



# Labour cost escalators for NSW, the ACT and Tasmania

This report was prepared for Ausgrid

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# Executive summary

This report presents forecasts for nominal wages growth in the utilities industry and the professional services industry in the economies of Australia, New South Wales (NSW), Tasmania and the Australian Capital Territory (ACT). It also presents forecasts for wages growth in the overall workforce in these economies.

In accordance with its responsibilities under the National Electricity Rules (NER) the Australian Energy Regulator (AER) is required to make determinations on the prices that Ausgrid and other owners of electricity distribution assets can charge their customers for the use of these assets. For this determination the NER states the AER must satisfy itself that the company's forecast for operating expenditure includes costs that are efficient. In doing this, the AER is required to consider total labour costs (i.e. forecast employees multiplied by forecast nominal wages).

In practice, the AER determines whether the utilities industry's labour cost projections are efficient by considering the outlook for nominal wages per worker, after an adjustment is made for inflation and output per worker. If nominal wages in the utilities industry are increasing at a rate that is faster than inflation and productivity combined, this means that real costs per worker are increasing. This cost increase should be passed onto the customers of the utilities industry.

## Which nominal wage measure should be used?

The AER currently prefer to use WPI to measure nominal wages. This report analyses the advantages and shortcomings of WPI wages and compares the WPI to other wage measures such as the AWE.

Each nominal wage measure has its own strengths and weaknesses. For example, the WPI is the least volatile but does not include any composition effects. In fact, no wage measure accurately captures composition effects because an ideal wage measure would use weights that reflect the substitutability of different types of labour used by the utilities business. The WPI, a fixed weighted index, would be a good proxy for wages when different types of labour have low substitutability. Conversely, the AWE, a variable weighted index, would be a good proxy for wages when there is a high level of substitutability.

Ideally, the AER should choose the wage measure – AWE or WPI – that is most consistent with the methodology utilities businesses use to plan their labour requirements. This is because forecasts of wage growth should be combined with forecasts of growth in labour demand to develop forecasts of growth in the wage bill or total labour costs. If labour requirement planning is done on a per-hour basis, then WPI would be appropriate because it measures wage growth on a per-hour basis. Conversely, if labour requirement planning was done on a per worker basis, then the AWE would be more appropriate, since this is also measured on a per worker basis.

However, Ausgrid have informed Independent Economics that neither approach is feasible, and that utilities companies simply grow their labour costs at a rate consistent with the outlook for the labour cost escalator. This means we need to consider forecasts of both WPI and AWE, in order to form a judgement on labour cost pressures in the utilities industry. Forecasts of both measures are presented in this report.

## **Forecasting the AWE and WPI**

Nominal wage growth is forecast using Independent's Macro-econometric model and a new labour cost model developed for this project. The approach used by Independent Economics ensures all forecasts are grounded in sound economic theory. For example, tight labour market conditions in a particular state or industry would lead to an increase in wages for that particular state or industry.

In addition, the modelling approach utilised leads to forecast of nominal wages across states and industries which are consistent with the national outlook. This is because wage growth in each state or industry is forecast relative to economy-wide wages. For example, Industry-level wages are forecast to grow *relative* to economy-wide wages; this is determined by the outlook for labour demand in each industry *relative* to economy-wide labour demand. Labour demand in each industry is driven by activity in the industry. This means, for example, that the depreciation of the Australian dollar would encourage activity in the manufacturing sector as they become more internationally competitive. This would support solid wage growth in manufacturing.

## **The economic outlook**

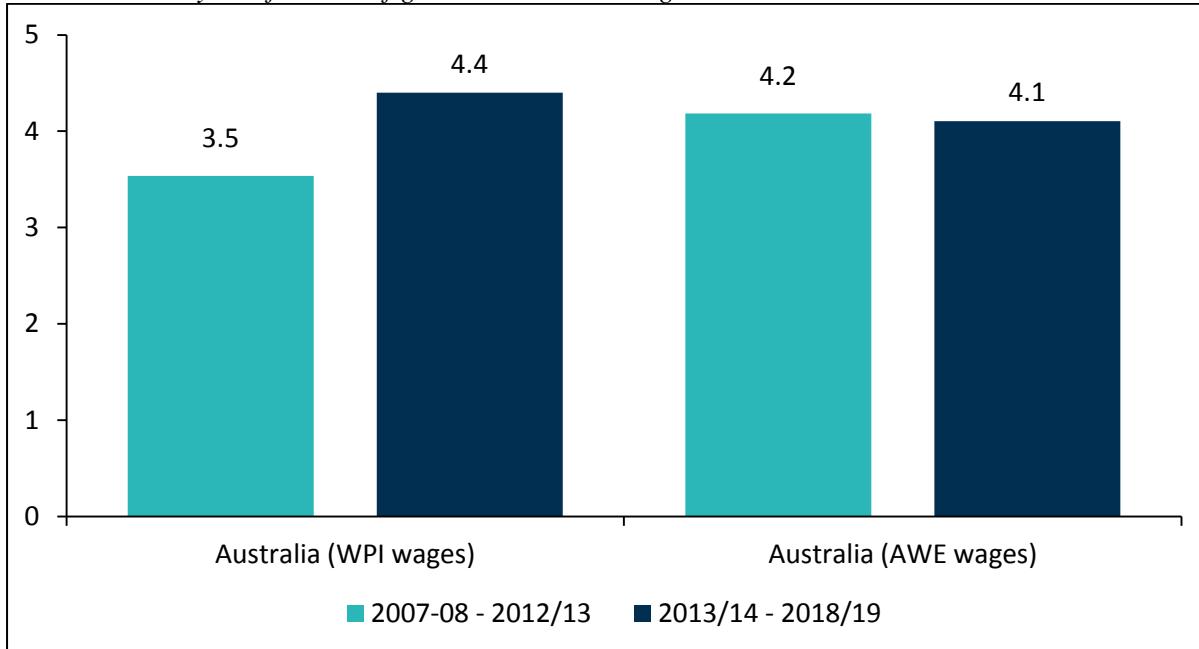
The Australian economy is currently in a soft patch. Economic activity is expected to be subdued in 2012-13 and 2013-14, with average GDP growth of just 2.7 per cent over these two years (this compares to average growth of 3.2 per cent per year over the last 15 years). Following this period of slow growth, economic conditions are expected to improve. GDP is expected to grow on average by 3.2 per cent for four years from 2014-15. This pickup in growth is supported by improved growth in exports, consumption and a recovery in housing investment. The soft patch has seen consumer price inflation slow to 2.3 per cent in 2012-13. Inflation of 2.3 per cent is expected again in 2013-14, before it picks up to an average rate of 2.6 per cent over the 5 years to 2018-19.

The current soft patch has translated into a weak labour market: employment grew by 1.2 per cent (this is weak relative to average growth of 2.2 per cent over the last 10 years), the trend unemployment rate has climbed to 5.5 per cent (higher than the average rate of 5.1 per cent over the last 10 years) and WPI wages growth slowed to 3.1 per cent (much weaker than average growth of 3.8 per cent over the previous decade).

As the economy improves, the labour market is also expected to improve and for wages growth to pick up to 4.4 per cent per year on average over the 5 year forecast period. This is shown in Chart A. Strong growth in wages is driven, in part, by a delayed benefit to labour from the gain in Australia's terms of trade, in the form a boost to real incomes.

AWE wages are expected to grow slightly more slowly than WPI wages in the forecast period (around 4.1 per cent). In the five years to 2013-13, AWE wages grew relatively quickly and it is expected the factors that drove this faster growth to reverse.

*Chart A. History and forecast of growth in nominal wages in Australia*



Source: ABS; Independent Economics

Most importantly, it is expected that hours per worker to fall. As changes in WPI wages reflect changes in pay per *hour* and changes in AWE wages reflect changes pay per *worker*, a fall in hours per worker will reduce growth in AWE wages relative to WPI wages. As Australia recovered from the GFC hours per worker increased, as employers were reluctant to take on new workers, given the uncertain economic outlook. This saw hours per worker rise to level that is above a level consistent with its long-run trend decline. Hours per worker are expected to return to this trend, as it reflects, amongst other factors, the aging of the workforce (as people get closer to retirement, they tend to scale back the hours they work). This means hours per worker can be expected to fall, and for AWE wages to grow weakly relative to WPI wages. Also weighing on growth in AWE wages, relative to WPI wages, will be the retirement of older, more highly paid workers from the industry in the near future.

In NSW, WPI wages growth is forecast to be in line with the national average, as the labour market conditions should return to normal over the forecast period. Relatively quick WPI wages growth is expected in the ACT and slower growth in Tasmania, as the labour markets in these states are expected to be relatively strong and relatively weak respectively.

*Table A. Growth in nominal wages in the Australian economy (per cent)*

	WPI wages				AWE wages			
	Australia	NSW	Tasmania	ACT	Australia	NSW	Tasmania	ACT
2008-09	4.1	3.9	4.4	4.0	3.8	1.0	0.6	6.5
2009-10	3.0	3.0	3.7	3.3	5.3	4.0	7.1	6.8
2010-11	3.8	3.8	3.4	3.6	4.0	3.3	6.5	7.1
2011-12	3.6	3.6	3.5	3.3	4.0	2.9	5.2	5.7
2012-13	3.1	3.0	2.9	3.8	3.7	3.9	4.4	5.1
2013-14	3.3	3.3	3.1	3.5	2.1	1.7	1.1	1.9
2014-15	4.1	4.0	4.0	4.2	3.3	2.8	2.6	3.5
2015-16	4.8	4.8	4.8	5.0	5.0	4.6	4.6	5.4
2016-17	5.0	4.9	4.9	5.1	5.3	5.0	5.0	5.7
2017-18	4.8	4.7	4.7	4.9	4.8	4.5	4.5	5.0

Source: ABS; Independent Economics

In the utilities industry, WPI wages are expected to grow relatively strongly in the forecast period. The industry is a large employer of technicians and trade-workers, and wages growth amongst these individuals is expected to be strong in the Australian economy, as the mining boom switches to its production phase.

*Table B. Growth in nominal wages in the Utilities industry (per cent)*

	Utilities Industry - WPI wages				Utilities Industry - AWE wages			
	Australia	NSW	Tasmania	ACT	Australia	NSW	Tasmania	ACT
2009-10	4.3	3.8	4.9	4.3	8.9	7.5	10.7	10.1
2010-11	4.1	3.5	3.8	4.0	10.7	9.5	12.8	13.3
2011-12	3.5	3.2	3.5	3.4	2.6	1.9	4.2	4.8
2012-13 (e)	4.0	3.7	3.9	4.7	4.9	5.2	5.8	6.7
2013-14	3.9	3.8	3.7	3.9	2.3	1.9	1.5	2.3
2014-15	4.6	4.6	4.5	4.6	3.0	2.6	2.5	3.6
2015-16	5.3	5.3	5.2	5.3	5.3	4.9	5.0	5.9
2016-17	5.3	5.3	5.2	5.3	5.8	5.5	5.6	6.4
2017-18	5.1	5.0	4.9	5.1	5.2	5.0	5.1	5.7

Source: ABS; Independent Economics

In the professional services industry, WPI wages is expected to grow in-line with the national average. Wages in the industry grew quickly in the 5 years leading up to 2012-13, as growth in businesses investment (which was very strong) is a key driver of activity in the industry. As business investment is expected to weaken, wages growth in the industry is expected to be moderate. However, as non-mining sectors in the Australian economy pickup, they will require professional services, and this should see wages growth in the industry remain around the national average.

*Table C. Growth in nominal wages in the Professional Services industry (per cent)*

	Professional Services - WPI wages				Professional Services - AWE wages			
	Australia	NSW	Tasmania	ACT	Australia	NSW	Tasmania	ACT
2009-10	2.9	4.3	3.5	3.3	5.8	4.6	7.7	7.1
2010-11	4.4	3.6	4.0	3.6	5.1	4.0	7.1	7.6
2011-12	4.4	3.7	4.4	3.3	2.5	1.9	4.2	4.8
2012-13 (e)	3.5	3.5	3.4	3.8	2.3	2.6	3.2	4.0
2013-14	3.4	3.4	3.2	3.5	2.6	2.2	1.8	2.7
2014-15	4.2	4.2	4.1	4.2	3.9	3.4	3.3	4.4
2015-16	5.0	5.0	4.9	5.0	5.4	5.1	5.1	6.1
2016-17	5.1	5.1	5.0	5.1	5.7	5.4	5.5	6.3
2017-18	4.9	4.9	4.8	4.9	5.1	4.9	5.0	5.6

Source: ABS; Independent Economics

In all relevant states and industries, AWE wages – initially – is expected to be relatively weak before accelerating.

## **Wage growth in the utilities industry versus the electricity distribution industry**

Under the ABS industry classification, ANZSIC 2006, the utilities industry is made up of the Electricity, Gas, Water and Waste sub-industries. The Electricity industry itself is made up of several components, including generation, transmission, distribution, retail and electricity market operations. Ausgrid is an electricity distribution business.

Historically, the AER has applied the AWE or WPI for the utilities industry for all its determinations, regardless of whether the business is primarily providing one particular component of the electricity supply chain e.g. distribution. The analysis presented in Section 6 of this report suggest the WPI and AWE wages data for the utilities industry provide a reasonable proxy for wages in the electricity distribution and electricity transmission sub-industries. While these industries employ a different mix of workers, analysis which combines employment by occupation and wages growth by occupation suggests that WPI wages growth is similar in these industries. This, combined with employment data that suggests patterns in hours per worker are likely to be similar in both, also suggests AWE wage growth is similar in both.

## **Trends in labour productivity in the utilities industry**

Labour productivity, measured in output per worker has been falling in the utilities industry since 2001. Output has grown at its normal pace, while employment has grown strongly. Topp and Kulys (2012) attribute this to two factors. Firstly, the industry has had a high demand for workers to support its recent investment boom. Secondly, it has also been hiring people to learn the skill of older workers who are about to retire.

However growth in labour productivity is expected to slowly improve over the forecast period (eventually reaching a long term trend rate of 1.5 per cent per annum) as output grows and employment softens. The industry's output should grow as energy demand in the Australian economy

expands. In the short-term, this expansion in output and hence improvements in productivity would be slow as economic conditions remain subdued.

On the other hand, employment should weaken. Investment in the utilities industry is expected to soften, and this should see demand for workers associated with capital works slow. Also, it is expected that older workers in the industry will begin to retire. A combination of solid output growth and weaker employment growth should see productivity growth improve over the medium term.

# 1 Introduction

In accordance with its responsibilities under the National Electricity Rules (NER) the Australian Energy Regulator (AER) is required to make determinations on the prices that Ausgrid and other owners of electricity distribution assets can charge their customers for the use of these assets. For this determination the NER states the AER must satisfy itself that the company's forecast for operating expenditure includes costs that are efficient. In doing this, the AER is required to consider total labour costs.

In practice, the AER determines whether the utilities industry's labour cost projections are efficient by considering the outlook for nominal wages per worker, after an adjustment is made for inflation and output per worker. If nominal wages in the utilities industry are increasing at a rate that is faster than inflation and productivity combined this means that real costs per worker are increasing. This cost increase should be passed onto the customers of the utilities industry.

Given this, this report presents forecasts for nominal wages growth in the utilities industry and the professional services industry in the economies of Australia, New South Wales (NSW), Tasmania and the Australian Capital Territory (ACT). It also presents forecasts for wages growth in the overall workforce in these economies.

This report is structured as follows.

- **Section 2** explains what an ideal nominal wage measure should reflect. As there are various wage measures available from the ABS, section 2 also explains which data series is the most appropriate.
- **Section 3** explains the methodology we have used to generate our wages forecasts in the relevant industries, in the relevant states.
- **Section 4** examines the current economic environment and provides forecasts of the economy, the labour market and wages growth.
- **Section 5** provides detailed financial year forecasts for nominal wage growth in the relevant industries at the state level.
- **Section 6** evaluates the appropriateness of using WPI wages and AWE wages for the utilities industry as a measure for wages growth in the electricity distribution industry.
- **Section 7** evaluates the productivity performance of the utilities industry.
- **Appendix A** provides detailed calendar year forecasts for wages growth in the relevant industries in the relevant states.
- **Appendix B** provides a history of growth in output per worker in the utilities industry

While all care, skill and consideration has been used in the preparation of this report, the findings refer to the terms of reference of Ausgrid and are designed to be used only for the specific purpose set out below. If you believe that your terms of reference are different from those set out below, or you wish to use this report or information contained within it for another purpose, please contact us.

The specific purpose of this report is Labour Cost Escalators in the New South Wales, Tasmania and the ACT.

The findings in this report are subject to unavoidable statistical variation. While all care has been taken to ensure that the statistical variation is kept to a minimum, care should be taken whenever using this information. This report only takes into account information available to Independent Economics up to the date of this report and so its findings may be affected by new information. The information in this report does not represent advice, whether express or inferred, as to the performance of any investment. Should you require clarification of any material, please contact us.

## 2 Wage measures

According to the National Electricity Rules (NER), the AER must satisfy itself that a utilities company's forecast for operating expenditure includes costs that are efficient. In doing this, the rules state that the AER is required to consider total labour costs.

In practice, as explained in section 1, the AER considers the outlook for growth in nominal wages per worker, after an adjustment is made for inflation and output per worker. If nominal wages in the utilities industry are increasing at a rate that is faster than inflation and productivity combined this means that real costs per worker are increasing. This cost increase should be passed onto the customers of the utilities industry.

The ABS publishes a number of wage measures. For a given change in wages in the economy, the nominal wages growth that each measure registers will differ as each is calculated differently, and covers a different scope. Section 2 introduces these different wage series. It explains which wage series is the most appropriate, given the requirements of the AER. It explains which wages series, when it is adjusted for productivity and inflation growth, yields the most appropriate measure of growth in unit labour costs. In broad terms, this evaluation uses the criteria of:

- which measure exhibits the lowest (or an acceptable level) of volatility;
- which measure best picks up the effect of productivity on wages;
- which measure picks up specific labour costs that should be included in the AER's labour cost escalator; and
- whether the wage measure that is used should have fixed or variable weights.

The measure of nominal wages used by the AER is referred to in determinations as the 'labour cost escalator'. Currently, the AER's preferred labour cost escalator is a measure of wages called the Wage Price Index (WPI). In past determinations it has used average weekly earnings (AWE) as the labour cost escalator. The strengths and weaknesses of both measures, as well as other wage measures released by the ABS are discussed in this section.

### 2.1 Background

There are a number of nominal wage measures published by the ABS that are widely used. This includes the Wage Price Index (WPI), the Compensation of Employees (COE) and the Average Weekly Earnings (AWE). An overview of each measure is discussed below.

#### 2.1.1 Wage Price Index

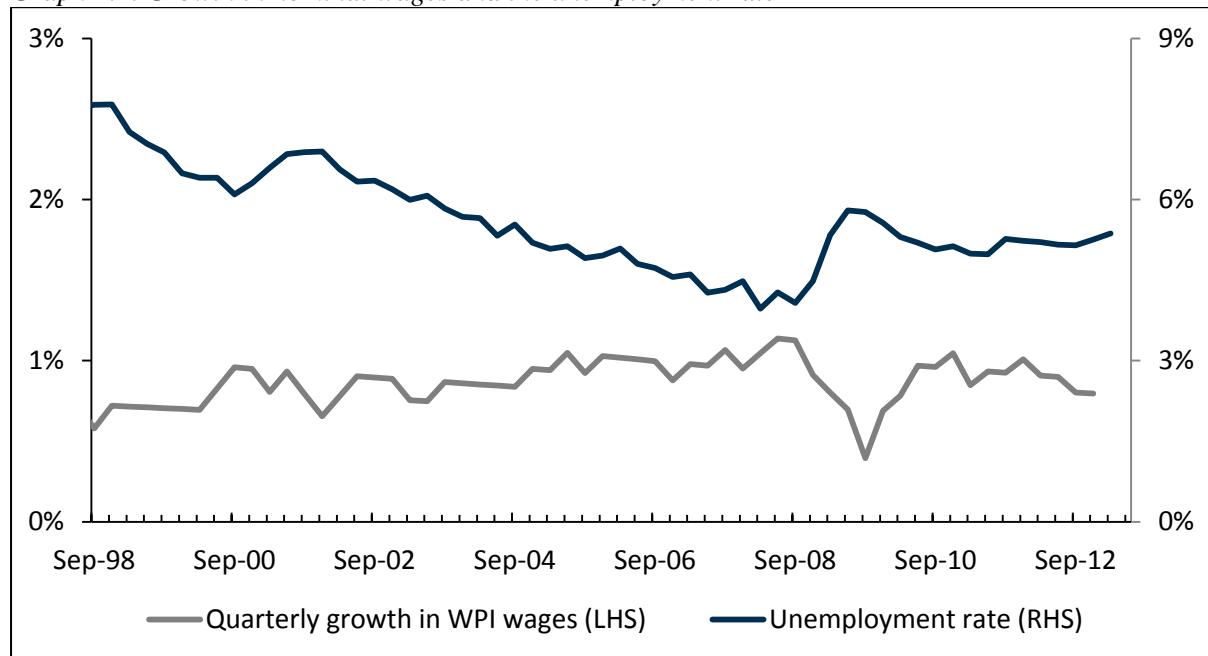
The WPI measures the weighted average change in the *labour cost per hour* of the jobs that are performed in an industry. The weights in this calculation are the labour hours required to perform each job.

The weights used in the WPI are held constant when calculating the time series. That is, the mix of labour hours in a particular year, called the base year, is used as weights for the entire time series. The current base year for the series is 2008-09. As the weights of the WPI are held constant, the index measures the average magnitude of wage increases faced by an industry, assuming that employers in the industry do not respond to changes in the relative wage by changing the mix of workers they employ. That is the wage increases are calculated based on the mix of workers prevailing in 2008-09.

From time to time, the ABS updates the weights used in calculating the WPI by changing the base year used to calculate the weights in a process known as rebasing. Rebasing does not occur frequently, the WPI series was last rebased in November 2009 when the base year was changed from 2003-04 to 2008-09. This rebasing is applied to the entire historical time series so that a consistent series is presented under the new base year.

The WPI is driven by the state of the labour market. When the unemployment rate is low or falling, employers find it more difficult to replace members of their workforce or expand it, and this usually results in the growth of hourly pay rates increasing. When the unemployment rate is high or rising, employers find it easier to replace members of their staff or expand it, which means hour pay rates tend to grow at a slower pace. This relationship is shown in Graph 2.1.

*Graph 2.1. Growth in nominal wages and the unemployment rate*



Source: ABS; Independent Economics

### 2.1.2 Average Weekly Earnings

The AWE data are the sum of regular cash payments made to employees,<sup>1</sup> divided by the number of employees. As the AWE data are the sum of payments to employees, they pick up the effect of changes in the employee mix. This means the AWE data provides a nominal wage measure that uses variable weights, which means it calculates wage growth after employers in the industry have responded to changes in relative wages or other changes in the labour market by changing the mix of their employees.

### 2.1.3 Compensation of Employees

COE data is published in the national accounts and is the comprehensive measure of income earned by employees. Where the AWE data are simply the sum of regular cash payments to employees, the COE data is the sum of regular and irregular payments to employees, plus employer social

<sup>1</sup> Regular cash payments made to employees include: ordinary time and overtime payments, payments by result, taxable allowances, commissions, gratuities, tips, income tax, regular bonuses, regular payments under profit sharing schemes and all salary sacrificed.

contributions (which include superannuation payments). Irregular payments include ‘irregular bonuses’ and ‘irregular payments from profit sharing schemes’ that are paid to employees.

One way to compare these nominal wage measures is to consider the additional information contained in AWE wages and COE wages *relative* to WPI wages. The WPI are changes in the hourly pay rate that flows from the state of the labour market, assuming that employers make no adjustments to the composition of their workforce. Growth in AWE and COE wages incorporate changes in hourly pay rates, but also allow employers to adjust the composition of their workforce. This means that, unlike the WPI, movements in the AWE and COE reflect the impact of compositional changes in the workforce. This includes, for example, changes in the education level and age of the workforce. Finally, AWE and COE wages per worker change as hours per worker change. Changes in hours per worker are an important way the state of the labour market can influence wage costs which the WPI does not reflect.

The remaining sub-sections discuss the advantages and shortcomings of the current labour cost escalator used by the AER, the WPI, under each criteria listed earlier in this section. The analysis also compares the strengths and weaknesses of the WPI against the other wage measures. This analysis is summarised in Table 2.1 the table below.

*Table 2.1 Summary of the strengths and weaknesses of each nominal wages measure*

	<b>Wage price index</b>	<b>Average weekly earnings</b>	<b>Compensation of employees</b>
Definition / description	Laspeyres index which measures average per cent change in the hourly labour costs across the jobs that are performed to produce output in an industry, weighted by labour hours required to perform each job	Sum of regular wages and salaries in cash paid to employees, divided by number of employees	Irregular and regular wages and salaries paid in cash and in kind, plus social contributions of employers (which include superannuation payments)
Comment	Measures wages growth from increases in pay rates; does not measure wages growth due to changes in the composition of the workforce	Measures wages growth due to increases in pay rates and due to changes in the composition of the workforce	The only wage measure that is fully consistent with the National Accounts
Used by other forecasters?	The AER currently use the WPI to measure wages growth. The Treasury's outlook for the Australian labour market is based on forecasts of the WPI.	Has been used by the AER in past determinations.	Used by economic modellers, including Independent Economics.
Volatility	Low	Medium	High
Consistency with productivity measures	Poor	Medium	High
Measurement of specific labour costs that should be included in labour cost escalator	Acceptable (misses superannuation, but an adjustment can be made for this if necessary)	Acceptable (misses superannuation, but an adjustment can be made for this if necessary)	High
Fixed or weighted index	Fixed	Variable - measures growth in wages that flow from changes in the structure of the workforce	Variable - comprehensively measures growth in wages that flow from changes in the structure of the workforce

Source: ABS; Independent Economics

## 2.2 Advantages of the WPI

The WPI has three key advantages. Firstly, it is the nominal wage measure that exhibits the lowest level of volatility. This makes forecasts of the WPI more reliable, as they are subject to less statistical error. In terms of forecast reliability, the lower volatility of the WPI is partially offset by its short history. In contrast, the AWE and COE are more volatile.

Secondly, the WPI is the preferred measure of many economists who are interested in an index that gives them a simple indicator of the state of the labour market. For example, the Australian Treasury use forecasts of the WPI to communicate their view on the outlook for the labour market.<sup>2</sup> The WPI is also used as background information by Fair Work Australia when determining award wages and the Reserve Bank of Australia when developing monetary policy.<sup>3</sup>

The AWE and COE are also used in labour market analysis, though not as widely as the WPI. The AWE is useful because it provides information not only on nominal wage growth but also on nominal wage levels. The COE is the only wage measure that is fully consistent with the National Accounts and thus is often used in economic modelling.

Thirdly, the WPI measures the pure ‘price effect’ of wage increases for a particular state or industry. This is because, as discussed above, the quantity and quality of labour inputs used to weight the index are held constant. This means the index abstracts from how changes to workforce composition or hours worked affects wage growth in a state or industry. Therefore, the index is useful when the focus of the analysis or application is solely on price increases. For example, because it distinguishes the occupational mix of an industry at a point in time, and since wage growth across occupations can vary, the WPI will show fast wage growth in industries where wages for key industry occupations are growing rapidly.

## 2.3 Shortcomings of the WPI

As discussed above, the WPI is well suited for applications where the sole focus is on price increases. However, as noted earlier, the AER is responsible for considering growth in *total labour costs* in the utilities industry. This section shows that the WPI does not measure growth in total labour costs per employee for three reasons. This is because there are various drivers of nominal wage growth that the WPI does not respond to, this includes:

- changes in the hours worked by employees;
- changes in the composition of the labour force; and
- changes in the Superannuation Guarantee (employer superannuation contribution rates).

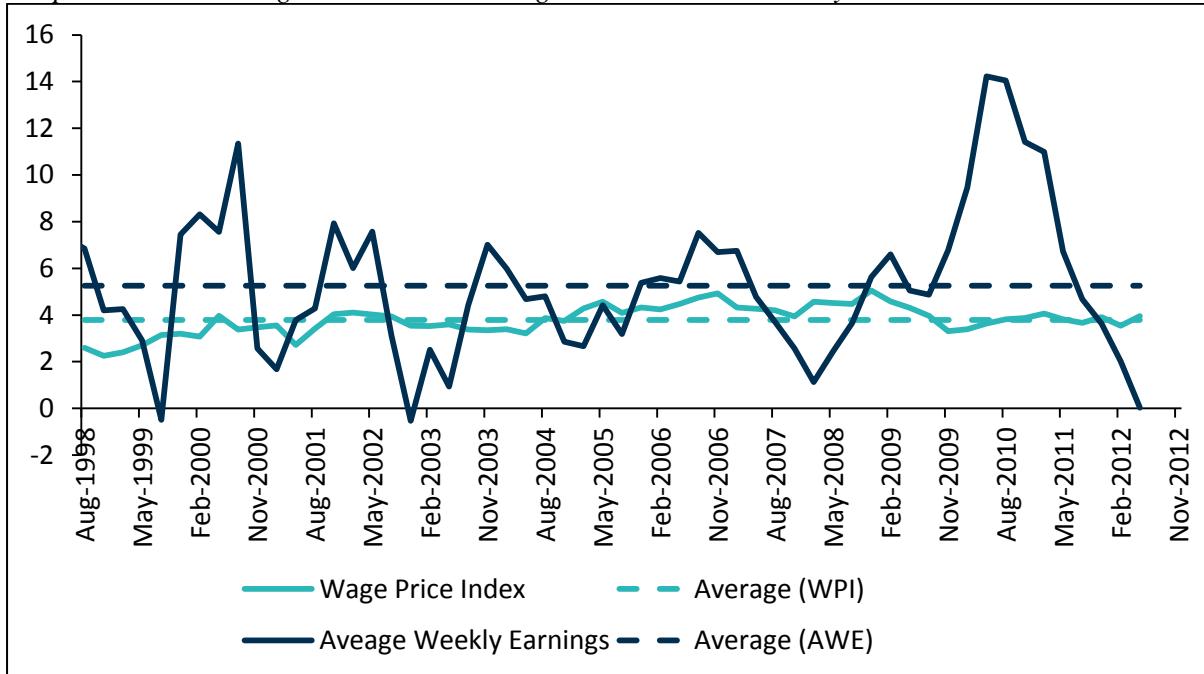
In contrast, AWE wages pick up the growth in wages that flows from the first two of these effects, while the COE would reflect changes in superannuation rates. This analysis is important because average wages growth in the utilities industry has been much stronger when measured with the AWE. That is, the WPI has persistently grown at a weaker rate than the AWE measure (as shown in Graph 2.2).

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<sup>2</sup> Budget Paper 1, Statement 2 (pg. 13) Australian Treasury (May 2013)

<sup>3</sup> ABS Cat. 6351.0.55.001 - Wage Price Index: Concepts, Sources and Methods, 2012

*Graph 2.2 Year-ended growth in nominal wages in the utilities industry*

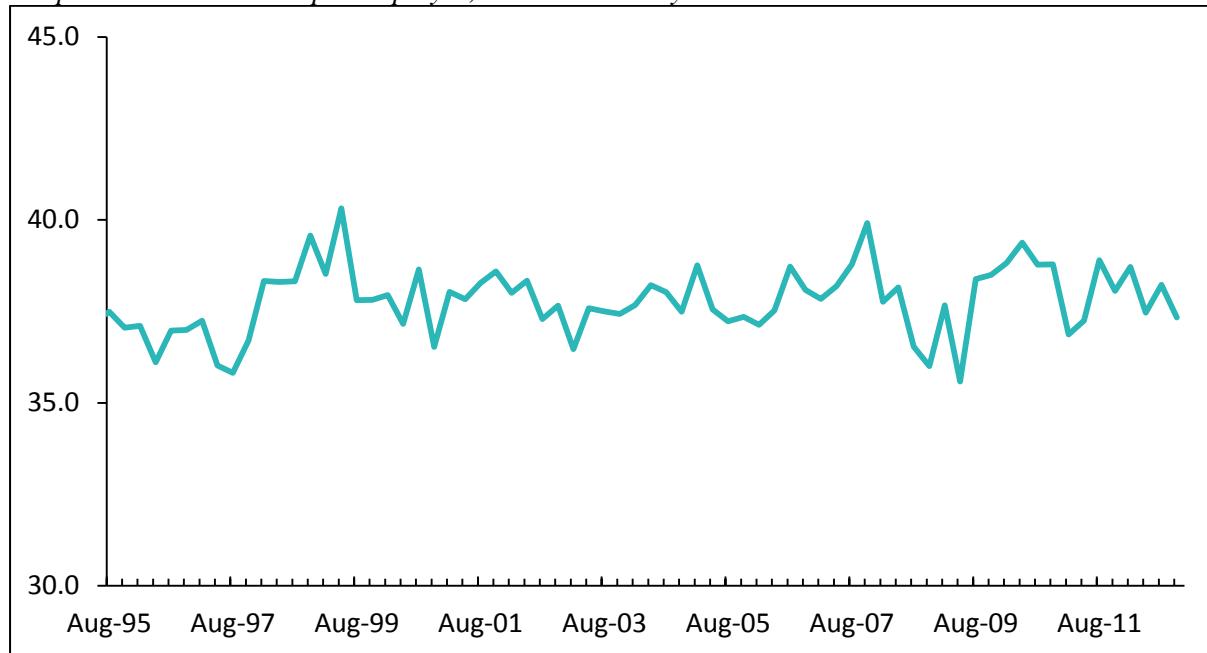


Source: ABS; Independent Economics

### 2.3.1 Changes in hours worked per employee

In the utilities industry, from the beginning of 2009, Graph 2.2 shows that growth in AWE wages was much quicker than growth in WPI wages. A key driver of this was a sharp increase in hours worked per employee. As the WPI measures average growth in *hourly* pay rates, it does not measure the growth in wages that flows from changes in hours worked per employee. As AWE wages are the sum regular payments to employees for a week of work, they do measure the growth in wages that flows from this change. Graph 2.3 shows that hours per employee picked up in the utilities industry from 2009. The AER has not adequately discussed the wedge between growth in WPI wages and growth in AWE wages that is created by changes in hours worked per employee in its previous determinations.

*Graph 2.3 Hours worked per employee, Utilities Industry*



Source: ABS

As hours worked in the utilities industry increased from 2009, growth in AWE wages increased relative to growth in WPI wages for two reasons. Firstly, as employees work more hours in a week they produce more and, in the long term, are paid more. Secondly, as hours picked up, the amount of *overtime* hours picked up relatively quickly. Table 2.1 shows that overtime hours worked – as a share of total hours worked in the electricity supply industry – grew from 6 per cent to 8 per cent between 2008 and 2012. Because pay rates are higher for overtime hours, this switch in behaviour pushes up the *level* of weekly pay between periods. This change in the level between periods supports the growth rate between periods.

Table 2.1 also shows that overtime pay rates grew by more than normal time pay rates between 2006 and 2012. Both the WPI and AWE pick up this change.

*Table 2.1. Average hours and rates of pay in the electricity supply industry*

	Ordinary time, average:		Over time, average:		Overtime hours worked:
	Hours worked	Rate of pay	Hours worked	Rate of pay	per cent of total hours
May-12	37	48	3.2	80	8.0%
May-10	37	43	2.8	69	7.1%
Aug-08*	37	38	2.4	65	6.1%
May-06	37	35	2.7	55	6.9%

Source: ABS

\* 2008 data were collected in August and not May

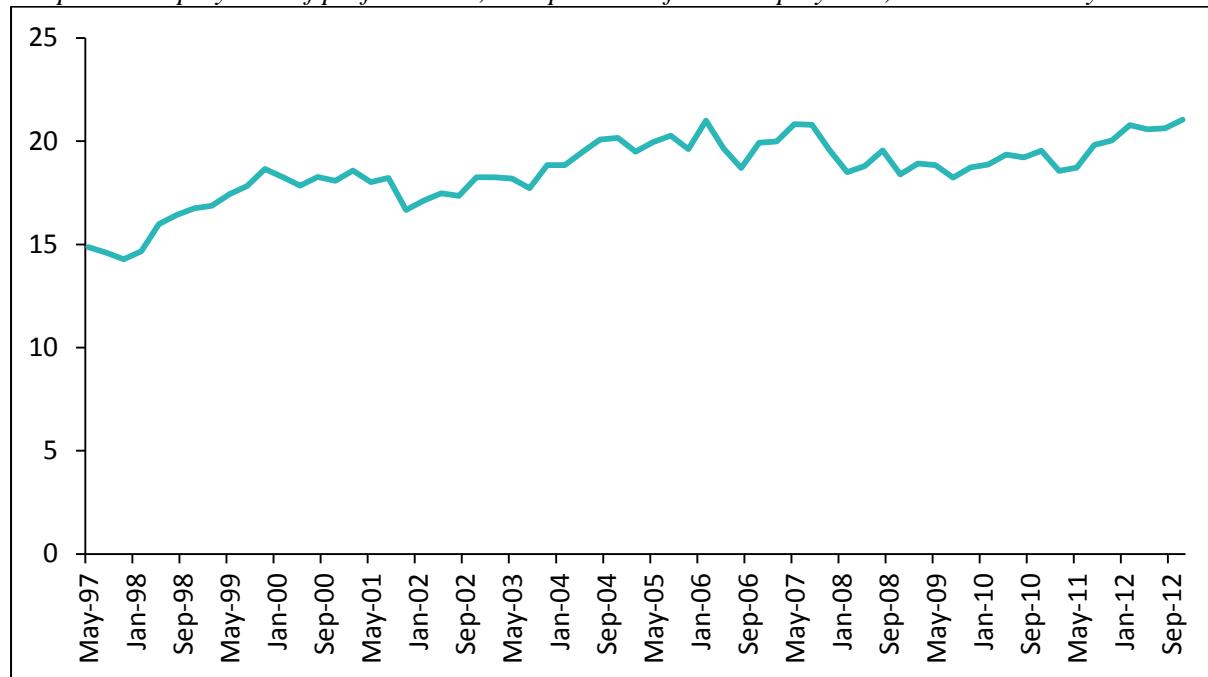
### 2.3.2 Changes in the composition of the workforce

As noted, Graph 2.2 shows that average growth in AWE wages has been stronger than average growth in WPI wages. This is because the structure of the utilities workforce is changing: it is switching into

occupations that are highly paid (and away from those that are lowly paid) and has become older. The WPI, with its fixed weights, does not measure the effect of these compositional changes but the AWE and COE data does.

Since the late 1990s, employment amongst professionals in the utilities industry has increased relative to employment amongst individuals with other occupations, as shown in Graph 2.4. Employment amongst professionals in the utilities industry, as a per cent of the total employment, grew from around 15 per cent in 1997 to 20 per cent in 2006 before it eased slightly. Between 2008 and 2012 this figure increased again from around 19 per cent to around 21 per cent.

*Graph 2.4 Employment of professionals, as a per cent of total employment, Utilities Industry\**



Source: ABS

\*4 quarter moving average

Relatively fast employment growth amongst professionals drives quicker growth in AWE wages than in WPI wages, as these individuals are relatively well paid compared to other occupations, as shown in Table 2.2. Professionals are relatively well paid because they should be more productive. One reason for this is that they are usually better educated. Combined, Graph 2.2 and Table 2.2 suggest changes in the composition of the workforce contributed to faster growth in AWE relative to WPI, especially in the late 1990s and late 2000s. That is, since wages paid to professionals are *high* relative to wages paid to other occupations, and the utilities industry has increased its employment of professionals relative to its employment of individuals that hold other occupations, this will affect the level of the average wage it pays to its employees. This would have an impact on the growth rate in wages from period to period. The AWE and COE measure capture this effect. The WPI data do not measure this effect.

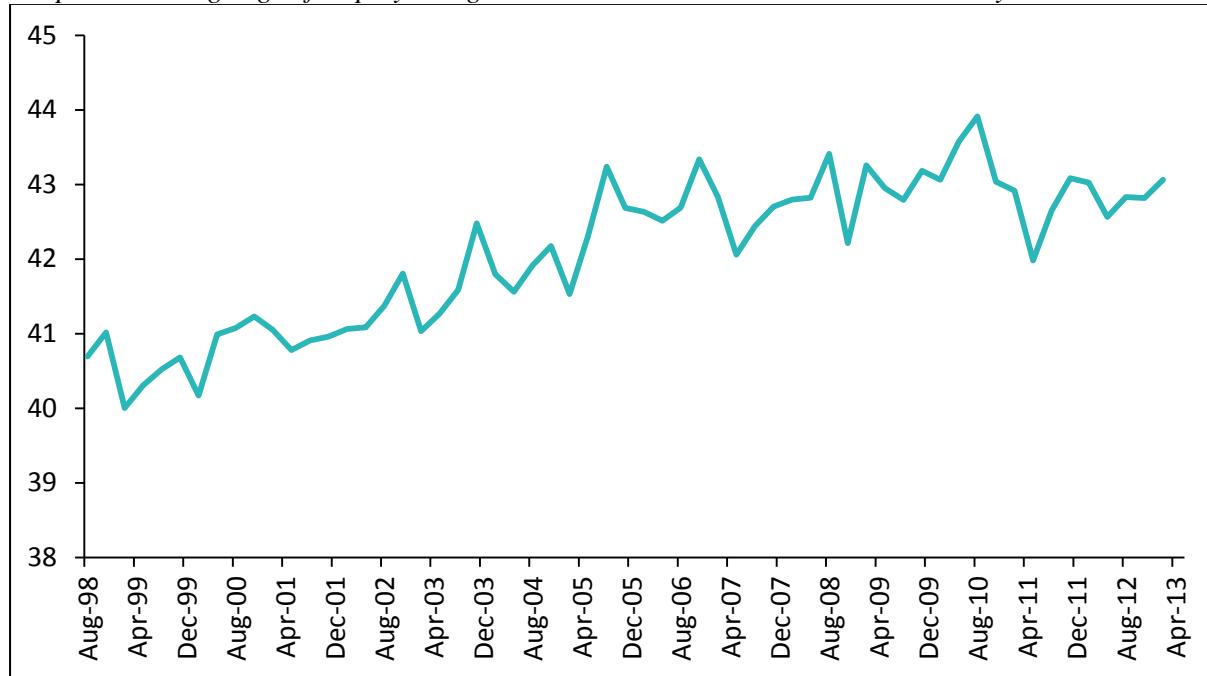
*Table 2.2. Average weekly total cash earnings per employee, by occupation (May quarter 2012)*

	Average weekly total cash earnings (\$)
Managers	1926
Professionals	1438
Technicians and trades workers	1247
Community and personal service workers	707
Clerical and administrative workers	972
Sales workers	607
Machinery operators and drivers	1283
Labourers	779

Source: ABS

Graph 2.5 shows that, in line with the overall aging of the Australian population, the average age of the utilities workforce has increased since the late 1990s (employment of older employees has increased as a share of total employment). The most recent data suggest this trend may be reversing.

*Graph 2.5 Average age of employees aged between 15 and 65 in the utilities industry*



Source: ABS; Independent Economics.

\* Average age of employees aged 15 – 65. The data that are used for Graph 2.5 are employment in the industry, spread across seven age brackets. To calculate the average age, Independent Economics has assumed each member of each age bracket has lived for the middle number of years in the bracket.

Similar to the changing occupation mix, the increase in the average age of employees in the utilities industry puts upward pressure on the level wages in the industry and the growth rate in AWE wages relative to WPI wages. This is because older employees tend to be more highly paid. The higher pay of older workers, in general, reflects their higher levels of productivity (which in turn reflects the fact they usually have more experience). Table 2.3, taken from Census data, shows that wages generally increase with the age of the worker.

*Table 2.3. Average weekly personal income\*, by age bracket*

<b>Average weekly personal income (\$)</b>
10-19 years
20-29 years
30-39 years
40-49 years
50-59 years

Source: Australian Census 2011

\* For individuals earning between \$0 and \$1999 per week

Changes in the composition of the workforce brings into question whether a fixed weight measure, such as the WPI or a variable weight measure such as the AWE should be used, particularly when the changes in the composition result from changes in the relative wage. Theoretically, an ideal wage measure would use weights that reflect the substitutability of the different types of labour in the labour bundle. A fixed weight measure is ideal when there is no substitutability between the different types of labour. When there is no substitutability business are not able to change the composition of the workforce in response to changes in relative wages (e.g. the relative wage of high skilled labour to low skilled labour), so fixed weights correctly reflect the impact of the relative wage change on the business' average labour cost. In contrast, a variable weight measure is ideal when the different types of labour in the labour bundle are perfectly substitutable.

In practice, different types of labour are neither perfectly substitutable nor have zero substitutes. Hence, neither the WPI nor AWE is ideal for measuring the impact of changes in relative wages. For example, for an increase in the relative wage of professionals to tradespersons, the WPI would overstate the cost to the business of this increase because it ignores the ability of the business to substitute away from professionals towards tradespersons and thus reduce the impact of the relative wage increase on its labour costs. On the other hand, the AWE does capture this substitution possibility but would underestimate the cost of the wage increase to the business. This is because, for example, a tradesperson would not be able to perform the work as well as a professional (e.g. the quality of the work may be lower) and this imposes a cost to the business.

### 2.3.3 Superannuation

The WPI and the AWE data do not include superannuation payments. This means when minimum employer superannuation payments are *increasing* as a share of wages, as they are set to do between 2012/13 and 2019/20, the WPI and the AWE may *underestimate growth* in labour costs. Thus, growth in WPI or AWE wages may need to be adjusted upwards if it is to be used to assess growth in total labour costs, given the forthcoming changes in superannuation requirements.

Hence, growth in labour costs may exceed growth in the WPI and the AWE for Distribution Network Service Providers (DNSPs) who are making minimum employer superannuation payments. However, for DNSPs making above minimum employer superannuation payments, this may not be the case.

## 2.4 Productivity-adjusted wage measure

As discussed earlier, the AER takes the outlook for growth in nominal wages and subtracts forecast growth in labour productivity and inflation, to generate forecasts of a real labour cost escalator. It is

important that the adjustments made to the original nominal wage series is consistent with the wage measure used. There is currently an inconsistency in the method used by the AER. Specifically, the WPI does not include the impact on wage growth from compositional effects or changes to hours worked, but the productivity adjustment applied by the AER would implicitly allow for this.

In section 2.2 it was shown that if hours per worker are increasing and the structure of the workforce has changed towards more educated and experienced employees, the WPI data *underestimates* growth in nominal wages per worker because it does not measure wages growth that flows from these trends. On the other hand, the labour productivity measure used by the AER and its consultant is based on a per worker measure and thus would include these effects. Output per worker grows as workers work more hours and as the average worker becomes more educated and experienced. This means that growth in the WPI less growth in output per worker *underestimates* growth in labour costs per worker. This means the AER has been underestimating the cost pressures faced by the utilities industry.

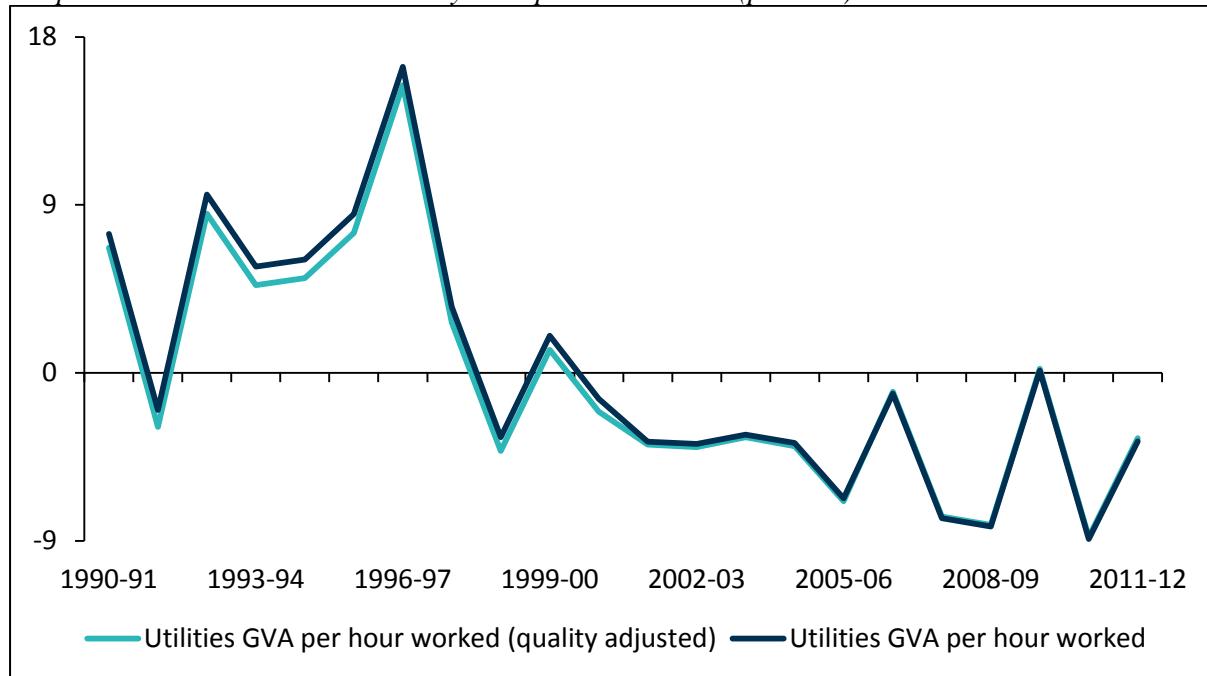
There are two ways to remove this inconsistency. Firstly, the AER could use a wage measure which is consistent with its labour productivity measure. The most appropriate labour cost measure from this perspective would be the COE, since it captures compositional effects and is the wage measure that is fully consistent with the National Accounts and thus fully consistent with output measures.

One drawback of this approach is that the COE per employee data exhibit a high level of volatility, particularly when disaggregated at the state or industry level. There are two sources of this volatility. Firstly, COE per worker is calculated using data from two different sources (COE is taken from the national accounts, where employment (workers) is taken from the labour force survey) and this adds to COE's volatility. Secondly, because the COE data are the most comprehensive labour income measure they are driven by many factors and this also adds to their volatility. However, if the COE data includes a driver that should be included in the labour cost escalator, and the other data do not, then the COE's additional volatility may be deemed acceptable.

Alternatively, an adjustment could be made to the labour productivity growth used by the AER. For example, an output per hour measure of productivity could be used and an adjustment could be made for productivity growth stemming from compositional effects.

Analysis by the AER's consultant suggests that composition-related productivity effects are small. In the utilities industry, data published by the ABS suggests that output per hour worked has grown only slightly more quickly than output per *quality adjusted* hour worked, as shown in Graph 2.6. For the quality adjustment, the ABS accounts for the level of education attainment and the experience of the workforce. Graph 2.6 suggests that the productivity boost (and wages growth) that is created by a better educated and older workforce in the utilities industry is small.

*Graph 2.6. Growth in utilities industry GVA per hour worked (per cent)*



Source: ABS; Independent Economics

However, labour productivity growth on a per hour measure compared with a per worker measure can vary. For example, since 1980-81 productivity growth on a GDP per-hour worked basis averaged 1.54 per cent per year, while on a GDP per worker basis it averaged 1.27 per cent per year. Similarly, since 2000-01, productivity growth has averaged 1.32 per cent and 0.88 per cent under the per-hour and per-worker measure, respectively. Faster productivity growth on a per hour measure is consistent with a fall in the number of hours worked per employee.

## 2.5 Conclusion

This section analyses the advantages and shortcomings of WPI wages and compares the WPI to other wage measures such as the AWE. The results from this analysis is summarised in table 2.1. As shown in the table, each wage measure has its own strengths and weaknesses. For example, the WPI is the least volatile but does not include any composition effects.

As discussed in section 2.3.2, no wage measure accurately captures composition effects because an ideal wage measure would use weights that reflect the substitutability of different types of labour used by the utilities business. The WPI, a fixed weighted index, would be a good proxy for wages when different types of labour have low substitutability. Conversely, the AWE, a variable weighted index, would be a good proxy for wages when there is a high level of substitutability. Ideally, the AER should choose the wage measure – AWE or WPI – that is most consistent with the methodology utilities businesses use to plan their labour requirements. This is because forecasts of wage growth should be combined with forecasts of growth in labour demand to develop forecasts of growth in the wage bill or total labour costs. If labour requirement planning is done on a per-hour basis, then WPI would be appropriate because it measures wage growth on a per-hour basis. Conversely, if labour requirement planning was done on a per worker basis, then the AWE would be more appropriate, since this is also measured on a per worker basis.

However, Ausgrid have informed Independent Economics that neither approach is feasible, and that utilities companies simply grow their labour costs at a rate consistent with the outlook for the labour cost escalator. This means we need to consider forecasts of both WPI and AWE, in order to form a judgement on labour cost pressures in the utilities industry. Forecasts of both measures are presented in this report.

Importantly, regardless of the measure used, a key determinant of the forecasts is the robustness of the model used to develop them and the underlying economic assumptions. Independent's approach to forecasting labour costs are discussed in the following section.

Finally, it is important that any productivity adjustment to the wage forecast is made consistently. That is, the productivity measure used should be comparable to the chosen wage measure. For example, growth in the WPI minus growth in output per worker will not correctly measure growth in unit costs because the WPI does not respond to changes in hours per worker or to changes in the composition of the workforce, but output per worker does. The key source of disconnect is hours per worker. If hours per worker are changing, WPI growth less productivity growth (where productivity growth is based on an output per worker measure) will be a poor estimate of the *true* growth in unit costs. On the other hand compositional effects are less material, consistent with the findings of other forecasters.

Notably, in its most recent determination (for Electranet in April 2013), the AER did not make an adjustment for productivity and noted this was because it could not calculate 'quality adjusted' labour productivity with an appropriate level of certainty.<sup>4</sup>

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<sup>4</sup> AER, *Final decision, ElectraNet, Transmission Determination 2013-14 to 2017-18*, (pg 54).

### 3 Methodology

This report includes forecasts for both the WPI and the AWE in the utilities industry and the professional services industry in the relevant jurisdictions. This section describes the methodology that was used to generate these forecasts.

#### 3.1 Forecasts for wages

The main tool used to develop the forecasts is the Independent Macro-econometric modelling system. At the core of this fully-integrated system is a state-of-the-art macro-econometric model that captures the broad workings of the Australian economy. A demographic model generates population scenarios for the core model, while a satellite state model takes the national level forecasts from the core model and develops them to the state level.

Importantly for this project, the labour market is modelled robustly, based both on economic principles and evidence from the historical data. The specific features of the labour market modelling incorporated in the Independent Macro-econometric model are as follows.

- **Labour supply.** In the long-term, labour supply is determined by the age and gender composition of the population. The model's population growth and population characteristics are driven by a demographic model, which incorporates assumptions regarding fertility, longevity, interstate and overseas migration. The model accounts for all types of immigration, including temporary workers (such as those on 457 visas). In the short term, labour supply is also determined by labour demand, this is known as the 'encouraged worker' effect.
- **Labour demand.** In a Keynesian short run, employment is demand determined in each industry. However, as prices gradually adjust, a representative firm in each industry determines the amount of labour it wishes to employ based on wages, and the amount of other factors of production (capital and natural resources) that is available. That is, the level of employment in each industry is based on profit maximisation by firms.
- **Labour market clearing.** Wages adjust to clear the labour market. That is, wages adjust so that the unemployment rate is at its sustainable level. For example, as labour market conditions tighten, that is when unemployment is above its sustainable rate, wages are bid up. This would tend to reduce labour demand and gradually bring the unemployment rate back to its sustainable level. The sustainable rate of unemployment is estimated based on a long-term analysis of the historical unemployment rate. Importantly, this analysis allows for the fact that there have been structural changes in the Australian labour market which has affected the sustainable level of the unemployment rate.

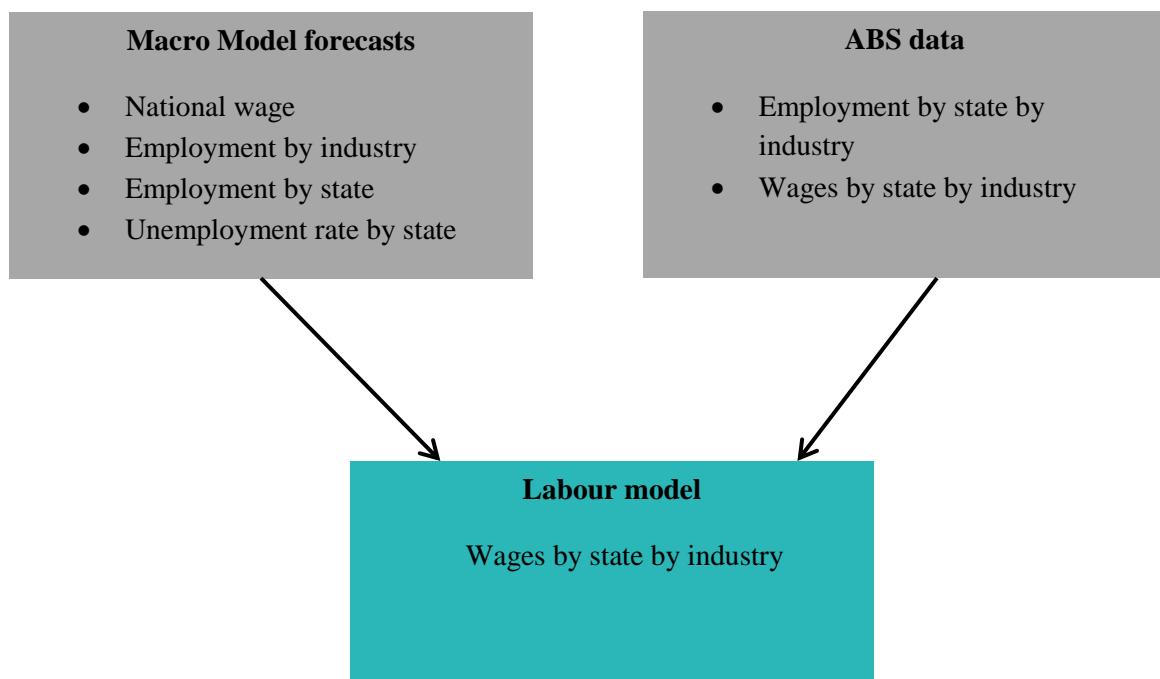
A satellite states model ensures that all state level forecasts are fully consistent with the national forecast. Importantly, the state forecasts allow for the differences in a state's industry composition. For example, Western Australia and Queensland are exposed to the mining sector, while New South Wales is exposed to the financial sector. This means, for example, that strong mining exports are likely to benefit Western Australia and Queensland more than other states, and have a greater impact on their activity.

Independent's forecasts for wage growth each industry is also fully consistent with the national forecast. For example, industry-level wages are forecast to grow *relative* to economy-wide wages; this is determined by the outlook for labour demand in each industry *relative* to economy-wide labour demand. Labour demand in each industry is driven by activity in the industry in the short term. This means, for example, that the depreciation of the Australian dollar would encourage activity in the manufacturing sector as they become more internationally competitive. This would support solid wage growth in manufacturing.

Independent's forecasts for wage growth in each industry at the state level are also fully consistent with the national outlook. This is because they are generated from our forecasts of wages by industry and wages by state using a widely accepted technique called the residual allocation system<sup>5</sup>.

The forecasting approach is illustrated in Figure 3.1

*Figure 3.1. Generation of labour market forecasts in the Independent Macro-econometric model*



## 3.2 Data collection

The data used in the Independent Macro-econometric model and new labour cost model to forecast wages by state by industry have been obtained from the ABS. The data are a combination of publicly available data and data available by special request. The data used for this project are listed in Table 3.1.

<sup>5</sup> This technique is also used by the ABS. For example, they use it to produce input-output tables.

*Table 3.1. List of key ABS data used in the forecast and analysis*

ABS data series	Catalogue Number	Latest included data
National accounts (quarterly)	5206.0	December quarter 2013
National accounts (annual)	5220.0	2011-12 financial year
Labour force (monthly)	6202.0	April 2013
Labour force (quarterly)	6291.0.55.003	March quarter 2013
Wage price index (quarterly)	6345.0	March quarter 2013
Average weekly earnings (semi-annual)*	6302.0	November 2012
Average weekly cash earnings (bi-annual)**	6306.0	November 2012

Source: ABS

\* Until May 2012, average weekly earnings data were released quarterly. Independent Economics has constructed a quarterly history for Average Weekly Earnings using interpolation to fill in August 2012.

\*\* Average weekly cash earnings (which provide data on earnings by occupation) are released every two years in the Employee Earnings and Hours Survey (cat. 6306.0)

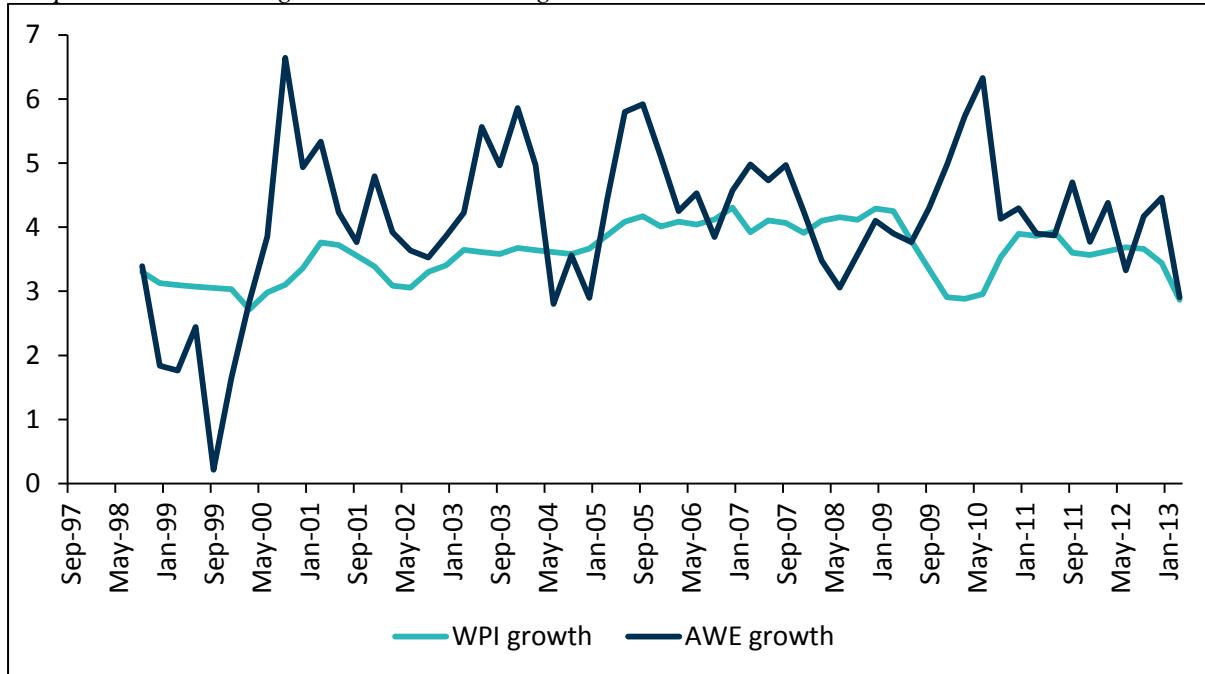
### 3.3 AWE forecasts

Both the forecasts for AWE and WPI are derived from their relationship with the COE-based wage measure that is contained in the Independent Macro-econometric model. As both are forecast relative the same variable, these forecasts are explained relative to each other. This section discusses the AWE forecasts *relative* to the WPI forecasts.

As described in section 2, in the short term, the outlook for the WPI is driven by the state of the labour market. In the longer term, it is expected to grow in line with inflation and labour productivity growth. As outlined in the following section, labour market conditions are expected to improve so and WPI wage growth is expected to accelerate. In all industries and states, the forecast for growth in AWE wages is weak relative to growth in WPI wages in the near-term and then stronger at the end of the forecast horizon.

Prior to the GFC, AWE wages grew more quickly than WPI wages. This is shown in Graph 3.1. A shift towards higher paying jobs offset the effect of a trend decrease in hours worked per employee, such that AWE growth was quicker than WPI growth.

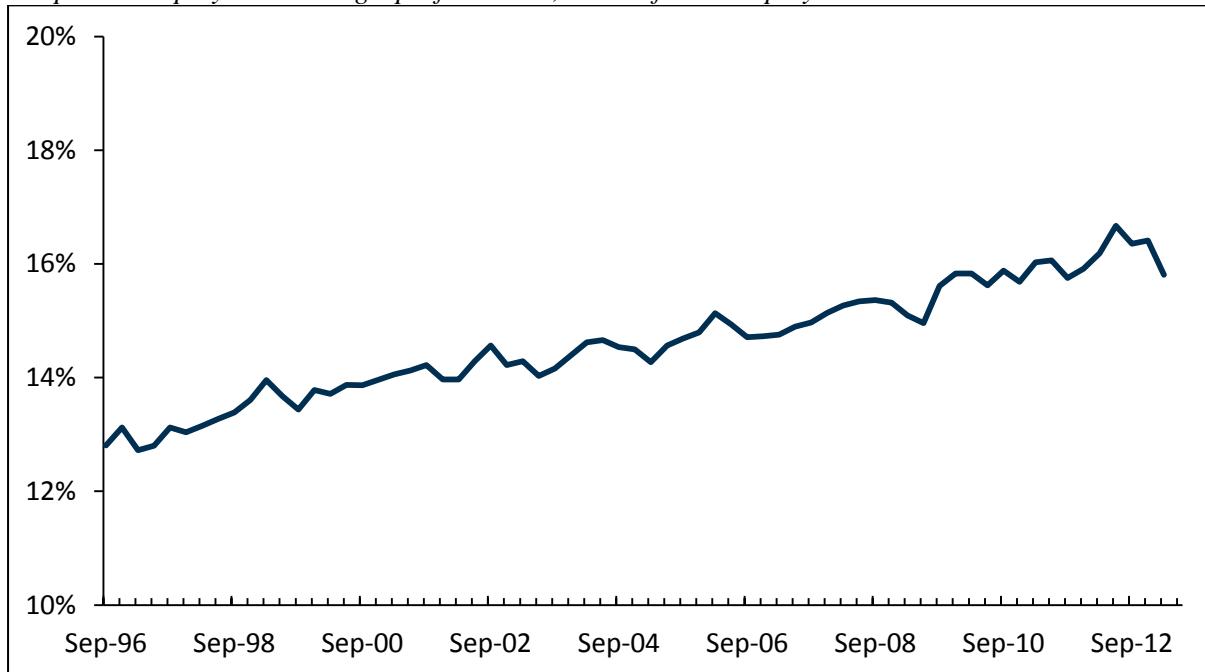
*Graph 3.1. Year-ended growth in nominal wages in Australia*



Source: ABS; Independent Economics

As the population became more educated, the share of the workforce holding higher paying jobs increased. For example, employment amongst professionals as a share of the workforce increased, as shown in Graph 3.2. This increased growth in AWE wages relative to WPI wages.

*Graph 3.2 Employment amongst professionals, share of total employment*



Source: ABS; Independent Economics

Between the mid-1990s and mid-2000s, hours worked per employee fell (as shown in Graph 3.3). This trend most likely reflects the aging of the population because as employees get closer to retirement, they tend to scale back the hours they work. It has probably been supported – over time – by an increase in workplace flexibility, which makes it easier for people to work part-time if they

wish. Further, the pre-GFC period saw strong gains in household wealth, which may have allowed some people to work fewer hours.

*Graph 3.3. Hours per worker*



Source: ABS

Immediately after the GFC period, AWE wages growth was particularly strong relative to WPI wages growth. While WPI wages growth eased, AWE wages growth accelerated sharply. One potential reason for this is that employers were reluctant to take on new staff, given the economic uncertainty, and any increases in labour requirements were met by increasing the hours worked by existing staff. (This logic is not clear-cut however as employers could increase labour inputs – in an uncertain environment – by taking on more part-time workers. If most of the existing workers at companies where this occurs work full-time, increasing the number the part-time workers will tend to reduce hours per worker). Another driver may be because employment amongst professionals continued to grow relatively strongly.

This trend is expected to unwind, and for hours per employee to drop back to a level that is consistent with its trend decline. In this period, AWE wages growth will be weak relative to WPI growth. There are already signs that hours per worker are falling back in some industries – for example, hours per worker fell in the utilities industry over 2012 - perhaps prompted by the soft patch Australia experienced in 2012. Therefore, hours are expected to drop in the short-term, and for AWE wage growth to be weak relative to WPI growth at the start of the forecast period. This point is elaborated in section 4.

# 4 The outlook for the economy and the labour market

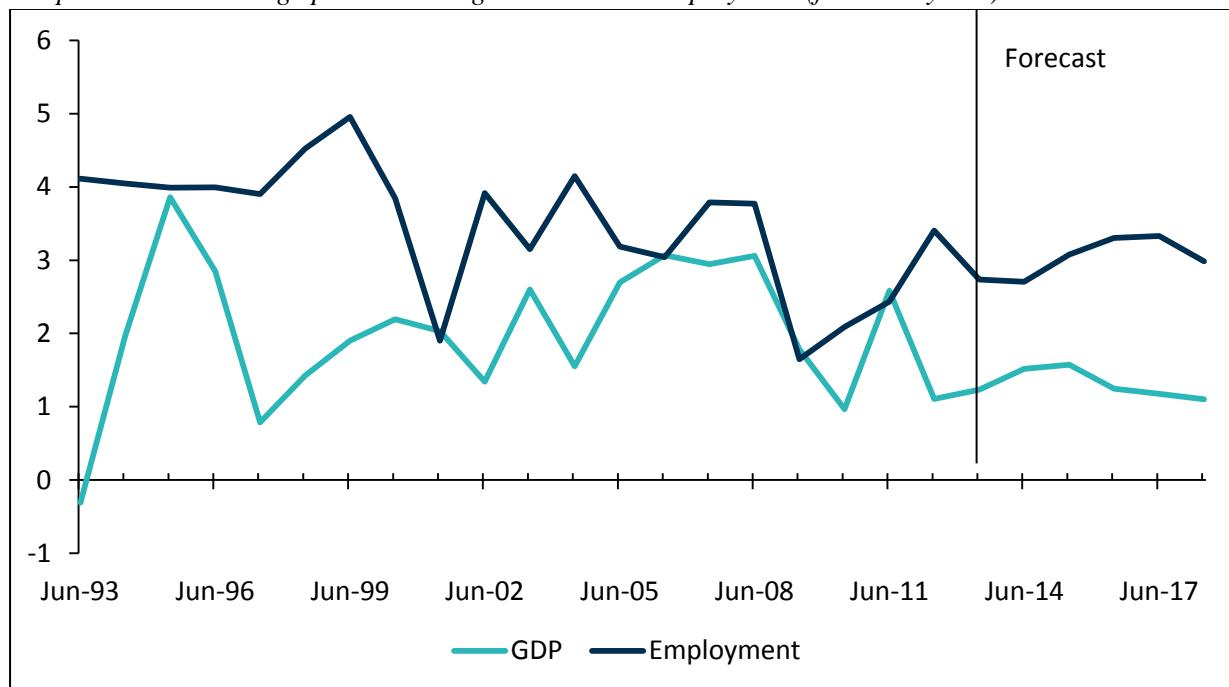
As described in Section 3, the forecast for wage growth in the industries, states and the industries in the states have been generated with the Independent Macro-econometric model and new wages model. A key driver for these forecasts is the outlook for the Australian economy. This section describes the current outlook for the Australian economy and wages growth, including wages growth in the relevant state and industries. For ease of exposition, and to reflect the modelling approach of Independent Economics, this commentary focuses on why these state and industry outlooks differ from the outlook for Australia.

## 4.1 Economic outlook for Australia

### 4.1.1 Economic conditions

The Australian economy is currently in a soft patch. Economic activity is expected to be subdued in 2012-13 and 2013-14, with average GDP growth of just 2.7 per cent over these two years (this compares to average growth of 3.2 per cent per year over the last 15 years). This is shown in Graph 4.1.

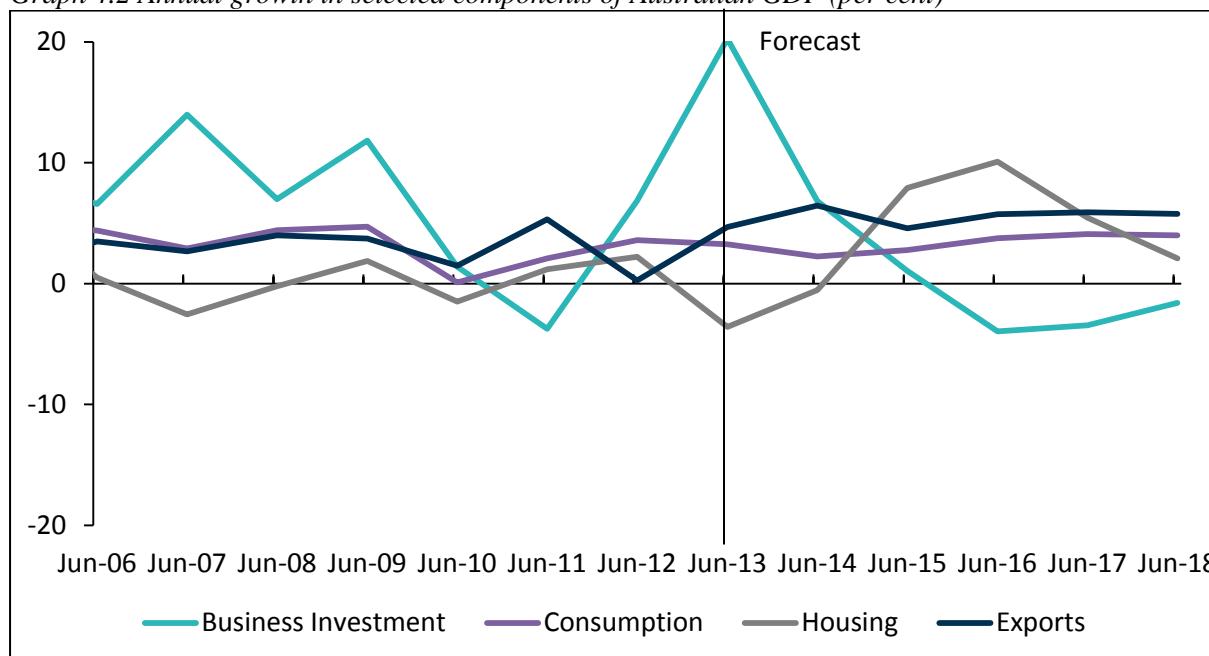
*Graph 4.1. Year-average per cent change in GDP and employment (financial years)*



Source: ABS; Independent Economics

Following this period of slow growth, economic conditions are expected to improve. GDP is expected to grow on average by 3.2 per cent for four years from 2014-15. This pickup in growth is supported by improved growth in exports, consumption and a recovery in housing investment, as shown in Graph 4.2. The soft patch has seen consumer price inflation slow to 2.3 per cent in 2012-13. Inflation is expected to be 2.3 per cent again in 2013-14, before it picks up to an average rate of 2.6 per cent over the 5 years to 2018-19.

*Graph 4.2 Annual growth in selected components of Australian GDP (per cent)*



Source: ABS; Independent Economics

In the decade preceding the global financial crisis, the private saving rate was low by historical standards. The global financial crisis led to a sharp correction in private saving rates and hence a sharp slowdown in household consumption as the private sector rebuilt its balance sheets. Consumption grew by 2.3 per cent in 2012-13, compared to average growth of 3.6 per cent per year over the previous 15 years. Households are expected to remain cautious in 2013-14, and for consumption to grow by 2.8 per cent. From 2014-15, the process of household balance sheet repair is expected to be finished and for the saving rate to fall. This will see consumption growth pickup to an average of 3.7 per cent per year between 2014-15 and 2018-19.

Despite strong growth in the population (driven mainly by a high level of migration), housing investment in Australia has been weak since 2005. Strong underlying demand for housing and relatively low interest rates are expected to lead to a recovery in housing investment. Housing investment is expected to rebound by 7.9 per cent and 10.1 per cent in 2013-14 and 2014-15.

Solid export growth, averaging 5.4 per cent per annum in the five years ending in 2017-18, is supporting strong GDP growth over the forecast period. Substantial investment in productive capacity in the Mining industry over the past few years will lead to a boost in commodity exports. In addition, the depreciation of the Australian dollar, as a result of the fall in commodity prices, will see a recovery in Manufacturing exports as the industry becomes more competitive internationally. The Australian dollar is expected to fall to 0.90 USD-AUD by 2017-18.

*Table 4.1. Economic history and economic projections, growth rates, Australia*

	Real GDP growth	Employment growth	Unemployment rate	CPI inflation
<b>History</b>				
2000-01	1.9	2.0	6.5	6.0
2001-02	3.9	1.3	6.7	2.9
2002-03	3.2	2.6	6.2	3.0
2003-04	4.1	1.6	5.6	2.4
2004-05	3.2	2.7	5.2	2.4
2005-06	3.0	3.1	4.9	3.2
2006-07	3.8	2.9	4.5	3.0
2007-08	3.8	3.1	4.3	3.4
2008-09	1.6	1.8	4.9	3.1
2009-10	2.1	1.0	5.5	2.3
2010-11	2.4	2.6	5.1	3.1
2011-12	3.4	1.1	5.3	2.3
2012-13	2.7	1.2	5.3	2.3
<b>Forecasts</b>				
2013-14	2.7	1.5	5.4	2.3
2014-15	3.1	1.6	5.2	2.7
2015-16	3.3	1.2	5.1	2.5
2016-17	3.3	1.2	5.1	2.5
2017-18	3.0	1.1	5.0	2.6
2018-19	2.8	1.0	5.0	2.7

Source: ABS; Independent Economics

#### **4.1.2 The Australian labour market and employment growth**

The current soft patch has translated into a weak labour market: employment grew by 1.2 per cent (this is weak relative to average growth of 2.2 per cent over the last 10 years), the trend unemployment rate has climbed to 5.5 per cent (higher than the average rate of 5.1 per cent over the last 10 years) and WPI wages growth slowed to 3.1 per cent (much weaker than average growth of 3.8 per cent over the previous decade).

Strong growth in activity leads to strong growth in demand for labour. Importantly, the key drivers of activity in the forecast, household consumption, and housing investment are relatively labour intensive and this supports strong growth in labour demand. Strong labour demand – in our forecast – shows up in robust employment growth and strong wage growth. Strong employment growth of around 1.4 per cent, per year, on average is expected between 2013/14 and 2015/16. This is stronger than normal employment growth of around 1 per cent. Employment growth is expected to slow to a more normal pace of 1.1 per cent in 2016/17 and 2017/18. With employment growing above its normal rate, the unemployment rate is expected to decline from 5.4 per cent in 2013-14 to 5.0 per cent in 2017-18.

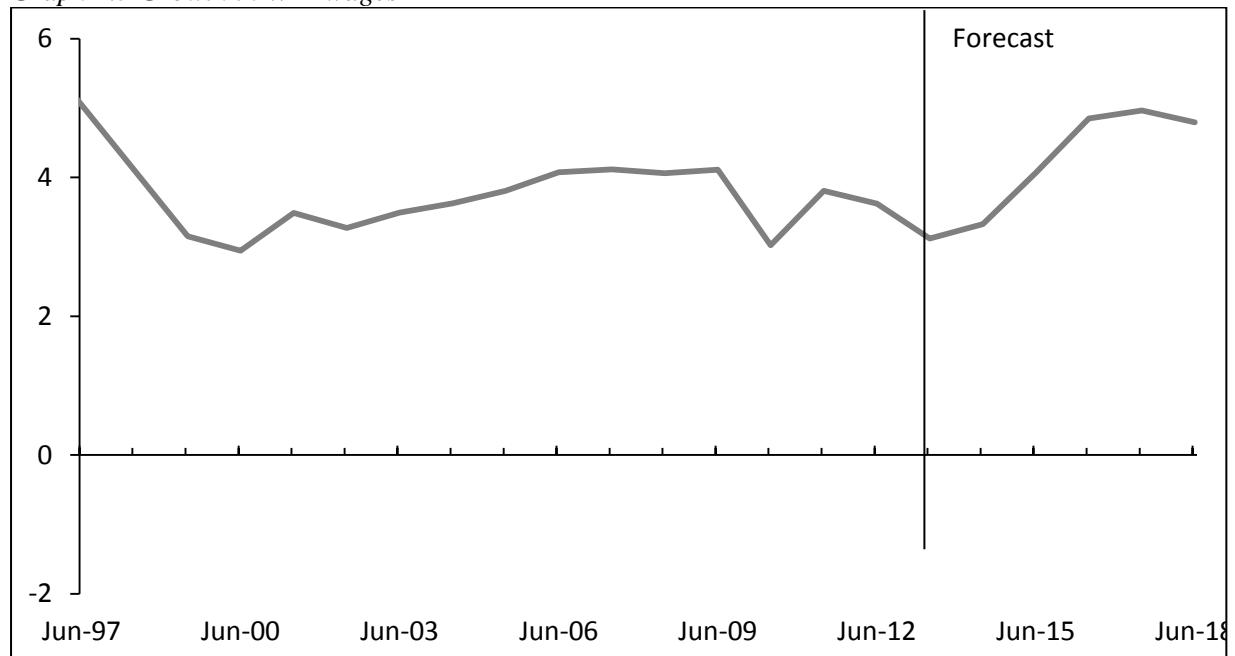
#### **4.1.3 WPI wages growth**

The unemployment rate is expected to increase in year-average terms from 2012-13 to 2013-14. Therefore relatively modest WPI wage growth is expected in 2013-14 (3.3 per cent). Once the

unemployment rate starts falling, with the improvement in economic conditions, WPI wage growth is then expected to pickup.

Over the forecast period, real wage growth is driven by an improvement in economic conditions, productivity growth, and a delayed effect on real incomes from the increase in the terms of trade. These factors lead to relatively fast wage growth by the middle of forecast period (as shown in Graph 4.3). The gains in Australia's terms of trade will eventually lead to a boost in real household income. Up until 2010-11, the benefit from the gain in the terms of trade that has occurred flowed to businesses in the form of a gain in profitability, rather than to labour as a gain in the consumer real wage. This is not sustainable, because abnormally high profitability (above hurdle rates of return) encourages an investment response. Indeed, the gain in profitability has stimulated high investment, notably in the mining sector. As this expands productive capacity, demand for labour rises pushing up real wages across the economy. In the forecast period, this process continues until profitability is restored to its normal relationship to the hurdle rate of return. Once this occurs, the benefit from the gain in the terms-of-trade is transferred to labour in the form of a gain in the consumer real wage.

*Graph 4.3 Growth in WPI wages*

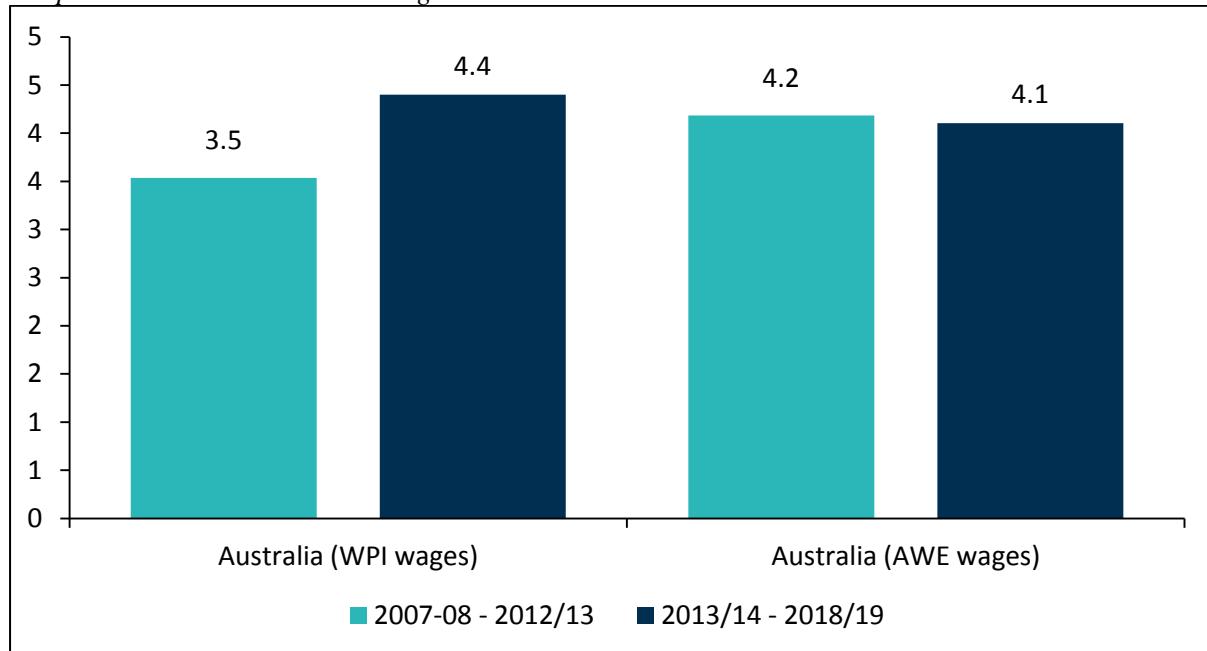


Source: ABS; Independent Economics

#### 4.1.4 AWE wages growth

AWE grew by 4.2 per cent per year (on average) over the 5 years to 2012-13. This was quicker than WPI wages, at 3.5 per cent per year, as shown in Graph 4.4. Over the forecast period, AWE wages growth is expected to be slightly below WPI wages growth, at just above 4 per cent.

*Graph 4.4. Growth in nominal wages in Australia*



Source: ABS; Independent Economics

As discussed in section 3, this reflects the expectation that hours per worker will fall, and return to levels consistent with its long-run trend (which it departed from during the GFC). As WPI measures hourly pay rates, but the AWE measures wages per worker, if hours per worker falls then the AWE grows weakly relative to the WPI. Year by year forecasts of wage growth under the WPI and AWE are shown in the table below.

*Table 4.2. Growth in nominal wages in Australia – WPI wages vs. AWE wages*

	WPI Wages	AWE Wages
2007-08	4.1	3.9
2008-09	4.1	3.8
2009-10	3.0	5.3
2010-11	3.8	4.0
2011-12	3.6	4.0
2012-13	3.1	3.7
2013-14	3.3	2.1
2014-15	4.1	3.3
2015-16	4.8	5.0
2016-17	5.0	5.3
2017-18	4.8	4.8
2018-19	4.7	4.4

Source: ABS; Independent Economics

## 4.2 Economic outlook for New South Wales

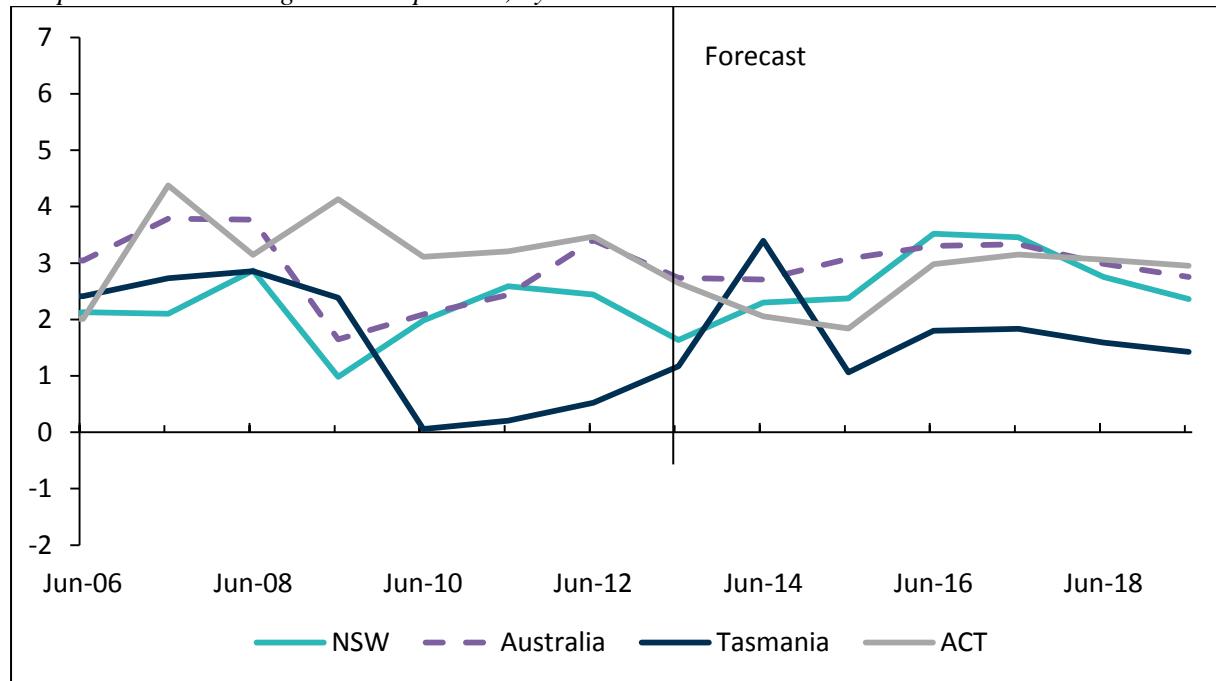
### 4.2.1 Economic conditions

The New South Wales economy is currently in a soft patch, as gross state product grew by 1.6 per cent in 2012-13. Growth of 2.3 per cent and 2.4 per cent is expected in 2013-14 and 2014-15 (which

is slightly quicker than its average pace of 2.2 per cent over the last decade), before picking to (an average) of 3.2 per cent over the years 2015-16, 2016-17 and 2017-18. Growth is then expected to revert back to 2.4 per cent in 2018-19. Overall, growth is below the national average and is expected to remain so until 2015-16.(This is shown in Graph 4.5)

Economic conditions are weak in NSW because the sectors that are doing well make up less of its economy, while the sectors which are doing poorly make up more. On the production side of the national accounts mining accounts for only 3 per cent of the NSW economy (compared to 10 per cent of the national economy) while the finance industry accounts for 15 per cent (compared to 5 per cent of the national economy, as Sydney is Australia's financial hub. Employment in the finance industry has grown slowly relative to the economy as a whole (0.6 per cent per year in the 5 years to February 2013, compared to a national figure of 1.5 per cent), and this has contributed to a relatively soft labour market in the state. Manufacturing accounts for 8.6 per cent of the NSW economy (which is close to the national figure of 7.6 per cent). On the expenditure side of the national accounts, household consumption and dwelling investment make up 62 of the NSW economy (compared to 59 per cent of the national economy).

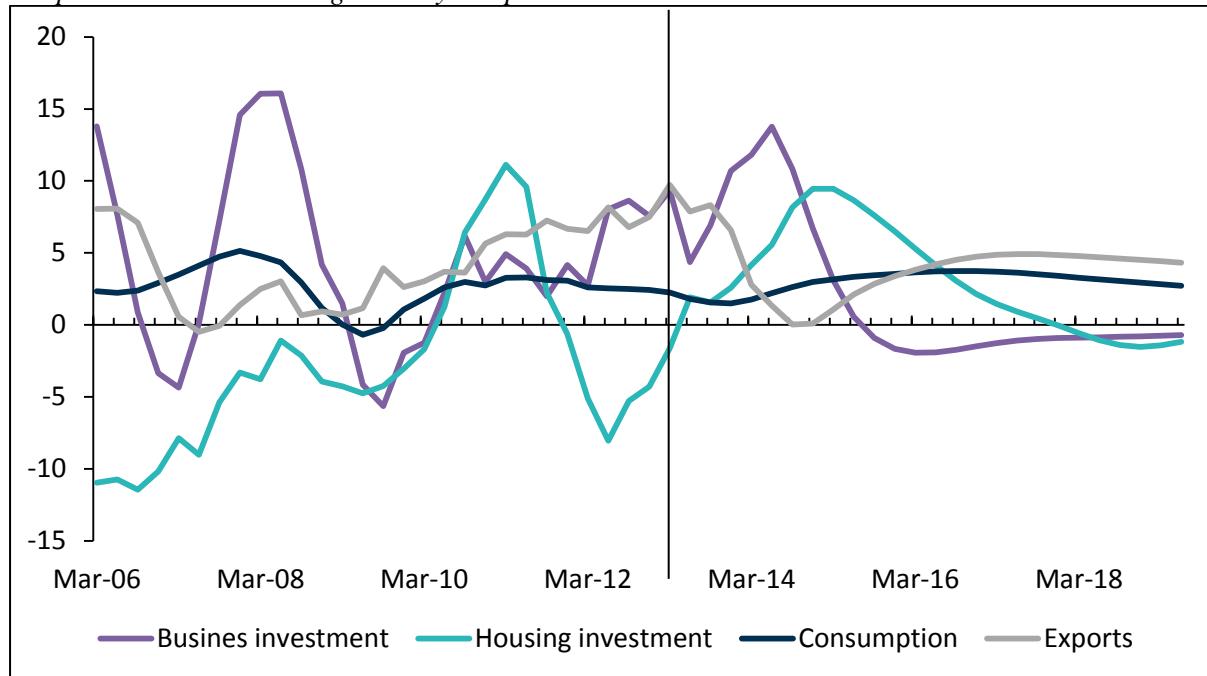
*Graph 4.5. Growth in gross state product, by selected states*



Source: ABS; Independent Economics

From its current soft patch, growth in state final demand in NSW is expected to pick up led by growth in consumption, dwelling investment and business investment. This is shown in Graph 4.6. In the case of consumption and dwelling investment, growth will be driven by the factors identified in the discussion for the national outlook. In the case of business investment, growth will increase as the competitiveness of NSW's trade exposed industries improves with the depreciation in the dollar. As consumption and dwelling investment are relatively important to the NSW economy, growth in state final demand is expected to be above the national average between 2014 and 2016, before easing to be in line with the national average.

*Graph 4.6. NSW economic growth by component*

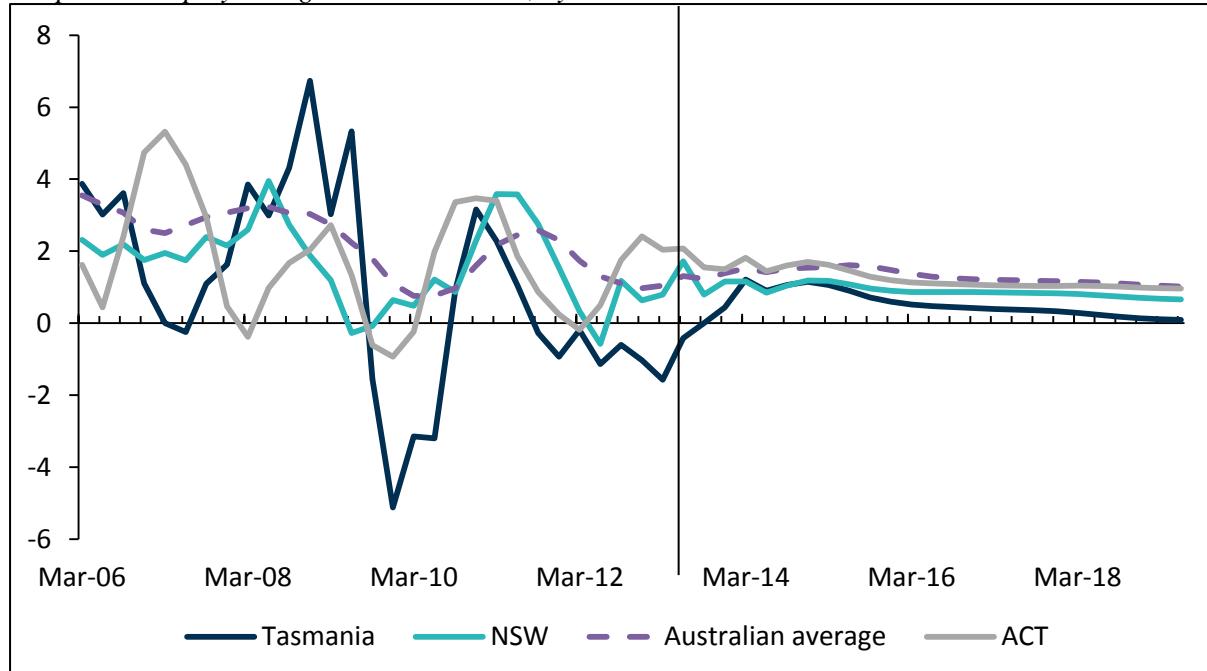


Source: ABS; Independent Economics

#### 4.2.2 NSW labour market and employment growth

Employment growth in New South Wales is expected to remain below the national average (shown in Graph 4.7).

*Graph 4.7. Employment growth in Australia, by selected state*

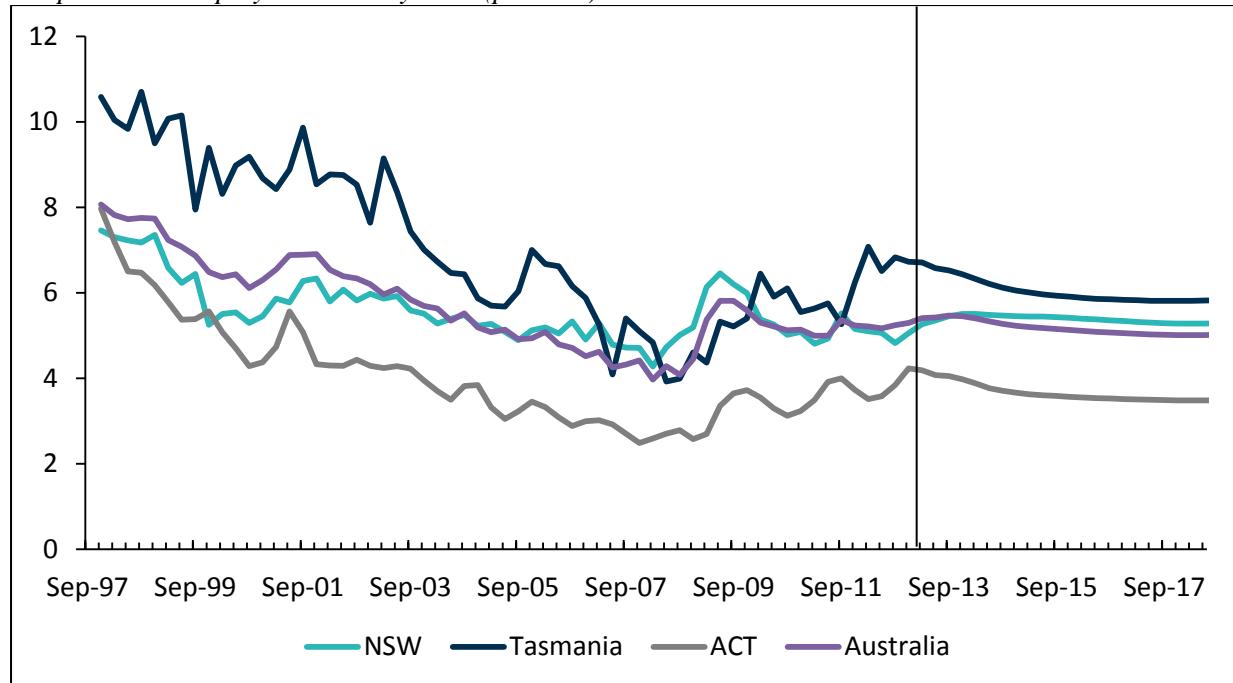


Source: ABS; Independent Economics

Employment growth that is below the national average in NSW means labour demand is growing below the national average. However, labour supply also grows at a below average pace in NSW, as population growth tends to be slower due to high levels of interstate migration to other states. The

unemployment rate is therefore expected to remain around the national average (Graph 4.8)

*Graph 4.8. Unemployment rate by state (per cent)*



Source: ABS; Independent Economics

#### 4.2.3 WPI wages growth in NSW

As the unemployment rate is expected to be around the national average, WPI wages growth in NSW is expected to be around the national average. This is shown in Table 4.3.

*Table 4.3. WPI wages growth in Australia and selected states*

	WPI wages				AWE wages			
	Australia	NSW	Tasmania	ACT	Australia	NSW	Tasmania	ACT
2008-09	4.1	3.9	4.4	4.0	3.8	1.0	0.6	6.5
2009-10	3.0	3.0	3.7	3.3	5.3	4.0	7.1	6.8
2010-11	3.8	3.8	3.4	3.6	4.0	3.3	6.5	7.1
2011-12	3.6	3.6	3.5	3.3	4.0	2.9	5.2	5.7
2012-13	3.1	3.0	2.9	3.8	3.7	3.9	4.4	5.1
2013-14	3.3	3.3	3.1	3.5	2.1	1.7	1.1	1.9
2014-15	4.1	4.0	4.0	4.2	3.3	2.8	2.6	3.5
2015-16	4.8	4.8	4.8	5.0	5.0	4.6	4.6	5.4
2016-17	5.0	4.9	4.9	5.1	5.3	5.0	5.0	5.7
2017-18	4.8	4.7	4.7	4.9	4.8	4.5	4.5	5.0

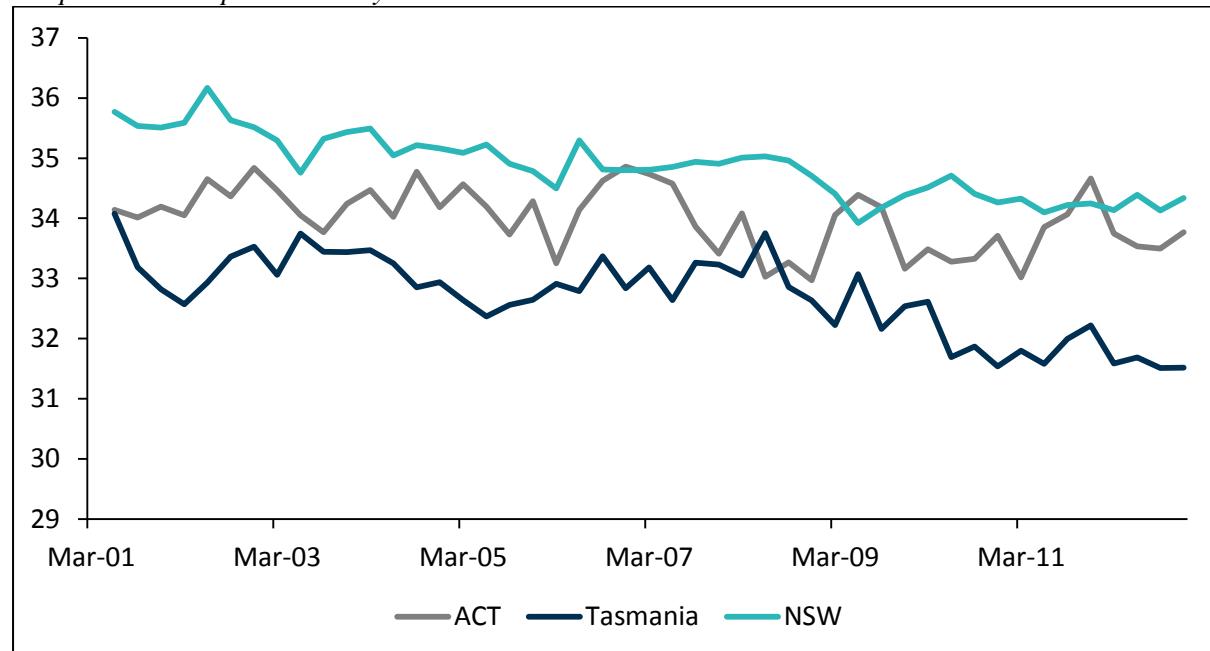
Source: ABS; Independent Economics

#### 4.2.4 AWE wages growth in NSW

As shown in Table 4.2, AWE wages growth is expected to be quite weak in NSW in the first two years of the forecast period relative to growth in WPI wages. The main driver of this is a decline in

hours worked per worker, reflecting the resumption of a long-run trend that was in place prior the GFC (this trend is shown in Graph 4.9). Hours per worker have been flat in NSW for about two years, and are above the level implied by the trend exhibited before the GFC. This trend is expected to resume as it reflects, among other factors, the aging workforce – as people get closer to retirement, they generally scale back their hours.

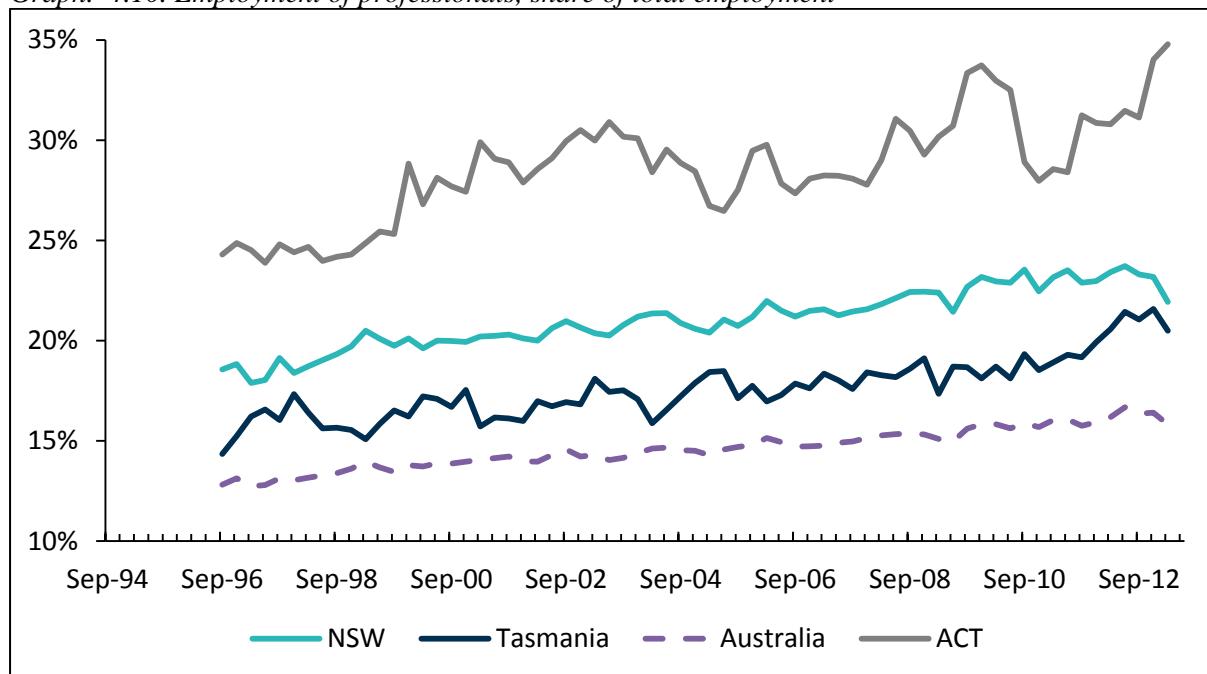
*Graph 4.9 Hours per worker by state*



Source: ABS; Independent Economics

Further, in the short-term, employment amongst professionals is expected to be weak relative to total employment. Employment amongst professionals has been weak in the recent data, as shown in Graph 4.10, as employment conditions have recently weakened in financial services and professional services (two industries which are heavy employers of professionals). In the medium term, employment amongst professional should resume its relatively strong growth.

*Graph. 4.10. Employment of professionals, share of total employment*



Source: Independent Economics

## 4.3 Economic outlook for Tasmania

### 4.3.1 Current economic conditions and outlook

The Tasmanian economy is currently very weak, as gross state product grew by only 1.2 per cent in 2012-13. Growth is expected to recover in 2013-14 before dropping back to a below average pace of 1.5 per cent per year for the rest of the forecast period. The recovery in 2013-14 is driven by a recovery in consumption which has been very weak. Household consumption fell by 1.6 per cent in 2011-12 and little growth is expected in 2012-13.

Average GSP growth for Tasmania is 2.0 per cent over the last decade. Economic growth in Tasmania is below the national average and this is expected to remain the case for the forecast period.

Economic conditions are weak in Tasmania because the sectors that are doing well make up less of its economy, while the sectors which are doing poorly make up more. On the production side of the national accounts mining accounts for only 2 per cent of the economy (compared to 10 per cent of the national economy). Manufacturing accounts for 8.2 per cent of the Tasmania economy (which is close to the national figure of 7.6 per cent). On the expenditure side of the national accounts, household consumption and dwelling investment make up 69 of the Tasmania economy (which is well above the national figure of 59 per cent).

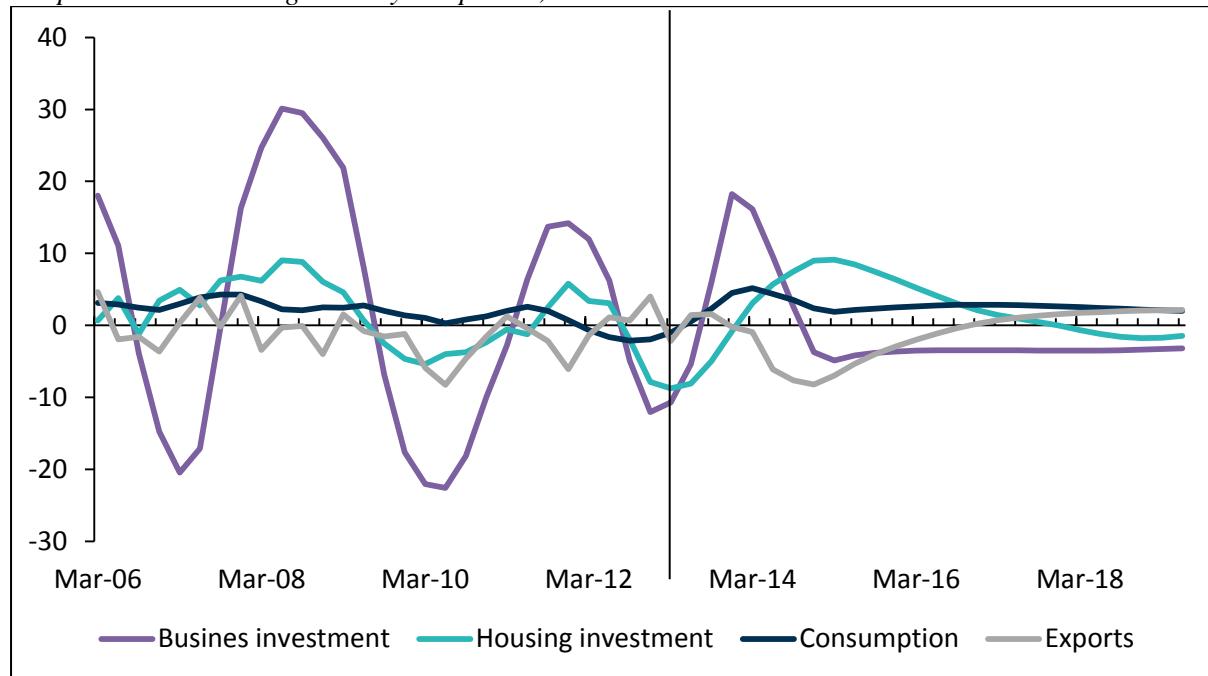
Economic growth in Tasmania is also below average because the population grew by only 0.5 per cent in 2012-13 (which compares to an average growth rate of 0.9 per cent). Population growth was weak as there was a sharp pick up in net interstate emigration with an outflow of around 2,500 people (from a small outflow in the previous year). 2,500 is the largest net outflow since 1999-00. In the years between 2012-13 and 1999-00, there was an average net inflow.

From its current soft patch, the improvement in Tasmania's growth will be led by stronger consumption, dwelling investment and business investment. This is shown in Graph 4.11. In the case

of consumption and dwelling investment, growth will be driven by the factors identified in the discussion for the national outlook. In the case of business investment, growth will increase as the competitiveness of NSW's trade exposed industries improves with the depreciation in the dollar.

Population growth should also pickup (back to average growth in 2013-14 and 2014-15). From 2015-16 however, population growth slows, and this sees growth in Tasmania weaken.

*Graph 4.11. Economic growth by component, Tasmania*



Source: ABS; Independent Economics

### 4.3.2 Labour market conditions and employment growth in Tasmania

Employment has fallen over the last year or so in Tasmania. This has seen the unemployment rate rise sharply. From 2013-14 employment growth is expected to be positive, and to pick up slowly as the state's economic recovery progresses. Initially, this sees the unemployment rate in Tasmania hovering around its current level (which is high relative to the national average). It then starts to fall as economic conditions improve, and employment growth picks up.

### 4.3.3 WPI wages growth in Tasmania

As unemployment is high relative to the national average, WPI wages growth is expected to be slightly weaker than the national average in the short-term, as shown in Table 4.2 (above). Wages growth is close to the national average – despite the soft labour market – because the unemployment rate in the state has been persistently above the national rate in the past, and does not seem to have weighed (substantially) on wages growth in Tasmania, relative to wages growth at the national level.

### 4.3.4 AWE wages growth in Tasmania

AWE wages are expected to rise modestly in 2013-14, and to be weaker than the expected growth in WPI. The driver of weak growth in AWE wages in Tasmania is slightly different to other states, as hours per worker have been relatively weak in the state. Graph 5.7 (above) shows that employment of professionals, measured as a share of total employment, rose relatively quickly in Tasmania in the years that followed the GFC, supporting growth in AWE wages. As the economic conditions improve,

professional employment as a share of total employment should return back to its normal trend, weighing on AWE wages growth.

## 4.4 Economic outlook for the ACT

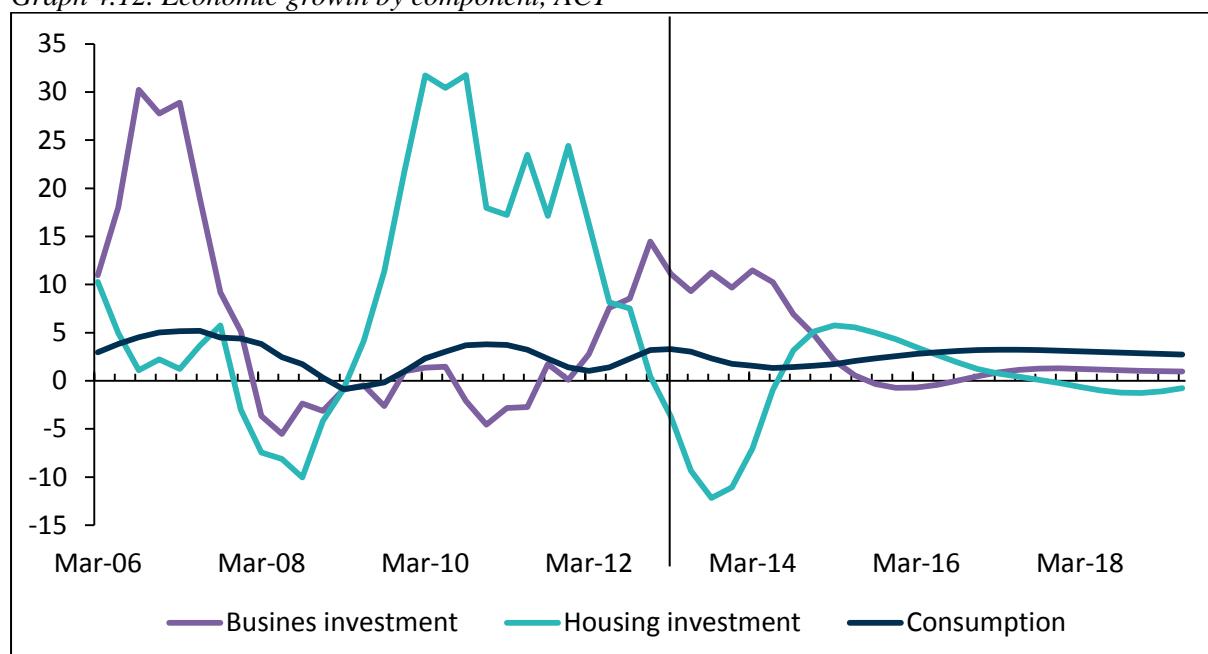
### 4.4.1 Current economic conditions and the outlook in the ACT

The Australian Capital Territory (ACT) is highly exposed to the public sector. This means that it is less affected by the business cycle but is more affected by government spending decisions. For example, the ACT economy grew soundly during the global and European financial crises; GSP growth averaged 3.5 per cent between 2008-09 and 2011-12.

GSP growth slowed to 2.6 per cent in 2012-13 (which is around the national average). As shown in Graph 4.12, growth is expected to average 2.7 per cent for the rest of the forecast period. This forecast sees growth well below the national average for the first part of the period, and around the national average in 2017-18 and 2018-19. This slowdown in growth is due to the efforts the Federal government is expected to make up to restore its budget to surplus. One savings measure the government is expected to implement is to reduce its demand for labour. This will reduce expenditure (and therefore activity growth) in the ACT.

In terms of the components of gross state product, housing investment is expected to lead the slowdown in growth in the next few years (as shown in Graph 4.7). Housing investment in the ACT – in contrast to the rest of the country – has grown strongly recently. One factor that explains this is stronger population growth (the ACT's population grew by an average of 1.9 per cent in the three years to 2012-13, compared to a national average of 1.6 per cent). The Federal government is expected to reduce its demand for labour and housing investment is expected to weaken.

*Graph 4.12. Economic growth by component, ACT*



#### **4.4.2 Labour market and employment in the ACT**

Employment growth has been above the national average recently, as labour demand by the Federal government has been stronger than in other parts of the economy. As the Federal government withdraws demand though – due to its efforts to restore the budget to surplus –employment growth is expected to slow.

The unemployment rate is currently below the national average. It is not expected to increase to the national average as many of the individuals who leave government employment are expected to try and find employment outside the ACT. This is because the government is large employer of professionals, and the job market for professionals is bigger in cities like Melbourne and Sydney than in Canberra.

#### **4.4.3 WPI wages growth in the ACT**

WPI wages growth in the ACT is expected to be in-line with the national average. This is despite the unemployment rate in the state being well below the national average. This result reflects the fact that historically, the unemployment rate has usually been well below the national rate, and this has not resulted in relatively quick growth in WPI wages.

#### **4.4.4 AWE wages growth in the ACT**

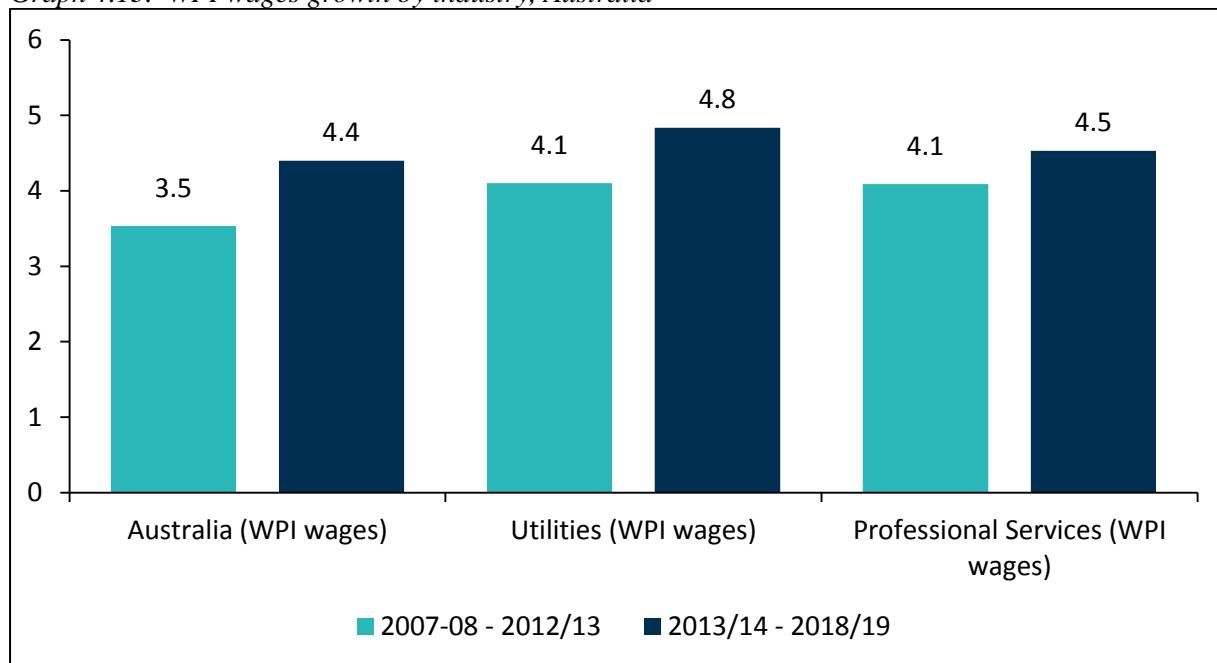
AWE wages are expected to grow by only 1.9 per cent in 2013-14, which is weaker than WPI wages growth of 3.5 per cent. As the Federal Government withdraws labour demand, employment of professionals is expected to fall relative to total employment, and this will weigh on growth in AWE wages relative to WPI wages. Hours per worker are expected to weaken, weighing further on AWE wages growth. Hours per worker did pick up in the ACT as Australia recovered from the GFC, but has weakened recently. This weakening is expected to continue, in-line with the long-run trend.

### **4.5 The outlook for selected industries at the national level**

#### **4.5.1 Utilities industry**

WPI wages growth in the utilities industry was stronger than the national average in the 5 years leading up to the end of 2012/13. This is expected to remain the case, as shown in Graph 4.13 below.

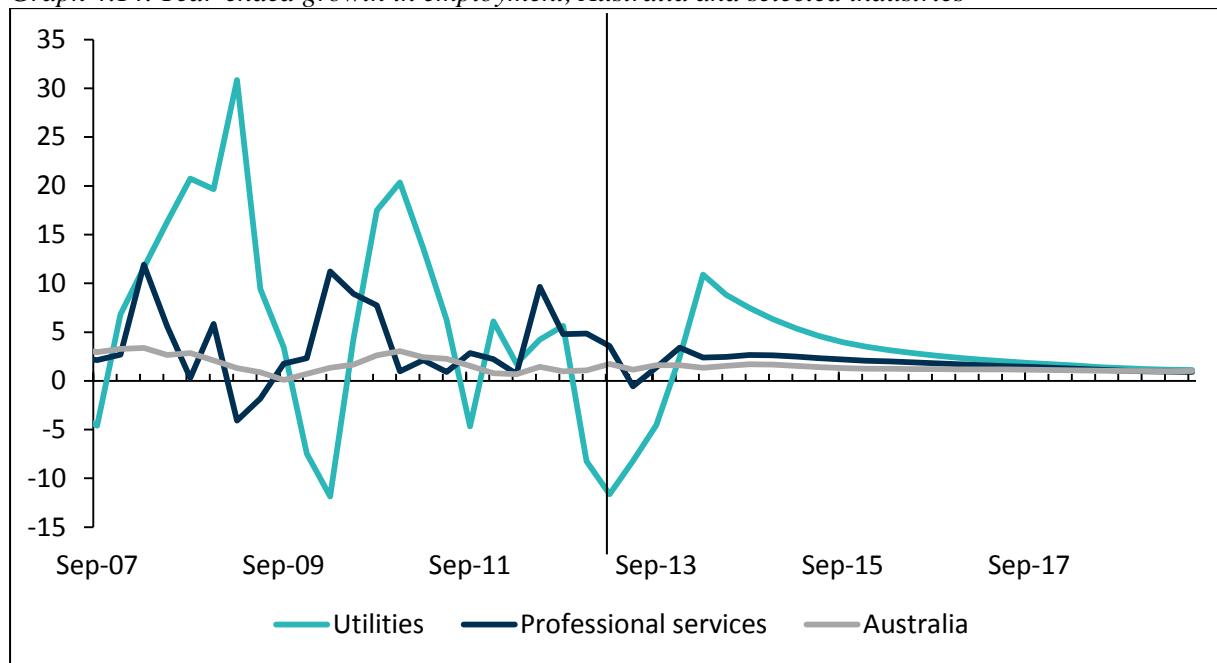
*Graph 4.13. WPI wages growth by industry, Australia*



Source: ABS; Independent Economics

As discussed in Section 7, labour demand has been strong in the utilities industry as the industry has recently undertaken substantial investment. Employment expanded by 18 per cent between the March quarters of 2008 and 2013, compared to 8 per cent in Australia as a whole. (This is shown in Graph 4.14).

*Graph 4.14. Year-ended growth in employment, Australia and selected industries*



Source: ABS; Independent Economics

As discussed in Section 7, investment growth in utilities industry has eased. However, reasonably strong growth employment in the industry is expected in the short-term. One feature of employment data for the industry is its volatility, because the industry is relatively small. As measured, employment fell by 5.8 per cent in 2012-13 (compared to growth in national employment of 1.2 per

cent). Rebounding from this, employment in the industry is expected to grow by 4.2 per cent and 5.9 per cent over the following two financial years.

Strong employment growth in the utilities industry drives a forecast of strong growth in WPI wages, relative to national growth. This is shown in Table 4.5.

Another feature of the utilities industry is that it is a large employer of technicians and trades workers, as shown in Table 4.4. Nominal wages paid to technicians and trade workers have been grown quickly, as demand for their services was strong in the mining industry during the investment phase of the mining boom (this is illustrated in Table 6.2, in a following section). Fast growth in wages paid to technicians and trade workers places upward pressure on growth in WPI wages in the utilities industry. Labour demand for technicians and trades workers is expected to be relatively strong in the 'production phase' of the mining boom (which is picking up now, as investment eases). This, again, should support growth in WPI wages in the utilities industry relative to WPI wages in the Australian economy.

Indeed, the electricity distribution sub-industry should feel upward pressure on its labour costs due to wage growth amongst technicians and trades workers *more* than the utilities industry as a whole. As shown in Table 6.1 (below), the electricity distribution sub-industry employs relatively more of these workers than the utilities industry does. However, as discussed in section 6, growth in WPI wages for the utilities industry is still a good proxy for wage growth in electricity distribution sub-industry. This is because the electricity distribution industry is a smaller employer of other occupations, such as machinery operators and drivers, whose wages are also growing quickly, and the utilities industry is a bigger employer of these occupations.

The electricity transmission industry should feel slightly less upward pressure on its labour costs than the utilities industry. It is a heavy employer of professionals, and wages amongst these individuals are expected to grow less quickly (as indicated by the slower growth in wages in the professional services industry, which is also a heavy employer of professionals). While wages pressure will be slightly less in electricity distribution, the calculations presented in Section 6 suggest this difference is likely to be quite small, as the WPI for utilities is still a good proxy for wage growth in electricity transmission.

*Table 4.4. Employment by occupation in Australia and selected industries (per cent of total)*

	Australia	Utilities	Professional services
Managers	13	12	11
Professionals	22	21	56
Technicians and trades workers	15	24	10
Community and personal service workers	10	0	0
Clerical and administrative workers	15	21	19
Sales workers	9	3	2
Machinery operators and drivers	7	13	0
Labourers	10	7	1

Source: ABS (Labour force survey, data are average for 2012 calendar year)

#### 4.5.2 Professional services

WPI wages growth in professional services industry was quicker than the national average in the 5 years leading up to the end of 2012-13 financial year. WPI wages growth in the industry is expected to be in line with the Australian average in the forecast period.

According to the Department of Innovation (formerly the Department of Education, Employment and Workplace Relations) the professional and technical services industry is a large employer of accountants, programmers, solicitors and other individuals with technical and analytical skills. DEEWR note employment conditions in the industry are driven by business profitability and investment in Australia<sup>6</sup>. This is because the skills of the professionals mentioned (and others) are drawn on heavily when businesses are growing or and when businesses are trading assets and developing new assets. Labour demand has been strong in the industry compared to average labour demand in the Australian economy over the last 5 years because, because business investment has been performing well relative to the rest of the economy (driven by the investment phase of the mining boom).

As the investment phase in the mining boom is coming to end WPI wages in professional and technical services are not expected to continue to grow faster than the national average. WPI wages are expected to grow in line with the national average, as other sectors of the economy (including the housing and consumption sectors) pick up to take the slack from the mining sector. Activity growth in these other areas should continue to underpin robust demand for professional services.

*Table 4.5. Growth in nominal wages in Australia and selected industries*

	WPI Wages			AWE Wages		
	Australia	Utilities	Professional Services	Australia	Utilities	Professional Services
2007-08	4.1	4.0	4.3	3.9	2.4	7.6
2008-09	4.1	4.5	5.3	3.8	5.2	5.7
2009-10	3.0	4.3	2.9	5.3	8.9	5.8
2010-11	3.8	4.1	4.4	4.0	10.7	5.1
2011-12	3.6	3.5	4.4	4.0	2.6	2.5
2012-13 (e)	3.1	4.0	3.5	3.7	4.9	2.3
2013-14	3.3	3.9	3.4	2.1	2.3	2.6
2014-15	4.1	4.6	4.2	3.3	3.0	3.9
2015-16	4.8	5.3	5.0	5.0	5.3	5.4
2016-17	5.0	5.3	5.1	5.3	5.8	5.7
2017-18	4.8	5.1	4.9	4.8	5.2	5.1
2018-19	4.7	4.9	4.8	4.4	4.9	4.7

Source: ABS; Independent Economics

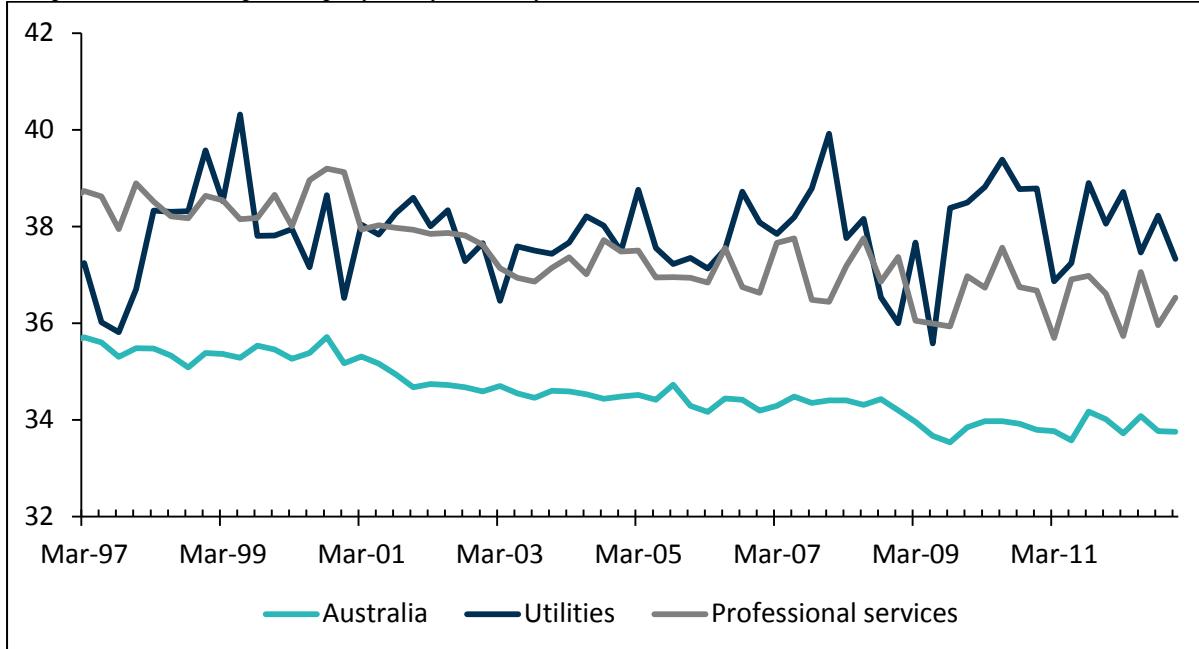
#### 4.5.3 AWE wages in the utilities and professional services industries

In utilities AWE wages are expected to grow by 2.3 per cent in 2013-14, compared to 3.9 per cent growth in WPI wages. This slower growth in AWE wages reflects the expectation that hours per employee, which have rose sharply in the post-GFC recovery will weaken significantly towards values implied by their pre-GFC trend (this is shown in Graph 4.15)

<sup>6</sup> Employment outlook for Professional, Scientific and Technical Services (2010, Department of Innovation

In professional services, AWE wages are expected to grow by 2.6 per cent in 2013-14, compared to growth in WPI wages of 3.4 per cent. This gap between growth in AWE wages and growth in WPI wages is less in professional services because hours worked per employee was weaker in the post GFC period and is closer to a level that is consistent with its long-term trend.

*Graph 4.15. Hours per employee, by industry*



Source: ABS; Independent Economics

## 5 Detailed forecasts for wages

Section 4 presented forecasts for economic activity, employment and WPI wages growth in Australia and the relevant states and industries. This section presents forecasts of WPI and AWE wages for the relevant industries, *in* the relevant states. These forecasts use the outlook for the labour markets in each state to explain how the wage outlook in a state's industry differs from the wage outlook for that industry at the national level.

### 5.1 The utilities industry

As shown in Table 5.3, WPI wages growth in NSW's utilities industry is expected to be in-line with wages growth in the national utilities industry. This is because labour market conditions in NSW are around average. In Tasmania, WPI wage growth is expected to be below the national average in the short-term, as the labour market is weak in the state.

*Table 5.1. Growth in nominal wages in the utilities industry*

	Utilities Industry - WPI wages			ACT	Utilities Industry - AWE wages			
	Australia	NSW	Tasmania		Australia	NSW	Tasmania	ACT
2009-10	4.3	3.8	4.9	4.3	8.9	7.5	10.7	10.1
2010-11	4.1	3.5	3.8	4.0	10.7	9.5	12.8	13.3
2011-12	3.5	3.2	3.5	3.4	2.6	1.9	4.2	4.8
2012-13 (e)	4.0	3.7	3.9	4.7	4.9	5.2	5.8	6.7
2013-14	3.9	3.8	3.7	3.9	2.3	1.9	1.5	2.3
2014-15	4.6	4.6	4.5	4.6	3.0	2.6	2.5	3.6
2015-16	5.3	5.3	5.2	5.3	5.3	4.9	5.0	5.9
2016-17	5.3	5.3	5.2	5.3	5.8	5.5	5.6	6.4
2017-18	5.1	5.0	4.9	5.1	5.2	5.0	5.1	5.7

Source: ABS; Independent Economics

In the ACT WPI wages are expected to grow in line with the national average, despite the unemployment rate in the ACT being well below average. As noted, the relationship between the labour market in ACT (relative to the rest of country) and wage growth (relative to the rest of the country) is not very strong.

The growth in AWE wages, relative to WPI wages, is consistent with the patterns in AWE growth relative to WPI growth already discussed.

### 5.2 The professional services industry

As shown in Table 5.3, wage growth in NSW's professional services industry is expected to be in-line with wages growth in the national industry, as labour market conditions in the state are expected to be line with the national average.

In Tasmania, WPI wages growth in the professional services industry is slightly weaker than the national average. This reflects the weaker labour market in that state.

In the ACT, WPI wages growth is in line with the national average, despite the labour market being tighter in this state than the national average. As noted, the relationship between the labour market in ACT (relative to the rest of country) and wage growth (relative to the rest of the country) is not very strong.

*Table 5.2 Growth in nominal wages in the Professional Services Industry*

	Professional Services - WPI wages				Professional Services - AWE wages			
	Australia	NSW	Tasmania	ACT	Australia	NSW	Tasmania	ACT
2009-10	2.9	4.3	3.5	3.3	5.8	4.6	7.7	7.1
2010-11	4.4	3.6	4.0	3.6	5.1	4.0	7.1	7.6
2011-12	4.4	3.7	4.4	3.3	2.5	1.9	4.2	4.8
2012-13 (e)	3.5	3.5	3.4	3.8	2.3	2.6	3.2	4.0
2013-14	3.4	3.4	3.2	3.5	2.6	2.2	1.8	2.7
2014-15	4.2	4.2	4.1	4.2	3.9	3.4	3.3	4.4
2015-16	5.0	5.0	4.9	5.0	5.4	5.1	5.1	6.1
2016-17	5.1	5.1	5.0	5.1	5.7	5.4	5.5	6.3
2017-18	4.9	4.9	4.8	4.9	5.1	4.9	5.0	5.6

Source: ABS;

The growth in AWE wages, relative to WPI wages, is consistent with the patterns in AWE growth relative to WPI growth already discussed.

# 6 Wages growth in electricity distribution

Under the ABS industry classification, ANZSIC 2006, the utilities industry is made up of the Electricity, Gas, Water and Waste sub-industries. The Electricity industry itself is made up of several components, including generation, transmission, distribution, retail and electricity market operations. Ausgrid is an electricity distribution business.

Historically, the AER has applied the AWE or WPI for the utilities industry for all its determinations, regardless of whether the business is primarily providing one particular component of the electricity supply chain e.g. distribution. This section analyses whether it wage growth in the utilities industry is a reasonable proxy for wage growth in electricity distribution.

## 6.1 WPI wages

As noted in section 2, the WPI measures the weighted average change in the labour costs associated with performing the set of tasks that are required to generate output in an industry or economy.

Wages growth in the electricity distribution and electricity transmission sub-industries will not necessarily be well measured by the WPI for the utilities industry. The nature of the output in these industries is different which means their output is generated by different ‘tasks’ and they employ individuals with different occupations.

Table 6.1 shows that wages growth in these three industries would be different if the wages of technicians and trade workers, professionals, machinery operators and drivers and labourers were growing at different rates. Electricity distribution employs more technicians and trade workers, electricity transmission employs more professionals and utilities employs more machinery operators and drivers and labourers.

*Table 6.1. Employment by occupation in Utilities, electricity distribution and electricity transmission*

	Electricity distribution	Electricity transmission	Utilities**
Managers	9%	14%	12%
Professionals	18%	46%	19%
Technicians and trades workers	44%	24%	26%
Community and personal service workers	0%	0%	0%
Clerical and administrative workers	23%	17%	19%
Sales workers	1%	0%	2%
Machinery operators and drivers	1%	0%	14%
Labourers	4%	0%	8%

Source: ABS (special request data for 2010/11 financial year)

\*\* Utilities is Electricity, Gas, Waste and Water Industry

Despite these differences it appears that the WPI wages in utilities provides a reasonable proxy for WPI wages growth in the electricity distribution and electricity transmission sub-industries.

- The wages of technicians & trades workers and of machinery operators and drivers have been growing quickly, as both sets of individuals have been in high demand during the mining boom. This suggests growth in WPI wages in electricity distribution industry and in the utilities industry is probably similar. (The weighted average of wage growth across all occupations is similar in these two industries, as shown in Table 6.2, when the weights used are their employment by occupation shares. This calculation that is conceptually similar to the calculation that underlies the WPI).
- The wages of professionals have been growing less quickly than most other professions. This suggests that growth in WPI wages in electricity transmission is probably slower than in utilities, but the difference is likely to be quite small. This is also illustrated in Table 6.2.

*Table 6.2. Average Weekly Cash Earnings by Occupation\**

	May-06	May-12	Per cent change
Managers	1489	1926	4.4
Professionals	1125	1438	4.2
Technicians and trades workers	948	1247	4.7
Community and personal service workers	574	707	3.5
Clerical and administrative workers	735	972	4.8
Sales workers	484	607	3.8
Machinery operators and drivers	948	1283	5.2
Labourers	598	779	4.5
Average per cent change, weighted by occupation distribution of...			
Electricity distribution	--	--	4.6
Electricity transmission	--	--	4.4
Utilities	--	--	4.6

Source: ABS; Independent Economics

\* The ABS collects data for average weekly cash earnings from a sample that is different to average weekly earnings. Also, the series differ conceptually. Average weekly cash earnings includes salary sacrifices, whereas average weekly earnings does not. AWCE data are published once every two years. May-06 data was chosen as a comparison as the next data in the history were published in Aug-08, and thus influence by the GFC.

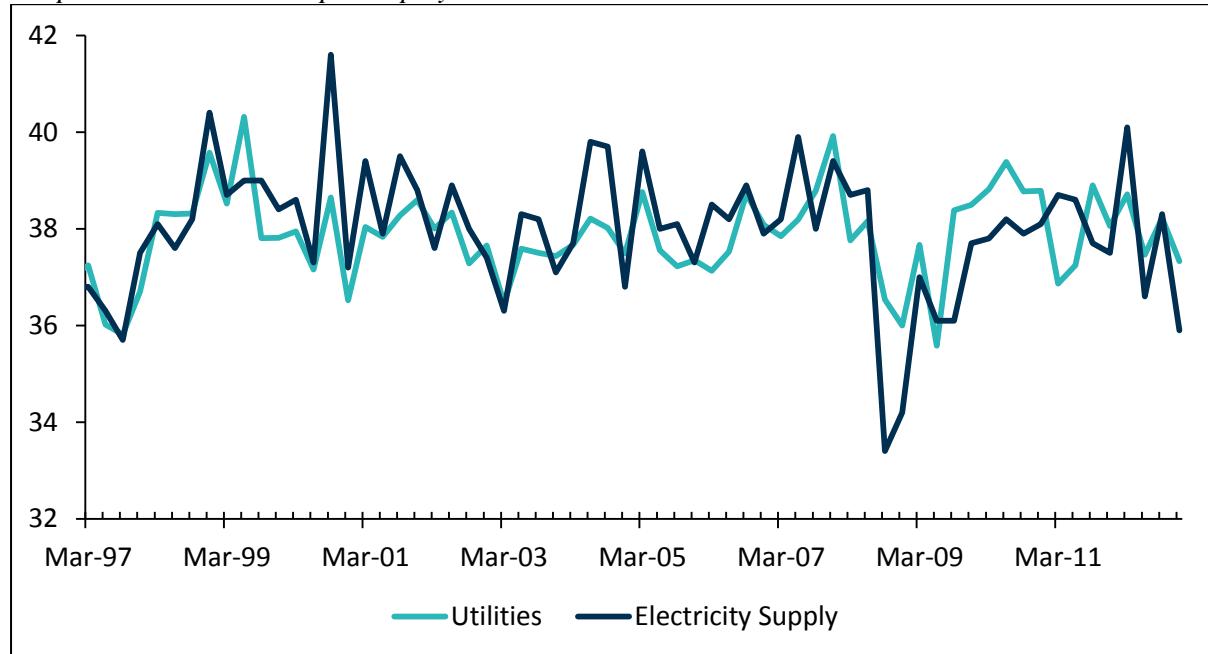
## 6.2 AWE wages

It is not possible to definitively determine whether AWE wages in the utilities industry are good measure of AWE wages in the electricity distribution and electricity transmission industries, as Independent Economics is unable to approximate growth in AWE wages in the electricity distribution and electricity transmission industries. This is because a history of employee earnings by occupation that includes observations with similar dates to the data for employment by occupation in these industries is not available. However, an indicative analysis shows that AWE wages in utilities is a

reasonable proxy of AWE wages in electricity distribution and electricity transmission. This analysis is outlined in this section.

As explained, one of the most important drivers of differences between AWE wages growth and WPI wages growth is changes in hours worked per worker. Graph 6.1 shows that hours per worker in the electricity supply sub-industry follows a similar pattern to hours per worker in the utilities industry.

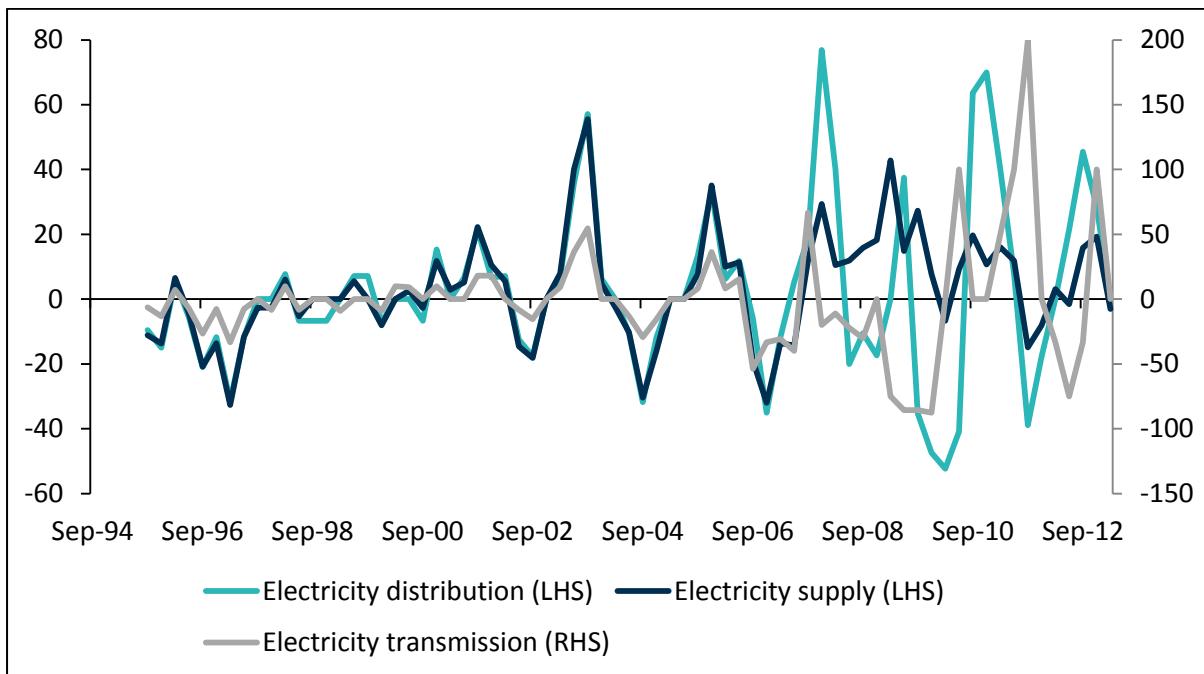
*Graph 6.1. Hours worked per employee*



Source: ABS; Independent Economics

Further, Graph 6.2 shows that employment growth in the electricity distribution and electricity transmission industries follow patterns that are broadly similar to the pattern of employment growth in the electricity supply industry. If employment conditions follow similar patterns, this suggests that hours per worker follow similar patterns in these three industries. In turn, this means hours per worker in these industries follow a similar pattern to hours per worker in utilities.

*Graph 6.2 Year-ended employment growth, per cent*



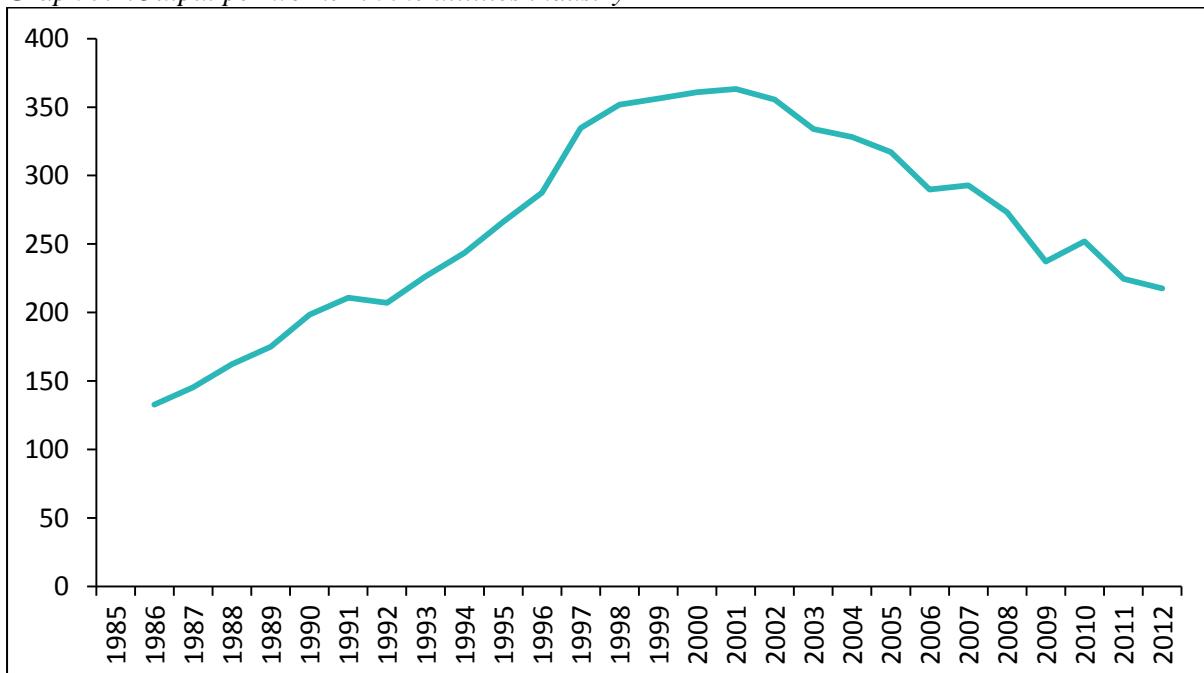
Source: ABS; Independent Economics

Thus, since WPI wages in utilities is a reasonable measure of WPI wages in electricity distribution and electricity transmission, and hours per worker follow a similar pattern in these industries, this implies that AWE wages in utilities is a good measure of AWE wages in electricity distribution and electricity transmission.

# 7 The productivity performance of the utilities industry

In terms of productivity performance, the utilities industry has gone through two distinct phases. From the middle of the 1980s to around 2001, labour productivity in terms of output per worker grew by around 7 per cent year, as shown in Graph 7.1. Then, from 2001 to 2012, output per worker fell by 4.5 per cent per year. Throughout this period, output grew at a reasonably steady pace (shown in Graph 7.2, below).

*Graph 7.1. Output per worker in the utilities industry*



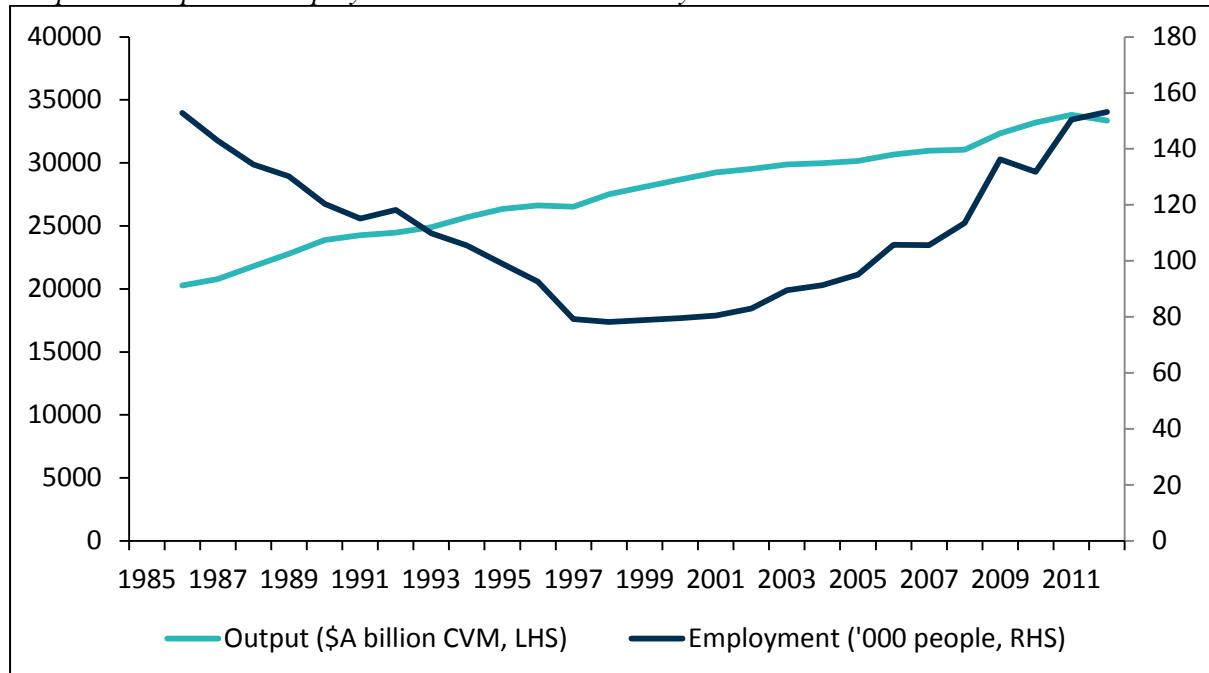
Source: ABS; Independent Economics

Section 7 explains these trends, and assesses the outlook for output per worker. A relevant consideration here is the capital stock and its use. The AER's treatment of productivity growth is also discussed.

## 7.1 Output per worker in the utilities industry

Between the middle of the 1980s and the end of the 1990s, employment fell sharply in utilities, as shown in Graph 7.2. The utilities sector was reformed during this period and these reforms allowed (and forced) the industry to use labour more efficiently. For example, one reform that was applied to the sector during this period was an increase in the competition between companies that operated in the sector. This increased competition saw the industry shedding workers heavily. Annual average growth rates in output per worker are provided in Appendix D.

*Graph 7.2. Output and employment in the utilities industry*



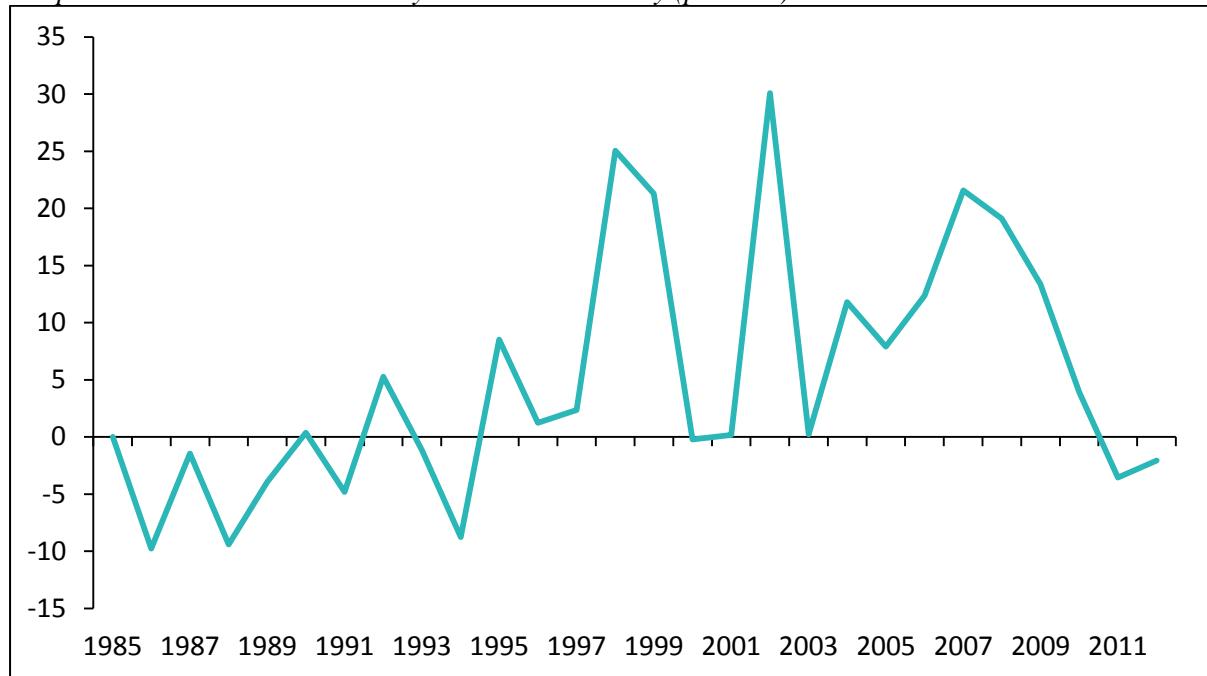
Source: ABS; Independent Economics

Since the early 2000s, employment has recovered quite quickly, but this has not translated into higher output. According to Topp and Kulys (2012) employment has expanded as more workers have been required to help upgrade and augment network infrastructure. As this work does not constitute extra output their employment has weighed on output per worker. The authors also note that some workers have been employed to learn the skills of older workers who are set to retire. The marginal output created by these new workers (while their older colleagues remain employed) is likely to be small, which means their employment has potentially weighed on output per worker.

Hiring workers to upgrade and augment infrastructure has reflected the investment boom that has been underway in the utilities industry since the late 1990s (Graph 7.3 shows investment in utilities has grown strongly on average since then) This investment boom, so far, has not translated into strong output growth for three reasons according to the Productivity Commission.

- The utilisation of new production facilities that have been created in this investment boom has been low. Some new assets have built to service ‘peak demand’ in summer (which has increased sharply relatively to normal demand due to an increase in the use of air-conditioning). Production at these assets drops sharply outside ‘peak’ periods. Other new production assets have designed with future demand in mind. Production at these assets should rise as the economy grows in the long-term. In relation to these assets, the Commission notes that investment in utilities tends to ‘lumpy’ or ‘cyclical’ with periods of rapid investment following periods of slow investment.
- Some new investment has gone into improving output ‘quality’ but not output ‘quantity’. For example, investments in underground cabling and upgrades to assets to improve the reliability of supply do not result in increases in measured output.
- Some new investment has been directed towards reducing the environmental impact of production in the sector, rather than expanding production. Notably, some investment has focused on shifting away from brown coal fired production.

*Graph 7.3. Growth in investment by the utilities industry (per cent)*



Source: ABS; Independent Economics

It is likely that labour productivity growth will improve in the future, because the factors driving its recent poor productivity performance are either cyclical or temporary. Firstly, output in the utilities industry will continue to grow as demand for energy in the Australian economy expands. However, in the short term, weakness in the Australian economy is expected to lead to subdued demand for output from the utilities industry.

Secondly, employment growth is expected to slow. As noted, the recent investment in the utilities is ‘cyclical’, which means the associated demand for labour is ‘cyclical’ as well. Investment in the utilities industry tends to ‘cycle’ between phases of substantial investment, where the new capacity that is required to meet demand for a number of years is built up, and phases of weaker investment. This means investment is expected to weaken; indeed, investment growth has already slowed in recent years. With this, the labour demand in the industry that is attributable to this investment can be expected to slow. Further, once the skills transfer from the older workers to the younger workers in the utilities industry is complete, it is likely that when older workers retire, they will not be replaced by new workers. (In effect, this replacement is happening now before their retirement).

Overall, employment growth can be expected to weaken while output growth will remain solid and thus growth in output per worker can be expected to improve. Independent Economics expects that productivity in the utilities industry will slowly recover over the forecast period to a long term trend of 1.5 per cent per annum.

# References

Australian Energy Regulator (April 2012), *Powerlink – final decision – April 2012*

Australian Energy Regulator (April 2013), *Final Decision for ElectraNet's 2013-18 regulatory control period*

Deloitte Access Economics (February 2013), ElectraNet Determination 2013-18

Department of Innovation (2010), Employment Outlook for Professional, Scientific and Technical Services

Topp and Kulys (April 2012), *Productivity in Electricity, Gas and Water: Measurement and Interpretation* (Productivity Commission, Staff Working Paper)

# Appendix A: Calendar year forecasts

*Table A.1. Calendar Year Forecasts for Australia and Australian Industries*

	WPI Wages			AWE Wages		
	Australia	Utilities	Professional Services	Australia	Utilities	Professional Services
2008	4.2	4.2	5.0	3.6	3.2	6.4
2009	3.6	4.4	4.2	4.2	5.8	4.7
2010	3.3	4.6	3.5	5.1	12.3	7.3
2011	3.7	3.6	4.4	4.1	6.4	2.2
2012	3.6	4.0	4.2	4.1	2.2	3.6
2013	2.8	3.5	3.0	2.5	5.1	1.7
2014	3.8	4.4	4.0	2.6	1.6	3.2
2015	4.5	5.0	4.6	4.2	4.3	4.7
2016	5.0	5.4	5.1	5.4	5.7	5.7
2017	4.9	5.2	5.0	5.1	5.5	5.4
2018	4.7	5.0	4.8	4.5	5.0	4.8

Source: ABS; Independent Economics

*Table A.2. Calendar Year Forecasts for NSW and NSW Industries*

	WPI Wages			AWE Wages		
	NSW	NSW - Utilities	NSW - Professional Services	NSW	NSW - Utilities	NSW - Professional Services
2012	3.5	3.9	3.6	3.8	1.9	3.3
2013	2.6	3.2	3.1	2.2	5.0	1.6
2014	3.8	4.4	4.0	2.1	1.1	2.8
2015	4.4	5.0	4.6	3.8	3.9	4.3
2016	4.9	5.3	5.1	5.0	5.4	5.4
2017	4.8	5.2	5.0	4.8	5.3	5.2
2018	4.7	4.9	4.8	4.3	4.8	4.7

Source: ABS; Independent Economics

*Table A.3. Calendar Year Forecasts for TAS and TAS Industries*

	WPI Wages			AWE Wages		
	TAS	TAS - Utilities	TAS - Professional Services	TAS	TAS - Utilities	TAS - Professional Services
2012	3.3	3.8	4.0	5.1	3.4	4.9
2013	2.6	3.4	2.9	2.1	4.8	1.4
2014	3.7	4.2	3.8	1.7	0.9	2.6
2015	4.4	4.9	4.5	3.7	3.9	4.3
2016	4.9	5.3	5.0	5.0	5.5	5.5
2017	4.8	5.1	4.9	4.8	5.4	5.3
2018	4.6	4.8	4.7	4.3	4.9	4.8

Source: ABS; Independent Economics

*Table A.3. Calendar Year Forecasts for ACT and ACT Industries*

	WPI Wages			AWE Wages		
	ACT	ACT - Utilities	ACT - Professional Services	ACT	ACT - Utilities	ACT - Professional Services
2012	4.0	4.6	4.7	6.7	5.1	6.6
2013	3.2	3.8	3.3	2.2	5.2	1.8
2014	4.0	4.4	4.0	2.7	2.1	3.7
2015	4.6	5.0	4.6	4.5	4.9	5.3
2016	5.1	5.4	5.1	5.7	6.4	6.4
2017	5.0	5.2	5.0	5.4	6.1	6.0
2018	4.8	5.0	4.8	4.8	5.4	5.3

Source: ABS; Independent Economics

## Appendix B: Productivity

Table B.1. Percentage change in real output per number of people employed in utilities industry

Financial year ended	Utilities industry Growth in output per worker (per cent)
1987	10
1988	12
1989	8
1990	13
1991	6
1992	-2
1993	9
1994	8
1995	9
1996	8
1997	16
1998	5
1999	1
2000	1
2001	1
2002	-2
2003	-6
2004	-2
2005	-3
2006	-9
2007	1
2008	-7
2009	-13
2010	6
2011	-11
2012	-3

Source: ABS; Independent Economics