Attachment 5.18

Independent economics - Labour escalation for NSW DNSPs

May 2014

Labour cost escalators for NSW, the ACT and Tasmania

This report was prepared for Ausgrid, Endeavour Energy, Essential Energy, ActewAGL and Transend

18 February 2014

Independent Economics is an independent provider of economic modelling services to support economic policy analysis and forecasting. We are strongly committed to independent modelling that provides robust analysis and real solutions to meet client needs. In Australia, we provide services to government and industry, and we also provide services internationally.

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Executive summary

This report presents forecasts of growth in nominal labour costs. These forecasts are for the use of a group of electricity network businesses in their submissions to Australian Energy Regulator (AER). Those businesses are the electricity distribution businesses Ausgrid, Endeavour Energy, Essential Energy (from NSW) and ActewAGL (from the ACT) and the electricity transmission business Transend Networks (Tasmania). This report was commissioned by Ausgrid on behalf of those businesses.

Those businesses submit forecasts for labour costs to the AER as part of the AER's determinations on the prices they can charge for the use of their electricity network assets. The AER's pricing determinations are governed by the National Electricity Rules (NER), which state that the AER must satisfy itself that forecast operating expenditure includes labour costs that are efficient.

Labour costs are forecast in Australia, NSW, Tasmania and the ACT, reflecting the geographic spread of the businesses. In each economy, wages are also forecast for the utilities and professional services industries, reflecting the main sources of labour used by the network businesses.

Annual labour cost growth is forecast on a year-by-year basis, and as a compound average growth rate in the five years to 2018-19. This reflects the needs of the AER, which makes pricing determinations that apply to five year 'regulatory periods'. The current regulatory period for the electricity network businesses finishes at the end of 2013-14. The subsequent five year regulatory period goes from the start of 2014-15 to the end of 2018-19.

The Australian Bureau of Statistics (ABS) publishes a range of measures of wages. This report presents forecasts of the Wage Price Index (WPI) and Average Weekly Earnings (AWE).

The outlook for nominal labour costs is influenced by the broader outlook for the labour market and the economy generally. Similarly, the outlook for wages in the specific regions and industries in which the network businesses operate depends on the outlook in those specific labour markets.

In considering the implications of rising wages for prices, any changes in labour productivity can also be taken into account.

Against this background, the main issues to be considered in projecting future growth in labour costs for the network businesses are as follows.

- Which measure of wages should be used?
- How are wages forecast?
- What is the economic outlook and the specific outlook for wages?
- Is wages growth in utilities reflective of wage growth for the electricity businesses?
- What is the productivity outlook in the electricity industry?

These issues are now addressed in turn.

Which measure of wages should be used?

While the ABS publishes a range of measures of wages, the appropriate choice from this range for the purpose of the AER's price determinations depends on whether and how the AER also adjusts for

productivity growth. The AER does not currently adjust for productivity growth, so that case is considered first.

In its wage publications, the ABS advises that only one of its wage measures, the WPI, is designed to measure changes in the pure price of labour. The WPI is constructed to measure changes in the price of labour in the same way that the Consumer Price Index is constructed to measure changes in the price of consumer goods and services. That is, the WPI captures movements in the price of a fixed bundle of labour services, in the same way that CPI does for a fixed bundle of consumer goods and services.

Another widely used measure of wages is AWE, but it is constructed for a different purpose. It measures average earnings of employees at a point in time. It does this by dividing total earnings by the number of employees. This means that, in addition to reflecting movements in the pure price of labour, it will also reflect movements in average hours worked and the average quality of labour, as both affect average earnings.

The AER is concerned with movements in efficient labour costs as a determinant of prices. For that purpose, it is appropriate to use a pure measure of movements in labour costs i.e. the WPI.

The shortcomings of instead using AWE for that purpose are evident. For example, suppose an industry decides to replace some part-time workers with a smaller number of full-time workers, or to replace some lower skilled workers with a smaller number of higher skilled workers. That may leave the industry with fewer, but more-highly paid, workers and no change in its total wage bill. This development would not provide a justification for a price change and, consistent with that, WPI would be unaffected. However, AWE would rise and hence would provide a false signal of a rise in labour costs. This false signal for AWE would only be neutralised by also making an adjustment for productivity growth that measures labour input in a compatible way i.e. persons employed.

Consistent with that analysis and the advice from the ABS, the AER currently use the WPI, rather than AWE, to measure labour costs in the utilities industry in each state and territory. However, that conclusion is based on the assumption that no adjustment is made for productivity growth.

In its determinations, the AER has noted that it should adjust growth in labour costs for growth in productivity. This is because it is changes in the nominal *unit* cost of labour (the cost of labour per unit of output) that provides a justification for price changes. Thus, price changes should take into account the percentage movement in the price of labour net of the percent gain in labour productivity. However, as acknowledged by the AER, it is not possible to adjust the WPI for growth in productivity because there is no published measure of productivity that is consistent with it. Given this difficulty, the AER has decided to use the WPI but make no adjustment for productivity.

As a further recent complication, measured productivity in the utilities industry has been falling. This means a productivity adjustment would have *added* to the growth in prices the AER allowed for the utilities industry. In the future it is likely that productivity will turn around and begin increasing again. At this point, the issue of how to adjust labour cost indexes for productivity growth will arise.

It is inappropriate to use the WPI in conjunction with an incompatible measure of labour productivity. In particular, *labour cost and labour productivity adjustments can only be validly used in tandem if they are based on the same concept of labour input*. While the WPI excludes the effects of the rise in the average quality of labour, existing measures of labour productivity do not. Inappropriately combining the WPI with one of those existing productivity measures would mean, for example, that

the trend towards using more educated labour in place of less educated labour would trigger price reductions, whereas this would not be warranted on economic grounds.

If the AER proposes to make price adjustments for productivity increases, it would need to consider using alternative measures of nominal labour costs for which consistent measures of productivity, based on the same concept of labour input, are available. Two such measures are Average Weekly Ordinary Time Earnings (AWOTE) and AWE. Table A summarises, for each productivity measure, the compatible measure of labour costs.

Table A. Compatible measures for labour costs for alternative productivity measures

Productivity measure	Measure of labour costs
None*	WPI
Output per hour, standardised for changes to the average quality of the workforce (not available)*	WPI
Output per hour	AWOTE
Output per worker	AWE

Source: ABS; Independent Economics
* Currently the AER use the WPI and make no productivity adjustment because no measure of productivity that is consistent with the WPI is available.

Forecasting the AWE and WPI

Alternative measures of labour cost growth are forecast using Independent's Macro-econometric model and a new labour cost model developed for this report. The approach used by Independent Economics ensures all forecasts are grounded in sound economic theory and are fully consistent.

At the national level, wage movements are influenced by inflation, unemployment and productivity growth. Real wages rise faster or slower than productivity depending on where unemployment is lower or higher than normal. In this modelling, wages are measured using the national accounts concept of average compensation of employees (COE). Other measures of wages, including WPI and AWE, are modelled to depend on COE, ensuring that forecasts for all three wage measures are ultimately driven by the same labour market fundamentals.

At the state and industry level, consistency with this national wages outlook is achieved by modelling state and industry wages relative to national wages. Further, if the labour market is relatively strong in a particular state or industry, relative wages will also strengthen. For example, WPI for the mining industry strengthens relative to WPI for all industries if the mining industry's share of labour demand rises. AWE at the state and industry level is modelled in a similar way.

Finally, these forecasts for WPI and AWE in each industry and in each state are used to develop fully consistent forecasts of wages in each industry and in each state are used to develop fully consistent forecasts of wages in each industry *within* each state. This is achieved using the residual allocation system or RAS approach.

The economic outlook

GDP and Inflation

The Australian economy is currently in a soft patch. Economic activity grew by 2.9 per cent in 2012-13 and is expected to grow by 2.3 per cent in 2013-14 (this compares to average annual growth of 3.1 per cent in the ten years to 2011/12). Economic conditions are expected to recover. Activity is expected to grow on average by 3.4 per cent in the five years from the start of 2014-15 to the end of 2018-19. This pickup in growth is supported by a significant contribution from exports net of imports, a recovery in housing investment and improved growth in household consumption.

Net exports are expected to strengthen in response to two developments. First, international competitiveness has improved with the recent depreciation in the Australian dollar from above parity with the US dollar to around 90 US cents. Second, the mining boom is transitioning from the investment phase in which it drew in imports of mining equipment, to the production phase in which, with the completion of investment projects, mining export volumes are ramping up.

Housing investment is set to recover in response to low interest rates, a shortage of housing, and a continued normalisation of bank lending following the tough lending policies in the Global Financial Crisis (GFC). Housing approvals have already climbed by 23 per cent from the final three months of 2012 to the final three months of 2013, and this strong recovery in housing approvals is starting to flow through to housing construction.

Household consumption growth has been weak since the GFC, as households have strived to reduce their indebtedness. For example, the compound average annual growth rate in the volume of retail sales in the three years to the December quarter 2012 was only 1.5 per cent, compared to normal growth of over 3 per cent. However, this spending restraint has left household balance sheets in better shape, and with interest rates low, the outlook for household consumption growth is now more positive. Growth in the volume of retail sales has already picked up to be 3.4 per cent in the year to the December quarter 2013.

The soft patch in economic growth has seen low inflation. For example, CPI inflation was only 2.3 per cent from 2011-12 to 2012-13. However, the recent depreciation in the Australian dollar has pushed up CPI inflation to 2.7 per cent over the year to the December quarter 2013. Looking ahead, the Reserve Bank of Australia (RBA) policy of targeting an inflation rate of 2 to 3 per cent leads to a forecast for average CPI inflation of 2.5 per cent in the five years from the start of 2014-15 to the end of 2018-19.

The labour market

The current softness in the Australian economy has resulted in weak labour demand. Employment grew by 1.3 per cent in 2012-13, and is expected to grow by only 1.1 per cent in 2013-14. Hence, the trend unemployment rate has risen from 5.2 per cent to 5.9 per cent in the 18 months from July 2012 to January 2014.

From this weak position, labour demand is expected to strengthen in the forecast period for two reasons. First, the expected recovery in economic activity will flow through to the labour market, after the usual delay of around six months. Second, the economic recovery will see a switch in the direction of economic growth from industries with low labour intensity, such as mining and

engineering construction, to industries with high labour intensity, such as consumer services and residential construction i.e. the industry pattern of growth will become more positive for jobs growth.

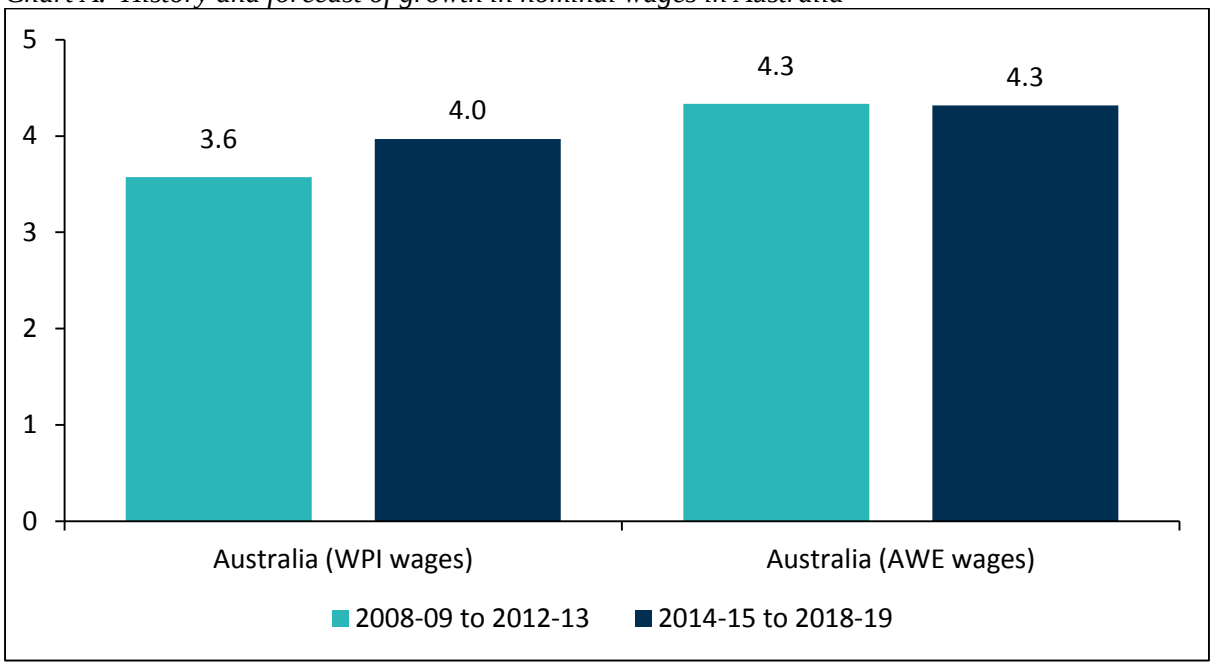
As a result of this recovery in labour demand, employment growth is expected to average 1.4 per cent per year over the five years from the start of 2014-15 to the end of 2018-19. This easily exceeds expected annual growth in labour supply of only 1.0 per cent per year in the same period. Consequently, the unemployment rate is expected to decline from around 6 per cent at the end of 2013-14 to around 5 per cent in 2018-19.

WPI wages growth

The recent weakness in the labour market has seen growth in wages slow. For example, the WPI grew by a weak 2.6 per cent from the December quarter of 2012 to the December quarter of 2013. This compares to its average annual growth over the prior decade of 3.8 per cent.

However, the recovery in the labour market is expected to lead to a similar recovery in wages growth. Annual WPI inflation is forecast to average 4.0 per cent in the five years from 2014-15 to 2018-19, as shown in Chart A. This is close to the historical norm for WPI inflation of 3.8 per cent.

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



Source: ABS; Independent Economics
* Five year compound average of growth in years specified

AWE Wages

In the five years to 2012-13, AWE wages grew more quickly than WPI wages (with annual average growth of 4.3 per cent compared to 3.6 per cent). This is consistent with the composition of the Australian workforce changing towards higher paying jobs. For example, employment amongst professionals grew from around 21 per cent to around 22 per cent of the employment and there was an increase in the average age of the workforce. Changes in the composition of employment towards higher-paying jobs add to growth in AWE, but have no effect on growth in WPI because it is based on a fixed bundle of jobs. Only partially offsetting these effects was a small fall in average hours worked by Australian employees, which slightly reduced growth in AWE relative to growth in WPI.

AWE wages are expected to grow on average by 4.3 per cent in the five years between the start of 2014-15 and the end of 2018-19. This is the same as the rate of AWE inflation in the five years to 2012-13. It is slightly faster than forecast WPI growth of 4.0 per cent, as the composition of the workforce continues to shift towards more highly paid occupations.

WPI wages have been rising faster in the utilities industry than for the economy as a whole. The utilities industry is a relatively heavy employer of workers in occupations that have been experiencing strong wage growth, including technicians and trade workers and labourers and machinery operators. Wages in these occupations have been supported by strong demand in the rapidly expanding mining sector. This is expected to continue as the mining industry transitions from the investment phase of the mining boom to the production/export phase. Consequently, wages in utilities are expected to continue to rise faster than for the economy as a whole. This is reflected in the forecasts for wages growth in utilities shown in Table B.

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	4.2	3.7	4.2	4.8	3.9	4.2	4.3	5.3
2013-14	3.4	3.1	3.2	3.3	2.5	1.9	0.8	1.6
2014-15	3.6	3.6	3.4	3.7	2.2	1.7	1.9	3.0
2015-16	4.0	3.9	3.9	4.0	4.2	3.7	4.0	5.0
2016-17	4.6	4.6	4.5	4.6	5.9	5.5	5.7	6.6
2017-18	4.9	4.9	4.8	4.9	6.1	5.8	5.9	6.6
2018-19	4.8	4.7	4.6	4.7	5.3	5.2	5.2	5.7

Source: ABS; Independent Economics

In the professional services industry, wages have also been rising faster than for the economy as a whole. This is because businesses investment, which is a key driver of activity and labour demand in the industry, has been growing strongly. In the forecast period, wages growth for professional services is expected to be only slightly above wages growth for the economy as a whole, as business investment eases from high levels with the passing of the investment phase of the mining boom. This is reflected in the forecasts for wages growth in professional services shown in Table C.

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	4.2	3.4	3.3	5.8	4.6	7.7	7.1
2010-11	4.4	3.6	4.0	3.7	5.1	4.0	7.1	7.6
2011-12	4.4	3.7	4.3	3.3	2.5	1.9	4.2	4.8
2012-13	3.5	3.3	3.4	3.7	3.4	3.7	3.7	4.7
2013-14	2.6	2.6	2.4	2.8	4.3	3.6	2.5	3.4
2014-15	3.3	3.2	3.1	3.2	2.5	2.0	2.3	3.4
2015-16	3.7	3.7	3.6	3.6	4.1	3.7	4.0	5.0
2016-17	4.4	4.3	4.3	4.3	5.7	5.4	5.6	6.5
2017-18	4.8	4.7	4.6	4.7	5.9	5.7	5.8	6.5
2018-19	4.6	4.6	4.5	4.6	5.2	5.0	5.1	5.6

Source: ABS; Independent Economics

Table D shows that in recent years there has been only moderate variation between states in growth in WPI wages. This contrasts with the more marked variation in wages growth between industries. Workers can change states more easily than they can change industries, and this geographical mobility tends to limit differences in wages growth between states. Similarly, Table D shows that there is expected to be relatively little variation in wages growth between states in the forecast period.

Table D. Growth in nominal wages in selected states (per cent)

	WPI wages				AWE wages			
	Australia	NSW	Tasmania	ACT	Australia	NSW	Tasmania	ACT
2009-10	3.0	3.0	3.6	3.3	5.3	4.0	7.1	6.8
2010-11	3.8	3.8	3.4	3.7	4.0	3.3	6.5	7.1
2011-12	3.6	3.5	3.4	3.3	4.0	2.9	5.2	5.7
2012-13	3.3	3.1	3.2	3.7	4.4	4.8	4.7	5.3
2013-14	2.8	2.8	2.7	2.8	3.1	2.8	1.5	2.1
2014-15	3.0	3.0	2.9	3.2	2.0	1.4	1.5	2.5
2015-16	3.5	3.4	3.4	3.6	3.7	3.2	3.4	4.3
2016-17	4.2	4.1	4.1	4.3	5.4	5.0	5.2	5.9
2017-18	4.6	4.6	4.5	4.7	5.6	5.3	5.4	6.0
2018-19	4.5	4.5	4.4	4.6	4.9	4.6	4.7	5.2

Source: ABS; Independent Economics

Wage growth in the utilities industry versus the electricity distribution industry

The electricity network businesses that commissioned this report are in the electricity distribution and electricity transmission sub-industries of the utilities industry. Section 6 shows wages growth in the utilities industry provides a reasonable proxy for wages growth in these sub-industries.

1 Introduction

This report presents forecasts of growth in nominal labour costs. These forecasts are for the use of a group of electricity network businesses in their submissions to Australian Energy Regulator (AER). Those businesses are the electricity distribution businesses Ausgrid, Endeavour Energy, Essential Energy (from NSW) and ActewAGL (from the ACT) and the electricity transmission business Transend Networks (Tasmania). This report was commissioned by Ausgrid on behalf of those businesses.

Those businesses submit forecasts for labour costs to the AER as part of the AER's determinations on the prices they can charge for the use of their electricity network assets. The AER's pricing determinations are governed by the National Electricity Rules (NER), which state that the AER must satisfy itself that forecast operating expenditure includes labour costs that are efficient.

Labour costs are forecast in Australia, NSW, Tasmania and the ACT, reflecting the geographic spread of the businesses. In each economy, wages are also forecast for the utilities and professional services industries, reflecting the main sources of labour used by the network businesses.

Annual labour cost growth is forecast on a year-by-year basis, and as a compound average growth rate in the five years to 2018-19. This reflects the needs of the AER, which makes pricing determinations that apply to five year 'regulatory periods'. The current regulatory period for the electricity network businesses finishes at the end of 2013-14. The subsequent five year regulatory period goes from the start of 2014-15 to the end of 2018-19.

This report is structured as follows.

- **Section 2** analyses the choice of wage choice measure from the various measures available from the ABS. It also explains how this choice is linked to whether and how an adjustment is made for productivity growth.
- **Section 3** explains the methodology that has been used to generate wages forecasts at the national, state and industry levels.
- **Section 4** examines the current economic environment and provides forecasts for the economy, the labour market and wages growth at the national level.
- **Section 5** provides detailed financial year forecasts for nominal wage growth in the relevant industries at the state level.
- **Section 6** examines whether it is reasonable to use wages growth in the utilities industry as a proxy for wages growth in the electricity distribution industry.
- **Appendix A** provides an alternative presentation of the detailed forecasts for wages growth, using calendar years rather than financial years.

While all care, skill and consideration has been used in the preparation of this report, the findings refer to the terms of reference of the electricity network businesses 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 to provide forecasts for Labour Cost Escalators for Australia, New South Wales, Tasmania and the ACT for the utilities industry, the professional services industry and for all industries combined.

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 Measures of labour costs

The ABS publishes a range of measures of wages. This range includes the Wage Price Index (WPI), average Compensation of Employees (COE) in the national accounts, Average Weekly Earnings (AWE) and Average Weekly Ordinary Time Earnings (AWOTE). From this range, the AER currently uses WPI to assess labour costs. Section 2.1 introduces the various measures of wages.

At the conceptual level, the choice from the range of wage measures for the purpose of the AER's price determinations depends on whether and how the AER also adjusts for productivity growth. The AER does not currently adjust for productivity growth, so that case is considered first, in section 2.2.

While measured productivity in the utilities industry has been falling in recent years, it is likely to resume its more usual pattern of positive growth in the future. The AER may then consider subtracting growth in labour productivity from growth in wages in making price determinations. Hence, section 2.3 assesses the conceptual choice of labour cost measure for price determination when adjustments for productivity growth are also made.

Beyond the main conceptual differences between the various measures of labour costs, there are also other differences. Section 2.4 discusses some of these other aspects of the various measures of wages.

2.1 Alternative wage measures

The Wage Price Index (WPI) is currently used by the AER. It measures changes in the price of wages and salaries in the labour market. Alternative versions of the index refer to the price of labour either per hour or for ordinary hours of work. This report focusses on the 'per hour' versions.

The ABS states that the methodology used to construct the WPI is similar to that used for other price indexes such as the Consumer Price Index. In the WPI, index numbers are compiled using information collected from a representative sample of employee jobs within a sample of employing organisations.

The WPI aims to measure changes over time in the price of wages and salaries unaffected by changes in the quality or quantity of work performed. A range of procedures have been developed by the ABS to identify and remove quality and quantity changes to ensure that only pure price changes are reflected in the indexes. There is no available measure of labour productivity that is compatible with the WPI, because none of the existing measures of labour productivity standardise to remove the effects of changes in labour quality.

Average Weekly Ordinary Time Earnings (AWOTE) measures the average earnings in a week for full-time employees from their 'ordinary' hours. By measuring just the ordinary time earnings of employees who work full-time, the AWOTE data is designed to measure earnings largely abstracting from the effects of changes in average hours worked, irrespective of whether they arise from cyclical fluctuations or the trend from full time to part time work. Therefore, the measure of productivity that is most consistent with AWOTE is output per hour.

The ABS defines 'ordinary time earnings' to be payment for award, standard or agreed hours of work. If the hours defined by these arrangements change, then the AWOTE data would be impacted by changes in hours worked. However, in practice, cyclical fluctuations and the trend to part time work are more significant source of changes in hours worked than agreed changes to standard hours.

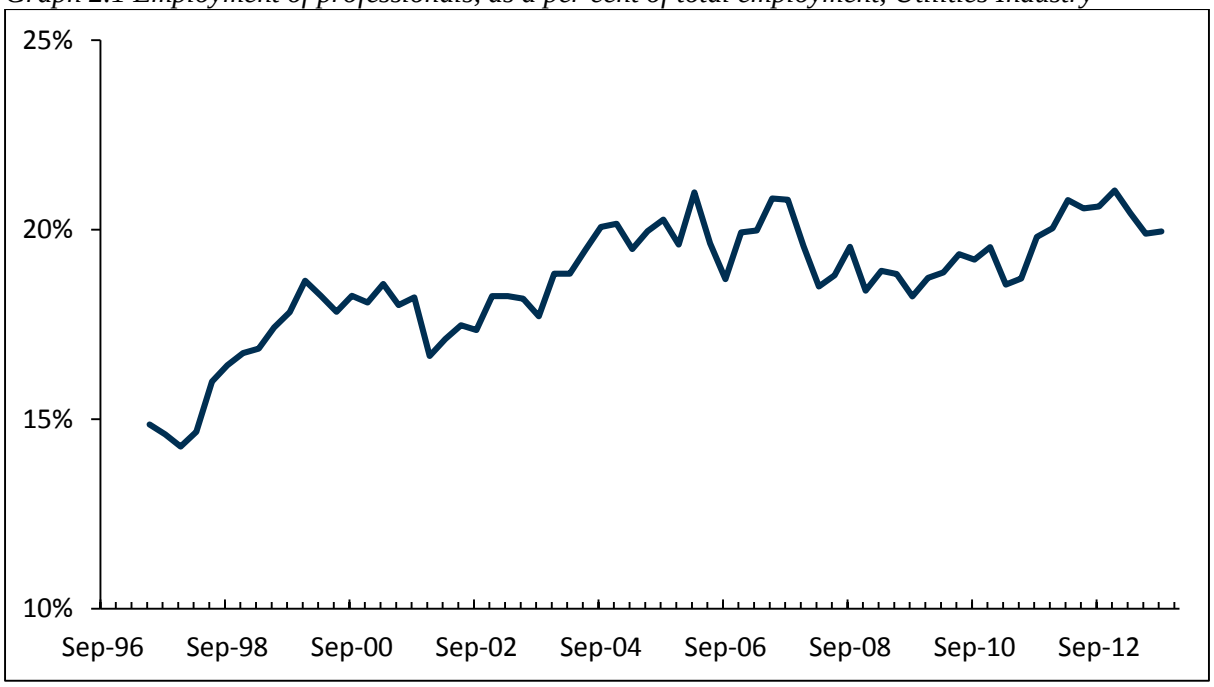
Hours worked are a superior measure of labour input to persons employed. Consequently, it is preferable to consider wages and labour productivity on a "per hour" basis rather than a "per worker" basis. This suggests using a wages measure such as AWOTE and measuring productivity as output per hour rather than output per person.

In the same publication as AWOTE, the ABS also provides estimates of average weekly earnings (AWE). AWE refers to average earnings per employee, irrespective of their hours of work. AWE is therefore affected by all variation in average hours worked. Because AWE defines labour input on a per employee basis, it should be used in conjunction with labour productivity measured per person rather than per hour. In that way, both labour productivity and wages refer to the same concept of labour input i.e. persons employed.

Both the AWE and AWOTE are intended to measure earnings of employees, not labour costs. Like the WPI they are affected by changes in the price of labour as an input, but unlike the WPI they are also affected by any change in the composition of employment e.g. from low-paying to high paying jobs.

Historically, the composition of the Australian workforce has shifted towards more highly paid occupations, as education attainment has increased. For example, in the utilities industry, employment of professionals (who are relatively highly paid) has increased as a share of total employment, as shown in Graph 2.1.

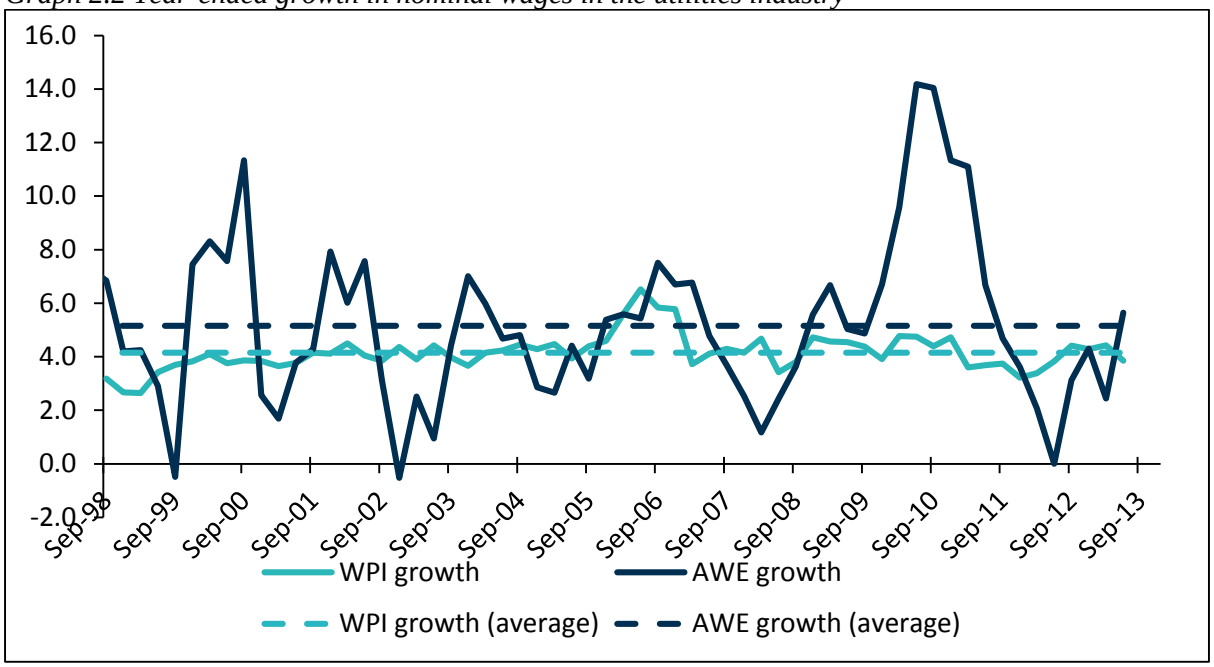
*Graph 2.1 Employment of professionals, as a per cent of total employment, Utilities Industry**



Source: ABS
*4 quarter moving average

Consistent with this trend towards more highly-paid occupations, AWE has grown faster, on average, than WPI in the utilities industry, as shown in Graph 2.2.

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



Source: ABS; Independent Economics

As suggested above, measures of wages and productivity should measure labour input in a consistent way. Because AWE refers to earnings per person, it should be used in conjunction with productivity measured as output per person. Analogously, AWOTE should be used in conjunction with productivity measured as output per hour worked.

The final measure of wages is average compensation of employees (COE) from the national accounts. It is similar in concept to AWE in that it is measured per employee. However, COE defines compensation more broadly to include components such as employer superannuation contributions. However, in general the observations already made about AWE also apply to COE.

2.2 Choice of wage measure without productivity adjustment

This section considers the appropriate choice of wage measure.

In its wage publications, the ABS advises that only one of its wage measures, the WPI, is designed to measure changes in the pure price of labour. The WPI is constructed to measure changes in the price of labour in the same way that the Consumer Price Index is constructed to measure changes in the price of consumer goods and services. That is, the WPI captures movements in the price of a fixed bundle of labour services, in the same way that CPI does for a fixed bundle of consumer goods and services.

Other widely used measures of wages, such as AWE and COE, are constructed for a different purpose. They measure average earnings of employees at a point in time. They do this by dividing total earnings by the number of employees. This means that, in addition to reflecting movements in the pure price of labour, they will also reflect movements in average hours worked and the average quality of labour, as both affect average earnings.

The AER is concerned with movements in efficient labour costs as a determinant of prices. For that purpose, it is appropriate to use a pure measure of movements in labour costs i.e. the WPI.

The shortcomings of instead using AWE of COE for that purpose are evident. For example, suppose an industry decides to replace some part-time workers with a smaller number of full-time workers, or to replace some lower skilled workers with a smaller number of higher skilled workers. That may leave the industry with fewer, but more-highly paid, workers and no change in its total wage bill. This development would not provide a justification for a price change and, consistent with that, WPI would be unaffected. However, AWE and COE would rise and hence would provide a false signal of a rise in labour costs. This false signal would only be neutralised by also making an adjustment for productivity growth that measures labour input in a compatible way i.e. persons employed.

Consistent with that analysis and the advice from the ABS, the AER currently use the WPI, rather than AWE or COE, to measure labour costs in the utilities industry in each state and territory.

2.3 Choice of wage measure with productivity adjustment

In its determinations, the AER has noted that it should adjust growth in labour costs for growth in productivity. This is because it is changes in the nominal *unit* cost of labour (the cost of labour per unit of output) that provides a justification for price changes. Thus, price changes should take into account the percentage movement in the price of labour net of the percent gain in labour productivity.

Unfortunately, as acknowledged by the AER, it is not possible to adjust the WPI for growth in productivity, because there is no published measure of productivity that measures labour input in the same way. WPI is standardised to remove the effects of changes in the composition of the workforce, but there is no such standardisation in any of the existing productivity measures.

There are significant difficulties in measuring productivity in the utilities sector generally and the electricity distribution sector in particular. Hence, it is suggested adjusting for productivity is better undertaken on the basis of a detailed assessment of specific sources of productivity gains within the industry rather than attempting to infer productivity gains using the broader data published by the ABS.

2.4 Other issues in choosing a wage measure

Besides the conceptual differences discussed above, there are also other differences between the various measures of wages, including WPI, COE and AWE.

One issue is the reliability with which each measure of wages can be forecast. Other things being equal, forecasting models will be more robust, with lower margins of error, when the historical data extends over a long period and exhibits low volatility. Of the three measures, the historical data for the WPI covers the shortest period, but also exhibits the lowest volatility. Thus, it is unclear which of the three wage measures can be forecast most robustly.

Another issue is the availability of forecasts and the extent of use for the selected wage measure. The Australian Treasury uses the WPI for its wages forecast in Budget Paper No. 1 and the Reserve Bank also focusses on the WPI in its regular Statement on Monetary Policy. Thus, the WPI has the advantage of being the most widely-used wage measure for key public policy purposes.

A third issue is how each measure addresses industry substitution between different types of labour induced by changes in relative wage rates. For example, during the recent mining boom, the price of engineers increased more quickly than the price of other types of labour because of strong demand for engineers from the mining sector. The utilities industry may be able to respond to some extent by

demanding fewer engineers and more workers from other occupations in their place. The utilities industry would substitute between occupations in this way if this resulted in a cost saving.

The WPI combines wages for different occupations using fixed weights. This means that it weights this increase in wages for engineers according to the use of engineers *before* the rise in their wages. Thus, the WPI will *overstate* the increase in labour costs in this situation, because it does not take into account the cost saving from labour substitution.

On the other hand, COE and AWE, in effect, weight the increase in wages for engineers according to the reduced use of engineers *after* the rise in their wages. This will understate the increase in labour costs, because it does not take into account that industry chose to use more engineers before the rise in their wages. Hence, COE and AWE will *understate* the increase in labour costs in this situation.

In principle, the substitution effects issue can be addressed by using a so-called ideal cost index. For labour costs, such an index allows for the degree of substitution between different occupations in correctly measuring movements in the overall price of labour. In practice, the ABS does not publish ideal cost indexes. Constructing cost indexes is challenging because it requires estimates of the degree of substitutability between different inputs into production. So a choice needs to be made between the less-than-ideal wage measures that are available, with no measure having a clear advantage in correctly allowing for substitution effects.

In practice, the difference between the wage measures in their treatments of substitution effects is a relatively minor consideration. If substitution effects were the only source of difference between the measures, historically growth in the WPI would have always exceeded growth in COE and AWE, whereas on average the reverse has been the case. There are other differences between the measures that are more important, such as their different treatments of changes in the composition of employment.

3 Methodology

This report provides forecasts for WPI and AWE for Australia, New South Wales, Tasmania and the ACT for the utilities industry, the professional services industry and for all industries combined. This section outlines the economic modelling approach that was used to develop these forecasts.

3.1 Forecasts for wages

Labour cost growth has been forecast using Independent's Macro-econometric model and a new labour cost model developed for this report. The approach used by Independent Economics ensures all forecasts are grounded in sound economic theory and are fully consistent.

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 national 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. In the short term, labour supply is also influenced by labour demand in what 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 amounts of other factors of production (capital and natural resources) that are available. That is, the level of employment in each industry is based on profit maximisation by firms.

- **Wage adjustment**. Wages adjust gradually to clear the labour market i.e. to bring the unemployment rate to its sustainable level. Specifically, wage movements are influenced by inflation, unemployment and productivity growth. Real wages rise faster or slower than productivity depending on where unemployment is lower or higher than its sustainable rate. For example, when unemployment is low, real unit labour costs are bid up. This works to reduce labour demand and gradually push the unemployment rate up 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.

The above modelling of national wages uses the national accounts concept for wages of average compensation of employees (COE). The measures of wages used in this report, WPI and AWE, are

modelled to depend on COE, ensuring that forecasts for all three wage measures are ultimately driven by the same labour market fundamentals.

The national economic forecasts from the macro model, together with state demographic forecasts from the Independent demographic model, are fed in the satellite states model. This allocates key national forecasts across the states in a way that ensures that the state economic forecasts are fully consistent with the national economic forecast. Importantly, the allocation method allow for the differences in industry composition between states. 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.

Similarly, the state wage forecasts are developed to be fully consistent with the national wage forecasts. This is achieved by modelling state wages relative to national wages. Further, if the labour market is relatively strong in a particular state, relative wages for that state will also strengthen. For example, if employment strengthens in WA relative to other states, the WPI for WA will strengthen relative to the national WPI. AWE at the state level is modelled in a similar way.

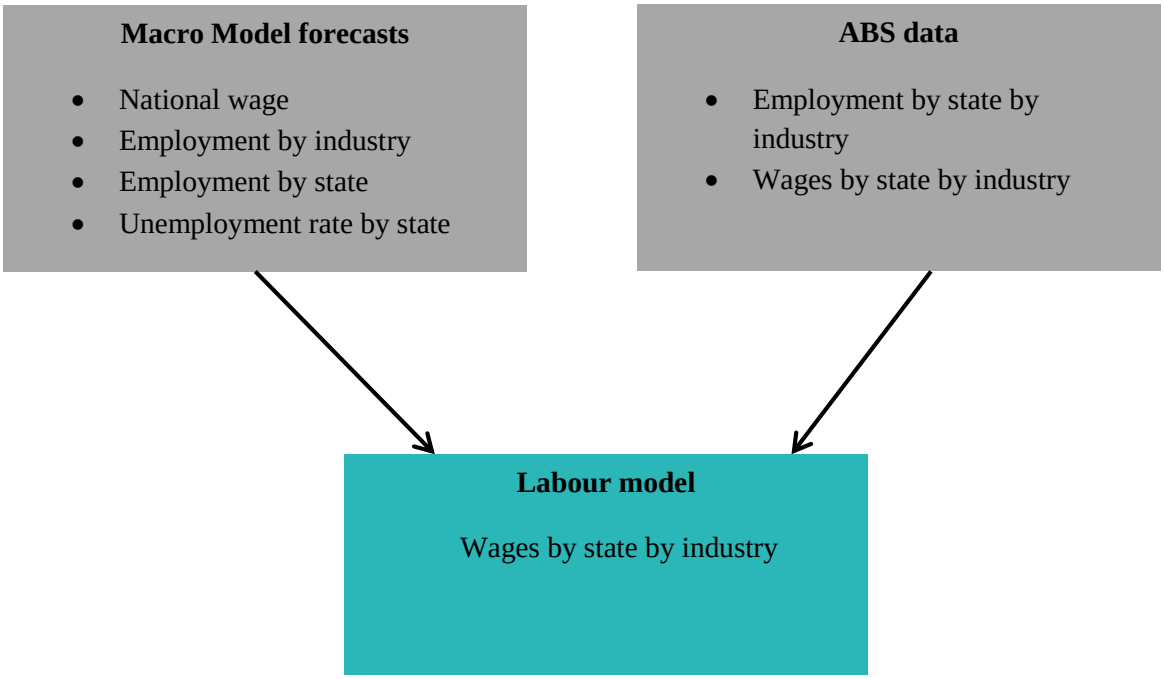
A similar approach is used to ensure that the forecasts for wages in each industry are fully consistent with the national wage forecasts. Thus, industry wages are modelled relative to national wages. Further, if the labour market is relatively strong in a particular industry, relative wages for that industry will also strengthen. For example, if employment strengthens in the mining industry relative to other industries, the WPI for mining will strengthen relative to the national WPI. AWE at the industry level is modelled in a similar way.

The above approach provides wage forecasts by state and by industry that are fully consistent with the national wage forecasts. However, wage forecasts are also required for each industry *within* each state. To achieve complete system, these more detailed wage forecasts are generated using the residual allocation system or RAS approach.[1]

The forecasting approach is illustrated in Figure 3.1

[1] This technique is also used by the ABS. For example, they use it to in updating input-output tables.

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.

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	June quarter 2013
National accounts (annual)	5204.0	2011-12 financial year
Labour force (monthly)	6202.0	June 2013
Labour force (quarterly)	6291.0.55.003	June quarter 2013
Wage price index (quarterly)	6345.0	June quarter 2013
Average weekly earnings (semi-annual)*	6302.0	May 2013
Average weekly cash earnings (bi-annual)**	6306.0	November 2012

Source: ABS

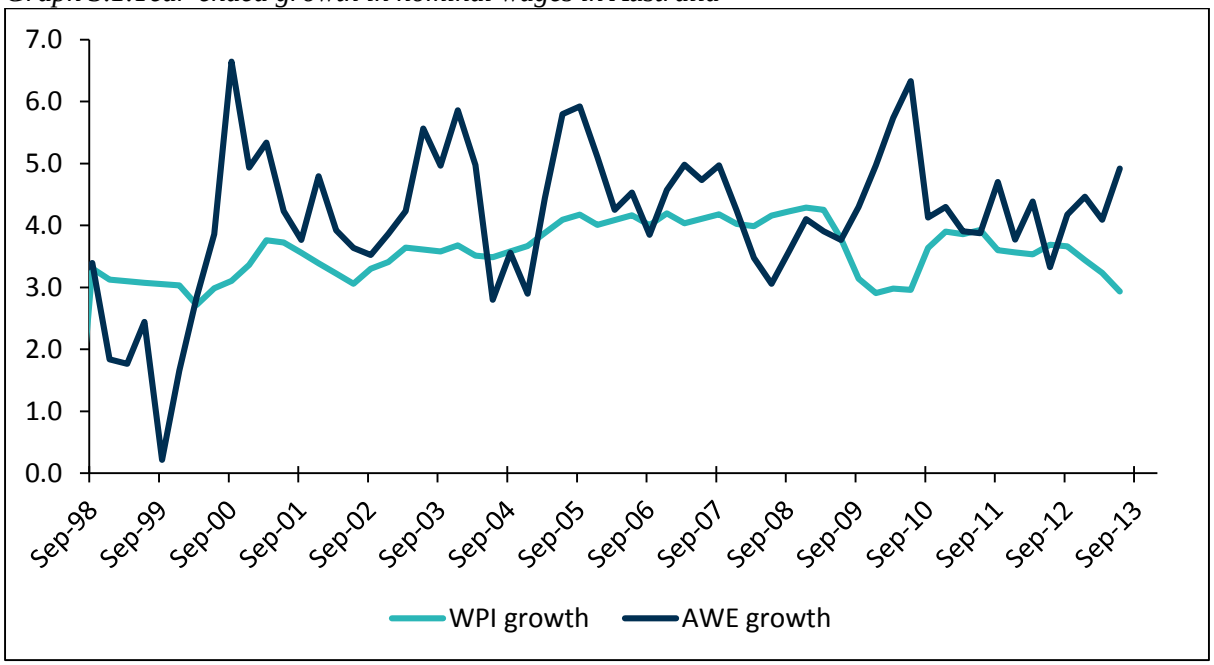
* Until May 2012, average weekly earnings data were released quarterly. Independent Economics has constructed a quarterly history for Average Weekly Earnings using interpolation to fill in August 2012.

** 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

This section discusses the history and the forecast for AWE wages in the Australian economy *relative* to the history and the forecast of WPI wages. From the start of the 2000s to the beginning of the GFC, AWE wages grew more quickly than WPI wages. This is shown in Graph 3.1. As explained below, a shift amongst Australian workers towards higher paying jobs offset the effect of a trend decrease in hours worked per employee, such that AWE growth was faster than WPI growth.

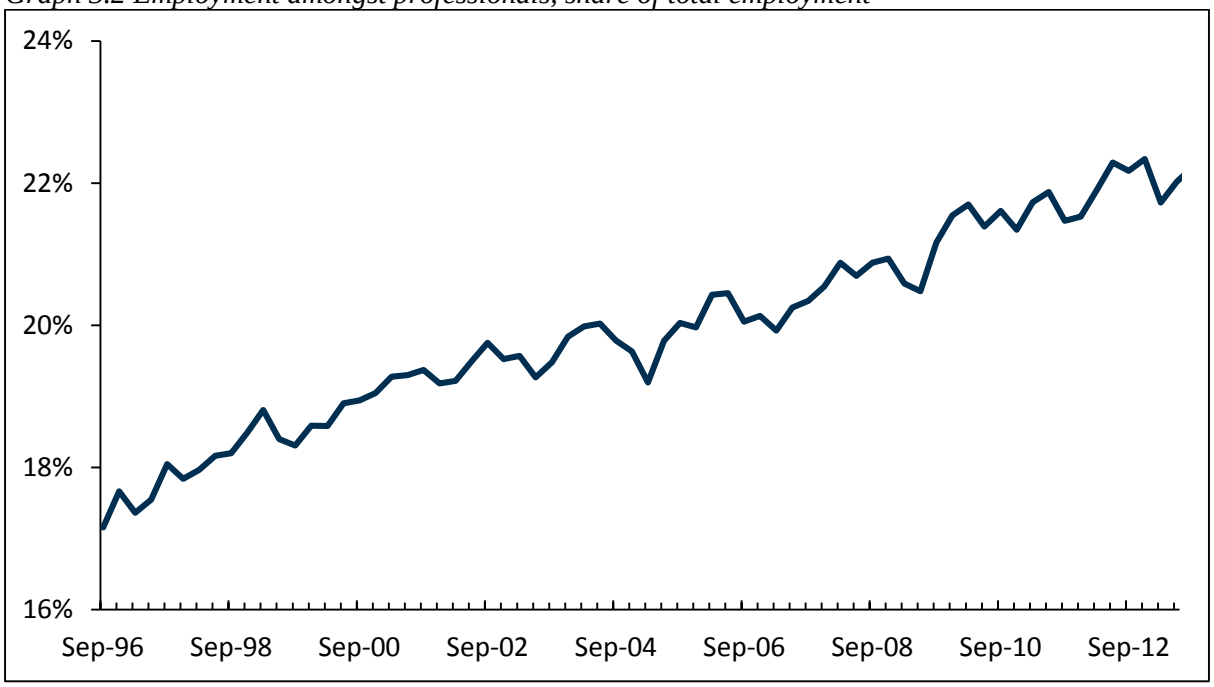
Graph 3.1.Year-ended growth in nominal wages in Australia



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. A shift towards higher paying jobs increases the level of earnings of Australian employees, which sees growth in AWE wages increase relative to growth in WPI wages.

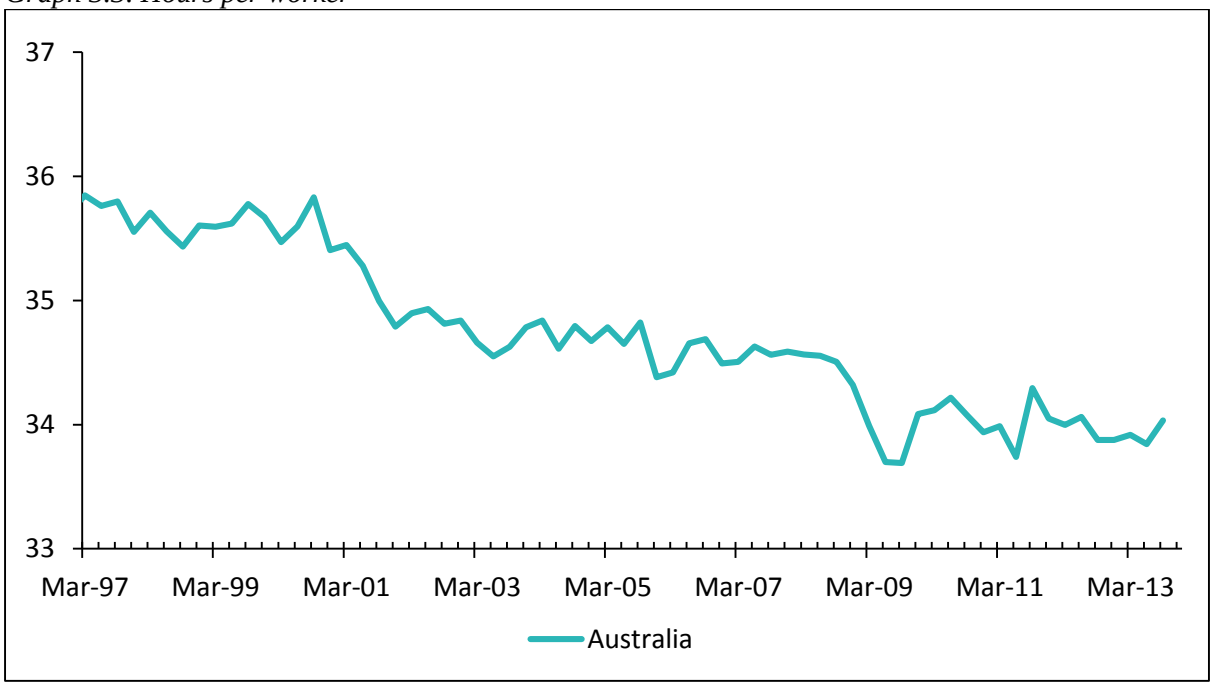
Graph 3.2 Employment amongst professionals, share of total employment



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 ageing 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. A fall in average hours weighs on the level of earnings of Australian workers, reducing AWE growth relative to WPI growth.

Graph 3.3. Hours per worker



Source: ABS

In 2008, AWE wages growth slowed sharply relative to WPI wages growth. This was due to a significant decrease in the average hours worked by Australian employees, which reduces the level of earnings and hence AWE growth relative to WPI growth. During the GFC, many Australian employers responded to the weaker economic conditions by reducing the hours their employees worked rather than their staff numbers. This is one reason why unemployment did not increase in Australia by as much as in some other countries.

After the GFC period, from mid-2009 onwards, AWE wages growth picked up sharply relative to WPI wages growth. While WPI wages growth eased, as the labour market remained weak, AWE wages growth accelerated sharply. This is due to the significant growth in average hours during this time. One potential reason for this is that employers, faced with economic uncertainty, were reluctant to take on new staff and any increases in labour requirements were met by increasing the hours worked by existing staff. Further, employment amongst professionals continued to grow relatively strongly, supporting AWE growth relative to WPI growth.

In 2013-14 and 2014-15, growth in AWE wages is expected to slow relative to growth in WPI wages, because hours per worker are expected to weaken. Hours per worker are expected to weaken because they are currently well above the level implied by the trend observed between the mid-1990s and the mid-2000s. In terms of growth in AWE wages, this effect should dominate the effect of further shifts in the Australian workforce to higher paying jobs. There are signs that hours per worker are falling back in some industries – for example, hours per worker fell over 2012 - perhaps prompted by the current soft patch in the labour market.

From 2015-16 to 2018-19, AWE wages growth is expected to strengthen relative to WPI growth, as the composition of the Australian workforce continues to change towards higher paying jobs and changes in hours per worker normalise. The forecasts for WPI wages and AWE wages are discussed in detail in the next section.

4 The outlook for the economy and the labour market

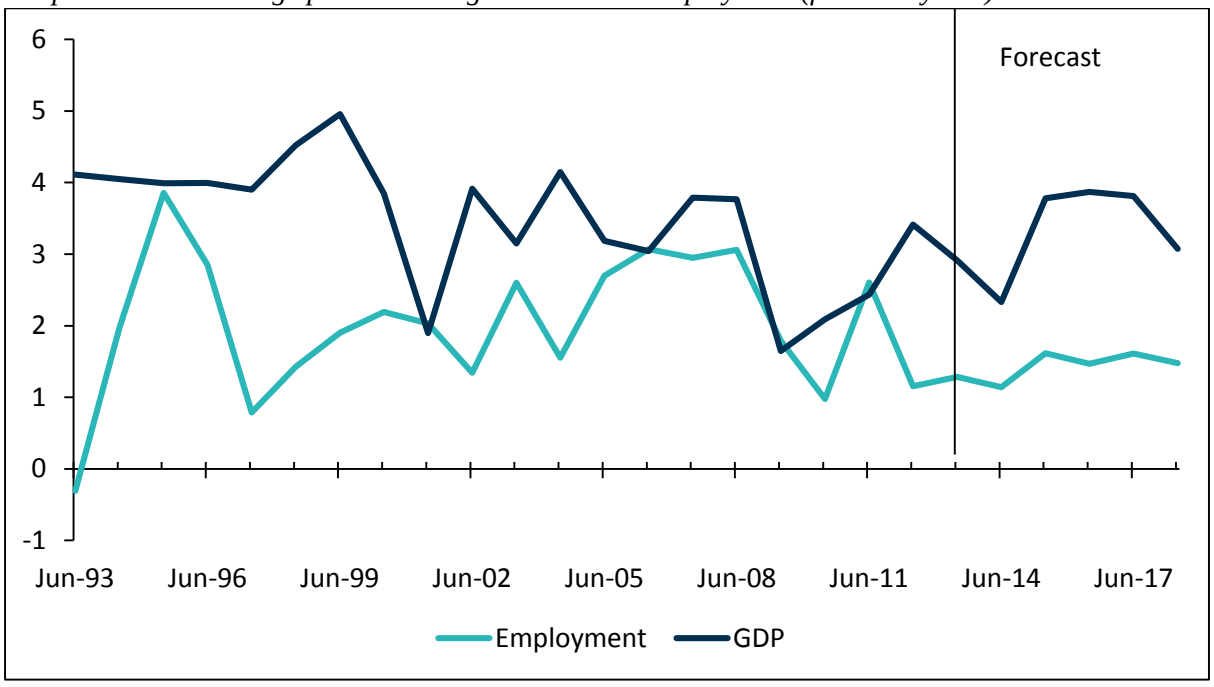
As described in Section 3, wage forecasts have been generated with the Independent Macro-econometric model and a new labour cost model. A key driver for these forecasts is the outlook for the Australian economy. Hence, this section begins by describing the current general outlook for the Australian economy. Against that background, it then presents, in turn, the wage forecasts at the national, state and industry levels.

4.1 Economic outlook for Australia

4.1.1 Economic conditions

As seen in Graph 4.1, the Australian economy is currently in a soft patch. Economic activity grew by 2.9 per cent in 2012-13 and is expected to grow by 2.3 per cent in 2013-14 (this compares to average annual growth of 3.1 per cent in the ten years to 2011/12). Economic conditions are expected to recover. Activity is expected to grow on average by 3.4 per cent in the five years from the start of 2014-15 to the end of 2018-19.

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



Source: ABS; Independent Economics

As seen in Graph 4.2, this pickup in growth is supported by a significant contribution from exports, a recovery in housing investment and improved growth in household consumption. Of the major areas of expenditure, only business investment weighs down on growth, as it is dragged down by the fall-off in mining investment from very high levels.

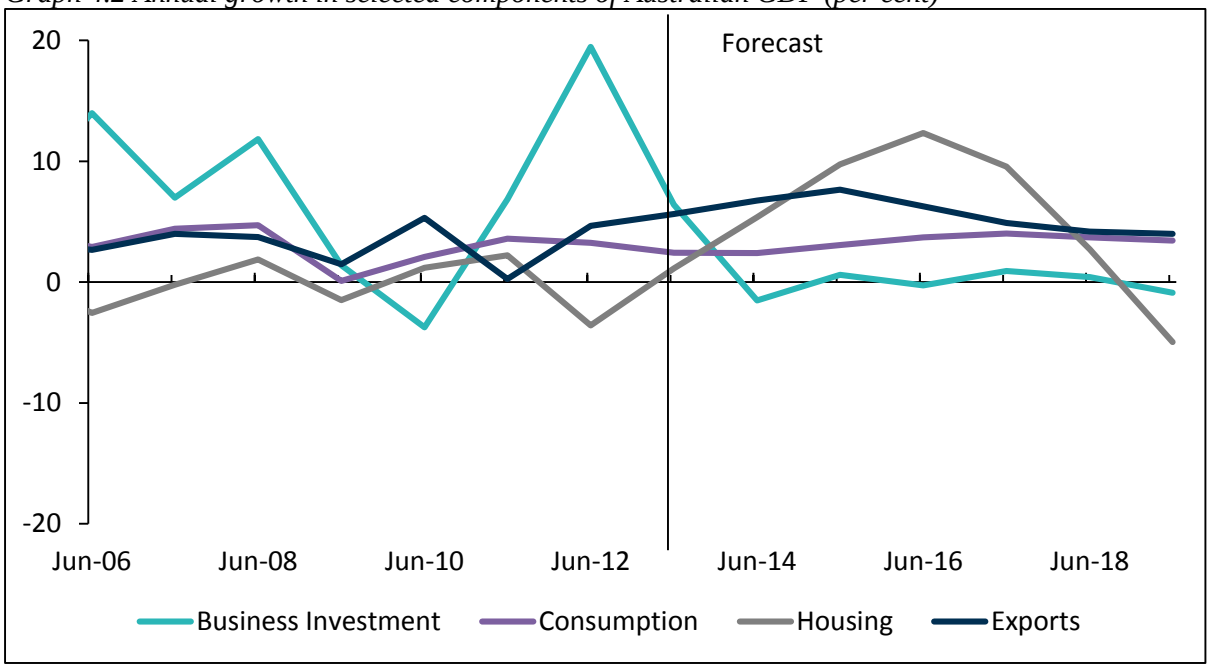
Exports net of imports are expected to strengthen in response to two developments. First, international competitiveness has improved with the recent depreciation in the Australian dollar from above parity with the US dollar to around 90 US cents. Second, the mining boom is transitioning

from the investment phase in which it drew in imports of mining equipment, to the production phase in which, with the completion of investment projects, mining export volumes are ramping up.

Housing investment is set to recover in response to low interest rates, a shortage of housing, and a continued normalisation of bank lending following the tough lending policies in the Global Financial Crisis (GFC). Housing approvals have already climbed by 23 per cent from the final three months of 2012 to the final three months of 2013, and this strong recovery in housing approvals is starting to flow through to housing construction.

Household consumption growth has been weak since the GFC, as households have strived to reduce their indebtedness. For example, the compound average annual growth rate in the volume of retail sales in the three years to the December quarter 2012 was only 1.5 per cent, compared to normal growth of over 3 per cent. However, this spending restraint has left household balance sheets in better shape, and with interest rates low, the outlook for household consumption growth is now more positive. Growth in the volume of retail sales has already picked up to be 3.4 per cent in the year to the December quarter 2013.

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



Source: ABS; Independent Economics

The soft patch in economic growth has seen low inflation. For example, CPI inflation was only 2.3 per cent from 2011-12 to 2012-13. However, the recent depreciation in the Australian dollar has pushed up CPI inflation to 2.7 per cent over the year to the December quarter 2013. Looking ahead, the Reserve Bank of Australia (RBA) policy of targeting an inflation rate of 2 to 3 per cent leads to a forecast for average CPI inflation of 2.5 per cent in the five years from the start of 2014-15 to the end of 2018-19, as seen in Table 4.1.

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

	Real GDP growth	Employment growth	Unemployment rate	CPI inflation
History				
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	5.0	3.1
2011-12	3.4	1.2	5.2	2.3
2012-13	2.9	1.3	5.3	2.3
Forecasts				
2013-14	2.3	1.1	5.8	1.6
2014-15	3.8	1.6	5.7	2.4
2015-16	3.9	1.5	5.4	2.3
2016-17	3.8	1.6	5.1	2.4
2017-18	3.1	1.5	4.9	2.8
2018-19	2.4	1.0	4.9	2.6

Source: ABS; Independent Economics

4.1.2 The Australian labour market and employment growth

The current softness in the Australian economy has resulted in weak labour demand. Employment grew by 1.3 per cent in 2012-13, and is expected to grow by only 1.1 per cent in 2013-14. Hence, the trend unemployment rate has risen from 5.2 per cent to 5.9 per cent in the 18 months from July 2012 to January 2014.

From this weak position, labour demand is expected to strengthen in the forecast period for two reasons. First, the expected recovery in economic activity will flow through to the labour market, after the usual delay of around six months. Second, the economic recovery will see a switch in the direction of economic growth from industries with low labour intensity, such as mining and engineering construction, to industries with high labour intensity, such as consumer services and residential construction i.e. the industry pattern of growth will become more positive for jobs growth.

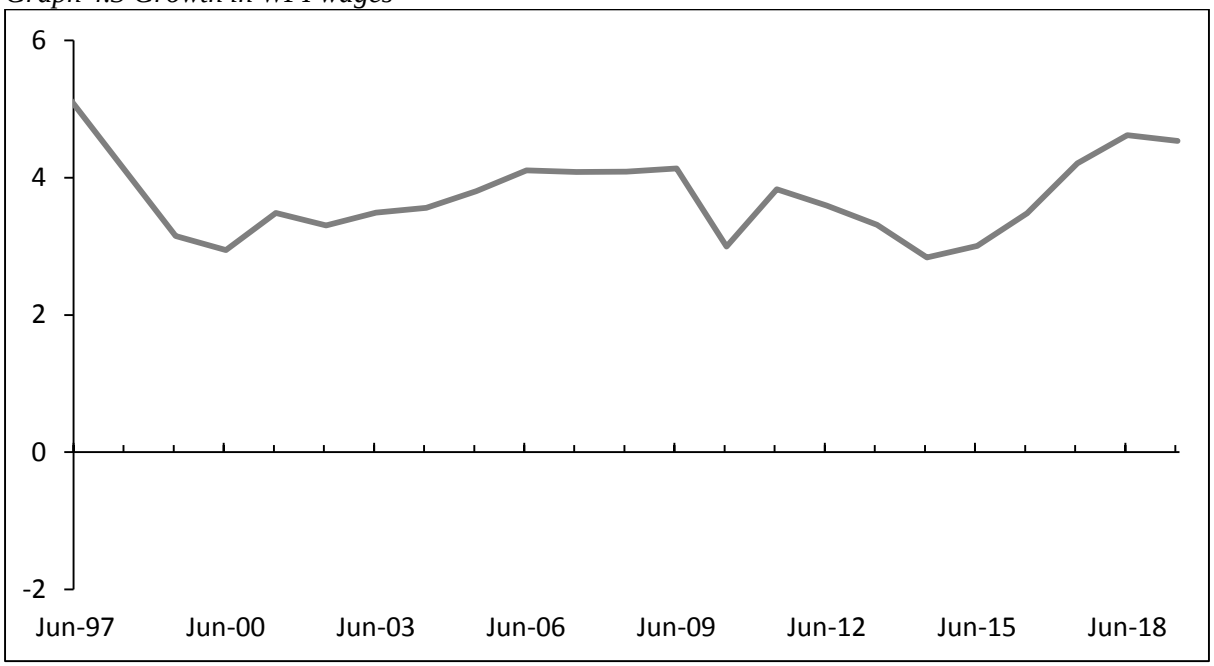
As a result of this recovery in labour demand, employment growth is expected to average 1.4 per cent per year over the five years from the start of 2014-15 to the end of 2018-19. This easily exceeds expected annual growth in labour supply of only 1.0 per cent per year in the same period. Consequently, the unemployment rate is expected to decline from around 6 per cent at the end of 2013-14 to around 5 per cent in 2018-19.

4.1.3 WPI wages growth

The recent weakness in the labour market has seen growth in wages slow. For example, the WPI grew by a weak 2.6 per cent from the December quarter of 2012 to the December quarter of 2013. This compares to its average annual growth over the prior decade of 3.8 per cent.

However, the recovery in the labour market is expected to lead to a similar recovery in wages growth. Annual WPI inflation is forecast to average 4.0 per cent in the five years from 2014-15 to 2018-19, as shown in Graphs 4.3 and 4.4, as well as Table 4.2. This is close to the historical norm for WPI inflation of 3.8 per cent.

Graph 4.3 Growth in WPI wages



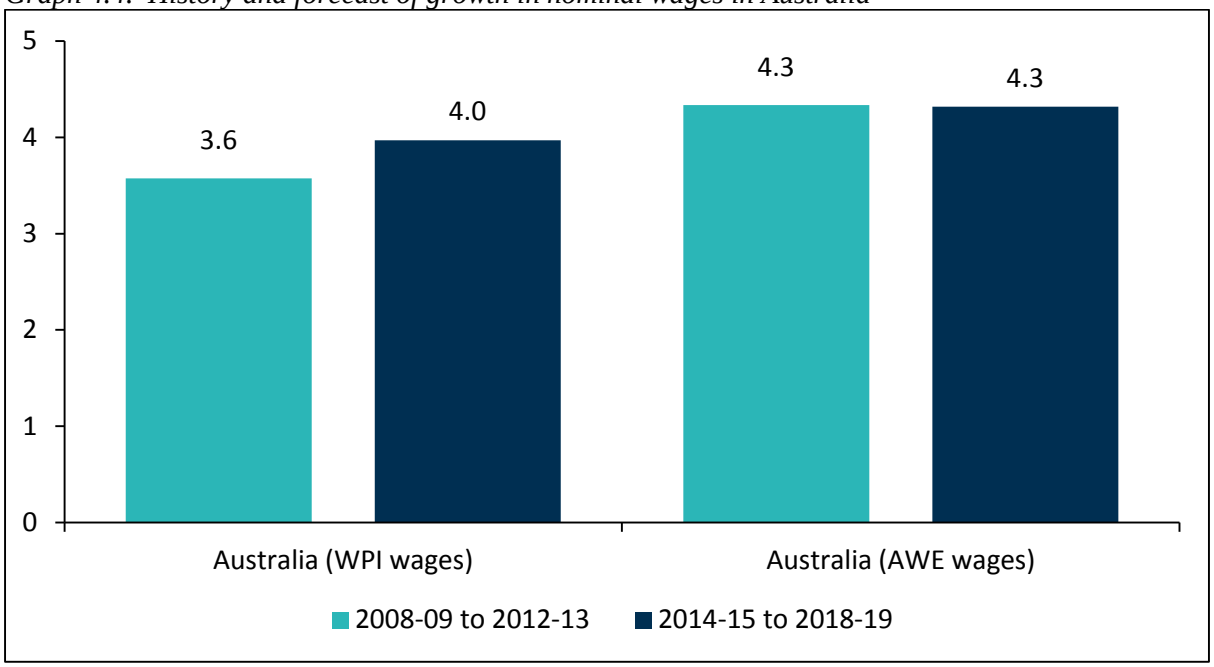
Source: ABS; Independent Economics

4.1.4 AWE wages growth

In the five years to 2012-13, AWE wages grew more quickly than WPI wages (with annual average growth of 4.3 per cent compared to 3.6 per cent). This is consistent with the composition of the Australian workforce changing towards higher paying jobs. For example, employment amongst professionals grew from around 21 per cent to around 22 per cent of the employment and there was an increase in the average age of the workforce. Changes in the composition of employment towards higher-paying jobs add to growth in AWE, but have no effect on growth in WPI because it is based on a fixed bundle of jobs. Only partially offsetting these effects was a small fall in average hours worked by Australian employees, which slightly reduced growth in AWE relative to growth in WPI.

AWE wages are expected to grow on average by 4.3 per cent in the five years between the start of 2014-15 and the end of 2018-19. This is the same as the rate of AWE inflation in the five years to 2012-13. It is slightly faster than forecast WPI growth of 4.0 per cent, as the composition of the workforce continues to shift towards more highly paid occupations.

*Graph 4.4. History and forecast of growth in nominal wages in Australia**



Source: ABS; Independent Economics
* Five year compound average in years specified

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	3.3	4.4
2013-14	2.8	3.1
2014-15	3.0	2.0
2015-16	3.5	3.7
2016-17	4.2	5.4
2017-18	4.6	5.6
2018-19	4.5	4.9

Source: ABS; Independent Economics

The economic outlook for each state that is within the scope of this study is now considered in turn, including the outlook for growth in wages. As a general observation, in recent years there has been only moderate variation between states in wages growth. This is because the geographical mobility of the workforce tends to limit differences in wages growth between states. Similarly, there is expected to be relatively little variation in wages growth between states in the forecast period. Thus, the main driver of wages growth in each state is the forecast presented above for wages growth at the national level.

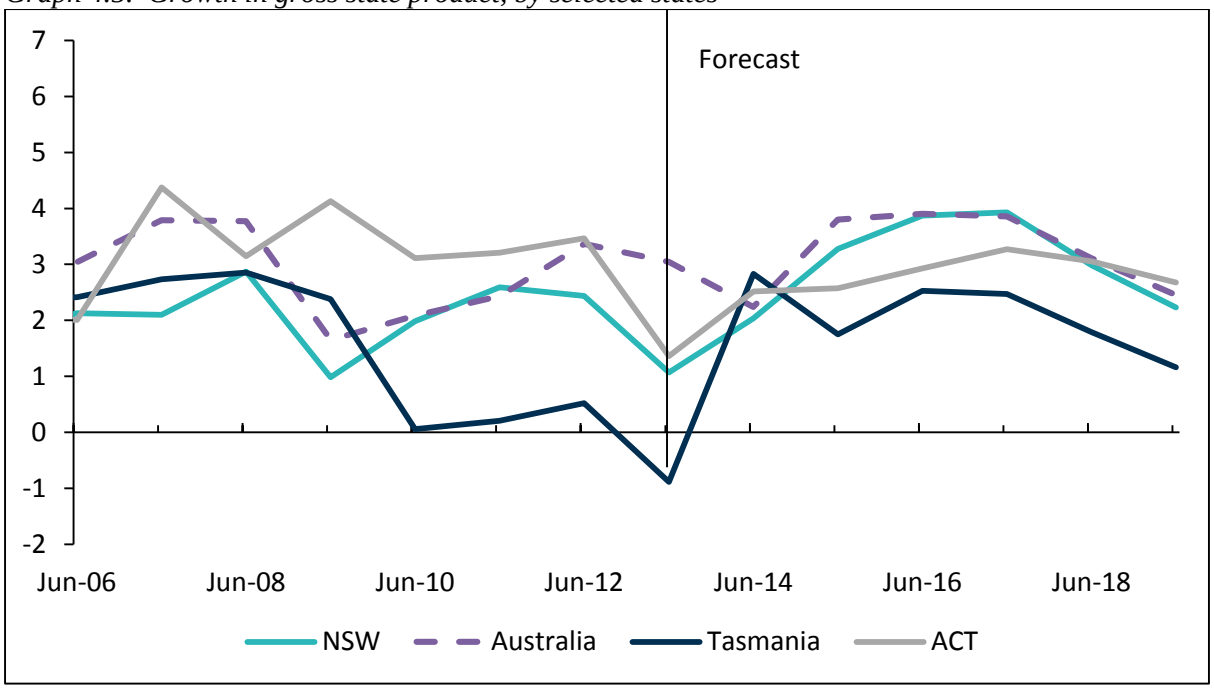
4.2 Economic outlook for New South Wales

4.2.1 Economic conditions

The New South Wales economy is currently in a soft patch, as gross state product grew by 1.1 per cent in 2012-13. Growth is expected to remain weak in 2013-14, at 2 per cent. This growth compares to average growth of 2.2 per cent in the ten years to 2011-12. Growth is expected to pick up in the five years between the start of 2014-15 and the end of 2018-19, averaging 3.3 per cent in these five years. Overall, growth is below the national average and is expected to remain so until 2015-16, as shown in Graph 4.5.

Economic conditions are weak in NSW because the sectors that are currently weak make up a relatively large share of its economy. 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 NSW. 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 per cent of the NSW economy (compared to 59 per cent of the national economy).

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

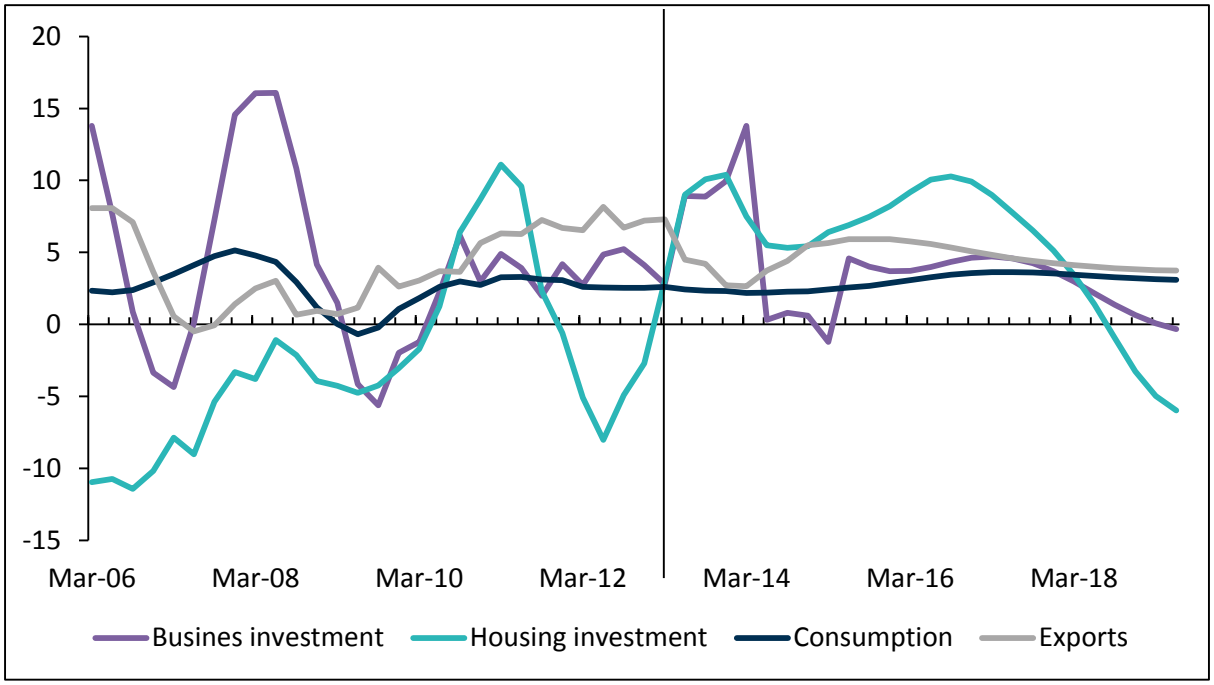


Source: ABS; Independent Economics

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, the mining industry is less important in NSW than for Australia as a whole, so the current sharp fall in mining investment weighs down less on growth in business investment in NSW. 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 2015, before easing to be in line with the national average.

Graph 4.6. NSW economic growth by component

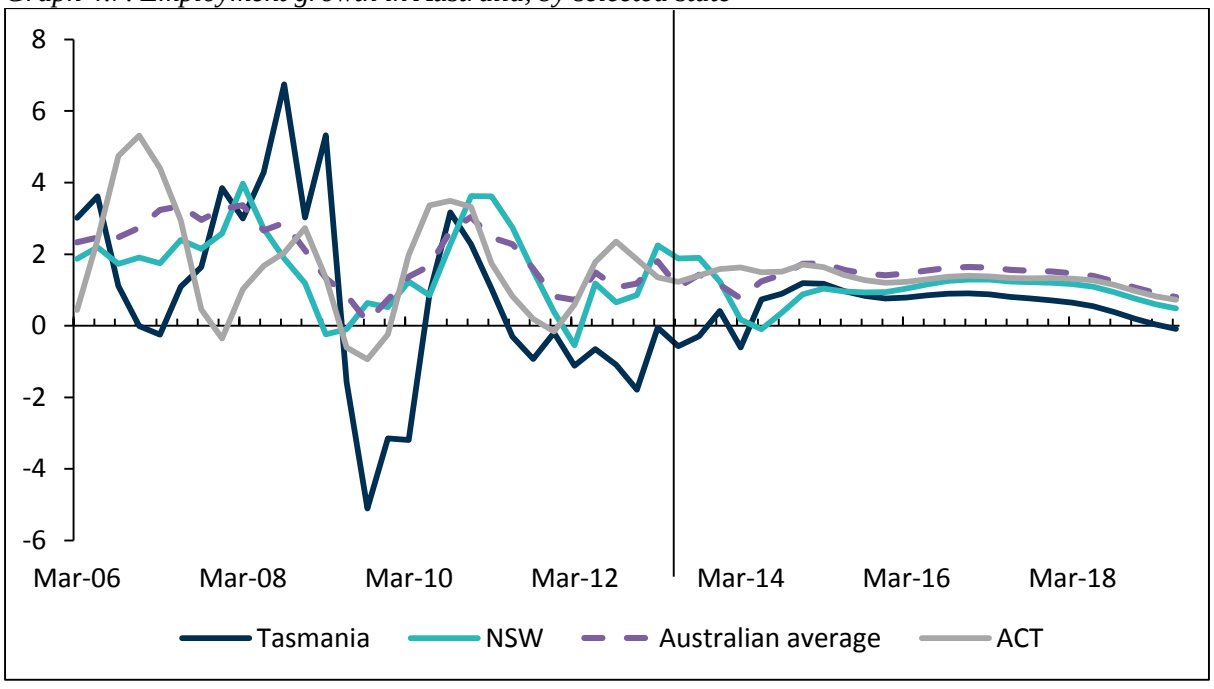


Source: ABS; Independent Economics

4.2.2 NSW labour market and employment growth

Employment growth in New South Wales is currently above the national average. However, employment growth is expected to weaken in the short-term and be below the national average from the start of 2014 onwards.

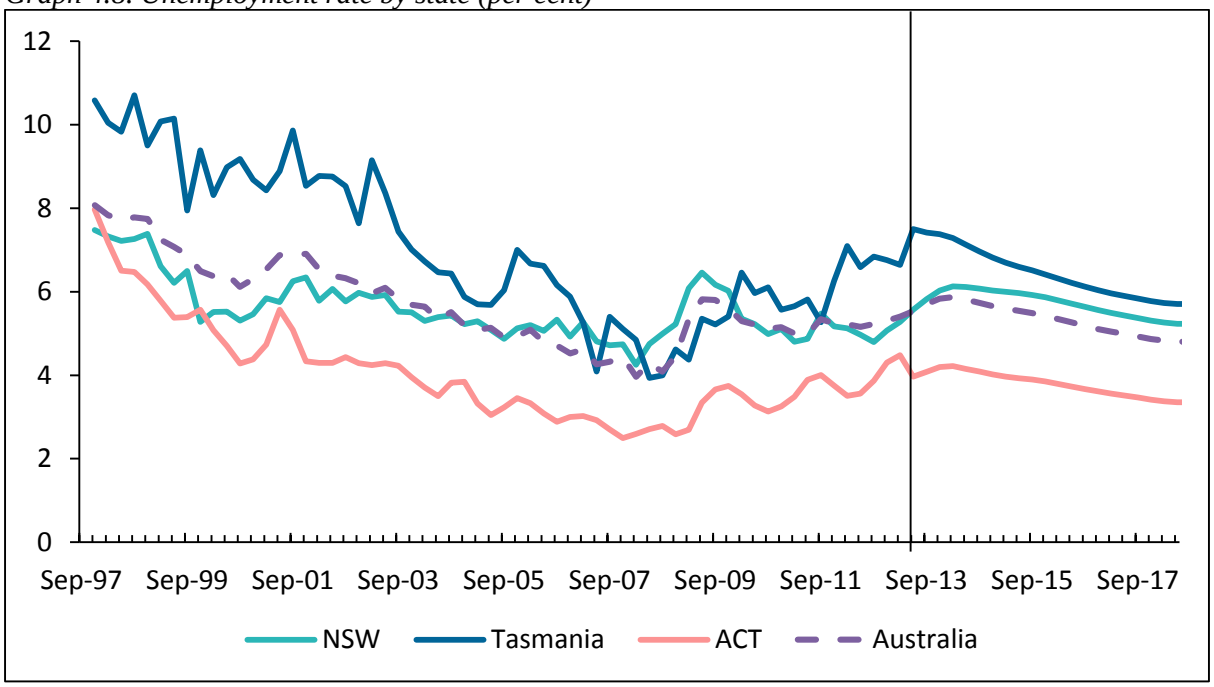
Graph 4.7. Employment growth in Australia, by selected state



Source: ABS; Independent Economics

At the same time, labour supply also grows at a below average pace in NSW, as population growth is slower due to high levels of interstate migration to other states. The unemployment rate is therefore expected to remain around the national average (or slightly above) in the forecast period (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

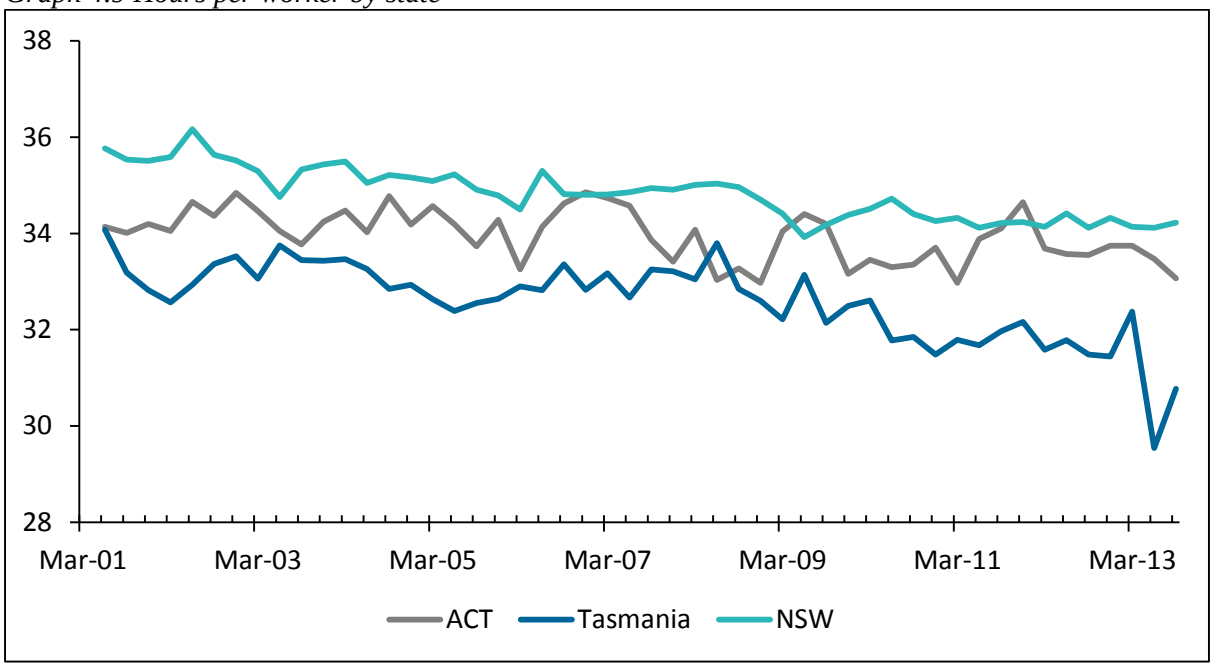
	WPI wages				AWE wages			
	Australia	NSW	Tasmania	ACT	Australia	NSW	Tasmania	ACT
2008-09	4.1	3.9	4.4	4.0	3.8	1.0	0.6	6.5
2009-10	3.0	3.0	3.6	3.3	5.3	4.0	7.1	6.8
2010-11	3.8	3.8	3.4	3.7	4.0	3.3	6.5	7.1
2011-12	3.6	3.5	3.4	3.3	4.0	2.9	5.2	5.7
2012-13	3.3	3.1	3.2	3.7	4.4	4.8	4.7	5.3
2013-14	2.8	2.8	2.7	2.8	3.1	2.8	1.5	2.1
2014-15	3.0	3.0	2.9	3.2	2.0	1.4	1.5	2.5
2015-16	3.5	3.4	3.4	3.6	3.7	3.2	3.4	4.3
2016-17	4.2	4.1	4.1	4.3	5.4	5.0	5.2	5.9
2017-18	4.6	4.6	4.5	4.7	5.6	5.3	5.4	6.0

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, which is expected to move towards levels implied by the trend exhibited up until the mid-2000s. Hours per worker have been flat in NSW for about two years, and are above the level implied by this trend (shown in Graph 4.9). This trend is expected to resume as it reflects, among other factors, the ageing 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

4.3 Economic outlook for Tasmania

4.3.1 Current economic conditions and outlook

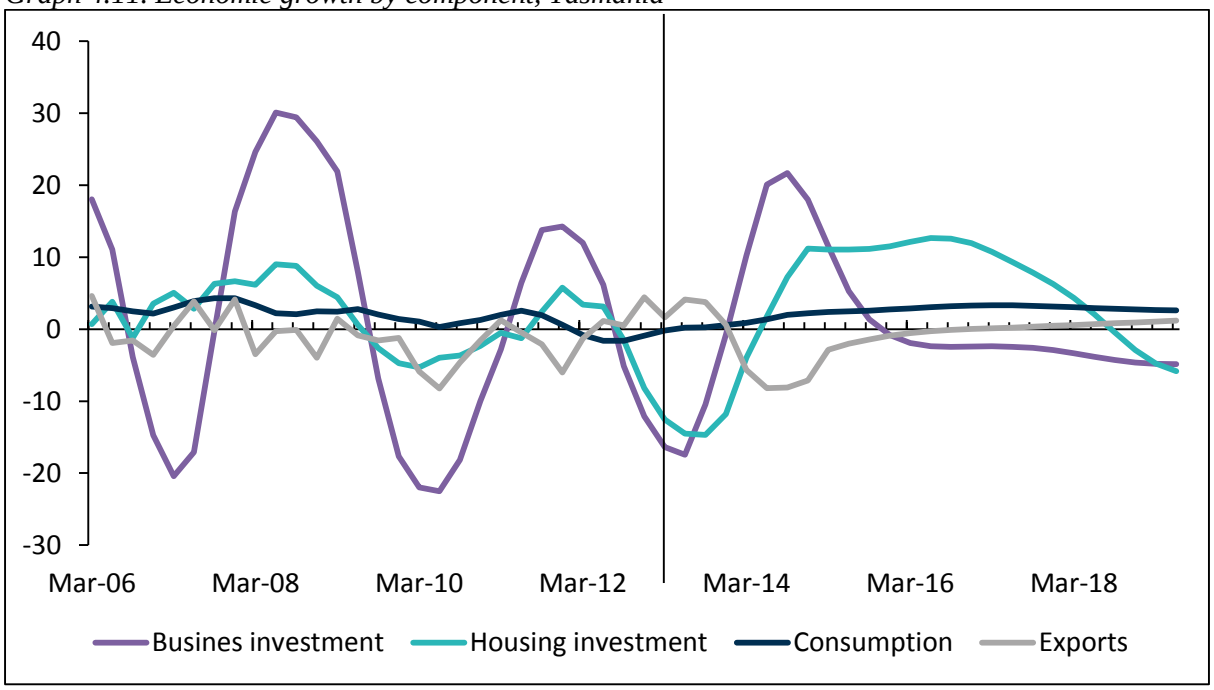
The Tasmanian economy is currently very weak, as gross state product fell by 0.9 per cent in 2012-13. Growth is expected to improve sharply in 2013-14 (to 2.8 per cent) before dropping back to an average pace of 1.9 per cent for the five years between the start of 2014-15 and the end of 2018-19. Overall, growth is weak relative to the national average, in line with historical experience.

Economic conditions are weak in Tasmania because the sectors that are doing well at the national level 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 per cent of the Tasmania economy (which is well above the national figure of 59 per cent).

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 competiveness of Tasmania's trade exposed industries improves with the depreciation in the dollar.

Graph 4.11. Economic growth by component, Tasmania



Source: ABS; Independent Economics

4.3.2 Labour market conditions and employment growth in Tasmania

Labour demand has weakened sharply in Tasmania with the weak economy and employment has fallen over the last year or so. 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.

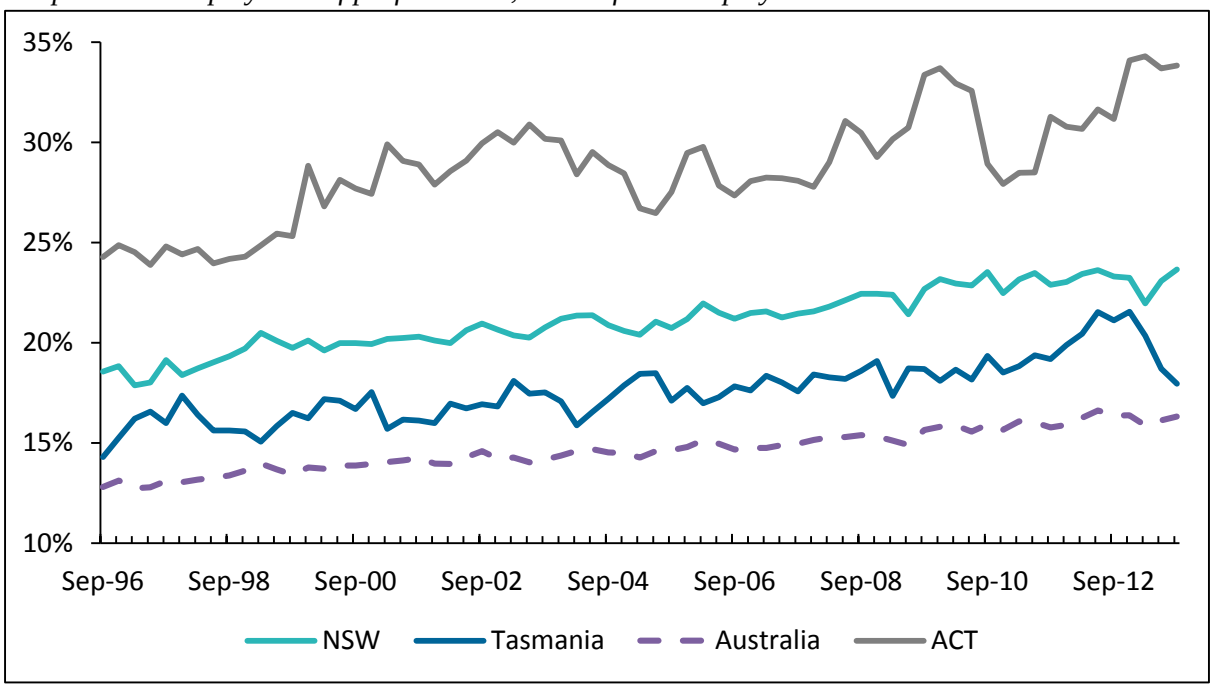
4.3.3 WPI wages growth in Tasmania

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 this has already led to wage levels in Tasmania that are relatively low.

4.3.4 AWE wages growth in Tasmania

AWE wages are expected to rise quite modestly in 2013-14, which is weak relative to expected growth in WPI wages. This relative weakness in AWE wages is due to two factors that are evident in recent data. Firstly, hours per worker has fallen in recent quarters (see Graph 4.9 above). Secondly, the employment of professionals relative to individuals in other occupations has fallen, as shown in Graph 4.12. Both these trends have occurred in the 2012-13 financial year. However, in terms of annual average growth rates, they will impact AWE wages growth in the 2013-14 financial year.

Graph. 4.12. Employment of professionals, share of total employment



Source: Independent Economics

4.4 Economic outlook for the ACT

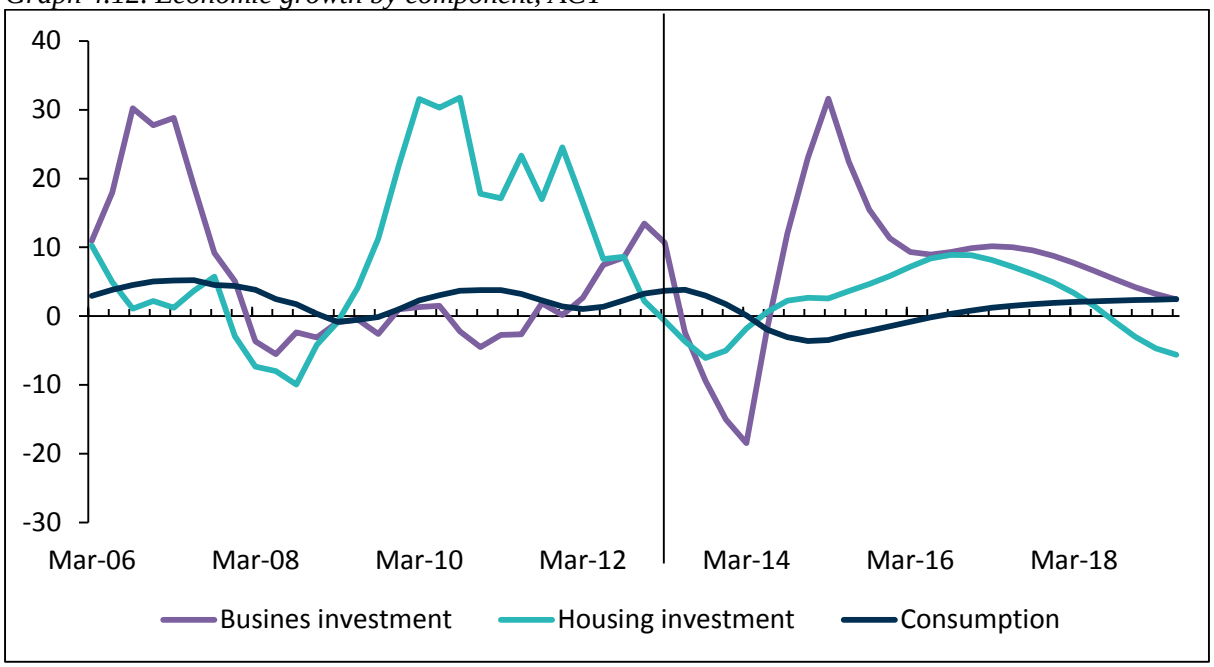
4.4.1 Current economic conditions and the outlook in the ACT

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 solidly during the global and European financial crises; GSP growth averaged 3.5 per cent between 2008-09 and 2011-12.

GSP grew weakened to 1.4 per cent in 2012-13, is expected to be 2.5 per cent in 2013-14. These growth rates are weak compared to history – average GSP growth in the ACT was 3.2 per cent in the ten years to 2011-12. This relatively slow growth is due to the steps the Federal government is taking and is expected to take to restore its budget to surplus. One such step is to reduce its demand for labour, which will reduce expenditure (and therefore activity growth) in the ACT. Growth is expected to pick up and average 2.9 per cent in the five years from the beginning of 2014-15 to the end of 2018-19.

In terms of the components of GSP, housing investment and business investment are expected to lead the slow-down 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 on average by 1.9 per cent in the five years between 2007-08 and 2012-13; this compares to the national average of 1.5 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 is around the national average. This is expected to remain the case. Employment is not expected to weaken substantially relative to the national average because some of the weakening in government demand for labour will manifest in the form of slower wage growth. The unemployment rate is currently below the national average. It is not expected to increase to the national average as the unemployment rate has been well below the national average for over a decade. Many of the individuals who leave government employment are expected to seek employment outside of 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 ACT being well below the national average. Low unemployment is a long-standing structural feature of the ACT economy and reflects its mobile workforce of professional workers.

4.4.4 AWE wages growth in the ACT

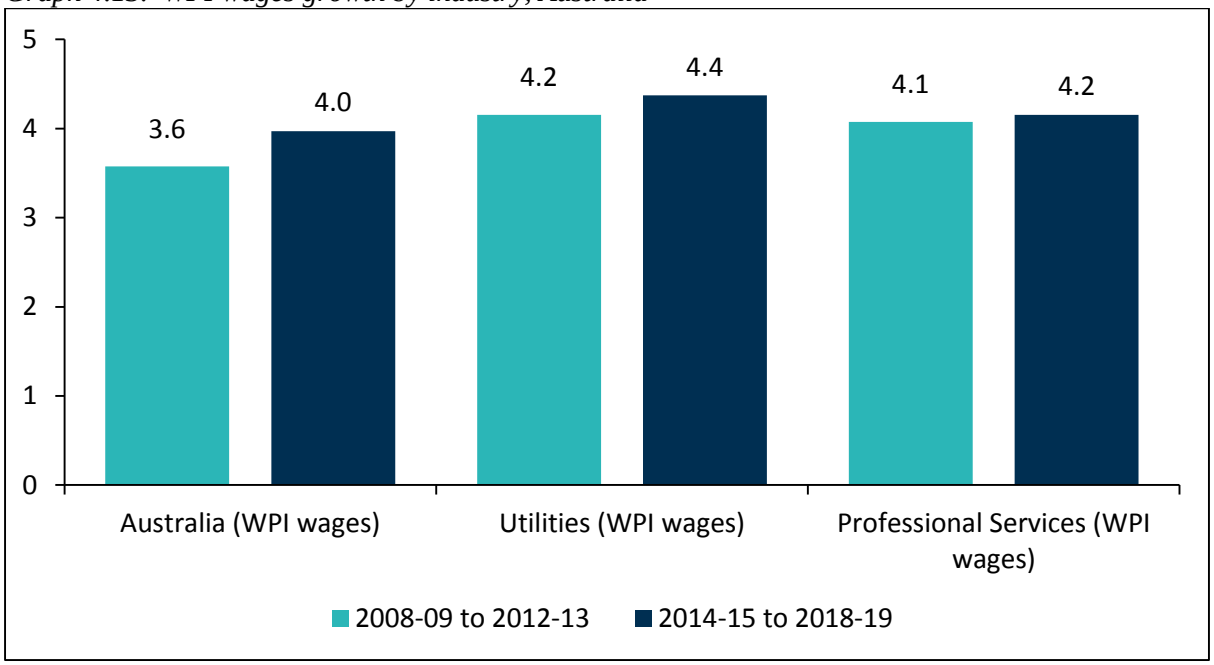
AWE wages are expected to grow by only 2.1 per cent in 2013-14, which is weaker than WPI wages growth of 2.8 per cent. As the Federal Government withdraws labour demand, employment of professionals is expected to fall relative to total employment, and this will weigh on growth in AWE wages relative to 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 have been rising faster in the utilities industry than for the economy as a whole. The utilities industry is a relatively heavy employer of workers in occupations that have been experiencing strong wage growth, including technicians and trade workers and labourers and machinery operators. Wages in these occupations have been supported by strong demand in the rapidly expanding mining sector. This is expected to continue as the mining industry transitions from the investment phase of the mining boom to the production/export phase. Consequently, wages in utilities are expected to continue to rise faster than for the economy as a whole. This general outlook for wages in the utilities industry is now described in more detail.

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



Source: ABS; Independent Economics
*Five year compound average in years specified

WPI wages growth in the utilities industry averaged 4.2 per cent in the five years to 2012-13, much stronger than the national average of 3.6 per cent. Growth is expected to remain relatively strong in the five years to 2018-19 (4.4 per cent compared to the national average of 4.0 per cent).

Data on WPI by occupation is not available. However, it clear from earnings data for the individual occupations that are important to the utilities industry that a relatively large amount of its workforce are in occupations that experienced strong fast earnings growth between 2007-08 and 2012-13, due to strong labour demand, and this is why the WPI for the industry grew relatively strongly.

As shown in Table 4.4 the utilities industry is a relatively heavy employer of technicians and trade workers, labourers and machinery operators and clerical and administrative workers. Table 6.2 (below) shows that average earnings in these occupations rose relatively quickly between 2006 and 2012. In the case of technicians and trade workers and labourers and machinery operators, wages grew quickly because of strong demand in the mining industry (the mining industry is also a relatively employer of individuals with these occupations). Labour demand in the mining sector is expected to remain relatively strong as the mining boom enters is export phase, which means we expect the wages

of technicians and trades workers and of labourers and machinery operators to continue to grow relatively stronger. It is thus expected that the WPI wages in the utilities industry will grow strongly relative to the national average in the forecast period.

At the sub-industry level, 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. 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, shown in Graph 4.13, 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	Mining	Utilities	Professional services
Managers	13	9	12	11
Professionals	22	17	21	56
Technicians and trades workers	15	26	24	10
Community and personal service workers	10	0	0	0
Clerical and administrative workers	15	8	21	19
Sales workers	9	0	3	2
Machinery operators and drivers	7	33	13	0
Labourers	10	5	7	1

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

4.5.2 Professional services

In the professional services industry, wages have also been rising faster than for the economy as a whole. This is because businesses investment, which is a key driver of activity and labour demand in the industry, has been growing strongly. In the forecast period, wages growth for professional services is expected to be only slightly above wages growth for the economy as a whole, as business investment eases from high levels with the passing of the investment phase of the mining boom. This general outlook for growth in wages for professional services is now discussed in more detail.

WPI wages growth in the professional services industry averaged 4.1 per cent in the five years to 2012-13, which was quicker than the national average of 3.6 per cent. Growth is only expected to pick

up marginally to 4.2 per cent in the five years to 2018-19 (despite the national average picking up to 4.0 per cent).

Wages in the professional services industry grew relatively quickly up until 2012-13 because labour demand in the industry was strong. Labour demand was strong, because activity in the industry is exposed to business investment in the economy, which was growing strongly (driven by the investment phase of the mining boom). According to the Department of Employment (formerly the Department of Education, Employment and Workplace Relations, DEEWR) the professional and technical services industry is a large employer of accountants, programmers, solicitors and other individuals with technical and analytical skills. The department notes employment conditions in the industry are driven by business profitability and investment in Australia[2]. 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.

Average growth in WPI wages in the professional services industry is only expected to increase marginally in the forecast period. The expected pickup in wages growth in the professional services industry is weak because activity growth in the sector should weaken as business investment in the economy slows (as the investment boom in the mining industry comes to an end). The effect of weaker business investment should be partially offset by stronger demand for professional services form other sectors of the economy, including the housing construction sector and the consumer services sector, as their growth picks up.

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	4.4	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	3.3	4.2	3.5	4.4	3.9	3.4
2013-14	2.8	3.4	2.6	3.1	2.5	4.3
2014-15	3.0	3.6	3.3	2.0	2.2	2.5
2015-16	3.5	4.0	3.7	3.7	4.2	4.1
2016-17	4.2	4.6	4.4	5.4	5.9	5.7
2017-18	4.6	4.9	4.8	5.6	6.1	5.9
2018-19	4.5	4.8	4.6	4.9	5.3	5.2

Source: ABS; Independent Economics

4.5.3 AWE wages in the utilities and professional services industries

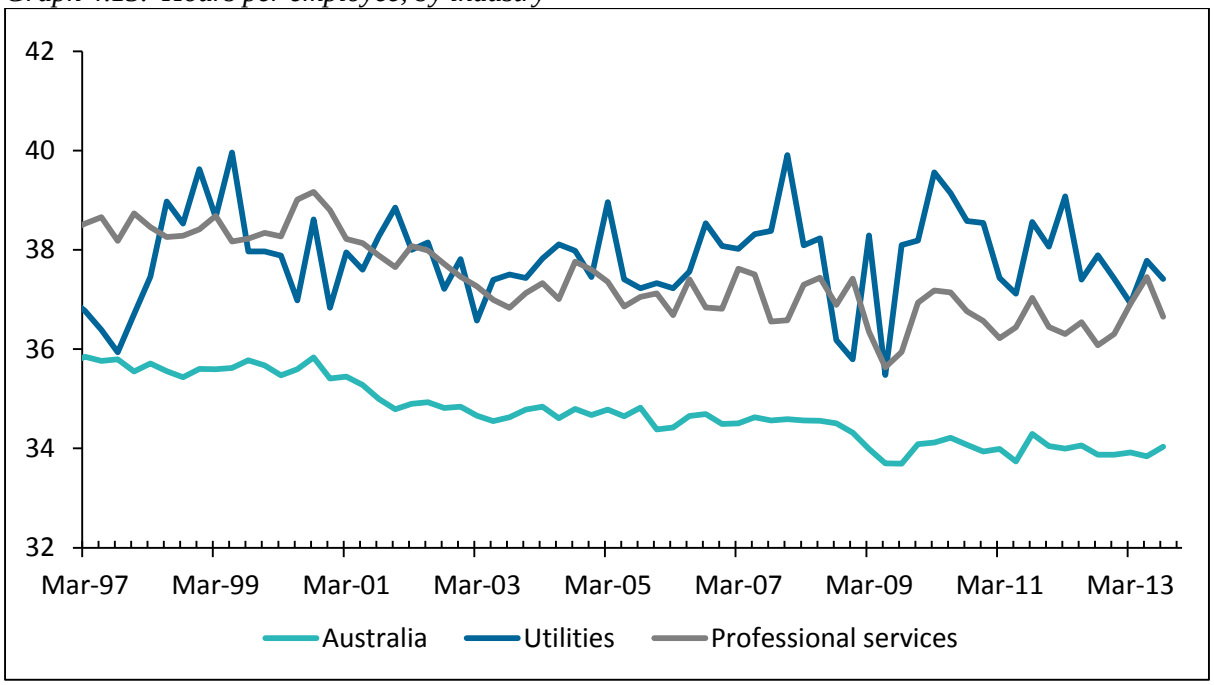
In line with the national trend, AWE wages growth in utilities is expected to be weak relative to WPI growth in the first part of the forecast period. This slower growth in AWE wages is due to the expectation that hours per employee, which have rose in the post-GFC recovery will weaken significantly as they move towards values implied by their trend exhibited up until the mid 2000s (this

[2] Employment outlook for Professional, Scientific and Technical Services (2010, Department of DEEWR)

is shown in Graph 4.15). In the second part of the forecast period, AWE wages growth is stronger than WPI wages growth in the utilities industry, in line with the national trend.

In the professional services industry, AWE wages are expected to grow by a relatively strong 4.3 per cent in 2013-14. This growth reverses relatively weak growth in these wages in recent years. Growth is then expected to weaken in before picking up, following the lead from the national economy.

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 *within* 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.

As outlined in Section 3, all forecasts in each industry at the state level have been generated with a RAS system. Further, this RAS system has been used to estimate historical data for WPI wages in both industries for Tasmania and the ACT and the history of AWE wages in both industries in all states, because the ABS do not provide these data.

5.1 The utilities industry

As shown in Table 5.3, WPI wages growth in NSW's utilities industry is expected to be broadly 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				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	4.2	3.7	4.2	4.8	3.9	4.2	4.3	5.3
2013-14	3.4	3.1	3.2	3.3	2.5	1.9	0.8	1.6
2014-15	3.6	3.6	3.4	3.7	2.2	1.7	1.9	3.0
2015-16	4.0	3.9	3.9	4.0	4.2	3.7	4.0	5.0
2016-17	4.6	4.6	4.5	4.6	5.9	5.5	5.7	6.6
2017-18	4.9	4.9	4.8	4.9	6.1	5.8	5.9	6.6
2018-19	4.8	4.7	4.6	4.7	5.3	5.2	5.2	5.7

Source: ABS; Independent Economics

In the ACT, WPI wages are expected to grow in line with the national average. 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.

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	4.2	3.4	3.3	5.8	4.6	7.7	7.1
2010-11	4.4	3.6	4.0	3.7	5.1	4.0	7.1	7.6
2011-12	4.4	3.7	4.3	3.3	2.5	1.9	4.2	4.8
2012-13	3.5	3.3	3.4	3.7	3.4	3.7	3.7	4.7
2013-14	2.6	2.6	2.4	2.8	4.3	3.6	2.5	3.4
2014-15	3.3	3.2	3.1	3.2	2.5	2.0	2.3	3.4
2015-16	3.7	3.7	3.6	3.6	4.1	3.7	4.0	5.0
2016-17	4.4	4.3	4.3	4.3	5.7	5.4	5.6	6.5
2017-18	4.8	4.7	4.6	4.7	5.9	5.7	5.8	6.5
2018-19	4.6	4.6	4.5	4.6	5.2	5.0	5.1	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

The electricity network businesses that commissioned this report are in the electricity distribution and electricity transmission sub-industries of the utilities industry. This section investigates whether wages growth in the utilities industry provides a reasonable proxy for wages growth in these sub-industries.

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. The electricity network businesses operate are electricity transmission and electricity distribution businesses.

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 makes it important to determine whether 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 changes in the cost of fixed bundle of labour, and thus the change in average price of labour in the 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 'fixed bundles of labour' are different.

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 employ 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 growth in utilities provides a reasonable proxy for WPI wages growth in the electricity distribution and electricity transmission sub-industries.

WPI wages growth in electricity distribution and in utilities generally is likely to be similar. The earnings of technicians & trades workers have been growing quickly (supporting wage growth in electricity distribution) and the earnings of machinery operators and drivers have been growing quickly (supporting wage growth in utilities). The earnings of both occupations have been growing quickly because both sets of individuals have been in high demand during the mining boom. In fact, earnings growth across occupations in both industries, weighted by the employment share of the occupations in 2010-11, is similar in these two industries (shown in Table 6.2). This calculation that is conceptually similar to the calculation that underlies the WPI.

WPI wages growth in electricity transmission is likely to slower than in utilities, but this difference appears to be quite small. This is because the earnings of professionals have been growing less quickly than the earnings of other occupations, which suggests wages growth is growing by less in electricity transmission. However, Table 6.2 shows that average wages growth in electricity distribution is still quite close to average wages growth in utilities, which means wages growth in utilities is a good proxy for wages growth in electricity distribution.

*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.

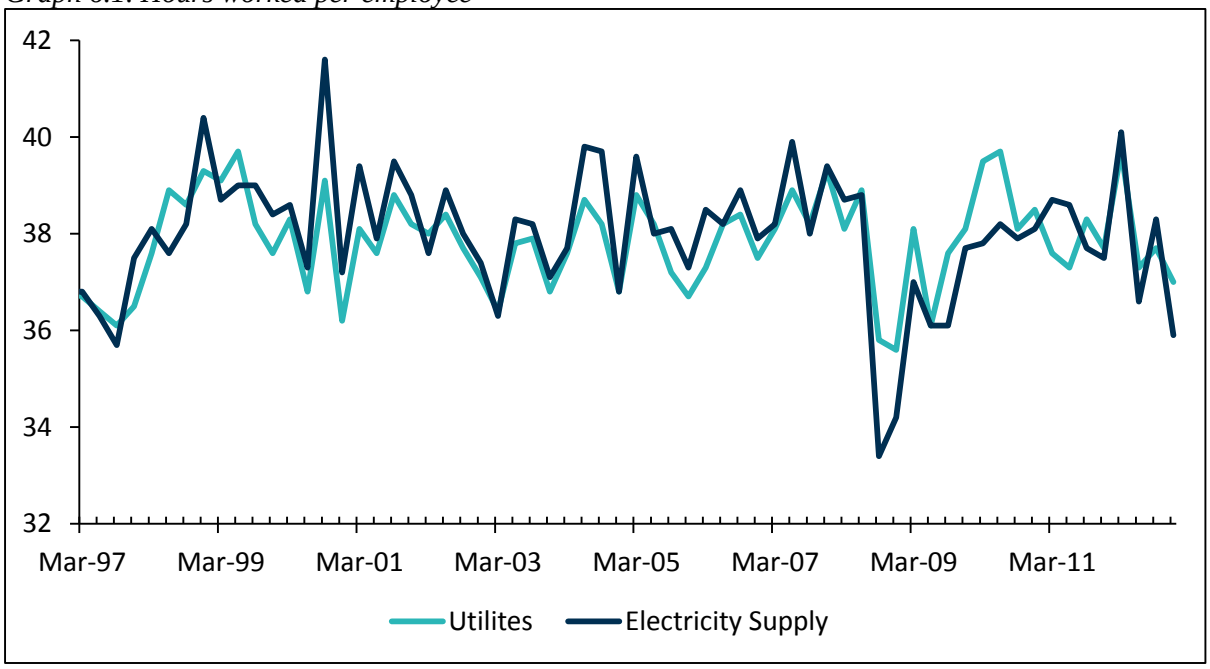
6.2 AWE wages

Due to data limitations, 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. To show this, using a calculation for earnings growth that is conceptually similar to AWE, we need data for employment by occupation in these industries and data for earnings by occupations at two points in reasonably close proximity. However, including special request data from the ABS, we only have employment by occupation in these industries in 2003-04 and 2010-11, and the level of earnings by occupation in May-06 and May-12.

Despite this, it is still possible to reach a conclusion on whether AWE wage growth in utilities is a good proxy for AWE wage growth in electricity transmission and electricity distribution. Based on the discussion in previous chapters, if we can show that hours per worker in electricity transmission and electricity distribution follow a similar pattern to hours per worker in utilities, then we can conclude that AWE wages in utilities are a good proxy for AWE wages in the other two industries, given that WPI wages in utilities are a good proxy for WPI wages in the other two industries. This is because a key source of difference between growth in AWE and WPI is changes in hours per worker.

Firstly, the ABS publish data on hours per employee in utilities and electricity supply (which includes electricity distribution and electricity transmission). Graph 6.1 shows that hours per worker in the electricity supply follows a similar pattern to hours per worker in the utilities industry. Data for hours per worker in electricity distribution and electricity transmission are not published.

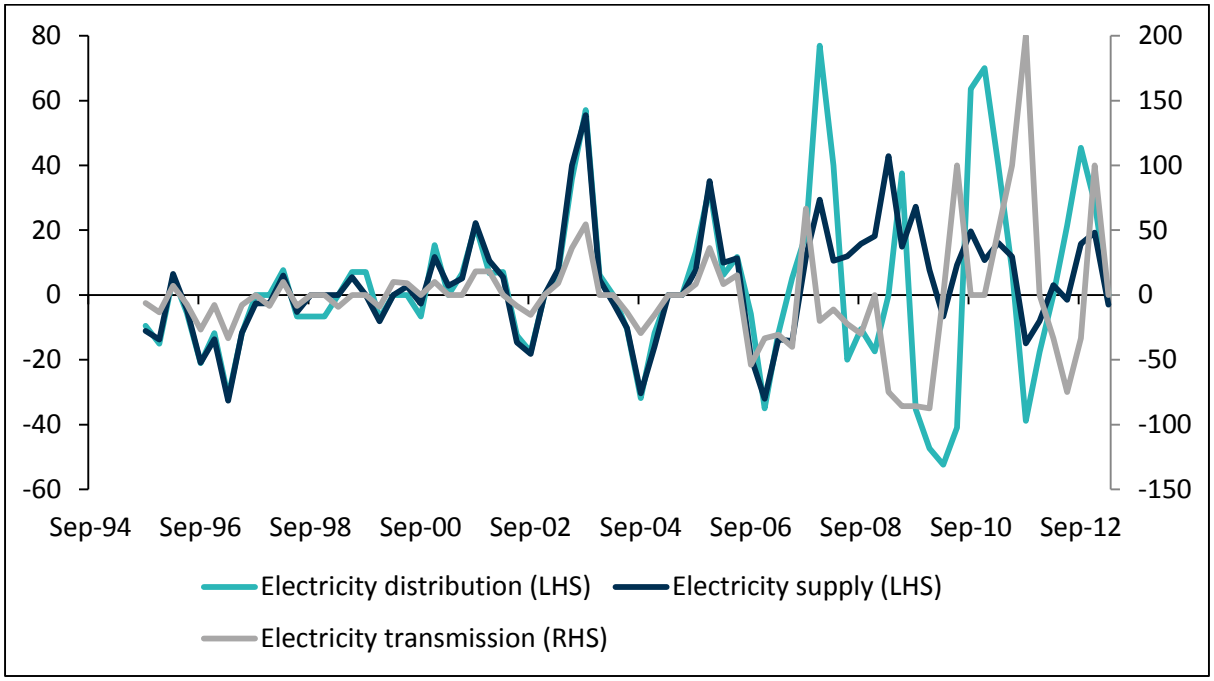
Graph 6.1. Hours worked per employee



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. Prior to the GFC period, employment across these industries followed a similar pattern. Since the GFC, the data have been very volatile, but it is clear that from around the end of 2007 to the beginning of 2010 employment growth weakened in each industry. Since then employment growth has strengthened, before weakening again.

Graph 6.2 Year-ended employment growth, per cent



Source: ABS; Independent Economics

If employment conditions – and therefore, demand for labour – follow similar patterns across electricity supply electricity distribution and electricity transmission, this suggests that hours per worker follow similar patterns in these three industries. In turn, this means hours per worker in electricity distribution and electricity transmission probably follow a broadly similar pattern to hours per worker in the utilities industry.

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.

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

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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	4.9	3.6	3.2	6.4
2009	3.5	4.3	4.2	4.2	5.8	4.7
2010	3.4	4.6	3.6	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	2.4	3.5
2013	3.0	3.8	2.6	4.1	3.3	4.3
2014	2.9	3.5	3.1	2.1	2.2	3.0
2015	3.2	3.7	3.4	2.6	3.0	3.1
2016	3.9	4.3	4.1	4.7	5.2	5.1
2017	4.5	4.8	4.6	5.7	6.2	6.1
2018	4.6	4.9	4.7	5.2	5.7	5.5

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	3.8	3.6	3.8	2.0	3.2
2013	2.7	3.0	2.5	4.2	3.3	4.2
2014	2.9	3.5	3.1	1.6	1.5	2.3
2015	3.1	3.7	3.4	2.0	2.5	2.6
2016	3.8	4.3	4.0	4.2	4.8	4.7
2017	4.4	4.8	4.6	5.4	5.9	5.7
2018	4.6	4.8	4.7	4.9	5.5	5.3

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	3.6	4.8
2013	2.9	3.8	2.6	2.7	2.0	2.8
2014	2.7	3.3	2.9	1.3	1.4	2.1
2015	3.1	3.6	3.2	2.2	2.8	2.9
2016	3.8	4.2	4.0	4.4	5.0	5.0
2017	4.4	4.7	4.5	5.5	6.0	5.9
2018	4.5	4.8	4.6	5.0	5.6	5.4

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	4.5	4.7	6.7	5.2	6.5
2013	2.8	3.7	2.5	2.7	2.5	3.4
2014	3.1	3.5	3.1	2.4	2.5	3.3
2015	3.3	3.8	3.4	3.2	3.8	3.9
2016	4.0	4.3	4.1	5.2	6.0	5.9
2017	4.6	4.8	4.6	6.2	6.8	6.7
2018	4.7	4.9	4.7	5.5	6.2	6.0

Source: ABS; Independent Economics

Supporting reference to Attachment 5.18

Consolidated CAPEX Report

Real

BPC Cost Type	2015	2016	2017	2018	2019	Overall Result
Contracted Services (Total)	333,112	337,946	287,481	249,639	213,703	1,421,882
Contracted Services	309,182	267,863	199,488	157,903	119,099	1,053,534
Contracted Services (Input)	23,931	70,083	87,994	91,737	94,605	368,348
Labour	375,461	371,376	343,858	342,876	338,793	1,772,363
Materials	311,181	283,670	232,824	227,271	204,652	1,259,597
Overall Result	1,019,753	992,992	864,163	819,786	757,148	4,453,842
	5.1%	6.6%	8.5%	10.8%	13.0%	
Constant						
BPC Cost Type	2015	2016	2017	2018	2019	Overall Result
Contracted Services (Total)	316,946	319,289	268,658	230,446	194,158	1,329,497
Contracted Services	294,179	253,096	186,554	146,147	108,597	988,573
Contracted Services (Input)	22,767	66,194	82,103	84,299	85,561	340,925
Labour	357,085	348,313	316,816	309,499	299,733	1,631,447
Materials	301,543	272,430	223,429	217,069	195,737	1,210,209
Overall Result	975,574	940,033	808,904	757,014	689,628	4,171,153

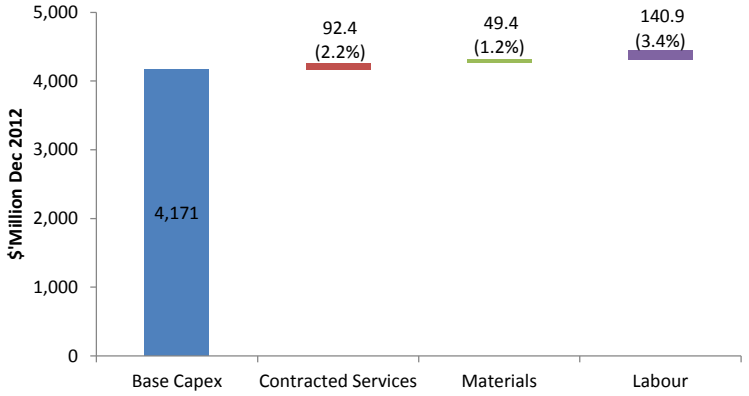
Difference (ammount)								
BPC Cost Type	2015	2016	2017	2018	2019	Overall Result		
Contracted Services (Total)	16,166	18,657	18,823	19,194	19,545	92,385	2.2%	6.9%
Contracted Services	15,003	14,768	12,933	11,756	10,502	64,961	1.6%	6.6%
Contracted Services (Input)	1,163	3,889	5,890	7,438	9,043	27,424	0.7%	8.0%
Labour	18,375	23,063	27,042	33,376	39,060	140,917	3.4%	8.6%
Materials	9,638	11,239	9,394	10,201	8,915	49,387	1.2%	4.1%
Overall Result	44,179	52,959	55,259	62,771	67,520	282,689	6.8%	6.8%

Difference (percentage)							
BPC Cost Type	2015	2016	2017	2018	2019	Overall Result	Average
Contracted Services (Total)	5.1%	5.8%	7.0%	8.3%	10.1%	6.9%	1.4%
Contracted Services	5.1%	5.8%	6.9%	8.0%	9.7%	6.6%	1.3%
Contracted Services (Input)	5.1%	5.9%	7.2%	8.8%	10.6%	8.0%	1.6%
Labour	5.1%	6.6%	8.5%	10.8%	13.0%	8.6%	1.7%
Materials	3.2%	4.1%	4.2%	4.7%	4.6%	4.1%	0.8%
Overall Result	4.5%	5.6%	6.8%	8.3%	9.8%	6.8%	1.3%

32%

1000

Base Capex	4,171				
Contracted S	4,171	92.4			2.2%
Materials	4,171	92.4	49.4		1.2%
Labour	4,171	92.4	49.4	140.9	3.4%
					6.8%



Consolidated CAPEX Report							
			Total CAPEX	Total CAPEX	Total CAPEX	Total CAPEX	Total CAPEX
		BPC Cost Type	Contracted Services	Contracted Services (Input)	Labour	Materials	Overall Result
BPC Project	BPC Asset Cat		* 1,000	* 1,000	* 1,000	* 1,000	* 1,000
Total CAPEX	AS_TOT	Total Asset Category	988,573	340,925	1,631,447	1,210,209	4,171,153
Total CAPEX	AS01_0000	Total Sub-transmission Substation	65,835		116,155	89,929	271,919
Total CAPEX	AS02_0000	Total Zone Substation	196,169		392,688	338,456	927,312
Total CAPEX	AS03_0000	Total Sub-transmission Mains OH	39,139		64,379	28,197	131,716
Total CAPEX	AS04_0000	Total Sub-transmission Mains UG	307,018		92,082	124,290	523,390
Total CAPEX	AS05_0000	Total Distribution Substation	87,370	10,306	232,371	247,009	577,057
Total CAPEX	AS08_0000	Total Distribution Mains	84,045	330,618	625,834	198,456	1,238,954
Total CAPEX	AS11_0000	Communications / System IT	19,941		34,066	20,722	74,728
Total CAPEX	AS20_0000	Total Non-System	182,387		68,841	119,555	370,784
Total CAPEX	AS99_0000	Total Other	6,391		4,903		11,294
Total CAPEX	AS_LAND	Total Land	277		128	43,595	44,000
Total Area Plans	AS_TOT	Total Asset Category	589,965		417,635	438,961	1,446,560
Total Area Plans	AS01_0000	Total Sub-transmission Substation	34,077		38,503	37,158	109,739
Total Area Plans	AS02_0000	Total Zone Substation	144,099		265,216	252,802	662,118
Total Area Plans	AS03_0000	Total Sub-transmission Mains OH	2,092		8,142	3,989	14,222
Total Area Plans	AS04_0000	Total Sub-transmission Mains UG	300,599		74,369	115,481	490,449
Total Area Plans	AS05_0000	Total Distribution Substation	200				200
Total Area Plans	AS08_0000	Total Distribution Mains	100,139		28,918	28,645	157,702
Total Area Plans	AS11_0000	Communications / System IT	8,758		2,487	885	12,130
Total Strategic Property Plan	AS_TOT	Total Asset Category	277		444	43,595	44,316
Total Strategic Property Plan	AS01_0000	Total Sub-transmission Substation			28		28
Total Strategic Property Plan	AS02_0000	Total Zone Substation			123		123
Total Strategic Property Plan	AS03_0000	Total Sub-transmission Mains OH			13		13
Total Strategic Property Plan	AS04_0000	Total Sub-transmission Mains UG			152		152
Total Strategic Property Plan	AS_LAND	Total Land	277		128	43,595	44,000
Total Replacement Plans	AS_TOT	Total Asset Category	249,806		744,419	337,199	1,331,424
Total Replacement Plans	AS01_0000	Total Sub-transmission Substation	18,340		63,837	39,032	121,209
Total Replacement Plans	AS02_0000	Total Zone Substation	24,213		98,986	54,599	177,798
Total Replacement Plans	AS03_0000	Total Sub-transmission Mains OH	36,088		49,565	20,807	106,460
Total Replacement Plans	AS04_0000	Total Sub-transmission Mains UG	6,053		16,787	8,306	31,146
Total Replacement Plans	AS05_0000	Total Distribution Substation	26,872		112,165	107,374	246,412
Total Replacement Plans	AS08_0000	Total Distribution Mains	138,240		403,078	107,081	648,399
Total Duty of Care Plan	AS_TOT	Total Asset Category	101,471		112,434	110,584	324,489
Total Duty of Care Plan	AS01_0000	Total Sub-transmission Substation	13,418		13,698	13,709	40,826
Total Duty of Care Plan	AS02_0000	Total Zone Substation	23,057		27,432	30,344	80,833
Total Duty of Care Plan	AS03_0000	Total Sub-transmission Mains OH	959		6,621	3,389	10,969

Total Duty of Care Plan	AS04_0000	Total Sub-transmission Mains UG	366		366	367	1,100
Total Duty of Care Plan	AS05_0000	Total Distribution Substation	56,328		46,129	44,566	147,023
Total Duty of Care Plan	AS08_0000	Total Distribution Mains	7,343		18,187	18,209	43,740
Total 11kV Capacity Plan	AS_TOT	Total Asset Category	-170,036	282,088	57,378	18,597	188,027
Total 11kV Capacity Plan	AS08_0000	Total Distribution Mains	-170,036	282,088	57,378	18,597	188,027
Total Reliability Plan	AS_TOT	Total Asset Category		5,183	14,723	6,471	26,377
Total Reliability Plan	AS08_0000	Total Distribution Mains		5,183	14,723	6,471	26,377
Total Customer Connections Plan	AS_TOT	Total Asset Category	7,712	25,319	74,593	82,660	190,284
Total Customer Connections Plan	AS05_0000	Total Distribution Substation	1,307	7,356	46,943	76,756	132,361
Total Customer Connections Plan	AS08_0000	Total Distribution Mains	14	17,963	22,748	5,904	46,629
Total Customer Connections Plan	AS99_0000	Total Other	6,391		4,903		11,294
Total Low Voltage Plan	AS_TOT	Total Asset Category	11,007	28,336	107,830	31,827	179,000
Total Low Voltage Plan	AS05_0000	Total Distribution Substation	2,664	2,951	27,134	18,314	51,062
Total Low Voltage Plan	AS08_0000	Total Distribution Mains	8,343	25,385	80,696	13,513	127,937
Total System IT / OTI Plan	AS_TOT	Total Asset Category	15,983		33,150	20,760	69,893
Total System IT / OTI Plan	AS01_0000	Total Sub-transmission Substation			87	29	117
Total System IT / OTI Plan	AS02_0000	Total Zone Substation	4,800		930	710	6,440
Total System IT / OTI Plan	AS03_0000	Total Sub-transmission Mains OH			39	13	52
Total System IT / OTI Plan	AS04_0000	Total Sub-transmission Mains UG			408	136	544
Total System IT / OTI Plan	AS08_0000	Total Distribution Mains			107	36	142
Total System IT / OTI Plan	AS11_0000	Communications / System IT	11,183		31,579	19,836	62,598
Total Non-System	AS_TOT	Total Asset Category	182,387		68,841	119,555	370,784
Total Non-System	AS20_0000	Total Non-System	182,387		68,841	119,555	370,784

Supporting reference to Attachment 5.18

Consolidated CAPEX Report

Real

BPC Cost Type	2015	2016	2017	2018	2019	Overall Result
Contracted Services (Total)	333,112	337,946	287,481	249,639	213,703	1,421,882
Contracted Services	309,182	267,863	199,488	157,903	119,099	1,053,534
Contracted Services (Input)	23,931	70,083	87,994	91,737	94,605	368,348
Labour	375,461	371,376	343,858	342,876	338,793	1,772,363
Materials	311,181	283,670	232,824	227,271	204,652	1,259,597
Overall Result	1,019,753	992,992	864,163	819,786	757,148	4,453,842
	5.1%	6.6%	8.5%	10.8%	13.0%	
Constant						
BPC Cost Type	2015	2016	2017	2018	2019	Overall Result
Contracted Services (Total)	316,946	319,289	268,658	230,446	194,158	1,329,497
Contracted Services	294,179	253,096	186,554	146,147	108,597	988,573
Contracted Services (Input)	22,767	66,194	82,103	84,299	85,561	340,925
Labour	357,085	348,313	316,816	309,499	299,733	1,631,447
Materials	301,543	272,430	223,429	217,069	195,737	1,210,209
Overall Result	975,574	940,033	808,904	757,014	689,628	4,171,153

Difference (ammount)								
BPC Cost Type	2015	2016	2017	2018	2019	Overall Result		
Contracted Services (Total)	16,166	18,657	18,823	19,194	19,545	92,385	2.2%	6.9%
Contracted Services	15,003	14,768	12,933	11,756	10,502	64,961	1.6%	6.6%
Contracted Services (Input)	1,163	3,889	5,890	7,438	9,043	27,424	0.7%	8.0%
Labour	18,375	23,063	27,042	33,376	39,060	140,917	3.4%	8.6%
Materials	9,638	11,239	9,394	10,201	8,915	49,387	1.2%	4.1%
Overall Result	44,179	52,959	55,259	62,771	67,520	282,689	6.8%	6.8%

Difference (percentage)							
BPC Cost Type	2015	2016	2017	2018	2019	Overall Result	Average
Contracted Services (Total)	5.1%	5.8%	7.0%	8.3%	10.1%	6.9%	1.4%
Contracted Services	5.1%	5.8%	6.9%	8.0%	9.7%	6.6%	1.3%
Contracted Services (Input)	5.1%	5.9%	7.2%	8.8%	10.6%	8.0%	1.6%
Labour	5.1%	6.6%	8.5%	10.8%	13.0%	8.6%	1.7%
Materials	3.2%	4.1%	4.2%	4.7%	4.6%	4.1%	0.8%
Overall Result	4.5%	5.6%	6.8%	8.3%	9.8%	6.8%	1.3%

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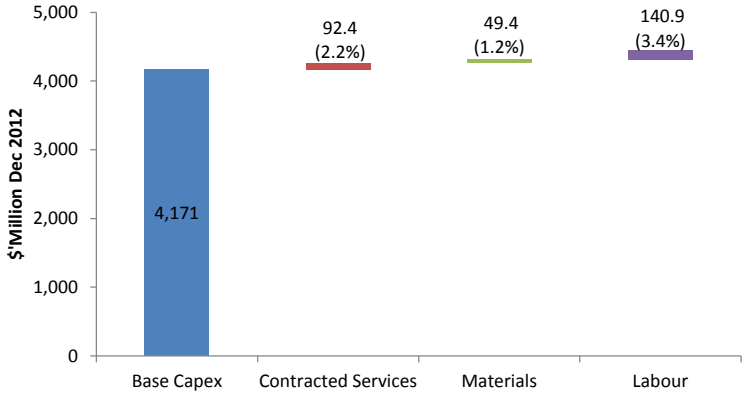
Base Capex	4,171				
Contracted S	4,171	92.4			2.2%
Materials	4,171	92.4	49.4		1.2%
Labour	4,171	92.4	49.4	140.9	3.4%
					6.8%



Consolidated CAPEX Report							
			Total CAPEX	Total CAPEX	Total CAPEX	Total CAPEX	Total CAPEX
		BPC Cost Type	Contracted Services	Contracted Services (Input)	Labour	Materials	Overall Result
BPC Project	BPC Asset Cat		* 1,000	* 1,000	* 1,000	* 1,000	* 1,000
Total CAPEX	AS_TOT	Total Asset Category	988,573	340,925	1,631,447	1,210,209	4,171,153
Total CAPEX	AS01_0000	Total Sub-transmission Substation	65,835		116,155	89,929	271,919
Total CAPEX	AS02_0000	Total Zone Substation	196,169		392,688	338,456	927,312
Total CAPEX	AS03_0000	Total Sub-transmission Mains OH	39,139		64,379	28,197	131,716
Total CAPEX	AS04_0000	Total Sub-transmission Mains UG	307,018		92,082	124,290	523,390
Total CAPEX	AS05_0000	Total Distribution Substation	87,370	10,306	232,371	247,009	577,057
Total CAPEX	AS08_0000	Total Distribution Mains	84,045	330,618	625,834	198,456	1,238,954
Total CAPEX	AS11_0000	Communications / System IT	19,941		34,066	20,722	74,728
Total CAPEX	AS20_0000	Total Non-System	182,387		68,841	119,555	370,784
Total CAPEX	AS99_0000	Total Other	6,391		4,903		11,294
Total CAPEX	AS_LAND	Total Land	277		128	43,595	44,000
Total Area Plans	AS_TOT	Total Asset Category	589,965		417,635	438,961	1,446,560
Total Area Plans	AS01_0000	Total Sub-transmission Substation	34,077		38,503	37,158	109,739
Total Area Plans	AS02_0000	Total Zone Substation	144,099		265,216	252,802	662,118
Total Area Plans	AS03_0000	Total Sub-transmission Mains OH	2,092		8,142	3,989	14,222
Total Area Plans	AS04_0000	Total Sub-transmission Mains UG	300,599		74,369	115,481	490,449
Total Area Plans	AS05_0000	Total Distribution Substation	200				200
Total Area Plans	AS08_0000	Total Distribution Mains	100,139		28,918	28,645	157,702
Total Area Plans	AS11_0000	Communications / System IT	8,758		2,487	885	12,130
Total Strategic Property Plan	AS_TOT	Total Asset Category	277		444	43,595	44,316
Total Strategic Property Plan	AS01_0000	Total Sub-transmission Substation			28		28
Total Strategic Property Plan	AS02_0000	Total Zone Substation			123		123
Total Strategic Property Plan	AS03_0000	Total Sub-transmission Mains OH			13		13
Total Strategic Property Plan	AS04_0000	Total Sub-transmission Mains UG			152		152
Total Strategic Property Plan	AS_LAND	Total Land	277		128	43,595	44,000
Total Replacement Plans	AS_TOT	Total Asset Category	249,806		744,419	337,199	1,331,424
Total Replacement Plans	AS01_0000	Total Sub-transmission Substation	18,340		63,837	39,032	121,209
Total Replacement Plans	AS02_0000	Total Zone Substation	24,213		98,986	54,599	177,798
Total Replacement Plans	AS03_0000	Total Sub-transmission Mains OH	36,088		49,565	20,807	106,460
Total Replacement Plans	AS04_0000	Total Sub-transmission Mains UG	6,053		16,787	8,306	31,146
Total Replacement Plans	AS05_0000	Total Distribution Substation	26,872		112,165	107,374	246,412
Total Replacement Plans	AS08_0000	Total Distribution Mains	138,240		403,078	107,081	648,399
Total Duty of Care Plan	AS_TOT	Total Asset Category	101,471		112,434	110,584	324,489
Total Duty of Care Plan	AS01_0000	Total Sub-transmission Substation	13,418		13,698	13,709	40,826
Total Duty of Care Plan	AS02_0000	Total Zone Substation	23,057		27,432	30,344	80,833
Total Duty of Care Plan	AS03_0000	Total Sub-transmission Mains OH	959		6,621	3,389	10,969

Total Duty of Care Plan	AS04_0000	Total Sub-transmission Mains UG	366		366	367	1,100
Total Duty of Care Plan	AS05_0000	Total Distribution Substation	56,328		46,129	44,566	147,023
Total Duty of Care Plan	AS08_0000	Total Distribution Mains	7,343		18,187	18,209	43,740
Total 11kV Capacity Plan	AS_TOT	Total Asset Category	-170,036	282,088	57,378	18,597	188,027
Total 11kV Capacity Plan	AS08_0000	Total Distribution Mains	-170,036	282,088	57,378	18,597	188,027
Total Reliability Plan	AS_TOT	Total Asset Category		5,183	14,723	6,471	26,377
Total Reliability Plan	AS08_0000	Total Distribution Mains		5,183	14,723	6,471	26,377
Total Customer Connections Plan	AS_TOT	Total Asset Category	7,712	25,319	74,593	82,660	190,284
Total Customer Connections Plan	AS05_0000	Total Distribution Substation	1,307	7,356	46,943	76,756	132,361
Total Customer Connections Plan	AS08_0000	Total Distribution Mains	14	17,963	22,748	5,904	46,629
Total Customer Connections Plan	AS99_0000	Total Other	6,391		4,903		11,294
Total Low Voltage Plan	AS_TOT	Total Asset Category	11,007	28,336	107,830	31,827	179,000
Total Low Voltage Plan	AS05_0000	Total Distribution Substation	2,664	2,951	27,134	18,314	51,062
Total Low Voltage Plan	AS08_0000	Total Distribution Mains	8,343	25,385	80,696	13,513	127,937
Total System IT / OTI Plan	AS_TOT	Total Asset Category	15,983		33,150	20,760	69,893
Total System IT / OTI Plan	AS01_0000	Total Sub-transmission Substation			87	29	117
Total System IT / OTI Plan	AS02_0000	Total Zone Substation	4,800		930	710	6,440
Total System IT / OTI Plan	AS03_0000	Total Sub-transmission Mains OH			39	13	52
Total System IT / OTI Plan	AS04_0000	Total Sub-transmission Mains UG			408	136	544
Total System IT / OTI Plan	AS08_0000	Total Distribution Mains			107	36	142
Total System IT / OTI Plan	AS11_0000	Communications / System IT	11,183		31,579	19,836	62,598
Total Non-System	AS_TOT	Total Asset Category	182,387		68,841	119,555	370,784
Total Non-System	AS20_0000	Total Non-System	182,387		68,841	119,555	370,784

Supporting reference to Attachment 5.18

Consolidated CAPEX Report

Real

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Contracted Services (Input)	23,931	70,083	87,994	91,737	94,605	368,348
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	5.1%	6.6%	8.5%	10.8%	13.0%	
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Contracted Services	15,003	14,768	12,933	11,756	10,502	64,961	1.6%	6.6%
Contracted Services (Input)	1,163	3,889	5,890	7,438	9,043	27,424	0.7%	8.0%
Labour	18,375	23,063	27,042	33,376	39,060	140,917	3.4%	8.6%
Materials	9,638	11,239	9,394	10,201	8,915	49,387	1.2%	4.1%
Overall Result	44,179	52,959	55,259	62,771	67,520	282,689	6.8%	6.8%

Difference (percentage)							
BPC Cost Type	2015	2016	2017	2018	2019	Overall Result	Average
Contracted Services (Total)	5.1%	5.8%	7.0%	8.3%	10.1%	6.9%	1.4%
Contracted Services	5.1%	5.8%	6.9%	8.0%	9.7%	6.6%	1.3%
Contracted Services (Input)	5.1%	5.9%	7.2%	8.8%	10.6%	8.0%	1.6%
Labour	5.1%	6.6%	8.5%	10.8%	13.0%	8.6%	1.7%
Materials	3.2%	4.1%	4.2%	4.7%	4.6%	4.1%	0.8%
Overall Result	4.5%	5.6%	6.8%	8.3%	9.8%	6.8%	1.3%

32%

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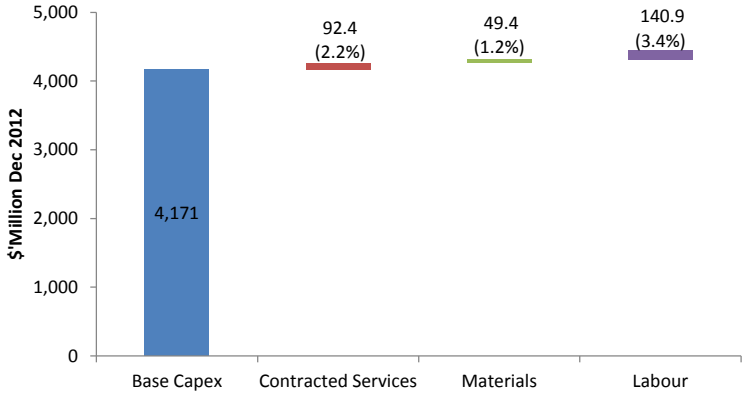
Base Capex	4,171				
Contracted S	4,171	92.4			2.2%
Materials	4,171	92.4	49.4		1.2%
Labour	4,171	92.4	49.4	140.9	3.4%
					6.8%



Consolidated CAPEX Report							
			Total CAPEX	Total CAPEX	Total CAPEX	Total CAPEX	Total CAPEX
		BPC Cost Type	Contracted Services	Contracted Services (Input)	Labour	Materials	Overall Result
BPC Project	BPC Asset Cat		* 1,000	* 1,000	* 1,000	* 1,000	* 1,000
Total CAPEX	AS_TOT	Total Asset Category	988,573	340,925	1,631,447	1,210,209	4,171,153
Total CAPEX	AS01_0000	Total Sub-transmission Substation	65,835		116,155	89,929	271,919
Total CAPEX	AS02_0000	Total Zone Substation	196,169		392,688	338,456	927,312
Total CAPEX	AS03_0000	Total Sub-transmission Mains OH	39,139		64,379	28,197	131,716
Total CAPEX	AS04_0000	Total Sub-transmission Mains UG	307,018		92,082	124,290	523,390
Total CAPEX	AS05_0000	Total Distribution Substation	87,370	10,306	232,371	247,009	577,057
Total CAPEX	AS08_0000	Total Distribution Mains	84,045	330,618	625,834	198,456	1,238,954
Total CAPEX	AS11_0000	Communications / System IT	19,941		34,066	20,722	74,728
Total CAPEX	AS20_0000	Total Non-System	182,387		68,841	119,555	370,784
Total CAPEX	AS99_0000	Total Other	6,391		4,903		11,294
Total CAPEX	AS_LAND	Total Land	277		128	43,595	44,000
Total Area Plans	AS_TOT	Total Asset Category	589,965		417,635	438,961	1,446,560
Total Area Plans	AS01_0000	Total Sub-transmission Substation	34,077		38,503	37,158	109,739
Total Area Plans	AS02_0000	Total Zone Substation	144,099		265,216	252,802	662,118
Total Area Plans	AS03_0000	Total Sub-transmission Mains OH	2,092		8,142	3,989	14,222
Total Area Plans	AS04_0000	Total Sub-transmission Mains UG	300,599		74,369	115,481	490,449
Total Area Plans	AS05_0000	Total Distribution Substation	200				200
Total Area Plans	AS08_0000	Total Distribution Mains	100,139		28,918	28,645	157,702
Total Area Plans	AS11_0000	Communications / System IT	8,758		2,487	885	12,130
Total Strategic Property Plan	AS_TOT	Total Asset Category	277		444	43,595	44,316
Total Strategic Property Plan	AS01_0000	Total Sub-transmission Substation			28		28
Total Strategic Property Plan	AS02_0000	Total Zone Substation			123		123
Total Strategic Property Plan	AS03_0000	Total Sub-transmission Mains OH			13		13
Total Strategic Property Plan	AS04_0000	Total Sub-transmission Mains UG			152		152
Total Strategic Property Plan	AS_LAND	Total Land	277		128	43,595	44,000
Total Replacement Plans	AS_TOT	Total Asset Category	249,806		744,419	337,199	1,331,424
Total Replacement Plans	AS01_0000	Total Sub-transmission Substation	18,340		63,837	39,032	121,209
Total Replacement Plans	AS02_0000	Total Zone Substation	24,213		98,986	54,599	177,798
Total Replacement Plans	AS03_0000	Total Sub-transmission Mains OH	36,088		49,565	20,807	106,460
Total Replacement Plans	AS04_0000	Total Sub-transmission Mains UG	6,053		16,787	8,306	31,146
Total Replacement Plans	AS05_0000	Total Distribution Substation	26,872		112,165	107,374	246,412
Total Replacement Plans	AS08_0000	Total Distribution Mains	138,240		403,078	107,081	648,399
Total Duty of Care Plan	AS_TOT	Total Asset Category	101,471		112,434	110,584	324,489
Total Duty of Care Plan	AS01_0000	Total Sub-transmission Substation	13,418		13,698	13,709	40,826
Total Duty of Care Plan	AS02_0000	Total Zone Substation	23,057		27,432	30,344	80,833
Total Duty of Care Plan	AS03_0000	Total Sub-transmission Mains OH	959		6,621	3,389	10,969

Total Duty of Care Plan	AS04_0000	Total Sub-transmission Mains UG	366		366	367	1,100
Total Duty of Care Plan	AS05_0000	Total Distribution Substation	56,328		46,129	44,566	147,023
Total Duty of Care Plan	AS08_0000	Total Distribution Mains	7,343		18,187	18,209	43,740
Total 11kV Capacity Plan	AS_TOT	Total Asset Category	-170,036	282,088	57,378	18,597	188,027
Total 11kV Capacity Plan	AS08_0000	Total Distribution Mains	-170,036	282,088	57,378	18,597	188,027
Total Reliability Plan	AS_TOT	Total Asset Category		5,183	14,723	6,471	26,377
Total Reliability Plan	AS08_0000	Total Distribution Mains		5,183	14,723	6,471	26,377
Total Customer Connections Plan	AS_TOT	Total Asset Category	7,712	25,319	74,593	82,660	190,284
Total Customer Connections Plan	AS05_0000	Total Distribution Substation	1,307	7,356	46,943	76,756	132,361
Total Customer Connections Plan	AS08_0000	Total Distribution Mains	14	17,963	22,748	5,904	46,629
Total Customer Connections Plan	AS99_0000	Total Other	6,391		4,903		11,294
Total Low Voltage Plan	AS_TOT	Total Asset Category	11,007	28,336	107,830	31,827	179,000
Total Low Voltage Plan	AS05_0000	Total Distribution Substation	2,664	2,951	27,134	18,314	51,062
Total Low Voltage Plan	AS08_0000	Total Distribution Mains	8,343	25,385	80,696	13,513	127,937
Total System IT / OTI Plan	AS_TOT	Total Asset Category	15,983		33,150	20,760	69,893
Total System IT / OTI Plan	AS01_0000	Total Sub-transmission Substation			87	29	117
Total System IT / OTI Plan	AS02_0000	Total Zone Substation	4,800		930	710	6,440
Total System IT / OTI Plan	AS03_0000	Total Sub-transmission Mains OH			39	13	52
Total System IT / OTI Plan	AS04_0000	Total Sub-transmission Mains UG			408	136	544
Total System IT / OTI Plan	AS08_0000	Total Distribution Mains			107	36	142
Total System IT / OTI Plan	AS11_0000	Communications / System IT	11,183		31,579	19,836	62,598
Total Non-System	AS_TOT	Total Asset Category	182,387		68,841	119,555	370,784
Total Non-System	AS20_0000	Total Non-System	182,387		68,841	119,555	370,784