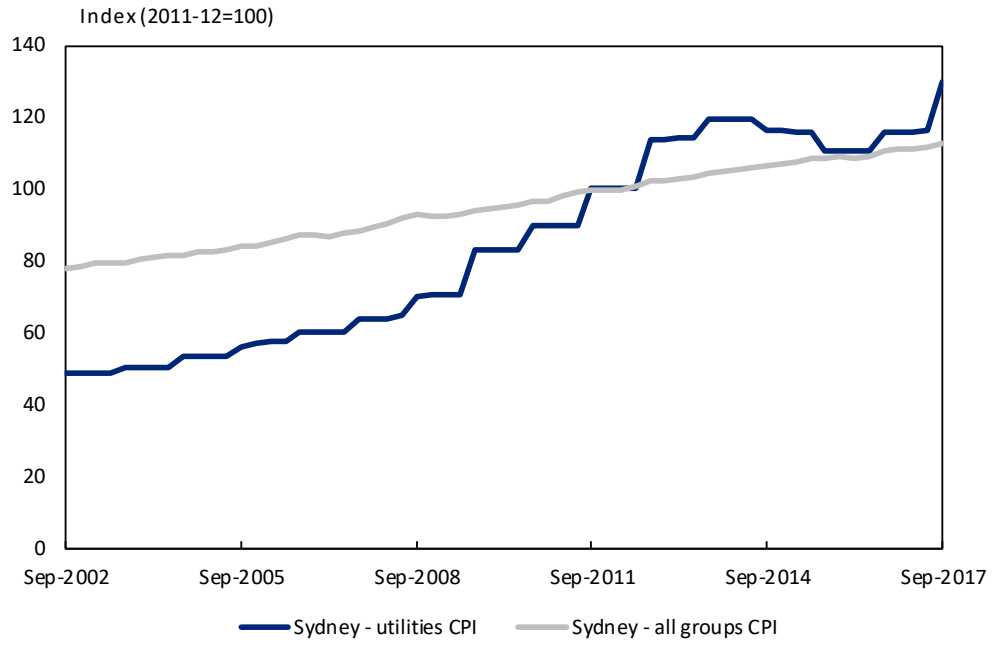
Chart 3.5 Comparative WPI growth rates in the 12 months to September 2016




Source: Australian Bureau of Statistics, Deloitte Access Economics.

Following several years of continuous growth, utilities prices in Sydney moderated in 2012 (shown in Chart 3.6). Average annual growth in CPI over the five years to June 2017 was 3.0% for utilities and 2.1% on average in Sydney. Over the year to September 2017, CPI for utilities rose by 11.8% compared to 1.9% across all groups.

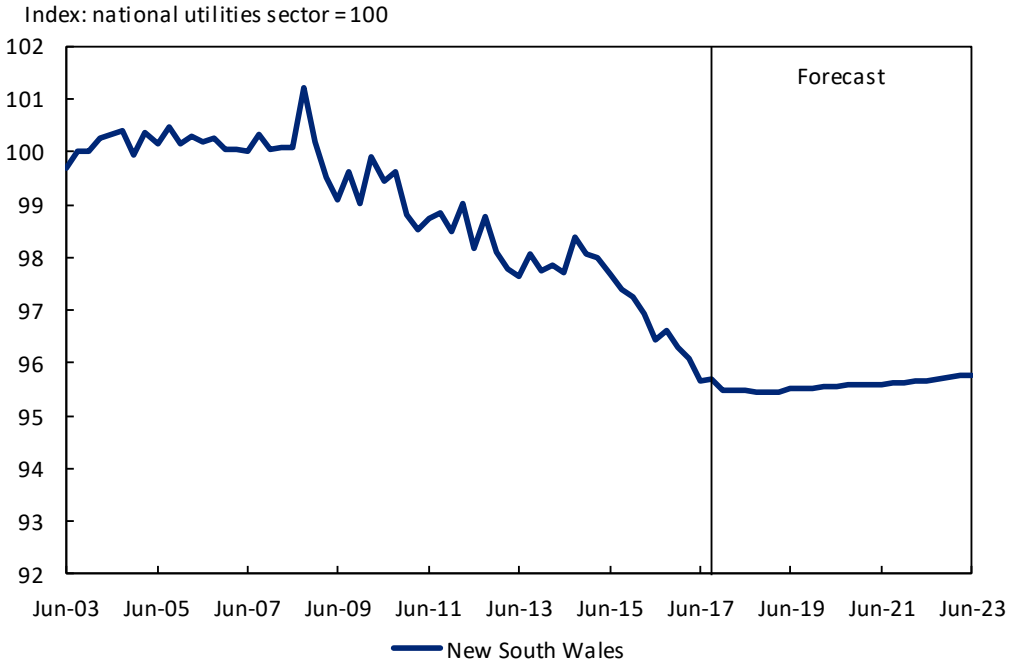
Chart 3.6 Sydney utilities prices




Source: Australian Bureau of Statistics.

New South Wales utilities sector WPI relative to the national average has been in decline since early 2009 (shown in Chart 3.7). The initial fall occurred at a time where wage growth in resource-rich States was very high, leading to falls in relative WPI for the south-eastern States. More recently, the utilities sector has experienced relatively poor performance across much of the country.

Chart 3.7 New South Wales utilities WPI relative to national utilities WPI



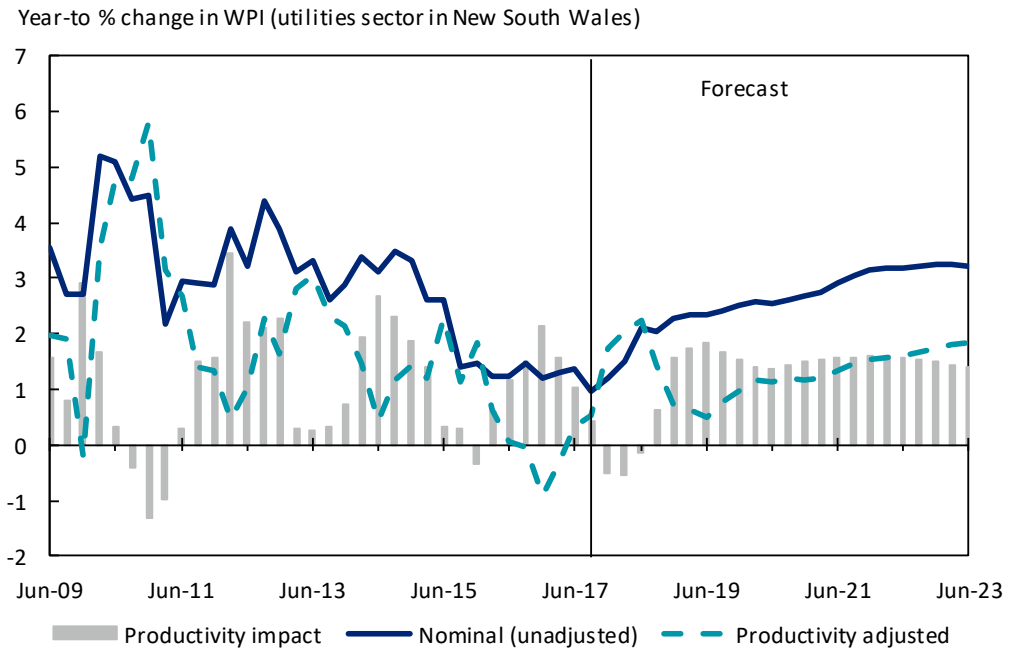

Source: Australian Bureau of Statistics, Deloitte Access Economics.

Chart 3.8 shows the detailed outlook for wages in the State's utilities sector. We expect wage growth in the utilities sector to increase gradually over the forecast period, with average annual growth between 2016-17 and 2022-23 of 2.7%.

It is also worth noting that the volatility in State indices implies that actual movements in State-by-industry WPI in the future are unlikely to be as smooth as shown in our projections. Movements in recorded data may therefore move against what might be expected from the underlying economic drivers.

That means that forecasting growth rates based on a point-to-point comparison of results can be volatile. For that reason Deloitte Access Economics recommends concentrating on the longer run underlying trends indicated in Chart 3.8.

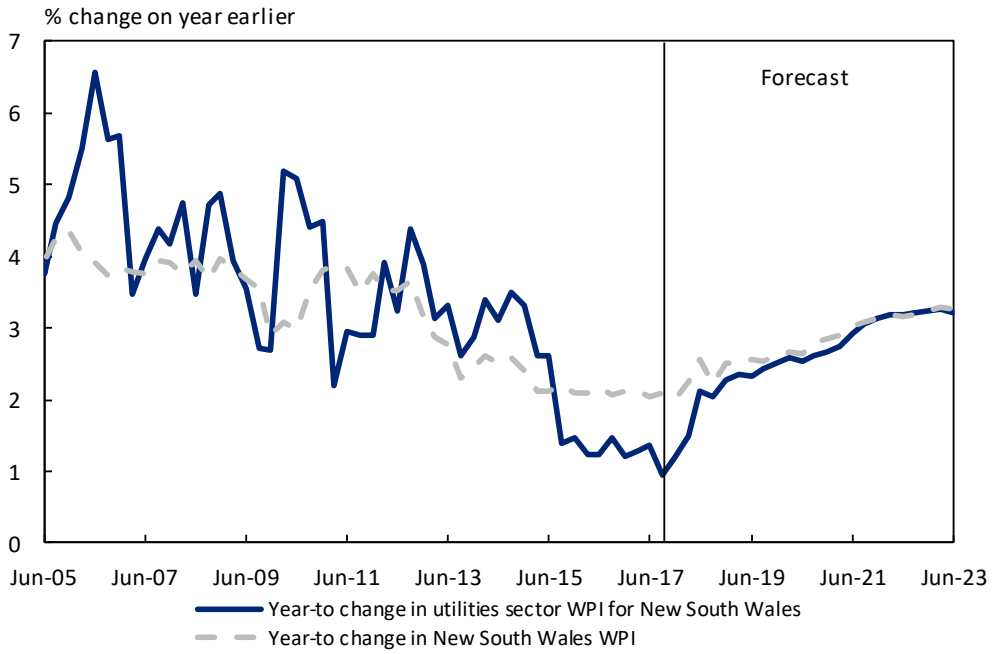
Chart 3.8 New South Wales utilities detailed WPI forecasts




Source: Australian Bureau of Statistics, Deloitte Access Economics.

Industry wage growth typically fluctuates above and below the State average over time, shown in Chart 3.9 for the utilities sector in New South Wales. Wage growth for the New South Wales utilities sector has remained below the gains in the wider State economy since mid-2015, partly due to the relatively strong performance of sectors such as entertainment and recreation and healthcare.

Chart 3.9 New South Wales utilities general labour cost growth




Source: Australian Bureau of Statistics, Deloitte Access Economics.

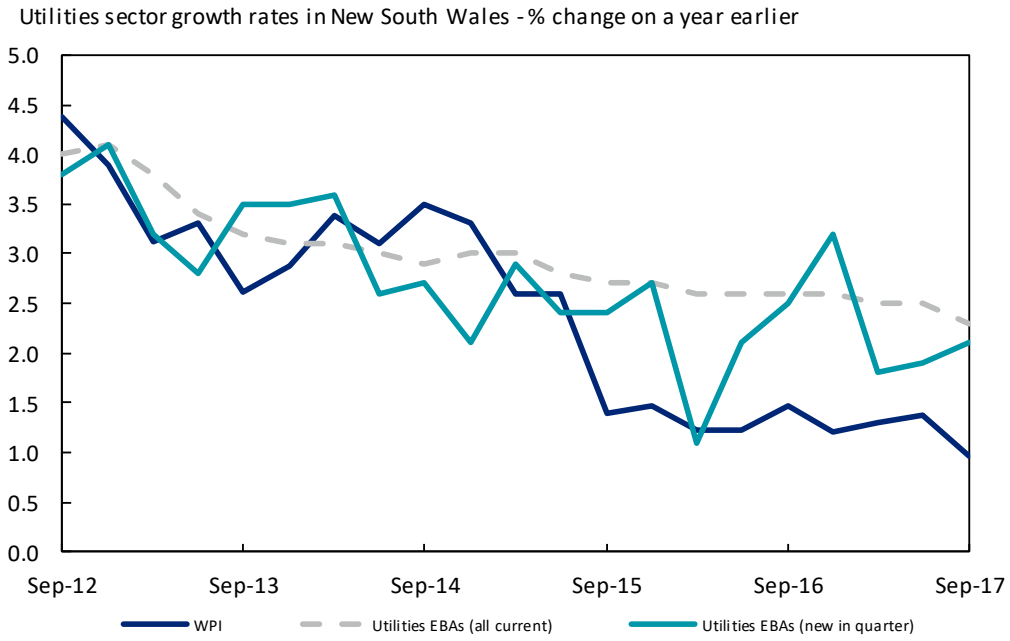
We do not expect wage growth in the utilities sector to continue to underperform relative to the State over the outlook. Utilities sector wage growth is expected to return to be close to the State's growth trend by mid-2018.

#### 3.2.2.2 Comparison with EBA outcomes

Chart 3.10 shows growth in the New South Wales utilities sector WPI alongside outcomes in State EBAs for the sector. The following can be concluded:

- The Average Annual Wage Increase (AAWI) across all current utilities EBAs in New South Wales has continued to moderate in recent periods.
- Since its low of 1.1% in early 2016, the AAWI for new utilities sector EBAs for New South Wales has fluctuated somewhat, reaching its decade average of 3.2% in December 2016 but dropping since. AAWI for new EBAs was 2.1% in September 2017.
- The AAWI for current utilities sector EBAs in New South Wales typically underperforms the national average. In September 2017, the State's AAWI was 0.9% lower than the Australian average. In fact, New South Wales had the slowest State AAWI across all current utilities EBAs at this time.

Chart 3.10 Comparative measures of wage growth in the New South Wales utilities sector




Source: Australian Bureau of Statistics, Department of Employment.

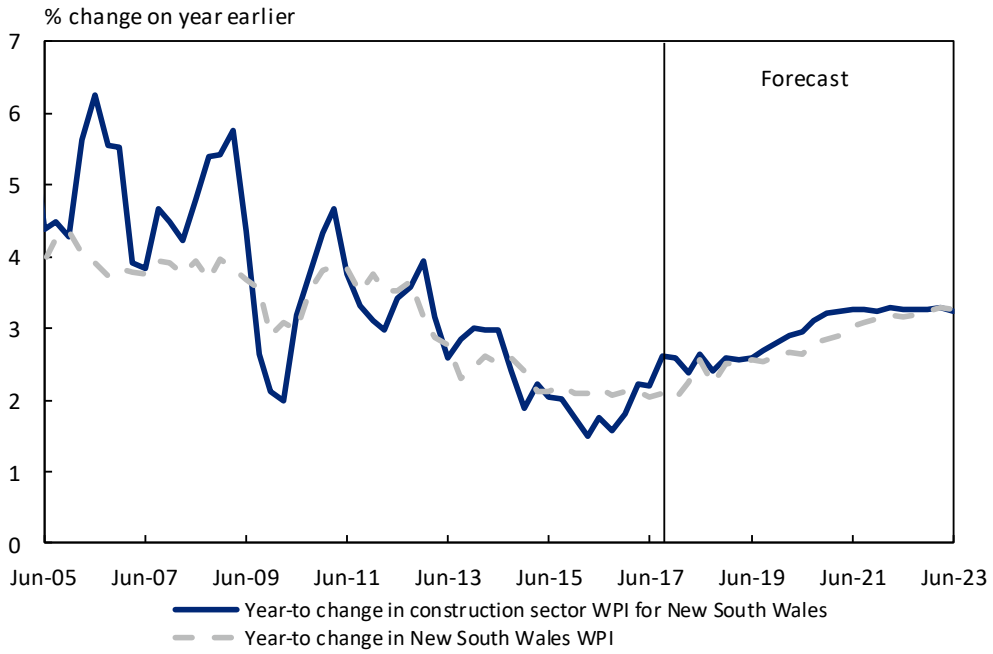
### 3.2.3 Construction sector wages

The New South Wales construction industry has had strong performance in recent years, which is expected to continue in the near term:

- **Engineering construction** in New South Wales is benefitting from excess stamp duty revenue and the State's asset recycling strategy, which have helped to fund a record infrastructure program. Growth is expected to continue in the near term as more projects enter the construction phase.
- **Commercial construction** is led by the $6 billion Barangaroo development in New South Wales, and the State Government has recently announced plans to spend over $2 billion redeveloping Allianz Stadium and ANZ Stadium, and building a new Western Sydney Stadium. That said, the value of work done fell over the last year and building approvals have fallen from their peak.
- **Housing construction** has been a key driver of economic growth in New South Wales in recent years, driven by solid population growth, low interest rates and elevated house prices. This sector remains at an elevated level with a large number of dwelling approvals yet to enter the construction phase. However, approvals have peaked and housing construction is not expected to contribute in the same way to economic growth within the State in coming years.

Wage growth for the New South Wales construction sector was 2.6% over the year to September 2017 compared to the State average of 2.1%. Average wage growth across the construction sector in Australia was 1.8% over this time. These levels remain low relative to historic levels (shown in Chart 3.11). Higher wage growth for the construction sector relative to the State follows strong performance in housing construction, and occurs at a time where engineering construction is a major strength of the State economy.

Chart 3.11 New South Wales construction labour cost growth




Source: Australian Bureau of Statistics, Deloitte Access Economics.

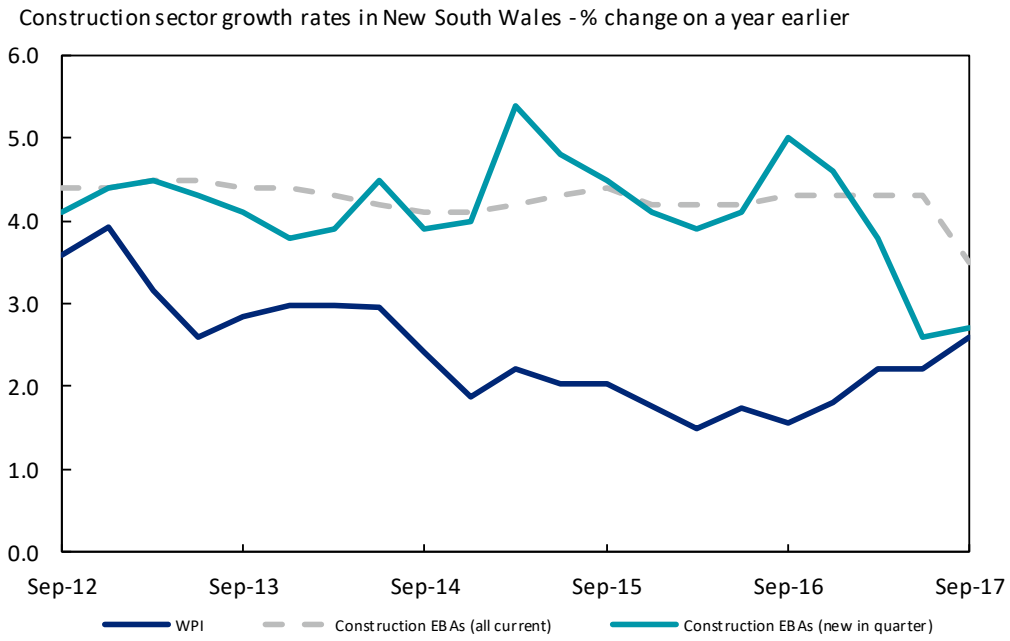
Looking forward, we expect wage growth in the New South Wales construction sector to be slightly above the State's all-industry average in the short-term. Wages are projected to begin recovering by mid-2019, returning to levels above 3% by 2020-21.

Chart 3.12 provides a comparison of construction WPI with EBA outcomes in recent years. It shows:

- Prior to September 2017, the AAWI for all construction EBAs remained relatively constant at an annual average of 4.3% over the five years to June 2017. This fell to 3.5% in September 2017 following over a year of a lower AAWI for new construction EBAs.
- The AAWI of new construction sector EBAs has been falling since September 2016, when it reached a level of 5.0%. Falls have begun to moderate, and in September 2017 the AAWI was 2.7%. The falls experienced between September 2016 and June 2017 have led to a narrower gap between WPI growth and EBA wage outcomes.

It is worth noting that the share of New South Wales construction sector employees covered by EBAs fluctuates but remains relatively low, ranging from 5.3% to 10.0% over the past year. In September 2017, 19,300 New South Wales construction employees were covered by EBAs, 5.3% of total employment in the sector.

Chart 3.12 Comparative measures of wage growth in the New South Wales construction sector




Source: Australian Bureau of Statistics, Department of Employment.

### 3.2.4 Summary results

Forecasts for sectoral wage growth New South Wales are shown in Table 3.2 below. These forecasts include real and nominal WPI, and real and nominal productivity-adjusted WPI.

Table 3.2 New South Wales wage forecasts

**Financial year changes in New South Wales nominal Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 2.1 | 2.2 | 2.4 | 2.6 | 2.9 | 3.1 | 3.2 |
| Utilities | 1.3 | 1.4 | 2.2 | 2.5 | 2.7 | 3.1 | 3.2 |
| Construction | 2.0 | 2.6 | 2.5 | 2.8 | 3.2 | 3.3 | 3.3 |

**Financial year changes in New South Wales real Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 0.1 | 0.1 | 0.1 | 0.3 | 0.5 | 0.7 | 0.9 |
| Utilities | -0.7 | -0.7 | -0.1 | 0.2 | 0.3 | 0.8 | 0.9 |
| Construction | -0.1 | 0.4 | 0.1 | 0.5 | 0.8 | 0.9 | 0.9 |

**Financial year changes in New South Wales nominal productivity adjusted Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | -0.1 | 1.9 | 0.9 | 1.1 | 1.5 | 1.7 | 1.9 |
| Utilities | -0.2 | 1.6 | 0.8 | 1.0 | 1.2 | 1.5 | 1.8 |
| Construction | 1.8 | 3.0 | 0.6 | 1.2 | 1.6 | 1.6 | 1.9 |

**Financial year changes in New South Wales real productivity adjusted Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | -2.1 | -0.2 | -1.5 | -1.2 | -0.9 | -0.7 | -0.4 |
| Utilities | -2.2 | -0.5 | -1.5 | -1.3 | -1.2 | -0.8 | -0.5 |
| Construction | -0.2 | 0.8 | -1.7 | -1.1 | -0.8 | -0.7 | -0.4 |

Source: Australian Bureau of Statistics, Deloitte Access Economics.

# 4 Victoria

## 4.1 Economic outlook

### 4.1.1 Overview

The Victorian economy is forecast to grow by 3.8% in 2017-18, well above the 2.8% forecast for the Australian economy as a whole. Lower interest rates and robust population growth have underpinned ongoing strength in consumer spending, housing investment and public infrastructure spending.

Demographic developments have been key in this performance. Victoria is estimated to have had the highest population growth of any State or Territory in 2017 (at 2.4%), placing its population growth at roughly one-and-a-half times the national rate (1.6%). Melbourne has historically been a popular destination for overseas migrants and recently, this has been combined with an upswing in net interstate migration.

These developments (low interest rates and strong demand from the resident population) have led to strong house price growth, particularly in Melbourne. Rising house prices have had an important bearing on economic growth and have led to an upswing in building activity, particularly in apartments. While the building cycle is mature, residential building approvals have remained elevated amid strong population growth. However, that also says the residential building cycle will no longer be boosting growth.

Rising house prices have also led to an increase in household wealth, supporting strength in private consumption and retail spending. Private consumption in Victoria increased by 3.2% in 2016-17 and is expected to increase by 2.6% in 2017-18 and 2018-19. This outlook predicts a gradual slowing in growth in private consumption. House price growth is slowing (as it is nationally) and many Victorians will have larger mortgages to service as well. Households are also struggling in a low-wage environment with persistent cost of living increases, for instance in the likes of electricity, healthcare and more recently, petrol prices.

Public infrastructure spending has also emerged as a key driver of growth in Victoria. Increased stamp duty revenues generated following strong growth in house prices and funds from asset recycling programs are being channelled into large developments across the State, particularly in transport.

Commercial building is also supporting investment growth. The value of work done is up by around a quarter over the past year, while building approvals are up by almost a third. Strength in commercial building is quite broad based, with office and education construction remaining the standout sectors.

Demand for Victoria's tourism and international education service offerings has also been positive. Melbourne has long been a popular destination for international students, which have been growing soundly with an increasingly affluent Asian region and a lower Australian dollar. International visitor numbers to Melbourne increased by 17% and spend by 33% over the past year; the highest increase in the country.

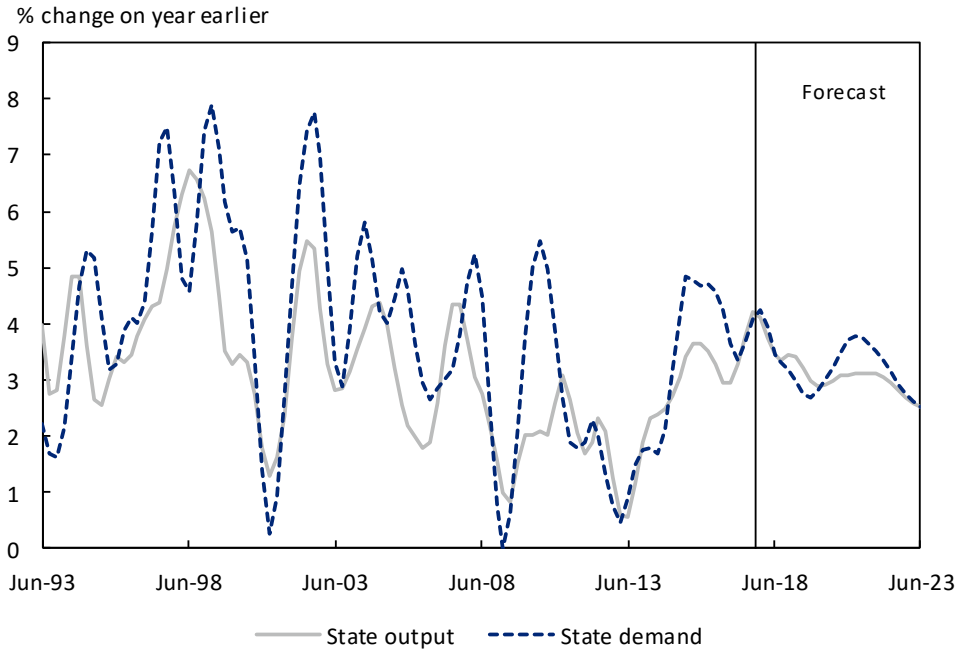
Despite the positive economic growth, there are a number of short to medium-term risks to the outlook:

- Higher electricity prices and a recent bounce in the Australian dollar look set to weigh on the State's relatively large industrial sector.
- Expectations of an interest rate rise will adversely influence credit-sensitive sectors including retail and housing.

- Population growth and housing construction may provide less support to the State's economy going forward.

On balance, growth in real GSP is forecast to grow by 3.8% in 2017-18 and 3.4% in 2018-19. This is higher than the corresponding GDP growth forecasts for the nation (2.8% and 3.1%).

Chart 4.1 Victoria output and demand




Source: Australian Bureau of Statistics, Deloitte Access Economics

Table 4.1 sets out Deloitte Access Economics' current forecasts for the Victorian economy.

Table 4.1 Victoria output and demand forecasts, financial year

**Financial year changes in Victoria key economic variables**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| **Annual % change (unless noted)** | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** | **2021-22** | **2022-23** |
| Consumption | | | | | | | |
| Private sector | 3.2 | 2.6 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 |
| Public sector | 4.6 | 3.6 | 4.4 | 4.0 | 3.4 | 3.4 | 3.2 |
| Private sector investment | | | | | | | |
| Dwelling investment | 6.4 | -3.3 | -6.0 | -1.4 | 7.3 | 5.6 | -1.5 |
| Non-residential building | -5.6 | 24.1 | 10.8 | 3.8 | 5.8 | 3.2 | 2.1 |
| Engineering construction | -4.4 | 18.6 | 8.8 | -2.3 | 4.5 | 3.4 | 1.8 |
| Machinery and equipment | -2.5 | 7.0 | 13.3 | 11.7 | 9.5 | 6.2 | 4.2 |
| IP and livestock | 8.1 | 4.7 | 3.2 | 3.8 | 9.4 | 7.6 | 6.4 |
| Public investment | | | | | | | |
| General Government | 13.5 | 20.2 | 4.8 | 3.3 | 2.4 | 3.3 | 3.2 |
| Public enterprises | 5.1 | 7.0 | -1.0 | -3.8 | -6.0 | -1.4 | 1.6 |
| | | | | | | | |
| Real final demand | 3.5 | 4.0 | 3.0 | 2.9 | 3.7 | 3.4 | 2.7 |
| Private sector | 2.8 | 3.4 | 2.7 | 2.8 | 4.0 | 3.5 | 2.6 |
| Public sector | 5.9 | 6.3 | 4.2 | 3.5 | 2.8 | 3.2 | 3.1 |
| | | | | | | | |
| Gross State output | 3.3 | 3.8 | 3.4 | 2.9 | 3.1 | 3.1 | 2.7 |
| | | | | | | | |
| Employment | 3.9 | 3.0 | 2.0 | 1.3 | 1.2 | 1.1 | 1.0 |
| Unemployment rate (%) | 5.9 | 5.6 | 5.3 | 5.2 | 5.1 | 4.9 | 4.9 |

Note: All variables (except for jobs and unemployment) expressed in inflation adjusted terms
Source: Australian Bureau of Statistics, Deloitte Access Economics

### 4.1.2 Utilities sector

Victoria's utilities are under a range of competitive, technological, regulatory and cost pressures. Energy demand from large energy users is declining as Victoria continues a shift away from heavy industry towards services-led growth. However, a strongly growing local population is supporting demand for utilities in the State.

Over the long term, tariff and regulation reform will encourage the use of energy in off-peak periods deferring the need for network investment. Victoria's smart meter installation positions the State to implement cost reflective network pricing and to provide consumers with better information about their energy use.

Late last year, the Victorian Government opened the first renewable energy auction as part of the Victorian renewable Energy Auction Scheme. The Scheme aims to enhance investment certainty to build new energy generation projects and reduce wholesale electricity prices. The State remains committed to renewable energy generation targets of 25% by 2020 and 40% in 2025.

The commitment to renewable energy will drive investment in new renewable generation and extensions to network infrastructure requiring a construction workforce in the short term. New renewable plant has a lower requirement for ongoing employees than existing baseload plant, so it is unlikely that this type of generation would increase employment in the utilities sector in the long run.

### 4.1.3 Construction sector

Victoria's construction sector remains solid, underpinned by demand from strong population growth. However, the drivers of construction activity within the State are shifting, with housing set to take a step back and with engineering and commercial construction to lead growth.

**Residential building** activity in Victoria has surged in recent years, with strong price growth and robust physical demand underpinning building activity. Residential building activity looks to have levelled off recently. However, it is worth noting that building approvals not fallen off significantly and regained some ground in the second half of 2017. As a result, while residential construction activity may no longer be increasing, it will remain historically elevated in the near-term. The State's strong population growth has diminished fears of oversupply; vacancy rates remain relatively low and rental growth has been positive. Dwelling price growth looks to have slowed, but remains positive.

**Engineering construction** growth has been increasing in Victoria. The value of engineering construction work done lifted by around 10% in the year to September 2017, following a run of similar sized gains stretching back to mid-2016. The associated gains in stamp duty, combined with strong population growth has meant the State government has been willing and able to invest in infrastructure, particularly in transport infrastructure.

There are around $13 billion worth of transport projects currently under construction, with $37 billion in the pipeline. The pipeline of planned work is led by the $11 billion Melbourne Metro and the $10 billion North East Link, both of which are scheduled to start construction in 2018.

Elsewhere, construction is set to start on the $900 million Stockyard Hill wind farm west of Ballarat. The project includes 149 wind turbines and is slated for completion in 2019. Approvals have also been granted for the $650 million Dundonnell wind farm near Mortlake. In total, there are almost $4 billion worth of renewable energy projects in Victoria.

Victoria's **commercial construction** is growing strongly after a relatively modest period. The value of work done is up by around a quarter over the past year, while building approvals are up by almost a third. And while the news is relatively broad-based, office and education sectors remain standouts. Melbourne's office market is tight, with rents increasing significantly in 2017. This reflects strong

employment growth, combined with competition from residential development in terms of the type of stock being added to the market.

## 4.2 Outlook for wages

### 4.2.1 All industries

Victorian wages lifted slightly in the September quarter of 2017, to be 2.2% higher over the year. Above trend employment growth is starting to absorb excess capacity in the State's labour market and add to wage pressures.

Chart 4.2 shows that, prior to 2012, the Victorian WPI underperformed compared to the national average. Resource rich States such as Queensland, Western Australia and the Northern Territory recorded relatively stronger wage growth amid the mining construction boom, while Victoria's economy did not benefit to the same extent.

The mining construction boom also produced a significant headwind for the Victorian economy through a higher Australian dollar. The appreciation of the Australian dollar due to the strength of commodity prices made the State's manufacturing and agriculture exports more expensive to foreign buyers. The resulting fall in competitiveness prompted many employers to limit wage gains.

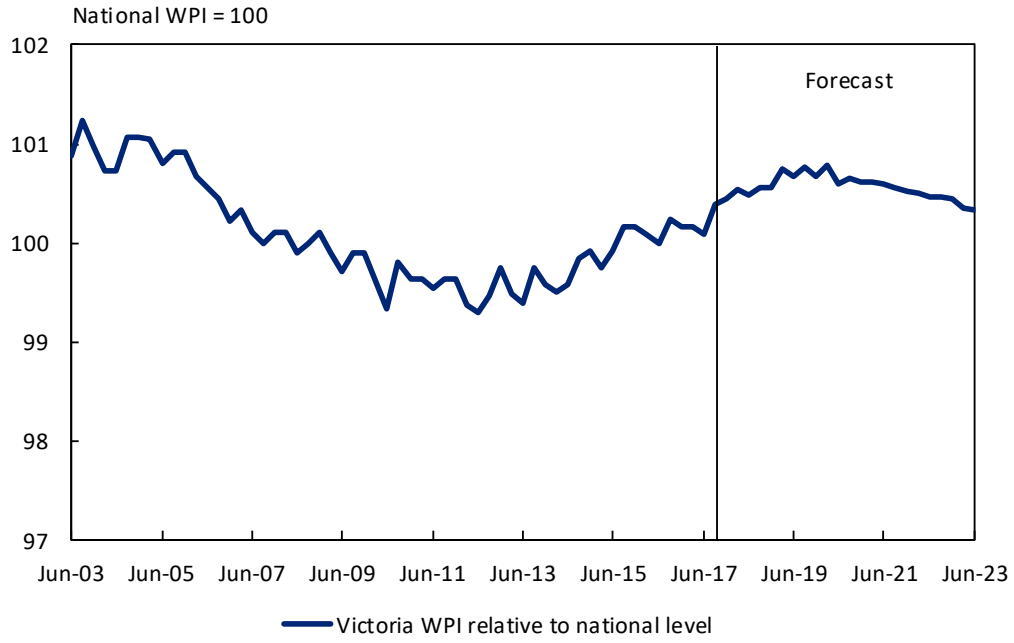
Since 2012 the recovery of the Victorian WPI relative to the national average was partly a reflection of extremely weak wage growth in the resource-rich States. As Victoria was not as heavily exposed to mining and mining-related sectors, the State's wages were less weighed down by large falls in engineering work in other jurisdictions.

The relative recovery of Victorian wages has also been driven by the strong performance of the State's economy. Victoria currently has the fastest growing population of any Australian State or Territory. That has boosted a number of sectors such as housing construction, retail, education, tourism, and public infrastructure investment. The positive backdrop for output in these sectors has added some upward pressure to wages.

Despite these positives, it is worth remembering that they are relative to the rest of Australia. It remains the case that wage growth in Victoria has slowed substantially in recent years. Moreover, looking ahead, Victoria's wage growth is expected to be limited by the following factors:

- **Although Victoria's economy is growing faster than the Australian economy, the rate** of increase is still modest. Many businesses continue to lack global competitiveness, which will keep pressure on employers to limit wage gains.
- **National wage growth is still low.** While improvements have been made in the labour market recently, a degree of spare capacity in the labour market are likely to see Australian wage growth remain relatively modest.
- **The manufacturing sector in Victoria (and Australia) remains under considerable pressure.** The strength of the Australian dollar continues to add to the existing structural challenges for the manufacturing sector. The end of automotive (and other related) manufacturing from Victoria and Australia has likely added to spare capacity in the State's workforce. In turn, this will lead to downward pressure on wages across the State.
- **Although the demand for workers in the State is solid, so too is the supply of them.** Much of Victoria's outperformance on economic indicators versus other States owes a lot to the strength of its population growth. Yet there has also been substantial growth in the supply of workers and Victoria's unemployment rate (6.1%) is higher than the national average (5.5%).

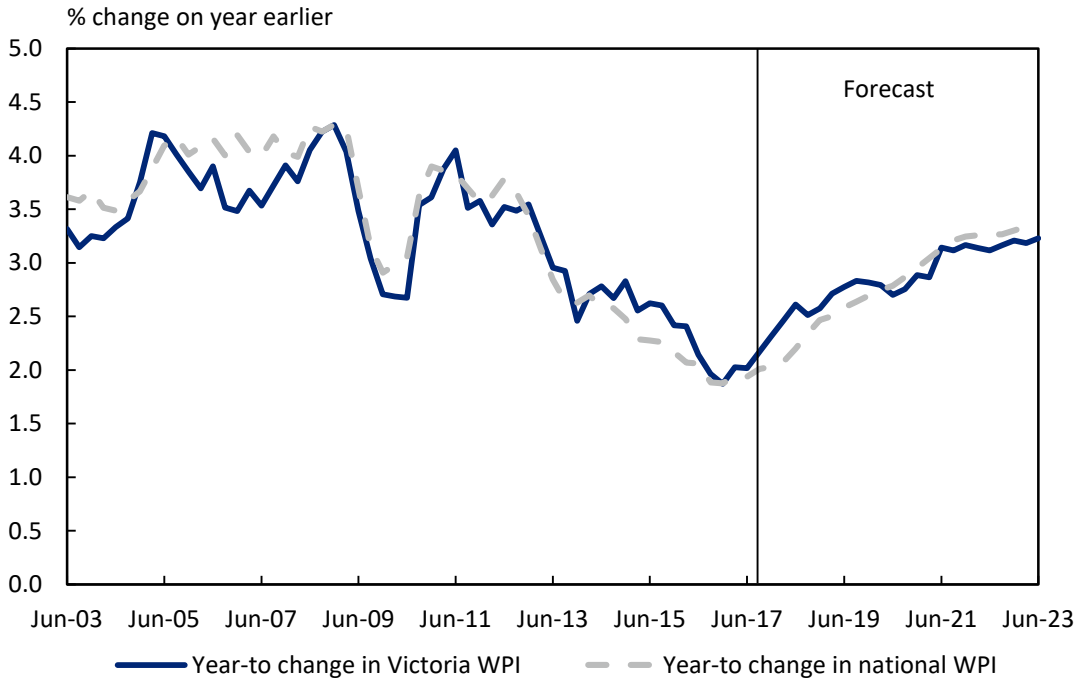
Chart 4.2 Victorian WPI relative to national WPI




Source: Australian Bureau of Statistics, Deloitte Access Economics

Looking ahead, Victoria's WPI is expected to pick up from 2.4% in 2017-18 to 2.6% in 2018-19. Chart 4.3 illustrates that the recovery of wage growth in Victoria is set to outpace the national average at first, before converging to national growth rates. Wage growth in Victoria is forecast to reach 3.2% by the end of the forecast period in 2022-23.

Chart 4.3 Victorian general labour cost growth

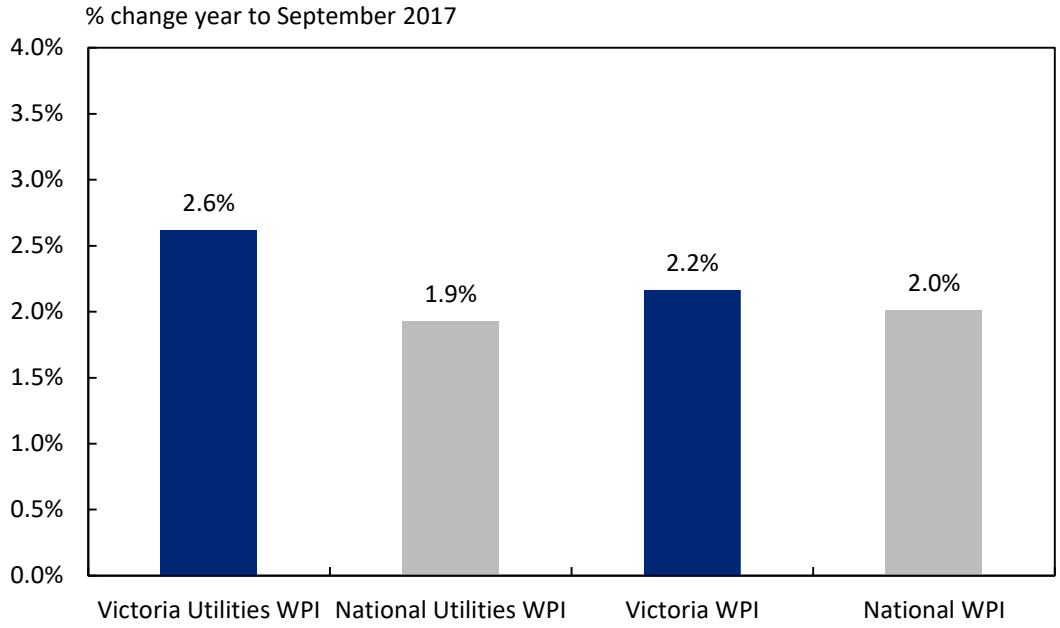



Source: Australian Bureau of Statistics, Deloitte Access Economics

### 4.2.2 Utilities sector wages

Chart 4.4 illustrates recent wage growth in the utilities sector and total economy for both Victoria and Australia. Over the past year, utilities wages in Victoria have continued to increase faster than (1) wages in the national utilities sector, (2) the overall Victorian economy, and (3) the broader Australian economy.

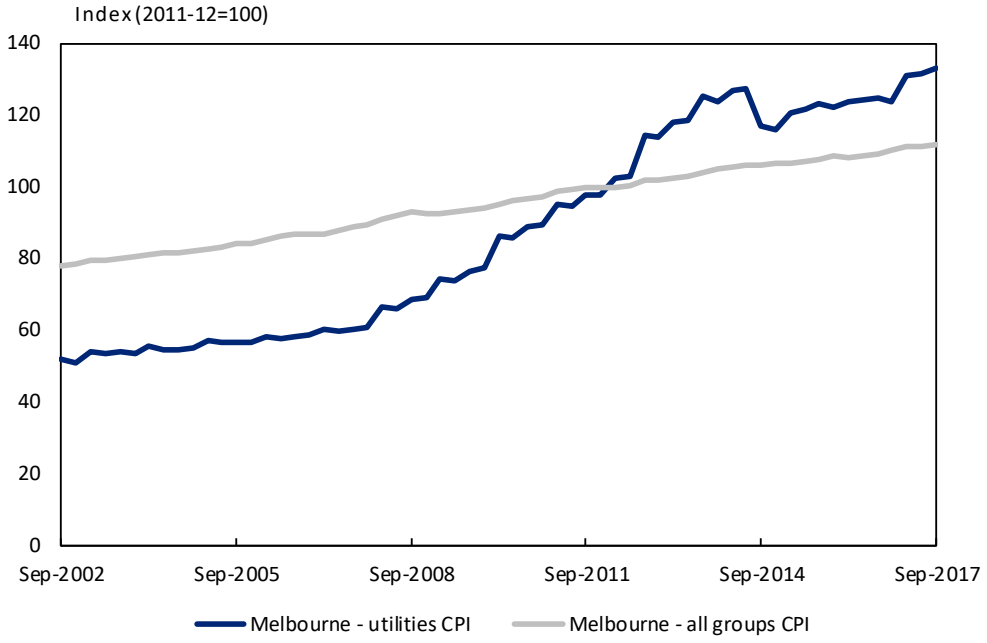
Chart 4.4 Comparative WPI growth rates in the 12 months to September 2017




Source: Australian Bureau of Statistics, Deloitte Access Economics

Chart 4.5 shows that utilities prices increased by 7.0% over the year ending September 2017 in Melbourne.

Chart 4.5 Melbourne utilities prices




Source: Australian Bureau of Statistics, Deloitte Access Economics

Wage gains in the Victorian utilities sector have largely outpaced those in the national utilities sector since 2011 (see Chart 4.6). Over the last six years Victorian utilities wages have increased by a compound annual growth rate of 3.5%, versus 2.9% growth in the Australian utilities sector.

This period of increase in relative wages does not appear to be because of rapid productivity growth in the Victorian utilities sector, or due to competition for workers from sectors such as construction, manufacturing or mining.

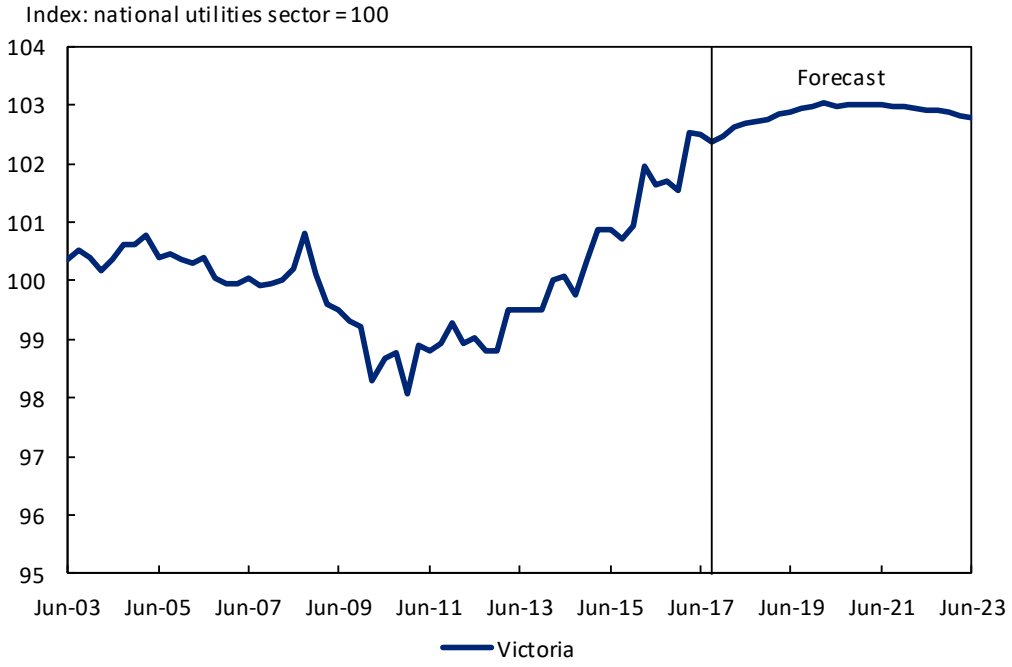
That said, competition for construction workers may be intensifying with commercial and engineering construction levels picking up and with residential construction activity still highly elevated. Potentially, this could be leading to more competition for utilities workers than in other States.

However, it is unlikely that recent trends will persist indefinitely. Wage price growth in the utilities sector is slowing, at 2.6% over the year ending September 2017 compared to 3.3% in the year prior. Growth in national utilities WPI has fallen by a smaller amount, from 2.3% over the year ending September 2016 to 1.9% over the year ending September 2017.

As a result, we forecast the upward shift of wage relativities in favour of Victorian utilities wages to level off in the near term, with Victorian utilities wages set to grow at rates that are more in-line with those of the national utilities sector (see Chart 4.6).

This projected moderation in relative gains is partly due to the fact that wage gains in the broader Victorian economy are expected to converge and in fact grow at a marginally slower rate than those in Australia by 2020. This slowdown in the pace of relative wage gains will have a downward impact on Victorian utilities wages.

Chart 4.6 Relative utilities WPI forecasts for Victoria




Source: Australian Bureau of Statistics, Deloitte Access Economics

There are also some sector-specific factors in play. Given that almost half of all utilities sector employees work in the electricity supply industry, the transition underway in the NEM is also likely to have an impact on wages:

- **Electricity demand is relatively stagnant in Victoria.** While upward pressure has come from strong population growth; there has been downward pressure amid rising energy prices, structural change in the economy and increased environmental consciousness. Largely

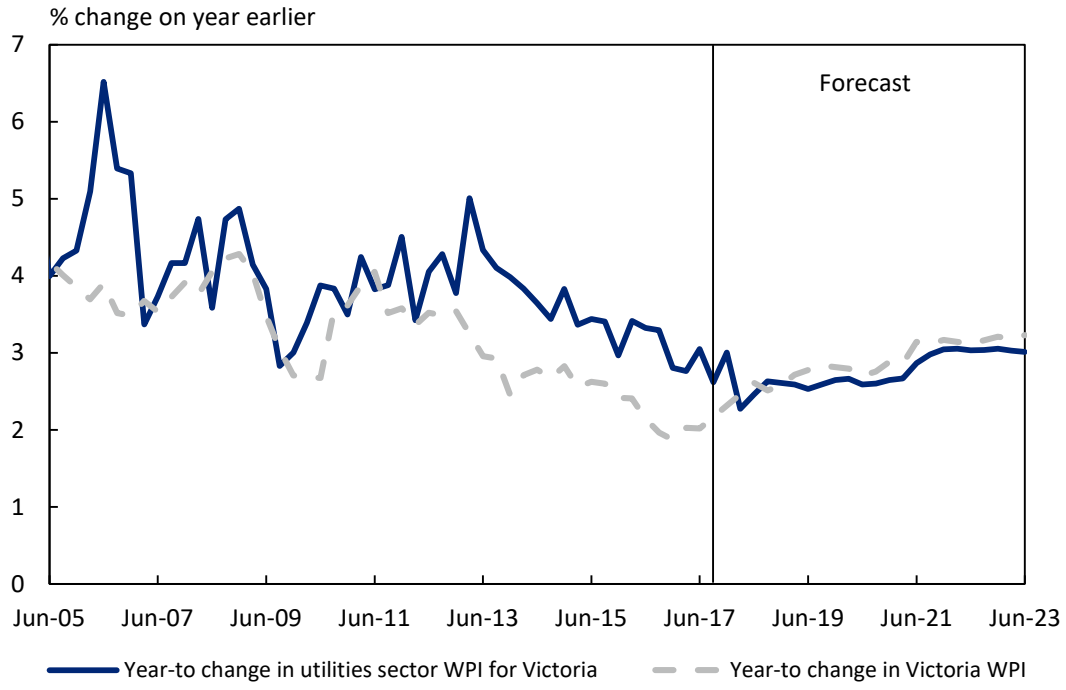
stagnant demand will weigh on output in the sector and therefore the amount firms are willing to pay to employees.

- **The retirement of coal-fired power stations has a proportionally large impact on Victoria.** Since 2012 ten coal-fired power stations have been decommissioned in Australia, three of which have been in Victoria's La Trobe Valley. The closure of the Hazelwood plant, which employed around 750 people, may contribute to softer wage outcomes in the electricity supply sector.
- Although Victoria's proposed renewable energy target is expected to drive investment in new renewable generation and existing infrastructure in the short term, **new renewable generation typically has a lower requirement for ongoing employees than existing baseload generation.** This is likely to place downward pressure on jobs and wages in the utilities sector. Indeed, the utilities sector has not participated in the jobs gains seen in the broader Victorian economy recently.

There is uncertainty about the likely path for the sector and any transition is expected to be slow. As such, these concerns are not reflected in Deloitte Access Economics' baseline forecasts, however they remain risks to the outlook.

Against that backdrop, Victorian utilities WPI is expected to continue to grow at more moderate rates. The pace of wage gains in the Victorian utilities sector is forecast to fall back to broader WPI growth in the Victorian economy from late 2018.

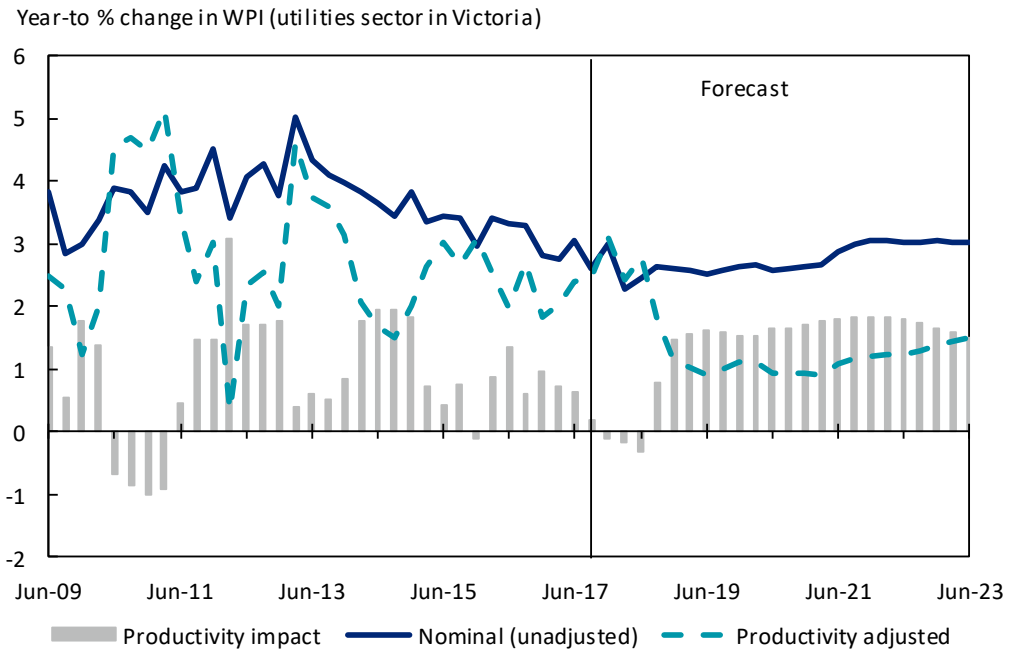
Chart 4.7 Victoria utilities forecast comparison




Source: Australian Bureau of Statistics, Deloitte Access Economics

Chart 4.8 shows productivity-adjusted wage growth has remained resilient, although this owes more to a fall-off in productivity growth than an increase in wages. It should also be noted that Victorian utilities wages are likely to include more short-term fluctuations than our forecasts show. However, the movement of recorded historical data away from these predictions does not necessarily translate to inaccuracy of the forecasts in the long term. Forecasting growth rates based on a point-to-point comparison of results can be volatile. Deloitte Access Economics therefore recommends concentrating on longer-run underlying trends indicated in Chart 4.8.

Chart 4.8 Victoria utilities WPI forecasts

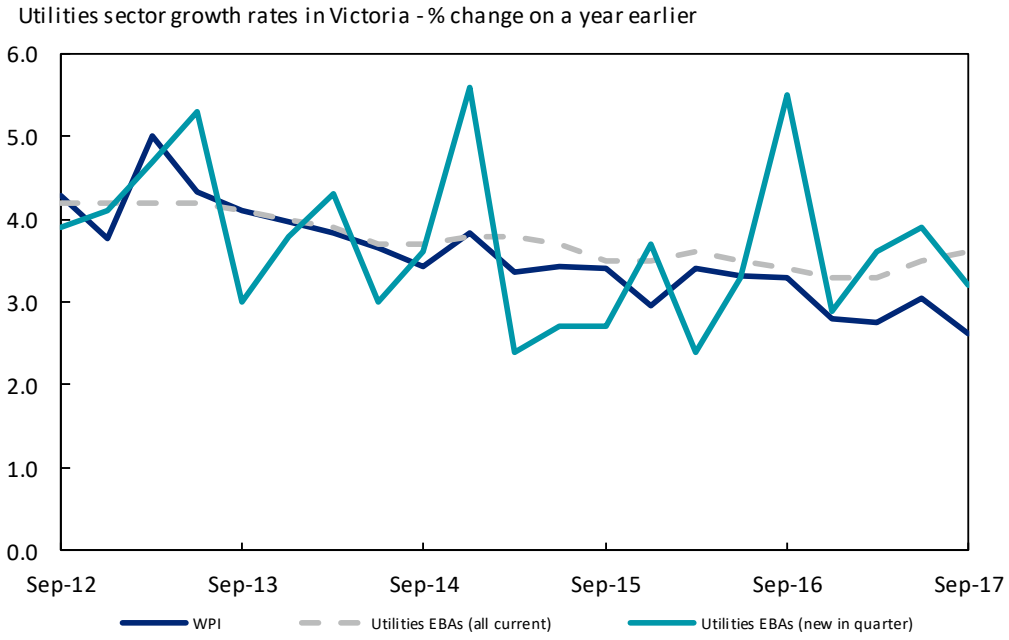



Source: Australian Bureau of Statistics, Deloitte Access Economics

#### 4.2.2.2 Comparison with EBA outcomes

The following section compares growth in Victoria's utilities sector WPI against outcomes in EBAs. Chart 4.9 shows that annual wage growth in current utilities sector EBAs grew by 3.6% in the September quarter of 2017, 1.0 percentage points above the growth rate of the utilities WPI.

Chart 4.9 Comparative measures of wage growth in the Victorian utilities sector




Source: Australian Bureau of Statistics, Department of Employment

More recently, the AAWI in new EBAs has eased. After accelerating to a high of 5.5% in September 2016, the AAWI for new EBAs fell to 3.2% in the September quarter of 2017. However, growth in

new EBAs is still solid, particularly given recent gains. As new EBAs are a barometer for future wage outcomes, there is likely to be a degree of upward pressure on wage growth across current EBAs in the short term.

An industry in transition is likely to experience tension between the expectations of the EBA workforce and employers desire to transform business practices and lower costs. In the long run, technology change and new business models will require some specialised skills, potentially making some other skills redundant. In the long-run, the average employee in the utilities sector is unlikely to be in short supply and relatively stagnant demand for energy will place pressure on utilities sector wage growth to be more in line with all-industry averages.

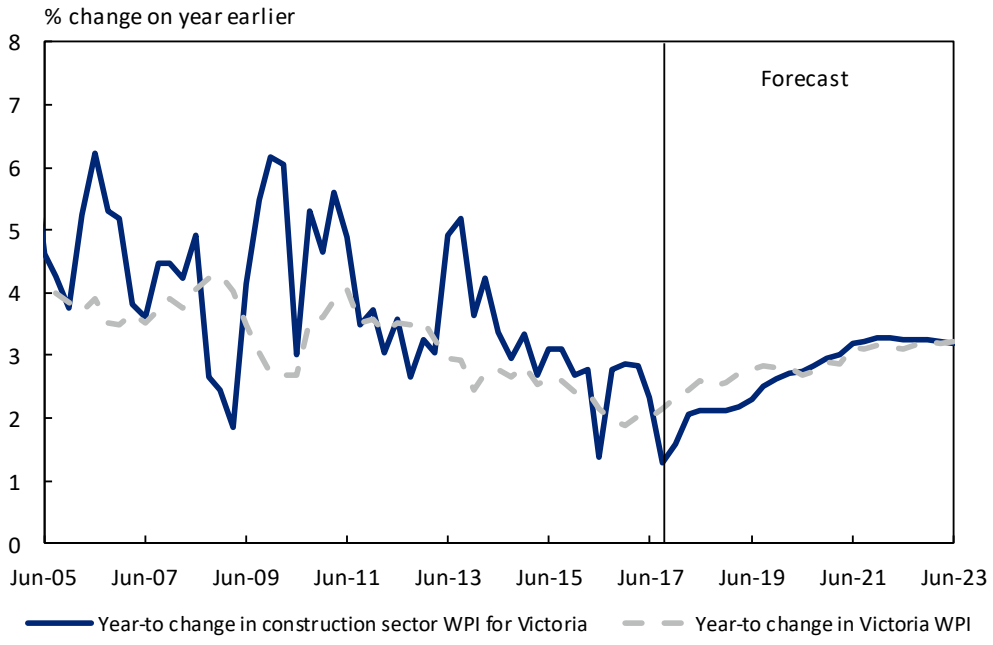
### 4.2.3 Construction sector wages

Victoria's construction sector is expected to grow at a solid pace over the next few years. Growth is expected in engineering and commercial construction while residential construction activity is expected to see some slight cyclical weakness in the near-term:

- **Engineering construction** has reported gains, and is expected to increase as the Victorian Government continue to invest in a number of significant infrastructure projects.
- **Commercial construction** is improving, buoyed by strong demand from population growth and increasing tourism activity. The recent State Budget increased investment into commercial projects (particularly in health and education) while the tight Melbourne office market is conducive to investment.
- **Housing construction** growth has been strong amid elevated house prices, increasing housing finance commitments, and the high value of residential building approvals. However, the building cycle is also mature and building activity is forecast to modestly decline in both 2018-19 and 2019-20 as the current cyclical building peak eases.

Chart 4.10 shows nominal Victorian construction WPI is forecast to increase from its current lows at 1.3% over the year ending September 2017. However, while wage growth is forecast to increase, growth in the construction WPI is forecast to remain marginally lower than the growth in wages in the Victorian economy as a whole over the next couple of years. That may reflect the drag anticipated from the cyclical downturn in the labour-intensive residential construction cycle.

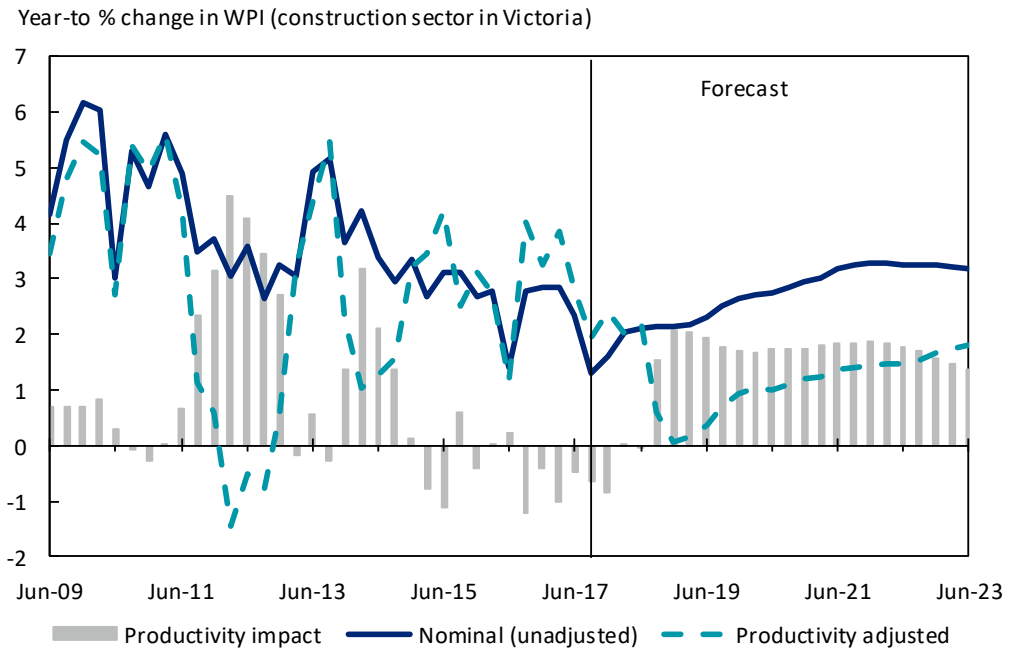
Chart 4.10 Victoria construction WPI forecast comparison




Source: Australian Bureau of Statistics, Deloitte Access Economics

Chart 4.11 shows the contribution of productivity changes to the nominal growth in WPI for the construction industry in Victoria. Productivity growth has been weak in recent years, which has buoyed productivity-adjusted wages growth as nominal wage growth has fallen. Looking forward, productivity growth is expected to rebound which will lead to productivity-adjusted wages falling initially before slowly recovering as nominal wage growth improves.

Chart 4.11 Victoria construction WPI forecasts

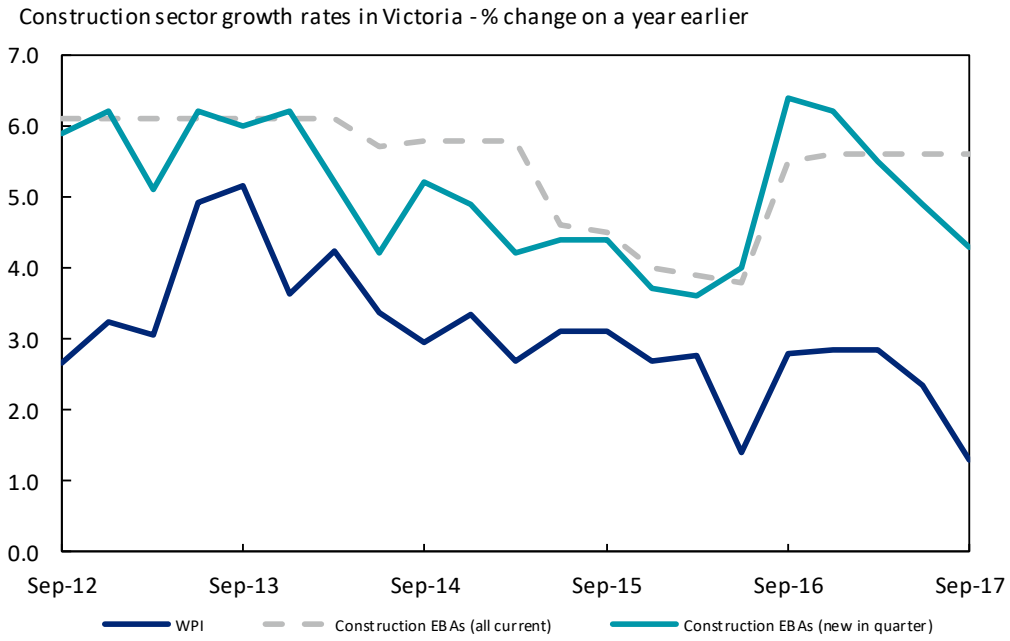



Source: Australian Bureau of Statistics, Deloitte Access Economics

As Chart 4.12 shows:

- Wage growth in new construction sector EBAs has been easing since a peak in growth of a robust 6.4% in September 2016. Wages in new EBAs grew by 4.3% in the September quarter of 2017. These gains are lower than recent increases but stand well above growth in the broader construction WPI in Victoria (+1.3%).
- Annual wage increases under all current EBAs in Victoria remain at a very healthy 5.6% over the year-ending September 2017; belying the broader slowdown in wage growth.
- A relatively high proportion of construction sector workers in Victoria are covered by EBAs. 27,700 Victorian construction sector employees were covered by an EBA in September 2017, around 9.7% of the total workforce (according to the ABS labour force survey). This is around twice the level of comparable coverage in New South Wales and higher than the national figure of 8.2%.

Chart 4.12 Comparative measures of wage growth in the Victorian construction sector




Source: Australian Bureau of Statistics, Department of Employment

### 4.2.4 Summary results

Forecasts for sectoral wage growth in Victoria are shown in Table 4.2. The forecasts include real and nominal WPI, and real and nominal productivity-adjusted WPI.

Table 4.2 Victoria wage forecasts

**Financial year changes in Victoria nominal Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 2.0 | 2.4 | 2.6 | 2.8 | 2.9 | 3.1 | 3.2 |
| Utilities | 3.0 | 2.6 | 2.6 | 2.6 | 2.7 | 3.0 | 3.0 |
| Construction | 2.7 | 1.8 | 2.2 | 2.6 | 3.0 | 3.3 | 3.2 |

**Financial year changes in Victoria real Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 0.1 | 0.5 | 0.6 | 0.6 | 0.5 | 0.7 | 0.8 |
| Utilities | 1.1 | 0.7 | 0.6 | 0.5 | 0.3 | 0.6 | 0.6 |
| Construction | 0.8 | -0.1 | 0.2 | 0.5 | 0.6 | 0.8 | 0.8 |

**Financial year changes in Victoria nominal productivity adjusted Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 2.5 | 1.4 | 1.0 | 1.1 | 1.0 | 1.1 | 1.4 |
| Utilities | 2.2 | 2.7 | 1.2 | 1.0 | 1.0 | 1.2 | 1.4 |
| Construction | 3.5 | 2.1 | 0.3 | 0.9 | 1.2 | 1.4 | 1.7 |

**Financial year changes in Victoria real productivity adjusted Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 0.6 | -0.5 | -0.9 | -1.0 | -1.4 | -1.3 | -1.0 |
| Utilities | 0.3 | 0.8 | -0.8 | -1.1 | -1.4 | -1.2 | -1.0 |
| Construction | 1.6 | 0.2 | -1.7 | -1.2 | -1.2 | -1.0 | -0.7 |

Source: Australian Bureau of Statistics, Deloitte Access Economics

# 5 South Australia

## 5.1 Economic outlook

### 5.1.1 Overview

The recent performance of the South Australian economy has been sound, which is an improvement on recent years. South Australia did not benefit from the resources boom like other resource-intensive States did. The ensuing high $A and elevated interest rates put acute pressure on the State's relatively large manufacturing sector, which was already struggling with structural headwinds.

More recently, record low interest rates have helped to stimulate interest rate sensitive industries such as housing and retail. The State's housing sector has also been buoyed by improving affordability relative to the Sydney and Melbourne markets which have seen substantial price growth in recent years. A more accommodative exchange rate has helped exchange rate sensitive industries such as tourism, farming, manufacturing and international education.

These more supportive settings have helped support economic growth in the State and the local unemployment rate has moved lower despite well-publicised job losses. In fact, the unemployment rate has moved back under 6% and is now only 0.4% higher than the national rate.

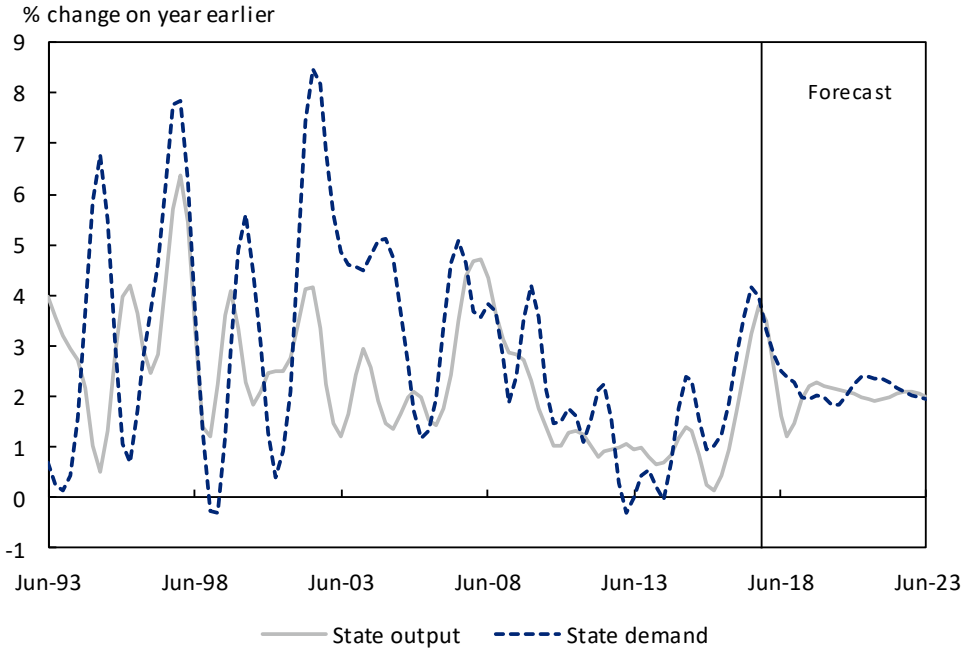
However, the legacy of the pressure on the State's manufacturing sector is still being felt. Holden ceased its local car manufacturing operations in late 2017, which resulted in direct losses of around 1,000 jobs. The challenge for the State's still notable manufacturing sector has been compounded by materially higher energy prices.

Yet despite the challenges, the manufacturing sector has been supported by increased public investment and short-to-medium term prospects will be boosted by the $35 billion *'Future Frigates Program'* and by the $50 billion '*Future Submarines Program*'. These projects are anticipated to boost local employment from the start of the 2020s. Local manufacturer Arrium, with its steel works at Whyalla, also received a lifeline recently in a boost for manufacturing output in the State.

While economic settings have become more positive, the State's longstanding demographic challenges remain and will weigh on comparative economic performance. South Australia's population has the second highest median age in Australia (behind only Tasmania). This means that the headwind of an ageing population will add further pressure on the South Australian economy relative to other States. The State also continues to have negative net interstate migration, which is a factor behind the State's relatively low rate of population growth (0.6% as opposed to 1.6% nationally).

The combination of positive and negatives means that the outlook is modestly positive for the South Australian economy. Chart 5.1 shows that the South Australian economy is expected to experience sound economic growth in the forecast period.

Chart 5.1 South Australia output and demand




Source: Australian Bureau of Statistics, Deloitte Access Economics

Table 5.1 below sets out Deloitte Access Economics' current forecasts for the South Australian economy.

Table 5.1 South Australia output and demand forecasts

| Financial year changes in South Australia key economic variables | | | | | | | |
|---|---|---|---|---|---|---|---|
| | History | Forecast | | | | | |
| Annual % change (unless noted) | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| Consumption | | | | | | | |
| Private sector | 2.9 | 1.6 | 1.8 | 1.6 | 1.5 | 1.8 | 1.9 |
| Public sector | 2.1 | 3.2 | 2.3 | 1.7 | 1.6 | 1.9 | 1.9 |
| Private sector investment | | | | | | | |
| Dwelling investment | 5.7 | 4.0 | -1.9 | -1.8 | 1.9 | 2.7 | -1.8 |
| Non-residential building | -5.6 | 8.4 | 5.8 | 4.5 | 6.8 | 3.8 | 2.3 |
| Engineering construction | -3.0 | 8.9 | -2.3 | -1.9 | 6.2 | 4.4 | 2.4 |
| Machinery and equipment | -2.2 | 18.5 | 8.8 | 9.1 | 8.6 | 5.8 | 4.6 |
| IP and livestock | 6.3 | 6.6 | 5.7 | 3.7 | 9.9 | 7.8 | 6.6 |
| Public investment | | | | | | | |
| General Government | 24.7 | 2.8 | 2.7 | 1.2 | 2.0 | 2.2 | 2.8 |
| Public enterprises | 8.6 | 4.7 | -12.0 | -14.9 | -8.8 | -3.6 | -0.1 |
| | | | | | | | |
| Real final demand | 3.0 | 3.1 | 2.2 | 1.9 | 2.3 | 2.3 | 2.0 |
| Private sector | 2.3 | 3.1 | 2.3 | 2.2 | 2.6 | 2.5 | 2.0 |
| Public sector | 5.2 | 3.2 | 1.8 | 1.1 | 1.4 | 1.8 | 2.0 |
| | | | | | | | |
| Gross State output | 2.2 | 2.8 | 1.7 | 2.2 | 2.0 | 2.0 | 2.1 |
| | | | | | | | |
| Employment | 1.4 | 1.1 | 1.0 | 0.9 | 0.6 | 0.6 | 0.4 |
| Unemployment rate (%) | 6.8 | 6.0 | 6.1 | 6.3 | 6.3 | 6.0 | 6.1 |

Note: All variables (except for jobs and unemployment) expressed in inflation adjusted terms

Source: Australian Bureau of Statistics, Deloitte Access Economics

### 5.1.2 Utilities sector

South Australia's utilities sector has drawn attention in recent times amid blackouts and expensive electricity prices.

This has a significant impact on household budgets, and it is also a major problem for businesses, particularly energy intensive industries such as manufacturing and construction. Despite ongoing job losses in manufacturing, around one-in-eleven South Australians are still employed in the manufacturing sector.

South Australia has been at the forefront of the push towards generating electricity from renewable energy sources. The South Australian Government has implemented a policy which will see 50% of the State's energy requirements come from renewable sources by 2025.

The 2017-18 South Australian Budget included a $550 million Energy Plan, including $360 million to build a gas-powered power plant to provide emergency back-up power and $150 million towards a Renewable Technology Fund, involving the construction of Australia's largest battery to store energy from wind and solar power.

### 5.1.3 Construction sector

The South Australian **housing construction sector** has seen a modest upswing, but not the substantial increases in activity that have occurred in the east coast capital cities. Part of this is due to the lower rates of dwelling price growth in Adelaide, where price growth has not been drastically different from inflation. There is also less underlying demand in the state due to slower population growth, as well as lower levels of investor activity which tends to drive housing cycles.

However, the lower level of building activity also protects against risks of oversupply. The residential vacancy rate remains relatively low in South Australia and rents are also increasing modestly which gives some more confidence to the outlook for residential construction.

The outlook for South Australia's **engineering construction** sector has improved. In particular, there are notable developments in the State's utilities sector. Both the public and private sector have been moving, including Elon Musks' 100-days-or-it's-free Tesla battery, which was switched on in late 2017.

There are more than $1 billion worth of renewable energy projects underway in South Australia. The largest prospective developments include the $1.5 billion Ceres project on the Yorke Peninsula and the $1 billion Riverland Solar Farm. The State Government is also planning to spend around $360 million on a 250MW gas-fired power station.

Elsewhere, the $975 million Carrapateena copper project (north of Port Augusta) is under construction and is targeting first production in 2019. Elsewhere, BHP have announced plans to spend more than $2 billion expanding their Olympic Dam mine. The BHP board will be asked to approve the project in mid-2020, with construction possible by 2023.

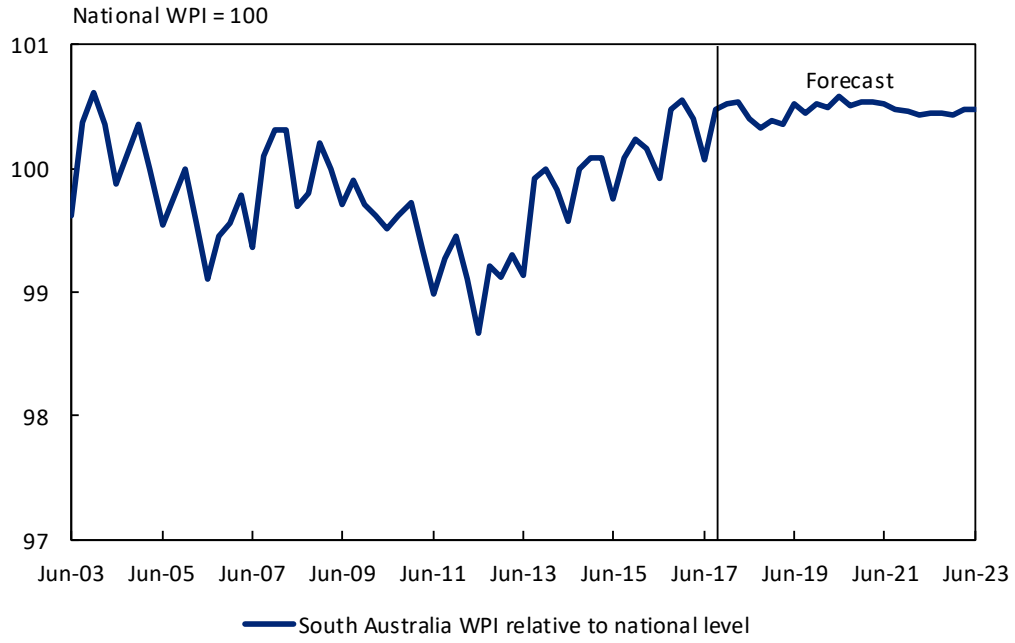
The value of work done in South Australia's **commercial construction** sector has lifted over the past year, while building approvals are up by almost half. A number of large projects were completed in 2017, most notably the $2.3 billion Royal Adelaide Hospital and a $400 million upgrade to the Adelaide Convention Centre. Looking ahead, the pipeline has been boosted by public spending. The State Budget has provided $250 million for the construction of a new clinical building at the Queen Elizabeth Hospital and $528 million for the new Adelaide Women's Hospital which is due to open in 2024. There was also funding for projects such as the $100 million Adelaide Botanic High School.

## 5.2 Outlook for wages

### 5.2.1 All industries

In recent years, wage price growth in South Australia has marginally outperformed national wage growth, giving rise to an upwards trajectory in Chart 5.2. Wage growth in South Australia is expected to be 2.2% in 2017-18, marginally higher than the national figure of 2.1%. However, the longer term outlook is for similar wage growth to the national average (Chart 5.2).

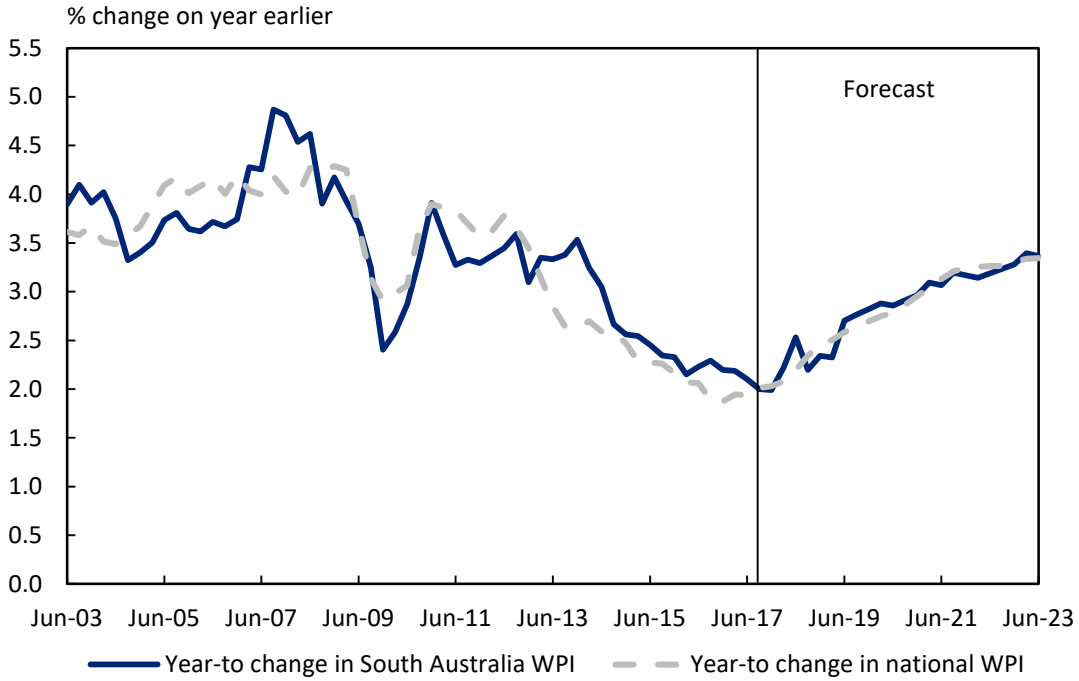
Chart 5.2 South Australia WPI relative to national WPI




Source: Australian Bureau of Statistics, Deloitte Access Economics

In the past few years, wage growth in South Australia has outpaced that seen in Australian as a whole. In part, that reflects that South Australia has not seen the mining related hangover that other States (such as Western Australia and Queensland) have had. However, as relative economic fortunes continue to normalise, South Australia's wage growth is forecast to converge to that seen in the broader Australian economy.

Chart 5.3 South Australia general labour cost growth



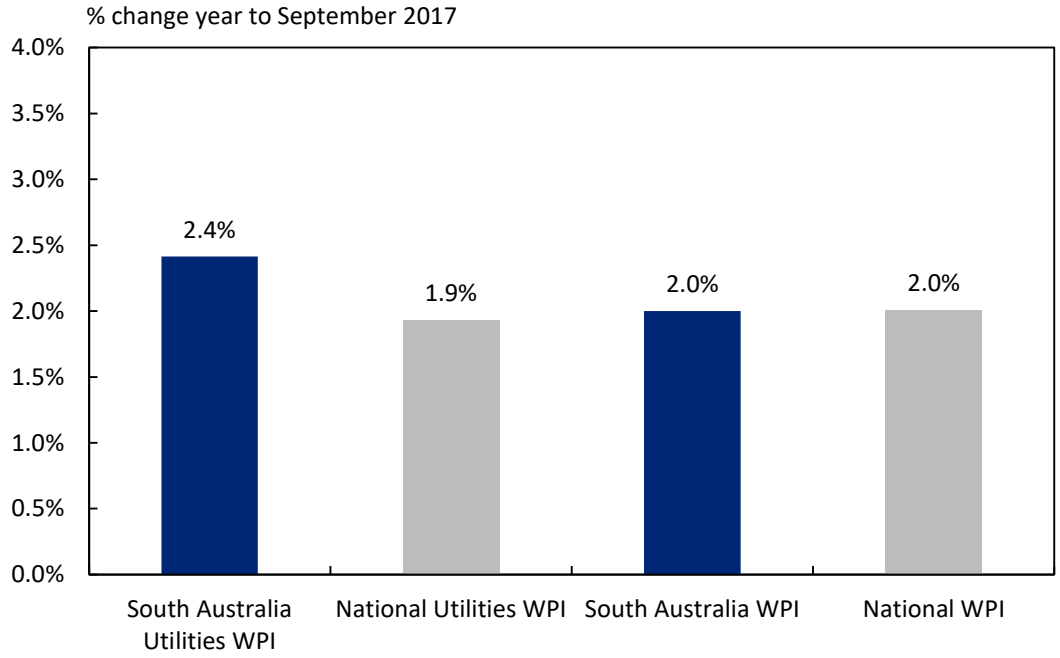

Source: Australian Bureau of Statistics, Deloitte Access Economics

While the State has its longstanding challenges in terms of demographics and a relatively heavy exposure to structurally challenged industries (such as manufacturing), there are also reasons for positivity in regards to the labour market and wage growth. The Commonwealth Government has committed to building much of Australia's new submarine fleet in Adelaide. This will involve a substantial investment and is expected to provide a boost to the State's manufacturing base over time. In time, South Australia may also receive an economic boost (through changes to net interstate migration) from noticeably more affordable housing compared to Melbourne and Sydney.

### 5.2.2 Utilities sector wages

In the absence of ABS data for the South Australian utilities sector, Deloitte Access Economics estimates that the South Australia utilities WPI grew by 2.4% over the year to September 2017. As shown in Chart 5.4, this is slightly above average wage growth for the Australian utilities sector (at 1.9%), and above wage growth across all industries in South Australia (2.0%) and nationally (2.0%), over the same period.

Chart 5.4 Comparative WPI growth rates in 12 months to September 2017




*Historical data estimated using Deloitte Access Economics' labour cost model. Unavailable from the Australian Bureau of Statistics

Source: Australian Bureau of Statistics, Deloitte Access Economics

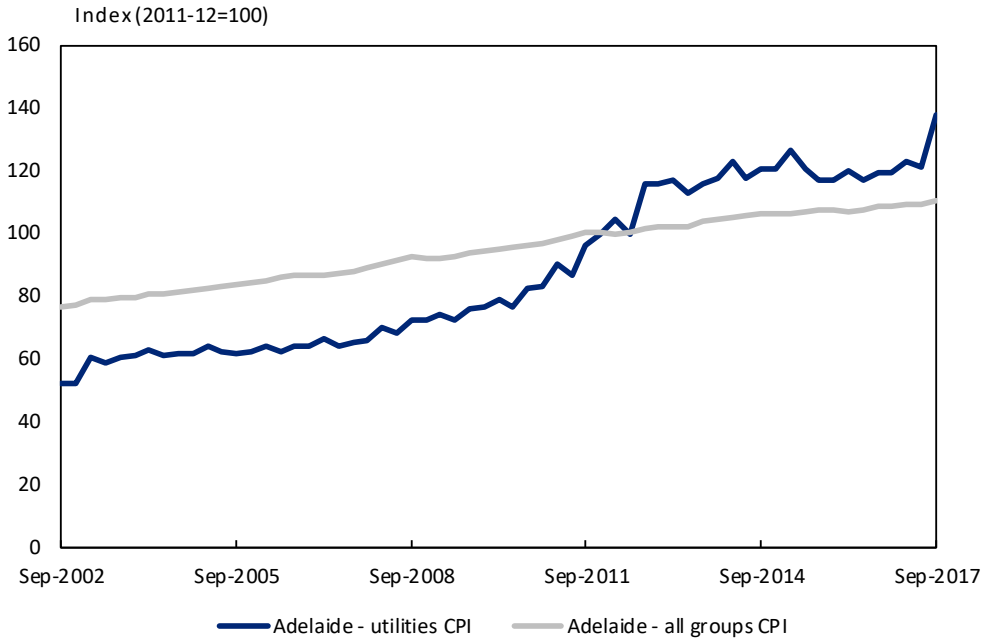
Estimated wage growth in the South Australian utilities sector is marginally stronger than wage growth in the national utilities sector or in the overall South Australian economy. However, wage growth in this sector has not been immune from the broader trend across the economy towards lower rates of growth. Private sector wage growth remains weak in Australia, as the excess slack in the labour market produced by the mining investment downturn has reduced the bargaining position of workers. Other common arguments for the wage slowdown phenomenon include the rise of automation and the propensity to offshore services; again weakening the bargaining position of incumbent workers.

Apart from national trends, there are also State-specific factors which are affecting wage outcomes in South Australia's utilities sector. South Australia has been at the forefront of the push towards generating electricity from renewable energy sources. The South Australian Government has implemented a policy which will see 50% of the State's energy requirements come from renewable sources by 2025. This has spurred investment in the sector, increasing demand for qualified technicians and other workers with the right skills, which may increase pressure on wages.

However, this also presents a number of other challenges for existing investments in other power producing assets, as well as the electricity network. This will have implications for employment and wages elsewhere in the sector.

Chart 5.5 shows most the most recent spike up in electricity prices in South Australia as retailers hiked prices with the start of the new financial year. Some retailers have cited higher wholesale electricity prices for the hikes with factors such as the closure of coal-fired power stations and demand from gas for export pointed to as potential causes. Sharp increases in electricity prices from already elevated levels have added to the strain on households and businesses alike.

Chart 5.5 Adelaide utilities prices



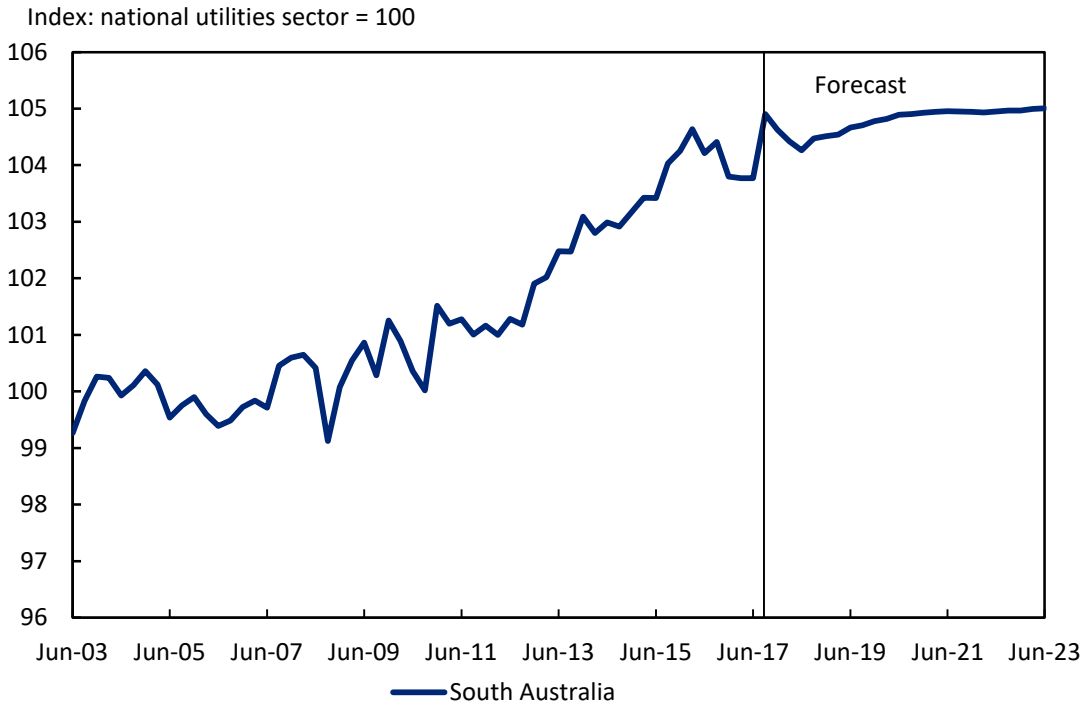

Source: Australian Bureau of Statistics

Substantial price increases are more concerning given the relatively stable demand environment in South Australia, given relatively low population growth and a continued decline in energy-intensive manufacturing production. That indicates that the supply side, rather than demand is contributing to higher electricity prices. While the State government has moved to sure up supply, the near-term future still looks challenging.

While the State's demand for specialist workers in regards to renewable energy may support wage growth, we expect the relative increase in South Australia's utilities WPI to the national utilities WPI to level off (Chart 5.6). This reflects the increased matureness of the renewables push in South Australia[3] as well as the pricing challenges the sector is facing in South Australia, which will keep the sector under close scrutiny.

[3] In 2016/17 the South Australian Government reached its target of 50% of the State's energy to be supplied from renewable sources by 2025. Premier Jay Weatherill has announced intentions to aim for zero emissions by 2050

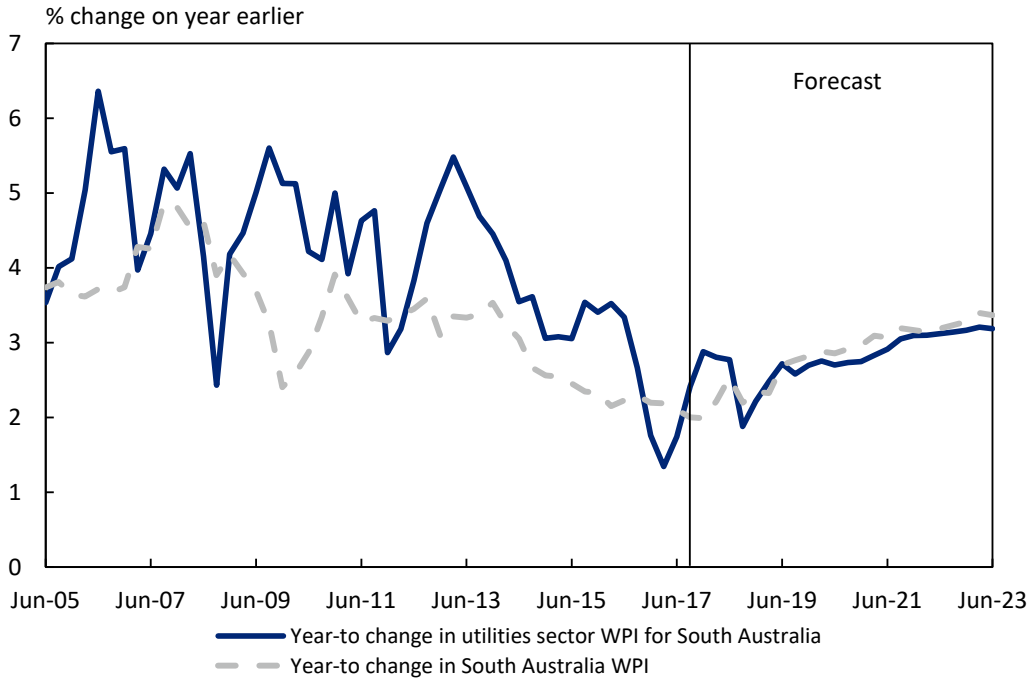
Chart 5.6 Relative utilities WPI forecast for South Australia




Source: Australian Bureau of Statistics, Deloitte Access Economics

Chart 5.7 shows that WPI growth in utilities has recovered from a low in early 2017 to once again outperform broader WPI growth in the South Australia economy. This continues a long running trend and likely reflects factors which have supported wage growth in utilities, such as rising energy prices and demand for specialist workers. Going forward, this is forecast to change with largely similar WPI growth in utilities to that seen in the broader South Australian economy.

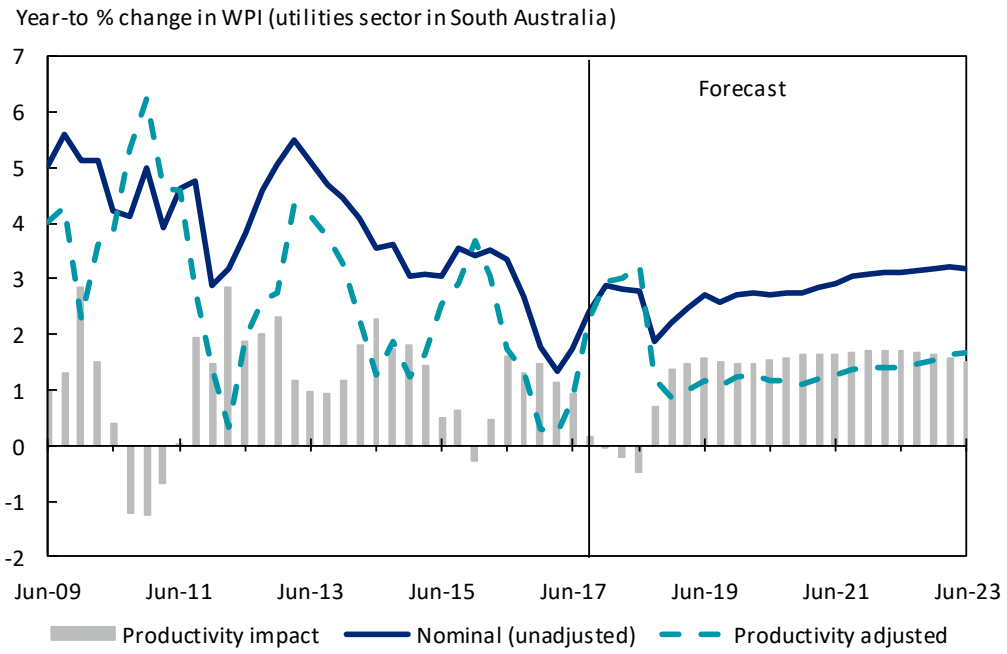
Chart 5.7 South Australia utilities WPI forecast comparison




Source: Australian Bureau of Statistics, Deloitte Access Economics

Chart 5.8 below separates out our forecast for wage growth in the South Australian utilities sector into productivity and 'other' components. Productivity-adjusted wages are currently growing at a similar pace to nominal wages as productivity improvements have pared back recently. Potentially, higher electricity prices have buoyed wages as productivity growth has slowed. Looking further ahead, productivity growth is expected to pick back up which will support growth in the utilities WPI.

Chart 5.8 South Australia utilities WPI forecasts



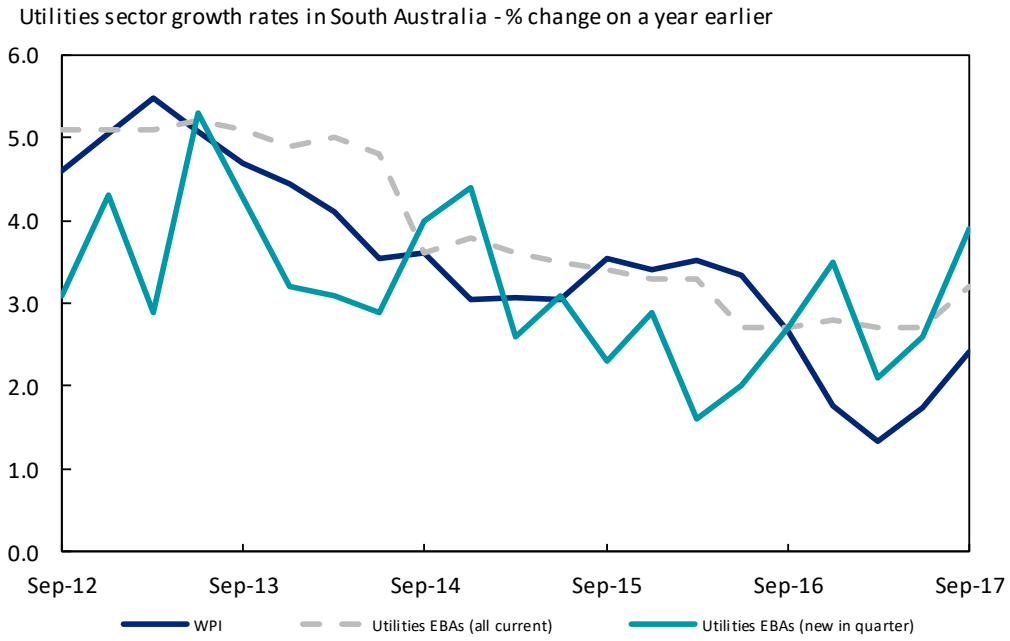

Source: Australian Bureau of Statistics, Deloitte Access Economics

#### 5.2.2.2 Comparison with EBA outcomes

The following section compares growth in South Australia's utilities sector WPI against outcomes in EBAs. Chart 5.9 shows that:

- Wage growth in new utilities sector EBAs has started to rise again, reaching 3.9% annual growth in the September quarter of 2017.
- This is up from 2.7% growth a year prior and is the highest growth seen since 2014.
- New EBAs wage growth has been trending up since mid-2016. The Average Annualised Wage Increase (AAWI) for new EBAs (3.9%) is now higher than for all existing utilities EBAs (3.2%), which is another positive sign that utilities wage growth may be solidifying.

Chart 5.9 Comparative measures of wage growth in the South Australian utilities sector




Source: Australian Bureau of Statistics, Department of Employment

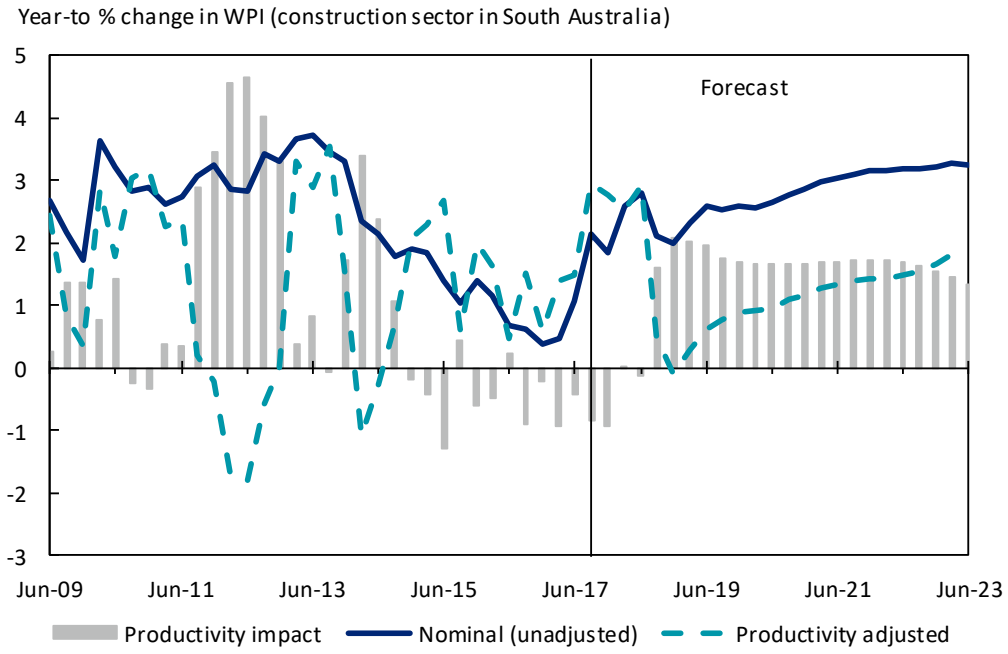
### 5.2.3 Construction sector wages

South Australia's construction sector is expected to see reasonable growth over the next few years. Growth is forecast to be bolstered by an improvement in levels of engineering and commercial construction:

- **Engineering construction** has reported gains and is expected to continue to increase as the South Australian Government continue to invest in a number of significant infrastructure projects, particularly in the utilities space.
- **Commercial construction** has been weighed down in recent years, however it is showing an improvement recently, which is expected to continue. The South Australian government increased investment into commercial projects, particularly those related to healthcare.
- **Housing construction** growth has been solid in recent years, although construction has not increased to the extent seen in recent years in States such as New South Wales and Victoria. That reflects lower population growth and house price growth in South Australia, but it also means the forecast downturn in building activity starting in 2018-19 will be gentler.

Weak levels of construction activity in recent years amid a struggling local economy has kept downwards pressure on wages growth. However, with the improved outlook for construction activity, wage growth in the construction sector is forecast to gradually increase, from 2.2% in 2018-19 to 3.1% by 2022-23. Chart 5.10 shows that productivity growth in the South Australian construction sector has been poor in recent times, meaning productivity-adjusted wage growth has been relatively strong. However, going forward, productivity growth is expected to improve, which means productivity-adjusted wage growth will moderate from current elevated levels.

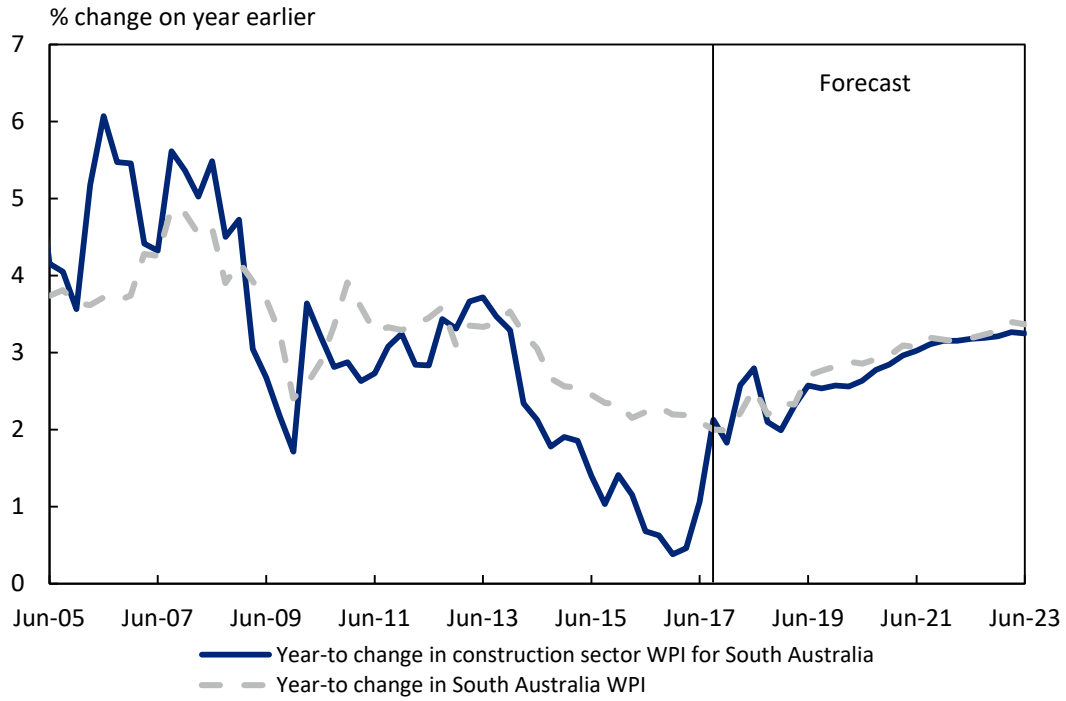
Chart 5.10 South Australia's construction WPI forecasts




Source: Australian Bureau of Statistics, Deloitte Access Economics

Over the medium term, wages growth expectations for the South Australian construction sector are in line with overall wage growth expectations for the State. Chart 5.11 shows that the South Australian construction sector witnessed a fall in wage growth in excess of that experienced in the broader South Australian economy in recent years, before recovering recently. Going forward, wage price growth in the construction sector is expected to gradually move higher, along with broader wage growth in the South Australian economy. By 2022-23, wage growth is forecast to be 3.2% in the construction industry, marginally less than the 3.3% WPI growth seen in the South Australian economy as a whole.

Chart 5.11 Comparative measures of wage growth in South Australia construction




Source: Australian Bureau of Statistics, Deloitte Access Economics

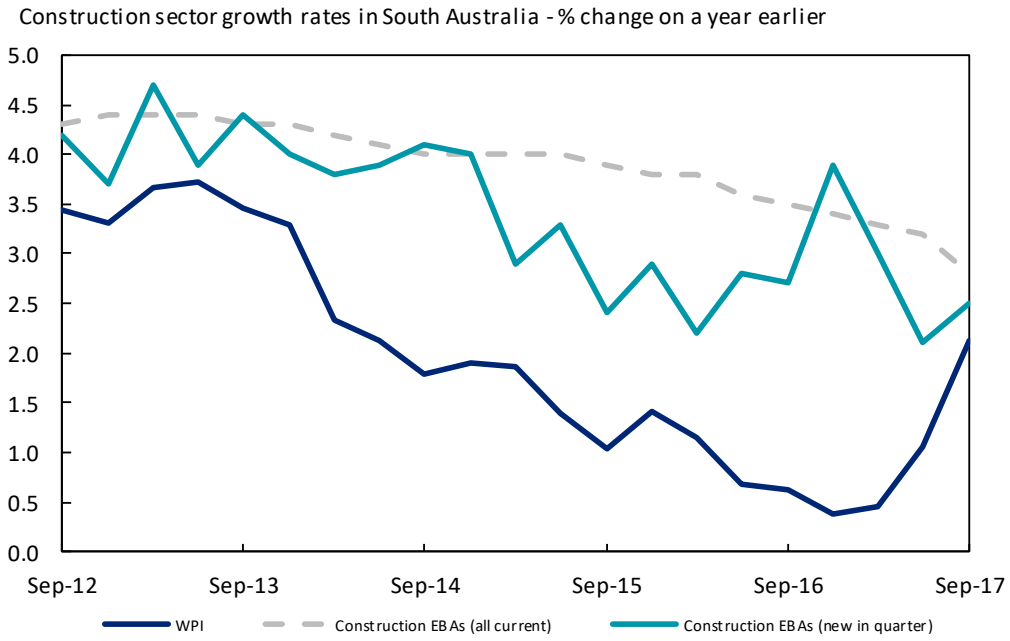
Chart 5.12 compares the growth in South Australia's construction sector WPI with partial results from EBAs. The chart shows that:

- Wage growth in new and existing construction sector EBAs has moderated, although the annual growth rate for new EBAs increased from 2.1% in June 2017 to 2.5% in September 2017. Wage growth for new EBAs are a barometer for future wage growth and show that the inflationary pulse may be firming.

- Prolonged soft conditions in new EBAs has put downward pressure on wage growth under all construction EBAs in South Australia and wage growth has fallen to 2.8% as at the end of September 2017. Further downside looks to be limited, particularly if new EBA wage growth continues to firm.

- It is worth remembering that of the almost 70,000 people employed in the South Australian construction sector (according to the ABS labour force survey) only 4,500 were covered by active EBAs in the September quarter of 2017. This equates to 6.6% of the total construction sector workforce, which is lower than the 8.2% coverage seen at the national level.

Chart 5.12 Comparative measures of wage growth in the South Australian construction sector




Source: Australian Bureau of Statistics, Department of Employment

### 5.2.4 Summary results

Forecasts for sectoral wage growth in South Australia are shown in Table 5.2. Forecasts include real and nominal WPI, and real and nominal productivity-adjusted WPI.

Table 5.2 South Australia wage forecasts

**Financial year changes in South Australia nominal Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 2.2 | 2.2 | 2.4 | 2.8 | 3.0 | 3.2 | 3.3 |
| Utilities* | 1.9 | 2.7 | 2.3 | 2.7 | 2.8 | 3.1 | 3.2 |
| Construction* | 0.6 | 2.3 | 2.2 | 2.6 | 2.9 | 3.1 | 3.2 |

**Financial year changes in South Australia real Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 0.7 | 0.1 | 0.5 | 0.6 | 0.6 | 0.7 | 0.9 |
| Utilities* | 0.4 | 0.6 | 0.5 | 0.5 | 0.4 | 0.6 | 0.7 |
| Construction* | -0.9 | 0.2 | 0.4 | 0.4 | 0.4 | 0.7 | 0.8 |

**Financial year changes in South Australia nominal productivity adjusted Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | 1.4 | 0.2 | 1.4 | 1.4 | 1.5 | 1.7 | 1.6 |
| Utilities* | 0.7 | 2.9 | 1.1 | 1.2 | 1.2 | 1.4 | 1.6 |
| Construction* | 1.2 | 2.8 | 0.3 | 0.9 | 1.2 | 1.4 | 1.7 |

**Financial year changes in South Australia real productivity adjusted Wage Price aggregates**

| | History | Forecast | | | | | |
|---|---|---|---|---|---|---|---|
| Annual % change | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| All industries | -0.1 | -1.9 | -0.5 | -0.8 | -0.9 | -0.7 | -0.8 |
| Utilities* | -0.8 | 0.8 | -0.8 | -1.0 | -1.2 | -1.1 | -0.8 |
| Construction* | -0.3 | 0.7 | -1.5 | -1.3 | -1.2 | -1.0 | -0.7 |

*Historical data estimated using Deloitte Access Economics' labour cost model. Unavailable from the Australian Bureau of Statistics

Source: Australian Bureau of Statistics, Deloitte Access Economics

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# Appendix A – Technical notes on WPI data and forecasts

The ABS historical WPI data is not released for each sector by State. This is due to small sample sizes and reasons of confidentiality. In some cases, where a specific WPI series is not available, a comparative series for AWOTE can be obtained. However all sectoral by State AWOTE estimates were discontinued at the end of 2011.

Table A.1 shows which data is available in time series for the WPI. These are data series provided on the new ANZSIC06 basis. WPI data has been provided across the period from September quarter 2008 to September quarter 2017.

Where AWOTE data is shown as being available, only estimates from May 2009 to November 2011[4] have been calculated by the ABS. Beyond this point data is imputed.

Table A.1 ABS WPI data availability by sector

| State | Utilities | Construction |
|---|---|---|
| New South Wales | Available | Available |
| Victoria | Available | Available |
| Queensland | Not available* | Available |
| South Australia | Not available* | Not available* |
| Western Australia | Not available* | Available |
| Tasmania | Not available | Not available* |
| Northern Territory | Not available | Not available* |
| Australian Capital Territory | Not available | Not available* |

*denotes AWOTE data available to November 2011.

Source: ABS

Where utilities sector WPI is not published Deloitte Access Economics imputes the value based on a combination of:

- WPI for utilities as a whole, and the relevant States, as well as relative movements in those industries with the States that do have an official estimated WPI.[5]
- When and where previously published, AWOTE for the sector in question. Note that all sectoral by State AWOTE estimates were discontinued at the end of 2011.
- Data on enterprise bargaining agreements.

The same method is used to estimate an imputed value for the construction and administration sectors.

Note this means **there is no longer any officially released time series estimate for utilities wages outside of New South Wales and Victoria** (in terms of WPI measures). **Therefore extreme care needs to be taken in analysing these series over time.** The modelling here implicitly assumes that overall Tasmanian, Northern Territory and Australian Capital Territory WPI wage growth, overall utilities sector wage movements, data for enterprise bargaining agreements, as well as the data published for other States, can be used to create a reasonable estimate of the

[4] AWE/AWOTE measures are defined for the mid-month of quarter, so the initial AWE/AWOTE data here is from the May 2009 publication. The WPI data is referred to by the entire quarter.
[5] Australian Capital Territory sectoral WPI indices are currently published only for the public administration sector.

specific WPI series in history. However, there is no guarantee that the data used matches what the ABS data would show were it to be released.[6]

As Table A.1 shows, the ABS produces all the required WPI data for New South Wales and Victoria, but not for the utilities sectors in other States, and not for the construction sectors in Tasmania and South Australia, Northern Territory or Australian Capital Territory. AWOTE data for the utilities sectors in Queensland, South Australia and Western Australia, and for the construction sectors in Tasmania, South Australia, Northern Territory and ACT were available until the end of 2011, but have now been discontinued. In addition, the overall AWOTE data itself is not consistent with the WPI data for Australia, so rather than using the raw data, to obtain a State by industry WPI we have used the deviations in the AWOTE growth from State AWOTE averages and applied a consistent ratio to the known State WPIs.

In other words, if the Queensland utilities sector AWOTE measure rose faster than the overall State AWOTE measure, then we allow the Queensland utilities sector WPI measure to rise faster than Queensland's overall WPI. Because the AWOTE data was far more volatile than WPI in later years, we limit the deviations that this might imply. We do that by comparing the variations in published AWOTE and WPI measures within each State and adjust the unknown deviations accordingly.

In addition to the AWOTE methodology (and in the most recent quarters, in place of it) we have used trends from EBAs to drive deviations in WPI growth rates. In all cases where WPI data is not published, the estimated results are normalised to ensure that the totals for the States are consistent with the levels of the industry components.

[6] The ABS does estimate these values, but does not release them externally due to the small number of businesses that are included in the sample, and the possibility that individual results could be estimated from the data if it were to be released.

# Appendix B – Some rules of thumb for wage forecasting

Inflation has three main drivers:

- Wage gains (or, to be more exact, wages relative to productivity);
- Import prices; and
- The degree of pressure on prices coming from the spare capacity in the economy.

The Reserve Bank aims to keep consumer price inflation (CPI) to 2 to 3 per cent on average over the medium term. The average inflation target applies both across time and across categories. For example, retail prices for imports have grown relatively slowly across the past decade, while prices for services have tended to grow faster.

The inflation target of 2 to 3 per cent also means that growth in nominal unit labour costs is close to growth in the CPI over time. However, there are other considerations in translating labour cost growth into wage growth.

- **First**, the workforce sees entries and retirements each year, with those retiring on higher earnings than the juniors who are entering. To look at the wage growth of individuals as a proxy for wage growth more widely is to forget that the group of individuals gains a year in experience and seniority every year whereas, due to retirements, the workforce as a whole sees rather less of an increase in experience and seniority every year.
- **Second**, whether considering a specific group of individuals or the workforce as a whole, you have to remember that we get better at working over time – for example, thanks to working with better equipment. This growth in labour productivity saves money. For example, the work that last year took an hour may this year take 58 or 59 minutes. In turn, that productivity growth reduces the impact of rising wages on labour costs.

The above therefore helps to identify some rules of thumb:

- Across a long enough period, growth in prices will tend to average somewhere in the Reserve Bank's target range of 2 to 3 per cent a year – perhaps 2.25% or 2.5%.
- The same is true for labour costs for a unit of output (nominal unit labour costs) – also averaging somewhere close to 2.25% or 2.5%.
- However, wages for the 'average' worker will tend to grow faster – the sum of both prices and productivity. As the latter has averaged around 1.25% over the past three decades that might suggest wages for the 'average' worker will grow by 3.5% or 3.75% in a typical year over the long run.
- There will be a divergence between wage growth on the one hand and price and productivity growth on the other over the course of a business cycle. When demand is strong relative to the available supply of workers, wage growth will exceed this rule of thumb measure and vice versa.
- Moreover, wages for the typical 'specific' worker will tend to grow faster still, as their seniority and experience increases each year. It is harder to identify a general rule of thumb here, as the reward for seniority and experience varies notably across sectors and occupations, as well as across the business cycle.

# Appendix C – Macroeconomic and wage forecasting methodology

**Introduction**

The model used by Deloitte Access Economics to forecast the WPI by State and by industry has been created as a subsidiary component of our Deloitte Access Economics Macro (DAEM) model. Key aggregates, including overall wage and productivity movements and projections for output and employment by State and for Australia are used to drive WPI measures at more detailed levels.

The following summarises the full model documentation that covers the key drivers of detailed labour costs.

**Macroeconomic forecasting**

DAEM is a macroeconometric model of the Australian economy. It is made up of numerous accounting identities and behavioural equations which describe the aggregate actions of households, businesses, government and international entities. The formulation of these behavioural equations is based on mainstream economic theory. The model is best described as a small open economy model in which all foreign (world) prices and interest rates are taken as given (that is, they are exogenous to the model).

In the model, business sector factors of production (capital and labour) produce non-farm business sector output, which is non-farm GDP less the service flow from housing and the value of government services. The level of business sector output is the sum of potential output and the output gap. Fluctuations in the output gap are driven by a number of cyclical factors, including fluctuations in interest rates, foreign GDP and the terms of trade.

Potential business sector output is the level of output that would exist if there were no temporary or cyclical influences. In constructing potential business sector output, considerable attention is paid to the population characteristics which influence labour participation, the growth rate of residual total factor productivity and the expected rate of capital deepening. The output gap is the gap between actual and potential business sector output. Negative output gaps imply the economy is operating below its potential, while positive gaps imply the economy is operating above its potential.

Model parameters are estimated using quarterly data extending from September 1974 to the most recent quarter for which data are available. Quarterly data is used because annual data is too aggregated to allow analysis of turning points and interest rate movements. Using monthly data is not feasible because most key ABS collections are produced on a quarterly basis – notably the national accounts, the balance of payments, CPI and international investment data.

DAEM forecasts all components of aggregate demand. To ensure consistency between aggregate expenditure and aggregate output, the model uses adjustment factors which trim individual expenditure components so that aggregate expenditure equals aggregate output.

**Domestic production**

Domestic production is divided into farm and non-farm. Non-farm production is further divided into household, general government and business sector production. Farm output is an exogenous input to the model.

The household sector produces housing rental services. This is the household sector's only output. The service flow is modelled as a fixed proportion of the housing capital stock.

Public sector production is limited to general government output, which comprises general government services (equal to the wage cost of the general government employees) and general government gross operating surplus (equal to the depreciation of general government capital).

All other non-farm production takes place in the business sector, which incorporates private and public enterprises. Business sector output is produced using capital and labour via a standard constant returns production technology. Business sector production is also influenced by the level of total factor productivity.

Imports are effectively intermediate goods in the DAEM model. They are combined with domestically produced traded goods to produce gross national expenditure on traded goods. Higher domestic demand raises the demand for imports. The level of exports is determined by foreign demand conditions rather than domestic supply conditions. Just as stronger domestic demand raises the demand for imports, stronger foreign demand raises the demand for exports.

### Labour market

The size of the labour force is forecast using exogenous assumptions about age specific population growth and labour force participation. There are two measures of employment in the model. There is the potential employment that underlies the estimate of potential output and actual employment. The output gap to a large extent reflects the gap between the actual and potential employment.

Potential employment is the actual labour force less the level of unemployed workers implied by the natural rate of unemployment, where the natural rate of unemployment is the level of unemployment that would exist in the absence of cyclical fluctuations. Actual employment is the actual labour force less the level of unemployed workers implied by the actual rate of unemployment.

Business sector employment is driven by a standard labour demand function that relies on labour productivity, real wages and business sector output growth.

### Prices and wages

The model also includes a number of measures of prices, wages and price deflators. Price and wage inflation in DAEM are governed by the behavioural equations of the:

- business sector output gap;
- real exchange rate;
- import prices;
- monetary policy reaction function;
- average quarterly wages

The way these equations interact is best observed through some examples.

A positive shift in domestic demand that raises the gap between actual and potential output (a positive output gap) will have a direct impact on price inflation by raising the underlying CPI. Wages respond with a lag to changes in underlying CPI inflation, with the long run real wage tied to CPI inflation and labour productivity growth.

A positive output gap also has a direct and indirect effect on real interest rates via the monetary policy reaction function, with the typical reaction to a widening output gap and higher price inflation being higher nominal interest rates. Higher interest rates dampen domestic demand which narrows the output gap and relieves upward pressure on price and wage inflation. Over time this mechanism forces the output gap back to zero, interest rates to a neutral position and inflation to return to the RBA target level.

A change in real wages that exceeded the change in labour productivity raises price inflation in the short run. Since wages increase by more than labour productivity this raises nominal unit labour costs, which in turn raises underlying CPI inflation. Wages in turn respond to changes in underlying CPI inflation. Over time wage inflation will equal price inflation (plus changes in productivity growth). In the long run, price inflation is governed by the same mechanism at work in the output gap example above, which forces the CPI inflation rate to return to the RBA target level.

While the real exchange rate and import prices do not have an import role in the output gap and real wage scenarios, they are key players in the next foreign price shock example. Holding other things constant, higher world prices raise domestic import prices. Higher import prices have a direct impact on price inflation by raising the underlying CPI. Higher price inflation causes nominal interest rates to rise via the monetary policy reaction function. Higher domestic interest rates and incomplete pass-through of world price changes to domestic prices causes the differential between domestic and world real interest rates to rise.

Ordinarily this would imply an appreciation of the real exchange rate but in the Australian case this is more than offset by a deterioration of the terms of trade due to higher import prices which causes a depreciation of the real exchange rate. Combined with incomplete price pass-through the nominal exchange rate appreciates in the short run, which partly offsets the rise in domestic import prices due to rising world price. Over time there is full pass-through of world prices to domestic prices, which eliminates the gap between domestic and foreign real interest rates and returns the terms of trade to its pre-price shock level. Just as in the domestic inflation example, wages respond with a lag to changes in underlying CPI inflation, with the long run real wage tied to CPI inflation and labour productivity growth.

### Industry forecasts

Industry output and employment are forecast following the top down methodology set out above. Industry output is determined through the forecasts of industry final demand. Industry final demand can be thought of as the total value of goods and services that are produced by a specific industry.

For example, if commodity exports increase in response to international demand this will generate an increase in mining output, measured in real gross value added terms. Similarly, if construction investment increases in response to low interest rates, this will generate an increase in construction output.

Industry employment is linked to output through exogenously determined levels of productivity. Considering the mining example from above, if the increase in commodity exports generates a 2% increase in output for the next quarter with no changes to a productivity assumption of 100% mining employment will increase by 2%. A final adjustment is made for both output and employment so that their respective sums equal the national totals.

## State forecasts

Gross State Product (GSP) is determined by distributing Gross Domestic Product based on State GSP and population relativities. GSP relativities are influenced by the gross value add of industry within each state. As with other demographic variables, population relativities are exogenously determined. Continuing with the mining example above, the increase in mining output will result in a more than proportionate increase in GSP for the mining intense states such as Western Australia, Queensland and the Northern Territory.

Industry output by State is driven by a combination of industry output at the national level, and a combination of State variables, including GSP, consumption and investment. Industry relativities between the States are also utilised. For example, Victoria has a relatively higher share of manufacturing output when compared to the national manufacturing share of total output. This means that if manufacturing output is forecast to decline nationally, a larger portion of that decline will be felt in Victoria.

The industry output forecasts are then normalised over several iterations, to ensure that state industry output adds to national, and each industry within a State adds to total State GSP.

**Wage forecasting**

The wage forecasting methodology adopted in this report involves estimation of the deviations between industry and State-specific wage measures and the broadest measures of wages in the Australian economy. In other words, the DAEM model has provided an overall picture for how the WPI will move, and the remainder of the modelling determines which industry, State and industries within States will see their WPI measures grow faster or slower than this value.

### Industry and State Labour Price Indices

Modelling of specific labour price indices (WPIs) begins with the movements in the total Australian WPI taken from the DAEM. This measure serves as an anchor to overall wage rates in every part of the economy, in part because it provides a measure of the wage rises that other employees are receiving, making it a common starting point for negotiations.

From this initial index, the model adds in deviations from the average. Three key factors will drive these wage differentials:

- **Business cycle factors**. Deviations in industry (or State) performance from the national average. Faster growing industries and States will tend to see faster growth in wages and vice versa. In this model, the key factor is how fast the industry (or State) is growing relative both to the national average, as well as to historical averages. So, while manufacturing growth in the future may be below the national average, if the gap is relatively less that has been seen in recent years, this is view as an out-performance by the sector and would see some upward pressure on wages. In this model the methodology is forward-looking, with forecast growth across the next six months (as well as the past twelve) used to determine the current performance of an industry.
- **Productivity factors**. The model assumes that industries with faster growth in productivity will see faster growth in wages – workers across an industry being rewarded for increasing the average amount of output per employee faster than the national average. As these factors take some time to become evident (and due to the inherent volatility in productivity measures at the State and industry level) an average productivity trend across the past two years is used.
- **Competition (relative wage) factors**. Depending on the nature of the industry, workers will have skills that are relatively more or less transferable to other sectors where wages may be rising faster than in their own. Indeed, many workers will be performing effectively the same task (or same occupation – effectively their job description) across different industries (as their industry classification is determined by what their employer produces, rather than what they do). This will tend to limit the ability of wage rates to diverge. As wage rates in (say) mining rise higher, companies in (say) the construction sector will be forced to pay higher wages to keep their staff. Similar factors operate across States – although they are likely to be less significant (and react only to relatively larger discrepancies in wages). The modelling here will see wages in competitor industries tend to move more closely together – with industries that are benefiting from the two previous factors tending to be drawn back towards the average, and wages in otherwise slow growing industries boosted.

In addition to these three 'mechanical' factors, there is often the need to use judgement to determine movements in wages – particularly when other data is volatile (which employment data currently is) and when factors not relevant to wage determination are having effects on broader output and employment measures.

It is important to remember that the WPI for an industry is a composite measure and can, in certain situations, behave in the perverse manner. When there is a significant change in the occupational structure of an industry, movements in the WPI may not be reflective of movements in the wages of individual employees. In an extreme case, it would be possible for say all the workers in an industry to take a pay cut but the overall WPI measure in the industry to rise if all the low-paid workers left the industry all together – shifting the average wage towards the higher level.

### Labour prices versus labour costs

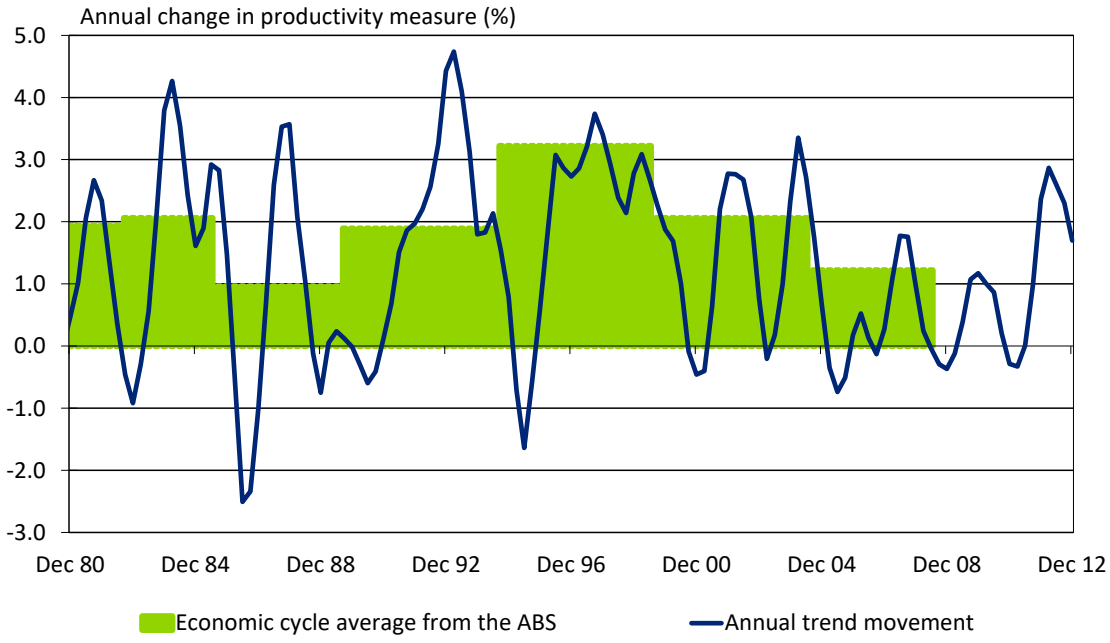
The methodology above estimates movements in labour prices – the cost of employing the average employee, whether broadly in the Australian economy, or in a specific industry in a specific State.

However, labour costs will rise at a different rate due to the effects of labour productivity growth. Effectively, labour productivity measures the number of units of output an individual employee can produce in a given time period. The more units of output each worker can produce, the fewer workers are required to create a given level of industry output. If productivity is rising, the total cost of labour (the price of each employee multiplied by the number of employees) will rise less rapidly than the individual employee's price.

The measure adopted for increases in labour costs is the growth in productivity-adjusted labour prices. Because so many factors can influence productivity (for example, during times of rapid expansion in employment, productivity may fall as new workers are often less productive that those who have been working in an industry for longer, but productivity may also rise as 'economies of scale' become available, and workers who may have been underemployed in their workplace increase their effective level of output) it is often best measured over an entire economic cycle. The chart below shows annual growth in a simple productivity measure against the ABS' cyclical average measure (the last published cycle ends in 2007-08, so the last few years have no official cyclical productivity growth measure).

For the last two economic cycles (1998-99 to 2003-04 and 2003-04 to 2007-08) the ABS has produced a labour productivity measure adjusted for the quality of hours worked. This measure is closer to the basic measure (output per employee) over the cycle than the simpler output per hour worked measure over this period.

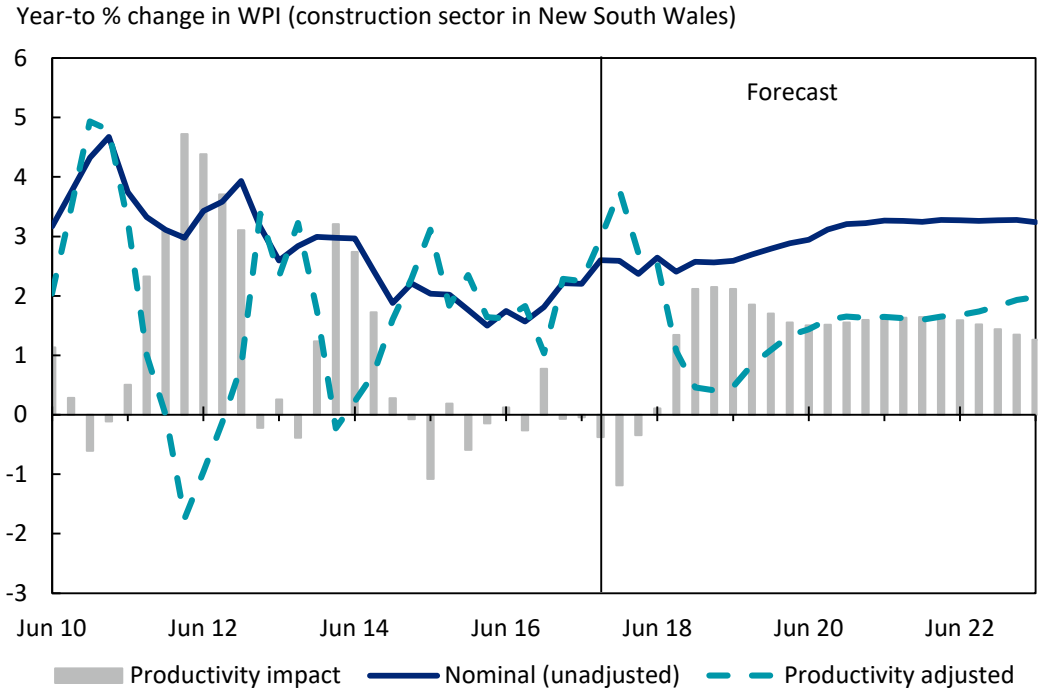
Chart C.1 : Growth in productivity – annual methodology vs economic cycle methodology




Source: ABS

However, in the methodology used here the volatility in the underlying productivity data is minimised by creating a composite productivity measure based on national, industry and State-specific productivity movements – where the relative impact of movements in the smaller and more volatile States and industries is lessened.

Chart C.2 : Sample measure of forecast productivity effects




Source: ABS, Deloitte Access Economics estimates, Deloitte Access Economics labour cost model

In the example above, the cyclical impact of productivity becomes clearer. Across the forecast period, the nominal (or unadjusted) WPI rises on average by 3.0% per year, while the rate of increase adjusted for productivity improvements is on average 1.6% per year – the gap implying productivity improvements of 1.4% per year.

# Appendix D – Different measures of wage growth

The ABS published an article in the October 2005 issue of Australian Labour Market Statistics (catalogue 6105.0) which discussed the comparative features and relative merits of the measures they produce.[7] The following reproduces part of that article, and then adds some observations.

**Introduction**

Statistics on employee remuneration are in demand from a wide range of users, including economic analysts, social researchers, policymakers, and employer and employee associations. The ABS publishes a number of measures relating to the remuneration of employees to meet the different needs of users. These measures include average weekly earnings, changes in the price of labour, and compensation of employees.

The variety of measures available can sometimes lead to misunderstanding and misapplication. The choice of measure will depend on what type of analysis is being undertaken. This section explores the differences between the various measures of employee remuneration.

**Measures of employee remuneration**

Three distinct measures of employee remuneration are discussed below: earnings; wage price index; and compensation of employees.

**Earnings**

Estimates of the level of earnings are produced from a number of surveys: the Survey of Average Weekly Earnings (AWE); the Survey of Employee Earnings and Hours (EEH); and the Survey of Employee Earnings, Benefits and Trade Union Membership (EEBTUM).

The AWE survey is one of the major sources of data on earnings, and is designed to provide a quarterly measure of the level of earnings. Three earnings series are produced from AWE:

- average weekly ordinary time earnings for full-time adults;
- average weekly total earnings for full-time adults; and
- average weekly total earnings for all employees.

While the AWE survey provides a frequent time series, data are only available for full-time adult employees and all employees, and can only be cross-classified by a small number of variables, such as sex, state, sector, and industry. The EEH and EEBTUM surveys provide additional detail, although on a less frequent basis. The EEH survey is run every two years and provides a large number of variables important in the analysis of weekly earnings, including: managerial/non-managerial status; state; sector; level of government; industry; occupation; employer size; sex; full-time/part-time status; adult/junior status; and type of employee (e.g. permanent/fixed-term contract or casual). The EEH survey therefore supplements AWE survey data by providing detailed information on the composition and distribution of employee earnings and hours.

The annual EEBTUM survey is a household survey, in contrast to the AWE and EEH surveys which are business surveys. The EEBTUM survey, which is conducted as a supplement to the monthly

[7] ABS 2005.

Labour Force Survey, collects weekly earnings data cross-classified by a range of socio-demographic information, including: sex; age; marital status; relationship in household; geographic region; school attendance; birthplace and year of arrival in Australia. The EEBTUM survey also collects details about the type of employment, including: occupation; industry; hours worked; full-time or part-time status; sector; size of workplace and leave entitlements.

While the EEH and EEBTUM surveys are run less frequently than the AWE survey, they are a valuable source of information as they enable detailed analysis of earnings levels.

### Wage Price Index

Information on changes in the price of labour is available from the quarterly Labour Price Index (LPI). The LPI is compiled from information collected from businesses on changes in wage and non-wage costs. Information collected on wages is used to produce a Wage Price Index (WPI).

The WPI was first compiled for the September quarter 1997 and is the main ABS measure of changes in wages. The WPI measures quarterly changes over time in the cost to an employer of employing labour, and is unaffected by changes in the quality or quantity of work performed. The WPI does not include the superannuation guarantee levee.

The ABS publishes four WPIs each quarter. The headline WPI series is the index of total hourly rates of pay excluding bonuses. This series excludes bonus payments (which generally relate to the individual performance of the employee or to the organisation's performance), and so represents a pure price measure for combined ordinary time and overtime hourly rates of pay.

In the WPI, index numbers are compiled using information collected from a representative sample of employee jobs within a sample of employing organisations. Price-determining characteristics of the jobs are fixed to ensure that changes in these characteristics do not contribute toward index movements. The following are examples of changes in price-determining characteristics which are not reflected in index movements:

- changes in the nature of work performed (e.g. different tasks or responsibilities)
- changes in the quantity of work performed (e.g. the number of hours worked)
- changes in the characteristics of the job occupant (e.g. age, apprenticeship year, successful completion of training or a qualification, grade or level, experience, length of service, etc.)
- changes in the location where the work is performed.

Changes in the price of wages and salaries resulting from changes in the composition of the labour market are also excluded from index movements. To achieve this, a longitudinal survey methodology is used to measure a similar sample of jobs over time.

### Compensation of employees

Compensation of employees (CoE) is a quarterly measure of the total remuneration paid to employees in return for work done and is published as part of the national accounts. CoE is a broader measure than earnings as it includes irregular payments (e.g. annual bonuses) and social contributions paid by the employer (e.g. severance, termination and redundancy payments; employer superannuation contributions; and workers compensation premiums). These payments are excluded from measures of earnings, which have a narrower focus.

A quarterly measure of the average CoE per employee, known as Average Earnings National Accounts (AENA), is produced by dividing the total CoE for the quarter by the total number of employees. The total number of employees is estimated using Labour Force Survey data, calculated as an average of the three months in each quarter. Some adjustments are made to this estimate of employment. Two measures of AENA are produced: average non-farm compensation per employee; and average compensation per employee. The average non-farm compensation per

employee estimate is the key series, as it is a more stable estimate. This is because employee earnings in the agricultural sector can fluctuate due to seasonal effects.

**Summary of the surveys and their key series**

Table D.1 (found at the end of this chapter) provides a comparison of each of the surveys discussed. It outlines the key series produced, what each survey is designed to measure, the frequency and type of data source, the benefits and limitations of each survey, and the related publication.

**Using the WPI measure**

While Deloitte Access Economics views the WPI as the best measure for use in the context of this report, 'best measure' is not the same as 'perfect measure', and there are also drawbacks to using the WPI.

The WPI is published by State and by sector separately, but not by State and by sector. That is, the WPI for New South Wales is published, and the mining sector WPI is also published, however the New South Wales mining sector WPI is not. The latter data is only available by special request and, in the case of small sample sizes, the ABS does not release their estimates.

More series were previously available 'by State and by sector' for AWOTE from the ABS 6302.0 release. The ABS ceased producing this information 'by State and by sector' which eliminated one of the remaining arguments in favour of using AWOTE or AWE over the WPI measures

A key reason was the high standard errors for these series. In the case of the AWE/AWOTE publication, sample selection is stratified across States and across industries, but not both. That means that as the businesses in the sample change from quarter to quarter (and about 8% of the 5,000 do each time) there is no guarantee that the State by industry samples can be readily compared. This led to questionable comparability of detailed AWE/AWOTE results from quarter to quarter as the changes may be driven by changes in the sample, rather than changes in wages.

The WPI, by contrast, suffers as little as possible from this problem because its sample follows specific 'jobs' over an extended period (at least five years). This limits the rotation problems that the AWE/AWOTE series suffered from.

It is possible to 'back out' reasonable estimates of WPI at the 'by State and by sector' level. Appendix B discusses how Deloitte Access Economics does that. The resultant series are rather less volatile than the matching ABS AWOTE series.

One drawback to using the WPI, is that it is sometimes relevant that the composition of the workforce is changing. That is particularly true in analysing the implications of wage developments for the Australian economy as a whole. For example, promotions are easier to get during a sustained expansion, reflecting the strength of cyclical demand rather than pure productivity. Other things equal, that adds to total incomes in the economy, but doesn't show up in the WPI (which does not 'recognise' that people at a certain seniority today are, on average, different to those who were at that level some years past).

**EBAs and contract rates**

Deloitte Access Economics' forecasts are developed using a more formal modelling approach rather than a more 'institution-based' approach.

The latter focuses on:

- increases in the **Federal Minimum Wage / Fair Pay Commission decisions**,
- increases in **collective agreements** under enterprise bargaining,
- increases in **individual agreements**.

That said, close attention to such institutional factors can assist in short term forecasting (as opposed to longer term forecasts), given that such decisions have lingering effects on wage outcomes.

Accordingly, Deloitte Access Economics notes developments in the Department of Employment's Trends in Federal Enterprise Bargaining reports[8], and takes account of these in its short term forecasting if they appear likely to have a material impact.

[8] Department of Employment, December 2016.

Table D.1 National wage surveys

| | AWE Survey | EEH Survey | EEBTUM Survey | LPI | CoE |
|---|---|---|---|---|---|
| **Key series produced** | Average weekly total earnings (AWTE) for full-time adult employees and all employees. Average weekly ordinary time earnings (AWOTE) for full-time adult employees | Average weekly earnings for all employees. Average weekly earnings for full-time adult non-managerial employees | Median and mean weekly earnings of full-time, part-time and all employees | Labour Price Indexes. Wage Price Index (WPI) of total hourly rates of pay excluding bonuses. | Non-farm Average Earnings National Accounts (AENA) |
| **Designed to measure** | Level estimates of weekly earnings and the distribution of earnings | Level estimates of weekly and hourly earnings and the distribution of earnings | Level estimates of earnings and the distribution of earnings | Changes in the price of labour | Level estimates of average compensation of employees |
| **Frequency and basis of survey** | Quarterly survey of businesses | Biennial survey of businesses | Annual survey of households | Quarterly survey of businesses | Quarterly national accounts series based on quarterly survey of businesses |
| **Benefits of the methodology** | Quarterly time series (original, seasonally adjusted and trend estimates available) | Provides detailed job information allowing analysis by industry, occupation, hourly rates etc. Source of distributional data (e.g. quartiles) | Provides detailed demographic and job information. Source of distributional data (e.g. medians) | Provides estimates of wage and non-wage inflation | Broad measure of remuneration |
| **Limitations of the methodology** | Few cross-classificatory items | Survey run infrequently (two-yearly) | Only provides average weekly total earnings (no series on ordinary time earnings). Includes payments not related to the period of work performed (e.g. backpay and pay in advance) | No level estimates or in-depth cross-classificatory items | Few cross-classificatory items |
| **Publication description and ABS catalogue number** | Average Weekly Earnings, Australia (cat. no. 6302.0) | Employee Earnings and Hours, Australia (cat. no. 6306.0) | Employee Earnings, Benefits and Trade Union Membership, Australia (cat. no. 6310.0) | Labour Price Index, Australia (cat. no. 6345.0) | Australian National Accounts: National Income, Expenditure and Product (cat. no. 5206.0) |

# Limitation of our work

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