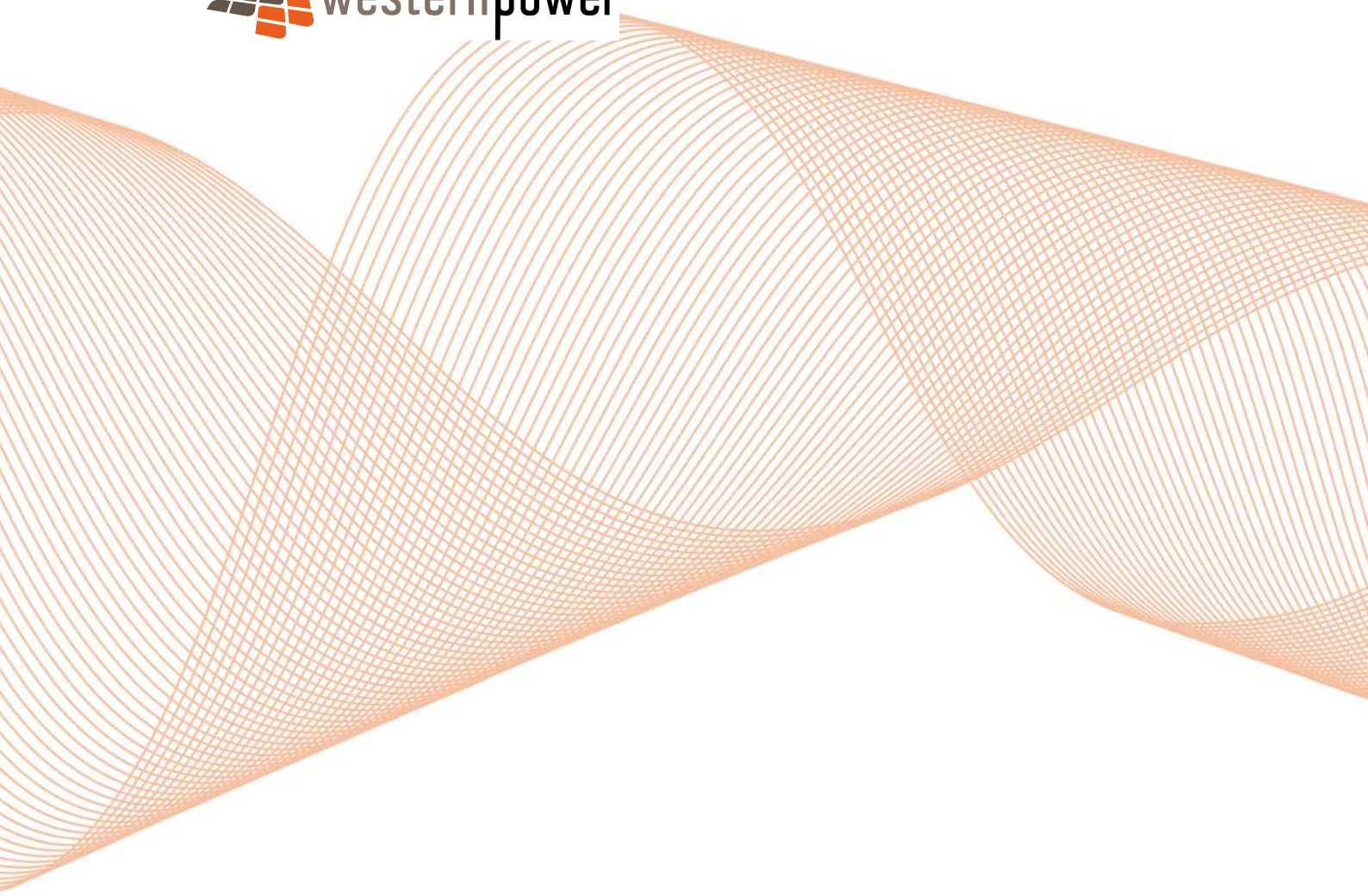
Appendix W.2 – Macromonitor Report – Forecast of Labour Costs – Electricity, Gas, Water And Waste Services Sector

September 2011



Forecasts of Labour Costs – Electricity, Gas, Water and Waste Services Sector

Western Australia

Report prepared for Western Power

July 2011

macromonitor

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Summary

This report provides forecasts of labour costs in the electricity, gas, water and waste services (EGWW) sector in Western Australia. Annual forecasts are provided, in year ended June terms, from a range of labour cost indicators. The key indicators are average weekly ordinary time earnings (AWOTE), the wage price index (WPI) and unit labour costs. Our forecasts for these main labour cost indicators are provided in Table 1 below.

Table 1
Labour Costs - Electricity, Gas, Water & Waste Services Sector
Western Australia - Annual % Change

Year Ended June	Average Weekly Ordinary Time Earnings *(Full Time Workers)* $	Wage Price Index - Ordinary Time Hourly Rate Index: 08/09=100	Unit Labour Costs - $ Wages per $ Real Gross Value Added $
2006	9.2	8.0	17.5
2007	5.1	4.5	6.4
2008	4.9	4.1	13.8
2009	9.7	7.2	19.6
2010	5.9	5.2	6.5
2011 *est.*	9.3	4.3	20.0
Forecasts			
2012	6.3	4.9	9.5
2013	6.3	5.0	7.9
2014	6.7	5.4	7.2
2015	6.3	5.0	5.8
2016	5.7	4.5	4.3
2017	5.7	4.5	4.1
Average Annual Growth Rates			
2001-2006	5.3	4.5	10.0
2006-2011	7.0	5.1	13.1
Forecasts			
2011-2017	6.1	4.9	6.5

Source: ABS & Macromonitor

In summary, we expect the recent slightly lower rate of wages growth in the EGWW sector to be short lived, with a gradual acceleration of wage inflation over the next few years.

The next phase of growth in the Western Australian economy, driven by growth in construction, mining and utilities, will drive up the demand for labour and put upward pressure on wages. We are forecasting growth in the EGWW sector AWOTE/WPI measure to reach 6.3%/5% in 2012/13 and 6.7%/5.4% in 2013/14.

We are forecasting a downturn in the construction and minerals investment cycles starting around 2015, as well as an easing in the rate of employment growth in the EGWW sector. As a result, we expect a moderation of wages growth from 2015.

Each of the three key labour cost indicators in Table 1 convey different information and have different applications.

The WPI measure excludes the effects of any compositional changes in the workforce. Therefore this indicator can be used as an escalator for the labour costs of individual groups of workers, or segments of the workforce.

The AWOTE measure includes the effects of many types of compositional changes, primarily changes in the mix of skill categories, or changes in the mix of occupation categories with different pay scales. Our forecasts of the AWOTE measure include assumptions regarding the average industry compositional change effects.

Finally, the unit labour costs measure includes the effects of industry average labour productivity changes. Unit labour costs measure the actual labour cost of producing a unit of output. That is, unit labour costs equal total wage costs divided by total output, or, average wage costs per worker (AWOTE) divided by average output per worker (productivity).

We outline in this report the wide variety of factors which can influence measured labour productivity.

Internal and External Labour Costs

To make projections of labour costs, the WPI measure can be used so long as this is applied to each segment of the workforce separately – with changes in the composition of the workforce captured in changes in employment by segment.

Alternatively, if projections of employment levels in each workforce segment are unavailable, then our forecast growth rates in the AWOTE measure can be applied to total employment, as the AWOTE measure includes an allowance for the expected industry average effect of compositional change.

If a projection of labour costs adjusted for productivity is required, and the individual factors affecting the output to labour ratio (productivity) within the organisation are not known, then our projections of unit labour costs could be used. However, this should be done with caution for the reasons described in this report.

1. Introduction

The objective of this report is to provide well researched forecasts of labour cost increases in Western Australia's electricity, gas and water sector. Note that the Australian Bureau of Statistics' new definitions of industry sectors (ANZSIC 2006) now define this sector as *Electricity, Gas, Water and Waste Services*. This sectoral definition is very similar to the previous *Electricity, Gas & Water* sector. In this report we will generally refer to the electricity, gas, water and waste services (EGWW) sector.

The cost projections in this report are intended to be indicative of the labour cost increases which will be experienced by Western Power over the forecasting period 2011/12 to 2016/17.

We aim to provide the historical data which we believe represent the best available indicators of these labour costs. We also provide annual forecasts of these data series out to 2016/17, along with a clear explanation of the forecasts.

All of the forecasts in this report are in nominal terms. These forecasts reflect all significant influences on labour costs in the EGWW sector, which Macromonitor specialises in analysing. In order to derive forecasts of real changes in costs one must adopt a forecast of CPI inflation. This will require one to take a view of changes in the CPI.

2. Notes on Labour Cost Data

2.1 Labour Cost Measures

There are three measures of labour costs which we will make use of in this report, two that are sourced from the Australian Bureau of Statistics (ABS) and one which is derived from ABS data. The two ABS data series are:

1. Average weekly ordinary time earnings (AWOTE), of all full-time wage and salary earners, and
2. Wage Price Index (WPI), ordinary time hourly rates of pay excluding bonuses.

The derived measure of labour costs which we will use in this report is Unit Labour Costs, which measures the cost of the labour required per unit of output. This measure reflects the productivity of workers as well as their rate of pay.

The AWOTE measure is sourced from the ABS publication, *Average Weekly Earnings, Australia*, catalogue number 6302.0.

These data measure the average income earned by all full time workers, for one week's earnings attributable to award, standard or agreed hours of work. Excluded are overtime payments, retrospective pay, pay in advance, leave loadings, severance, termination and redundancy payments, and other payments.

AWOTE is not affected by compositional changes between full- and part-time work or changes in the average amount of paid overtime worked, but it is affected by all other compositional changes in the labour force. It is affected by changes in the composition of the workforce across occupations and skill types, or, more simply, by change in the proportion of workers in lower as opposed to higher paid jobs.

The WPI measure is sourced from the ABS publication, *Labour Price Index, Australia*, catalogue number 6345.0.

The WPI measure is constructed by taking a 'basket' of standard occupations/positions in each industry, measuring the normal hourly wage rate of each, and weighting them together in a standard way. The percentage change in the WPI measure is a weighted average of the percentage change in the wage or salary in each individual occupation or skill category.

This measure excludes the effects of all types of compositional change in the workforce.

If there is no change taking place in the composition of an industry's workforce, then, in theory, the rate of change in the WPI and AWOTE measures will be the same. If, however, the workforce within a particular industry is becoming relatively more highly skilled, with a higher proportion of workers falling into higher paid occupations, then the rate of increase in the average earnings in that industry (AWOTE) will be greater than the average rate of change in earnings across each individual occupation group (the WPI).

In this report we will provide forecasts of both the WPI and AWOTE measures of labour costs in the EGWW sector.

2.2 Using Labour Cost Measure for Cost Escalation

Each of the three labour cost indicators conveys different information and has a different application.

The WPI measure excludes the effects of any compositional changes in the workforce. Therefore this can be considered an underlying labour cost indicator which can be applied to categories of workers with the same or similar level of compensation (labour costs of individual groups of workers, or individual segments of the workforce that fall into the same occupation or skill category).

The AWOTE measure includes the effects of many types of composition changes (for example, if the more highly skilled, higher paid segment of the workforce is becoming larger over time, then this will cause an increase in AWOTE, even if the wage rates within every segment is unchanged).

The AWOTE measure should be used if a direct projection of overall labour costs is required, if no information is available regarding likely future employment levels within each segment of the workforce. Our forecasts of the AWOTE measure include an allowance for average industry compositional changes. Specifically, the AWOTE forecasts include an assumption that the long run trend to a relatively more highly skilled workforce will continue. For this reason the forecast rate of growth in the AWOTE measure is higher than in the WPI measure.

The unit labour cost measure includes the effects of industry average labour productivity changes. We outline in this report the wide variety of factors which can influence measured labour productivity, including changes in the skill mix, changes in the nature of work being undertaken (e.g. relatively more capital construction as opposed to operational work), the available excess capacity of infrastructure and capital equipment (the ability to increase electricity/gas/water throughput without change to labour) and labour market conditions (affecting the average quality, or skill level of staff).

Internal and External Labour Costs

To make projections of labour costs, the WPI measure can be used so long as this is applied to each segment of the workforce separately – with changes in the composition of the workforce captured in changes in employment by segment.

Alternatively, if projections of employment levels in each workforce segment are unavailable, then our forecast growth rates in the AWOTE measure can be applied to total employment, as the AWOTE measure includes an allowance for the expected industry average effect of compositional change.

If a projection of labour costs adjusted for productivity is required, and the individual factors affecting the output to labour ratio (productivity) within the organisation are not known, then our projections of unit labour costs could be used. However, this should be done with caution for the reasons described in this report.

2.3 Estimation of the Wage Price Index Measure

With regard to the WPI for the EGWW sector, a separate data series for Western Australia is not available from the ABS. A data series is published for Australia, and unpublished data is available for New South Wales and Queensland, but not for any other state.

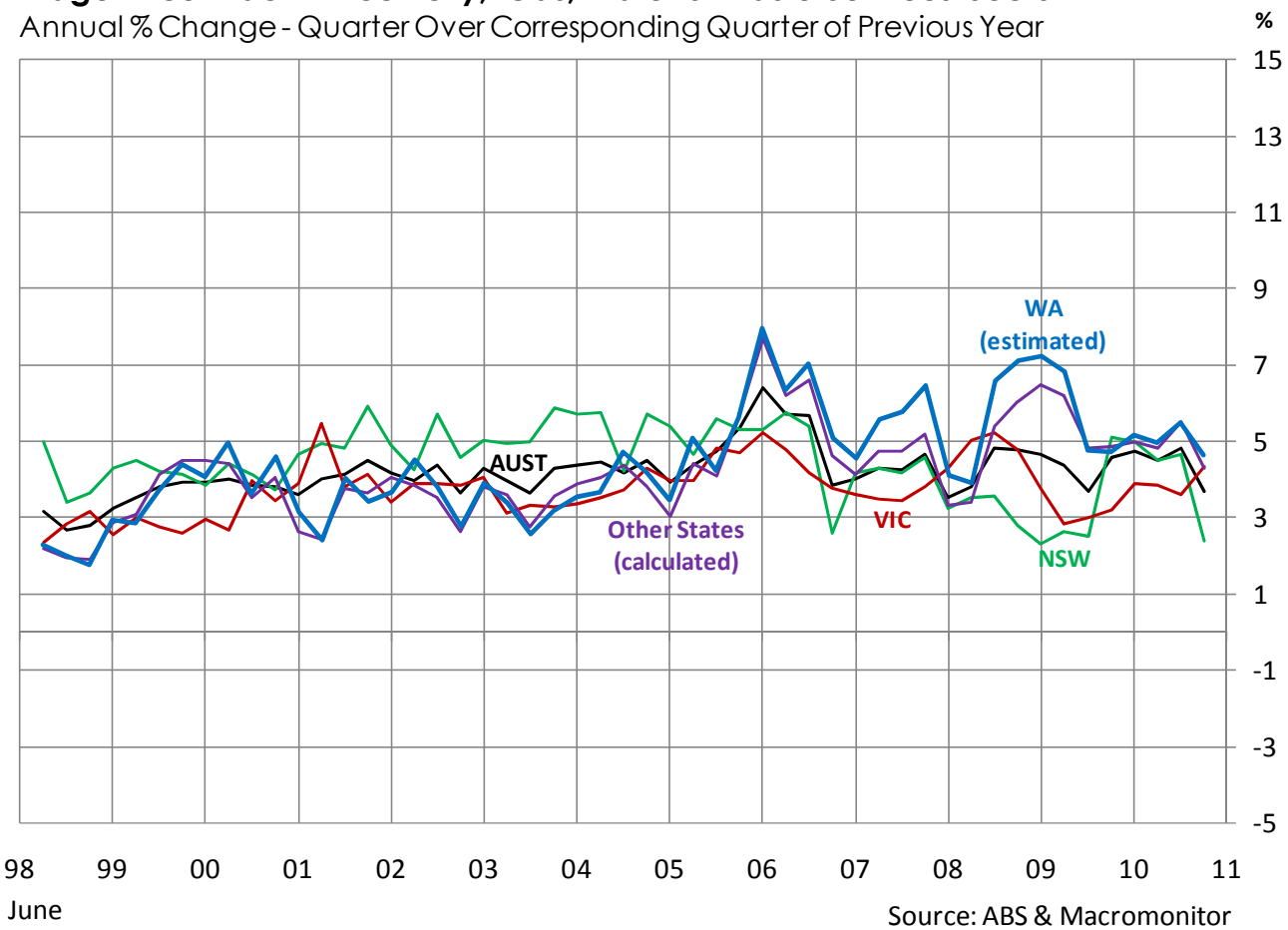
If we wish to use the WPI as an indicator of wage costs in Western Australia, then we need to firstly estimate that series based on other available information. A number of partial indicators are available to us, and a number of methods could be used to estimate these data, including:

- Calculating the WPI for the EGWW sector, for 'Other States', and then adjusting this series to reflect differences between the general wage inflation rates of these 'other states',
- Calculating the difference between the WPI for all industries and the WPI for the EGWW sector, at the national level, and applying that difference to the WPI for all industries in Western Australia, and
- Calculating the difference between the AWOTE and the WPI measures for the EGWW sector, at the national level, and applying that difference to the EGWW AWOTE measure in Western Australia.

Chart 1

Wage Price Index - Electricity, Gas, Water & Waste Services Sector

Annual % Change - Quarter Over Corresponding Quarter of Previous Year



Source: ABS & Macromonitor

We believe that the best method for estimating these data is to use the calculation of the EGWW sector WPI for 'other states'. This 'other states' series can be calculated from the EGWW WPI series for Australia, and the series for New South Wales and Victoria. We know that the total Australia data is a weighted average of all of the states and territories, and we know the weights, which are employment in the EGWW sector in each state. Hence we can calculate the data series for 'other states', that is, other than New South Wales and Victoria.

The 'other states' data is the best starting point for estimating the Western Australia EGW WPI data because; it is already a WPI measure, it already relates to the EGW sector, and, given the small degree of variability between this series and the Australia, New South Wales and Victoria series, we know that the Western Australia series is likely to be relatively close to it.

Once the 'other states' data series has been calculated, it can be adjusted to reflect the component states, using the differences between the general rate of wage inflation in each state (using the all industries WPI data).

The EGWW WPI data are shown in Chart 1 above, including our estimated data for Western Australia.

3. Forecasts of Labour Costs

3.1 Forecasting methodology

The approach we take to forecasting labour costs in the EGWW sector can be divided into the following components:

- Data collection and estimation (discussed above),
- Breaking down the labour cost data into workforce segments, by method of setting pay (award wages/minimum wage workers, enterprise agreement workers and individual contract workers),
- Specifying the factors which determine labour costs overall and within each workforce segment,
- Time series analysis – examining past trends and building an understanding of the relative importance of each determining factor over time, and
- Forecasting – forecasting the factors which determine labour costs, making assumptions regarding the current importance of each determining factor and how this might change over time.

An important element of our approach is that we construct our forecasts from the 'bottom-up', rather than from the 'top-down'. That is, we analyse and forecast labour costs specifically in the EGWW sector in Western Australia, and build up these forecasts from analysis of the individual workforce components. We do not start with an overall national level, all industries, wages growth forecast and then derive state and industry forecasts simply as deviations from that higher level series.

Our time series analysis is aimed at quantifying what we think the impact of the various determinants of labour costs will be during the forecast period. Note that this is not necessarily the same as their impact in the past. The determinants of wages in any given sector are subject to ongoing change, arising from changes in the industrial relations system, in the relative importance of different workforce segments, in factors affecting the supply of labour in particular occupations and so on.

We do not use econometric techniques to estimate the parameters of our forecasting models, for the following reasons:

- Difficultly in capturing the complexity of the wage formation process in equation form,
- Changes over time in the relative importance of the various determining factors, and
- Changes between the future and the past with regard to the relative importance of the different factors influencing wages growth.

It should also be remembered that, even if a set of forecast equations are perfectly specified, any forecasts derived from those equations are only as good as the forecasts of the other, independent variables (the determining factors), and other assumptions, being inputted into those equations.

Our approach is to carefully examine the historical data and build explanations of the trends observable in those data that match all of the available evidence. It is particularly important to

build explanations of notable changes which have taken place in the historical data, changes either in the rate of growth, or in the direction of change, or in the apparent relationships between variables. These explanations are the basis of the model which we use to forecast.

3.2 Determinants of overall labour costs

In this section we examine the determinants of the AWOTE and WPI measures of labour costs.

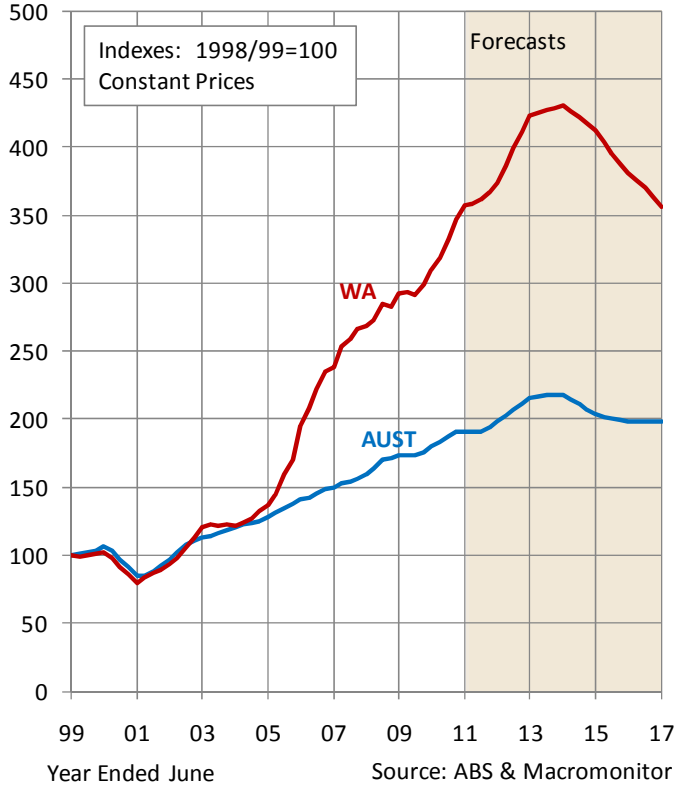
We will examine the individual workforce segments below, but it is first worth noting some general factors influencing all labour costs in the EGWW sector in Western Australia. Some of the important drivers of the outlook for labour costs are:

- The strength of growth in demand for labour in the EGWW sector, resulting from an expansion of services and large scale construction of new infrastructure in the sector,
- Strong growth in competing industries, in particular the mining and construction sectors, which are large employers of engineers, electrical tradespeople, infrastructure construction workers and other skill groups which are important segments of the EGWW workforce,
- Rising price and wage inflationary pressures in the overall Western Australian economy, and
- Limited supply of labour in Western Australia, in more remote regions in particular, which leads to significantly stronger wage increases than the rest of Australia during periods of strong labour demand (this was particularly evident in the second half of the 2000s).

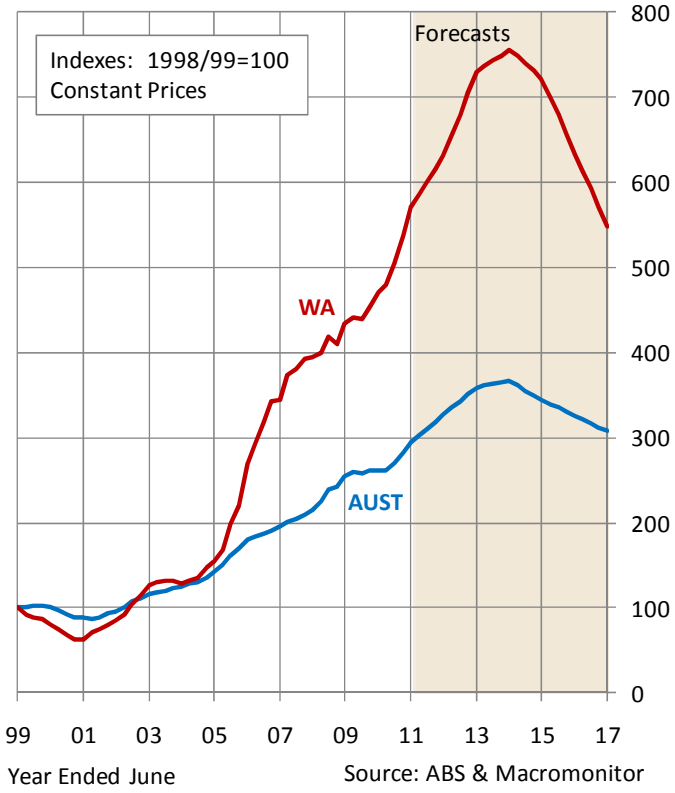
Chart 2 below illustrates the outlook for construction activity in Western Australia and total Australia. These charts show data in index form, so that the relative changes over time in Western Australia and total Australia can be more easily compared.

Chart 2

Total Construction Work Done



Non-Building Construction Work Done

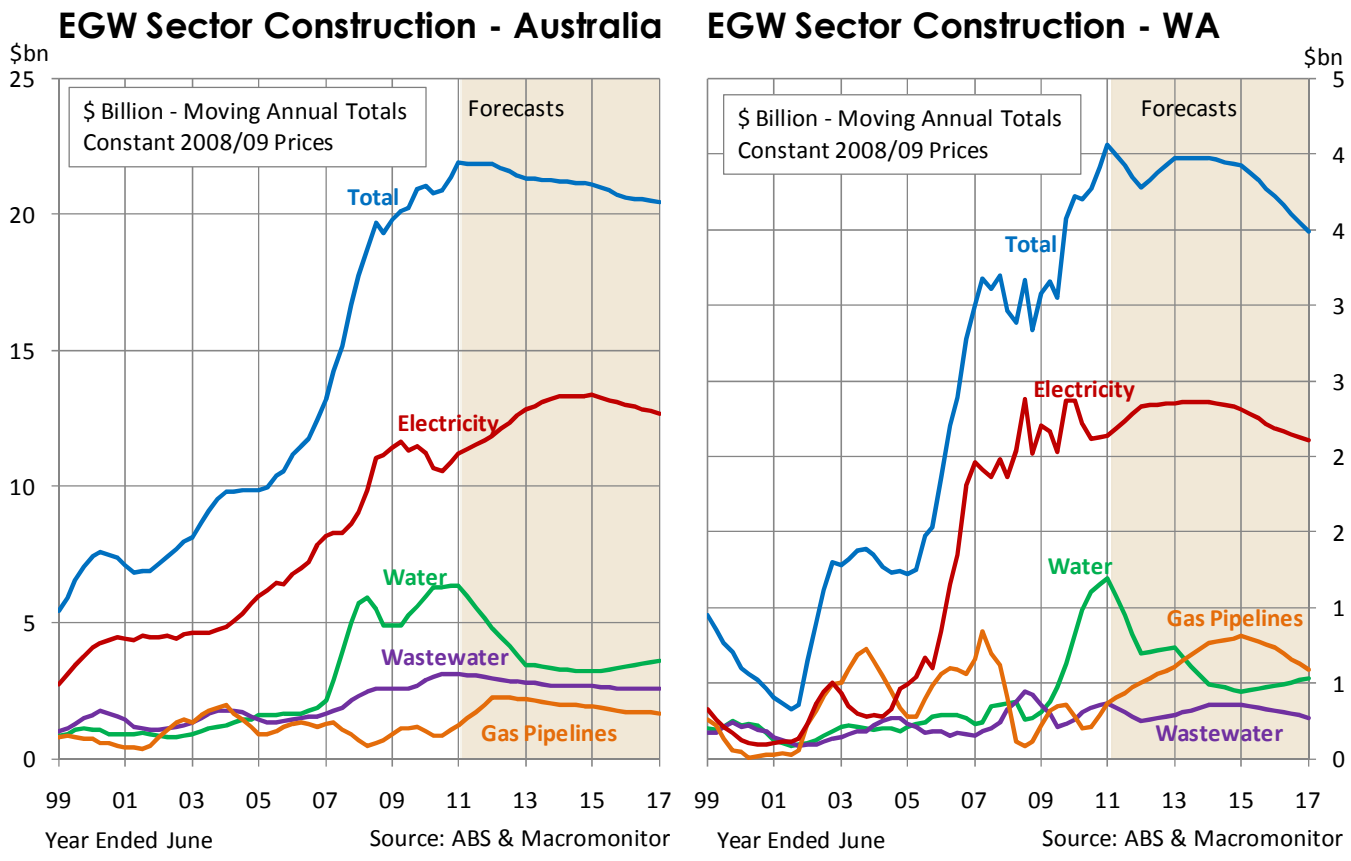


These charts show the strength of growth in construction activity in Western Australia relative to total Australia over the last decade. They also show that another strong phase of growth is expected over the next few years, peaking around 2014 or 2015.

This outlook for construction highlights the demand for workers which will come from the construction sector in Western Australia over the next five years. Equally importantly however, the construction outlook is indicative of the expected growth in operational activities in Western Australian industry over the coming decade. The construction of new mines, processing facilities, electricity generation, port and rail infrastructure will lead to strong increases in operational workforces beyond the period of construction.

It is useful also to look at the outlook for construction specifically in the EGWW sector in Western Australia. This is shown in Chart 3.

Chart 3



These charts illustrate the high level of construction in the EGWW sector currently, and expected over the next five or six years. This high level of new construction is accompanied by a large increase in the size of ongoing operations and in the labour requirement during and beyond the construction period.

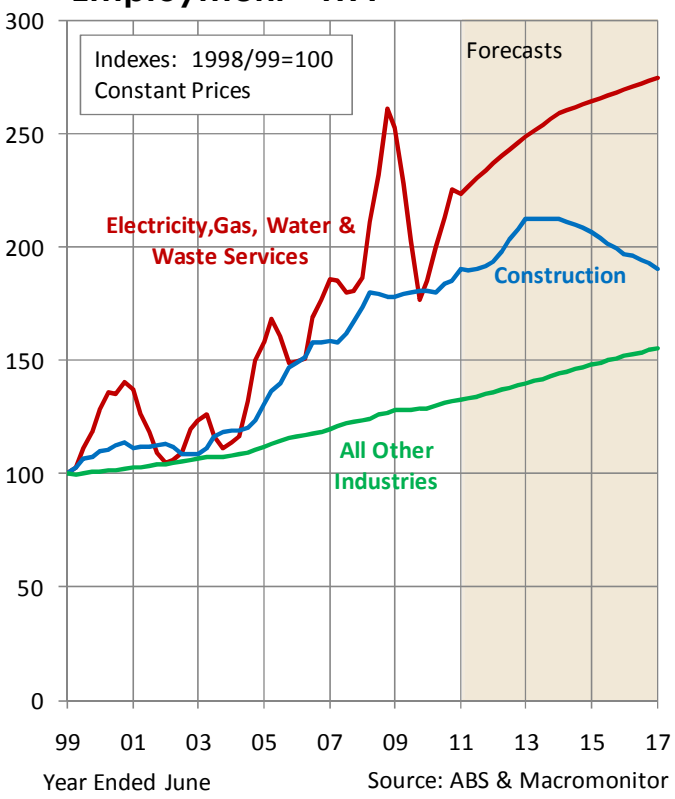
It is useful to look at the employment trends in the EGWW sector in Western Australia compared to other industries.

Chart 4 shows employment by sector, again in the form of indexes for ease of comparison.

Employment in both the construction and EGWW sectors have grown significantly faster than other parts of the economy over the past decade. Given the strength of the Western Australian construction sector over this time, it is interesting that employment in the EGW sector has increased more, in percentage terms, over past ten years.

As construction activity nears the peak of the cycle around the middle of the decade, on our forecasts, employment in construction is likely to start to tail off during the last two to three years of our forecast period. But we anticipate more lasting growth in EGWW employment, as the expansion of infrastructure and services comes on-stream.

Chart 4
Employment - WA



All of these indicators paint a picture of continued strong demand for labour in the EGW sector and strong demand in other, competing sectors. The growth in activity, construction and employment over the next six years however, is not expected to be quite as strong as during the boom years of the mid to late 2000s.

3.3 Labour Costs by Method of Setting Pay

This section examines the rates of change in wage costs across segments of the labour market defined by method of setting pay. The segments of the workforce thus defined are:

- Award wage earners,
- Workers subject to enterprise bargaining agreements (EBAs), and
- Workers on individual contracts.

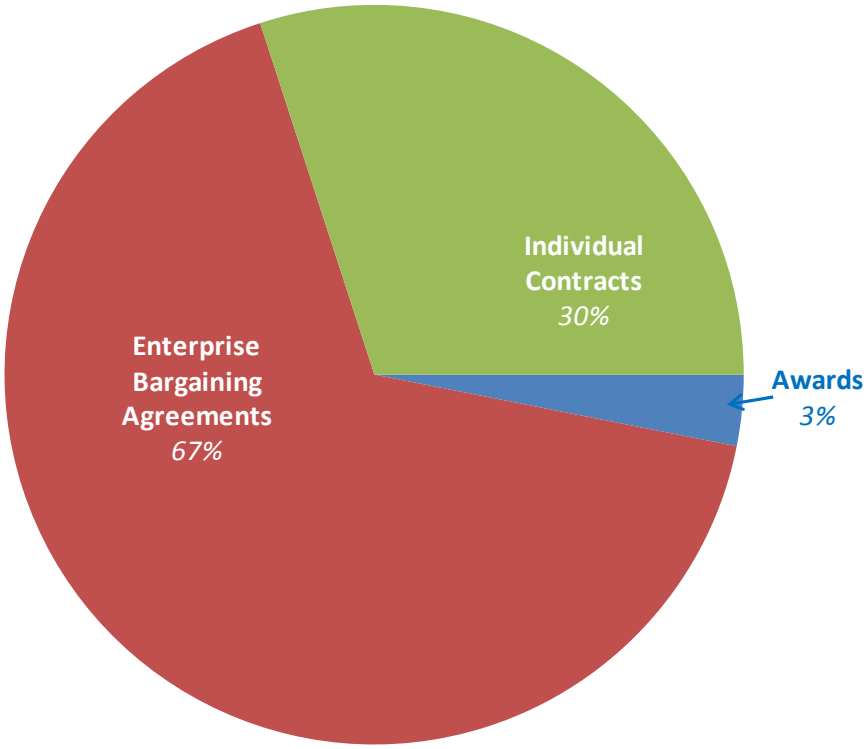
In undertaking this analysis, we firstly examined historical movements in each of these components and make historical estimates. We then forecast the rate of wage increases in each component of the workforce separately.

The wage increases in the three segments of the workforce (both historical and forecast) are weighted together according to the estimated proportion of the workforce represented by each group. We do not have data regarding the composition of the workforce at the State level, and so we use the national level composition, as shown in Chart 5 below. By weighting the wage increases together using these proportions, we arrived at the total wage increase which is shown in Table 4 in the following section.

Chart 5

Estimated Composition of the Workforce

Electricity, Gas & Water Sector, Australia



Source: *Employee Earning & Hours, Australia, 2010,* ABS, Cat. No. 6306.0

We need to note again here the difference between the wage price index (WPI) measure of wages and the average weekly earnings (AWOTE) measure of wages.

The wage price index measures a standard basket of positions and occupations, weighted together in a standard way. It does not allow for any actual changes in the composition of the workforce. For this reason we use the WPI measure as the measure of total wage increases which we will break down into the workforce components.

Our estimates of each workforce component, by wage setting method, should also not include any compositional changes. For example, the wage increases in the enterprise bargaining part of the workforce should be, more-or-less, a straight average of all wage increases included in enterprise agreements, without any allowance for compositional changes amongst the different occupations or positions over time.

The breakdown of wages growth by segment was partly the result of directly sourcing data relating to each segment and partly the result of Macromonitor's own estimates.

Source of data relating to wages within workforce segments by method of setting pay include:

- *Employee Earnings and Hours, Australia*, Australian Bureau of Statistics, Catalogue Number 6306.0.
- *Trends in Federal Enterprise Bargaining*, Department of Education, Employment and Workplace Relations.
- State Wage Case Decisions, Western Australian Industrial Relations Commission.
- Award Wage and National Minimum Wage decisions, Fair Work Australia.

The award wage segment of the workforce is the smallest component of the EGWW workforce. Wage increases in this segment are essentially determined by Western Australian and National award and minimum wage decisions, handed down annually, usually effective from 1 July.

Approximately 20% of Western Australian workers are covered by the State system, with the remaining 80% covered by the Federal system. We will use these proportions here to weight together the increases under the Federal and State minimum wage decisions. Table 2 contains the historical data and our projections of these increases.

It is clear from Chart 5 on the previous page that wage increases in the enterprise bargaining segment of the workforce are going to be the most important in determining the overall rate of wages growth in this sector.

Chart 6 shows data on average annualised wage increases contained in Federal enterprise agreements in the EGWW sector.

Table 2
Minimum Rates of Pay - Adults

	WA System			Federal System		
	Full Time Weekly Rate	Increase		Full Time Weekly Rate	Increase	
	$	$	%	$	$	%
2000	368.0	-	-	400.4	-	-
2001	400.4	32.4	8.8	413.4	13.0	3.2
2002	431.4	31.0	7.7	431.4	18.0	4.4
2003	448.4	17.0	3.9	448.4	17.0	3.9
2004	467.4	19.0	4.2	467.4	19.0	4.2
2005	484.4	17.0	3.6	484.4	17.0	3.6
2006	504.4	20.0	4.1	511.9	27.5	5.7
2007	528.4	24.0	4.8	522.1	10.2	2.0
2008	557.4	29.0	5.5	543.8	21.7	4.2
2009	569.7	12.3	2.2	543.8	0.0	0.0
2010	587.2	17.5	3.1	569.9	26.1	4.8
2011	607.1	19.9	3.4	589.3	19.4	3.4
Forecasts						
2012	635.1	28.0	4.6	617.3	28.0	4.8
2013	658.1	23.0	3.6	640.3	23.0	3.7
2014	681.1	23.0	3.5	663.3	23.0	3.6
2015	696.1	15.0	2.2	678.3	15.0	2.3
2016	714.1	18.0	2.6	696.3	18.0	2.7

Source: WA Industrial Relations Commission, Fair Work Australia, Macromonitor forecasts

The wage increase included in new agreements can be quite volatile. We use the average wage increase in all agreements in place at a given time as the indicator of wage increases amongst workers in the enterprise bargaining segment of the workforce. As at the December quarter 2010, the average increase in all current agreements in the EGWW sector was 4.7%. This compares with 4.0% on average across all industries.

Chart 6 shows that the overall average wage increase included in newly formulated enterprise agreements has fallen in recent quarters. This is causing the average rate of increase across all current agreements to edge down. We expect wage increases in new agreements to start rising again over coming quarters, rising through to a peak in 2013.

Chart 6
Annual Average Wage Increases in Enterprise Agreements
Electricity, Gas & Water Sector - Australia

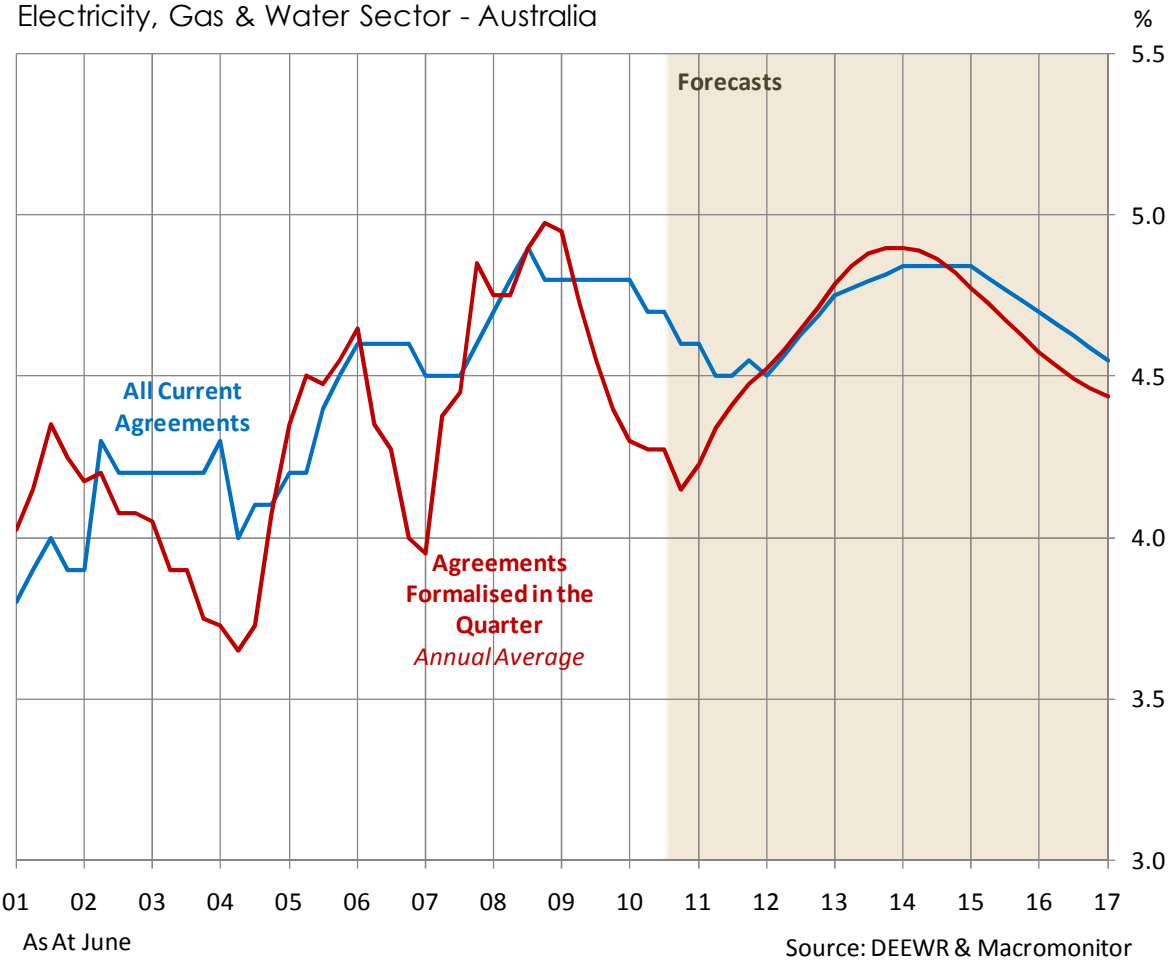


Table 3 provides a breakdown of the Western Australia EGWW sector wage price index into each workforce segment.

The assumed increase in enterprise agreement wages is forecast to fall a little, to 4.5% in 2011/12.

As employment demand rises and the labour market tightens over the next few years, we expect a rise in the wage increase in new agreements, through to a peak in around 2013 or 2014. The peak level of wage increases in all current agreements is forecast to be 4.8%.

The individual contract segment of the workforce is not as large as the enterprise agreement segment, but its effect is amplified by the greater volatility in annual rates of wage increases, and by the fact that individual contract wages are higher on average than wages in the other segments of the workforce and hence they have a larger effect on average costs.

Table 3
Contributions to Wage Price Index Increases by Method of Wage Setting
Electricity, Gas and Water Sector - Western Australia

Annual Averages

Year Ended December	Award Wages[1]			Enterprise Agreements[1]			Individual Contracts[1]			Total WPI *(annual average)*	
	Index: 2000=100	Ann. % Ch	%of Workforce	Index: 2000=100	Ann. % Ch	%of Workforce	Index: 2000=100	Ann. % Ch	%of Workforce	Index: 2000=100	Ann. % Ch
2000	100.0		1.4	100.0		76.5	100.0		22.1	100.0	
2001	102.6	2.6	1.3	103.8	3.8	77.3	105.7	5.7	21.5	104.1	4.1
2002	104.1	1.4	1.1	107.8	3.9	78.1	109.1	3.2	20.9	107.6	3.4
2003	107.6	3.3	1.4	112.4	4.2	79.0	114.5	5.0	19.6	111.6	3.8
2004	110.0	2.3	1.7	117.2	4.3	79.9	117.4	2.6	18.4	115.2	3.2
2005	112.2	2.0	1.3	122.1	4.2	78.5	117.6	0.2	20.3	119.8	4.0
2006	114.6	2.2	0.9	127.8	4.6	77.0	124.2	5.6	22.1	126.7	5.7
2007	118.4	3.2	3.2	133.5	4.5	72.3	132.2	6.5	24.6	133.9	5.7
2008	120.2	1.6	5.4	139.8	4.7	67.5	139.3	5.4	27.0	141.2	5.5
2009	123.5	2.8	4.3	146.5	4.8	67.2	147.8	6.1	28.5	150.0	6.2
2010	123.9	0.3	3.1	153.5	4.8	66.9	153.7	4.0	30.0	158.1	5.4
2011	127.3	2.8	3.1	160.6	4.6	66.9	161.9	5.3	30.0	165.7	4.8
Forecasts											
2012	130.1	2.2	3.1	167.8	4.5	66.9	169.7	4.8	30.0	173.3	4.6
2013	134.1	3.1	3.1	175.8	4.8	66.9	179.1	5.6	30.0	182.0	5.0
2014	137.4	2.4	3.1	184.3	4.8	66.9	190.3	6.2	30.0	191.8	5.3
2015	140.7	2.4	3.1	193.2	4.8	66.9	201.1	5.7	30.0	201.6	5.1
2016	142.8	1.5	3.1	202.3	4.7	66.9	210.7	4.8	30.0	211.1	4.7
2017	145.4	1.8	3.1	211.5	4.6	66.9	220.3	4.5	30.0	220.6	4.5
Average Annual Growth Rates											
2000-2011	2.2			4.4			4.5			4.7	
Forecasts											
2011-2017	2.2			4.7			5.3			4.9	

Source: ABS & Macromonitor

[1] Contributions from each wage fixing method segment are Macromonitor estimates

Individual contract wage increases are generally negotiated year by year and will be affected by labour market conditions, economic conditions and profitability of the business at the time of re-negotiation. These wages are generally not tied to any award or agreement benchmarks and so can increase at highly fluctuating rates.

Note that the estimates of the individual contract segment of the workforce presented in Table 3 are not sourced from any available data, but rather are simply calculated from the measured wage increases in the other segments and from the proportions of workforce. Hence these estimates should be treated as rough approximations only.

We estimate that the rate of individual contract wage increases in Western Australia has remained consistently strong over the period from the mid-2000s onwards. We anticipate a rate of increase of just under 5% in 2011/12, followed by an acceleration over the following two years, climbing above 6% in 2013/14. We then expect a mild easing over the last three years of our forecast period.

3.4 Total Labour Cost Forecasts

Wage Price Index

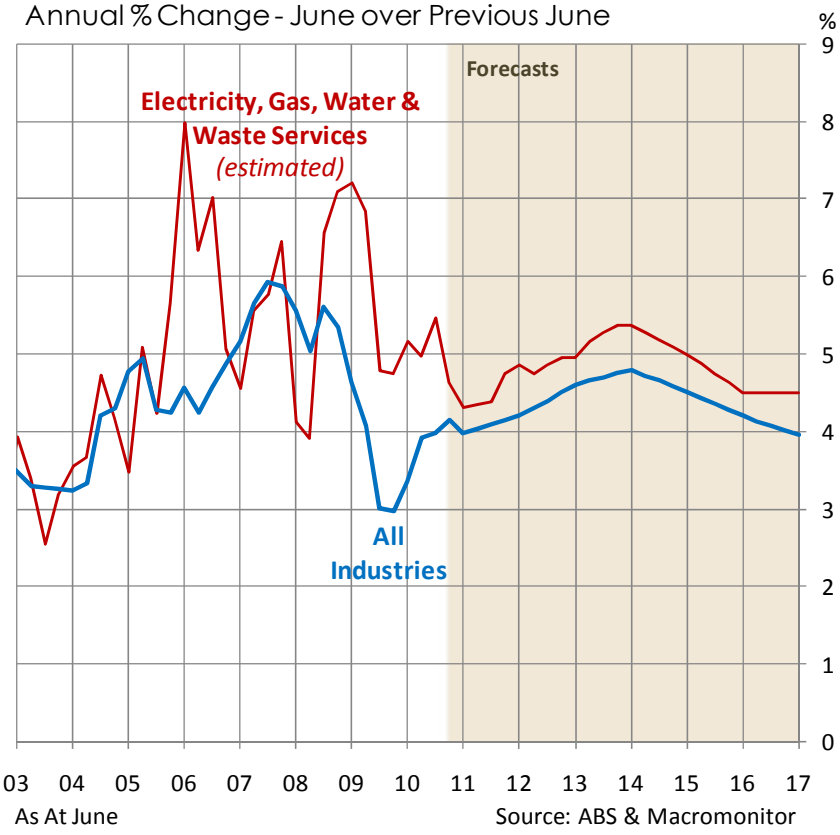
In this section we present our forecasts for both the WPI and AWOTE measures of labour costs.

We will firstly consider our forecasts of the WPI measure, which can be considered a measure of 'underlying' wage increases, abstracting from compositional change. We will then describe our forecasts of the AWOTE measure, which allow for the effects of compositional change.

Note once again that the data for the EGWW sector WPI in Western Australia is not sourced from the ABS, but rather is estimated by Macromonitor as per the discussion section 2.3.

Chart 7 shows the Wage Price Indexes in Western Australia, for the EGWW sector (estimated) and for all industries.

Chart 7
Wage Price Indexes - Western Australia
Annual % Change - June over Previous June



Since 2005, the WPI for the EGWW sector in Western Australia has increased by 5.5% per year, on average, while the overall WPI for all industries has increased by 4.5% per year.

Wages growth has slowed during 2009/10 and 2010/11. Growth in the EGWW WPI for Western Australia dropped back to an estimated 5.2% in 2009/10 and to 4.3% in 2010/11.

We expect this period of slowing wages growth to be short lived, with a gradual acceleration of wage inflation forecast for the next few years.

The next phase of growth in the Western Australian economy, driven by growth in construction, mining and utilities, will drive up the demand for labour and put upward pressure on wages. We are forecasting growth in the EGWW sector WPI to reach 5% in 2012/13 and 5.4% in 2013/14.

We are forecasting a downturn in the construction and minerals investment cycles starting around 2015. We expect a moderation of EGWW sector wages growth at this time also, prior to a stabilisation in 2016/17.

Table 4 contains our forecasts of both the WPI and AWOTE measures of wages in Western Australia's EGWW sector.

Average Weekly Earnings

As we have discussed above, the AWOTE measure includes the effects of compositional changes in the workforce, whereas the WPI measure does not. As is illustrated in Chart 8, the AWOTE measure is more volatile than the WPI measure and it has also tended to increase at a faster rate, on average, over a reasonably long period of time.

A higher rate of growth in the AWOTE measure indicates a compositional change in the workforce towards higher paid occupations, or higher skill levels. This differential can be explained by both a more highly skilled workforce and a tendency to for 'occupational inflation' whereby workers are promoted more quickly than previously in order to retain them in a strong labour market (ie, even if they have not reached the same 'skill level' as would previously have been required for promotion). These effects have resulted in an average differential between growth in AWOTE and growth in the WPI of 1.3%, on average, over the period from 1998 to 2011.

The ups and downs of this differential; the timing of the differences between AWOTE and WPI growth; could be due to a number of factors, but is difficult to predict. Therefore we have assumed a more-or-less stable differential between AWOTE growth and WPI growth in our forecasts. This differential averages 1.2% per year over the forecast years from 2010/11 to 2016/17.

Chart 8

Wages Growth - Western Australia - EGW Sector

Annual % Change - June over Previous June

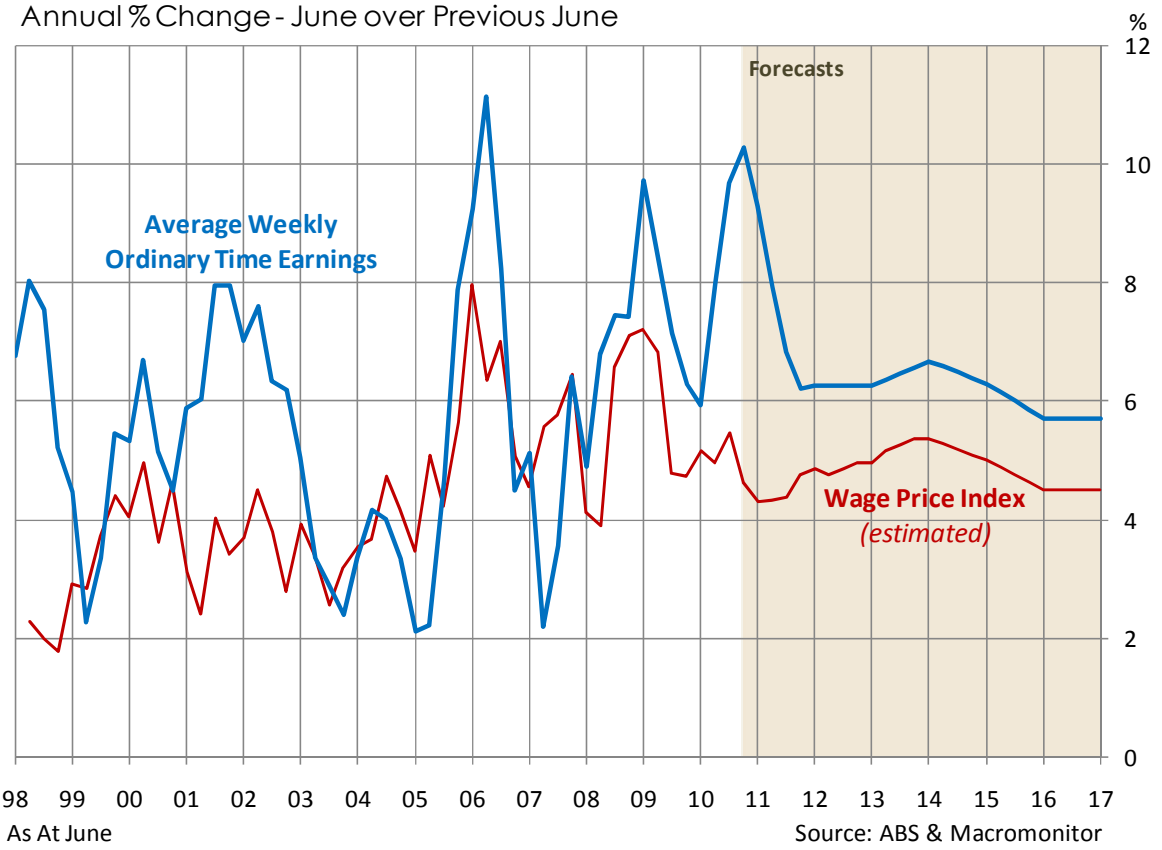


Table 4
Wage Cost Indicators - Western Australia
Electricity, Gas and Water Sector
Annual Averages

Year Ended June	Wage Price Index (as at June)		Average Weekly Ordinary Time Earnings (annual average)	
	Index: 2008/09=100	Ann. % Ch	$	Ann. % Ch
1998	63.0		791.7	
1999	64.8	2.9	827.2	4.5
2000	67.4	4.1	871.3	5.3
2001	69.6	3.1	922.6	5.9
2002	72.1	3.7	987.5	7.0
2003	74.9	3.9	1037.3	5.0
2004	77.6	3.5	1072.2	3.4
2005	80.3	3.5	1094.9	2.1
2006	86.7	8.0	1196.2	9.2
2007	90.6	4.5	1257.7	5.1
2008	94.4	4.1	1319.1	4.9
2009	101.2	7.2	1447.5	9.7
2010	106.4	5.2	1533.4	5.9
2011 *est.*	111.0	4.3	1675.8	9.3
Forecasts				
2012	116.4	4.9	1780.6	6.3
2013	122.2	5.0	1892.1	6.3
2014	128.7	5.4	2018.4	6.7
2015	135.2	5.0	2145.6	6.3
2016	141.3	4.5	2267.9	5.7
2017	147.6	4.5	2397.1	5.7
Average Annual Growth Rates				
2001-2006	4.5		5.3	
2006-2011	5.1		7.0	
Forecasts				
2011-2017	4.9		6.1	

Source: ABS & Macromonitor

4. Productivity Adjusted Labour Costs

4.1 Adjusting of Labour Costs for Productivity Changes

As we have mentioned previously, the third key measure of labour costs which we will use in this report is Unit Labour Costs (ULC), which can alternatively be called productivity adjusted labour costs.

Labour productivity is defined as output per unit of labour. More specifically, our measure of labour productivity in the EGWW sector is *constant price gross value added per hour worked*. This is consistent with the ABS measure of EGWW sector labour productivity, which can be found in publication 5204.0, *Australian System of National Accounts*, Table 15.

Note that this measure of labour productivity can be thought of as capturing two separate components:

- Changes in the productivity of workers within each particular skill or occupation group (we will call this productivity within skill levels), and
- Changes in the mix of workers across skill and occupation groups – a change in the workforce to a higher proportion of more highly skilled workers should be associated with higher overall productivity per worker, even if the productivity within each skill level hasn't changed.

In calculating the rate of change in unit labour costs, we must adjust our measures of nominal wages to take account of these changes in productivity. Note however, that the adjustment required for the AWOTE measure is different to the adjustment required for the WPI measure.

Changes in the AWOTE measure capture the overall change in wage costs per worker. Hence we must adjust this measure by total productivity per worker in order to arrive at unit labour costs.

Changes in the WPI measure already exclude the effects on wage costs of compositional change, and hence we must only adjust this measure for productivity within skill levels to arrive at unit labour costs. That is, we should only adjust the WPI measure by the first of the two components of labour productivity listed above.

The only measure of labour productivity available to us is total labour productivity (gross value added per hour worked). We do not have a measure of productivity within skill levels or occupations. Therefore we must use the AWOTE measure to derive unit labour costs. The difference between the WPI measure and unit labour costs thus derived can be thought of as a measure of the effect of productivity changes within skill levels on unit labour costs.

Caution is warranted in connection with these types of calculations. Each of the data series being used are from different ABS collections, which can involve different survey samples, different collection dates and slightly different time periods. Hence it is always better to look at longer term averages changes and trends than individual point in time estimates.

More relevantly, it is important to note that labour productivity, and both the components thereof, do not measure changes in the productivity of workers in performing a given task (eg, maintaining an electricity network). Rather, productivity measured using ABS data measures the productivity of output as defined by the ABS – which is less related to the specific tasks that labour performs. For example, increasing asset utilisation will result in higher measured productivity – even if there has been no change in the number/type of workers required to maintain the asset. Similarly, changes to the composition of work done can give rise to changes in measured productivity – even if workers are no more productive at performing each particular task.

In summary, measured labour productivity using ABS data captures changes in true 'task related' productivity and also:

- Changes in the type of work (tasks) undertaken – over time the nature of work in a particular industry sector can fluctuate from more labour intensive to less labour intensive tasks and back again, which will cause changes in measured labour productivity even if the number of hours required for each of those different types of tasks never changes, and
- Changes in the amount of capital input or in the productivity of capital – if an item of capital equipment becomes more fully utilised and hence produces more output, with no additional labour input, then our measure of labour productivity will increase.

4.2 Notes on Productivity Trends in the Electricity, Gas, Water & Waste Services Sector

Labour productivity in the EGWW sector is influenced by three main factors:

1. Ongoing improvements in work practices and technology,
2. The long run capital investment cycle, and
3. Labour market conditions, within the EGWW industry itself and in other industry sectors, particularly sectors where there are significant overlapping skill requirements such as construction and mining.

Work practices and technology

Improvements in productivity arising from the first source listed above have undoubtedly been large over the past few decades, starting with the major industry reforms of the 1980s and 1990s, and continuing up to the present time. We assume that these types of incremental, organisational improvements will continue over the forecast period.

Capital Investment Cycle Effects

The productivity effects of the capital investment cycle, point 2 above, are particularly important in the EGWW sector.

This sector is characterised by a long run investment cycle. There appears to be a cycle of around 25 to 30 years between major periods of renewal, upgrading and expansion of infrastructure, in the electricity distribution, transmission, water and wastewater sectors. We are currently reaching a peak in this long run cycle.

As we discussed in section 3.2, construction activity in the EGWW sector has risen dramatically over the last decade, and over the last five or six years in particular. Between 2004/05 and 2010/11 total EGWW sector construction has risen more than 200% (more than 3-fold) and in electricity specifically, construction has increased more than 300% (more than 4-fold).

The last major period of EGWW construction was in the late 1970 / early 1908s, when a large volume of electricity construction, in particular, took place. This time around, the construction upturn is much bigger, due to the ageing nature of the current asset stock.

In between these periods of major capital investment, the lower level of new construction work is accompanied by a gradual absorption of the excess capacity put in place by the previous construction phase. The available capacity of the infrastructure becomes fully utilised over a long period of time, followed by another phase of new construction.

This investment cycle has important implications for productivity changes over time.

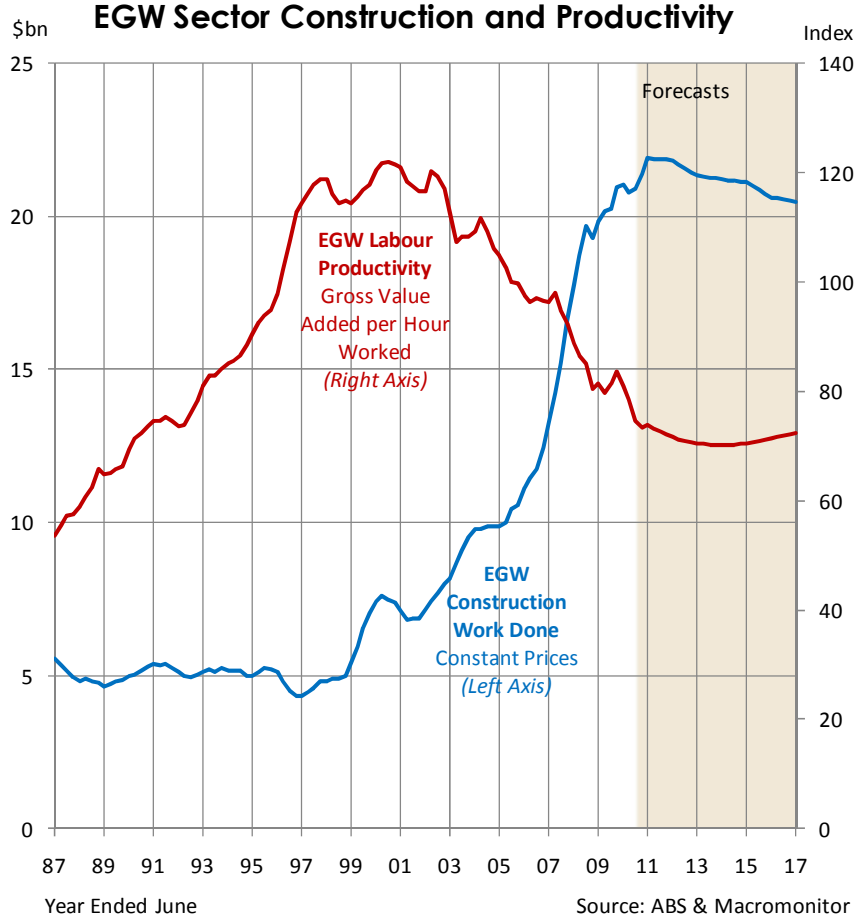
During the period when the rate of utilisation of the existing infrastructure and capital equipment is steadily increasing, much of the increased output flows through directly to measured labour productivity. This is really an increase in capital inputs, or perhaps an increase in capital productivity, but its effect is to increase labour productivity measured as output per hour worked.

In the electricity sector, this involves gradual increases in the throughput of transmission and distribution networks and the ramping up to full capacity of power stations. This can cause large increases in measured labour productivity, but has little to do with anything workers are doing.

During the period when major new construction work becomes necessary, a shift in the nature of work occurs towards more labour intensive construction and equipment installation activities. This has the effect of reducing labour productivity.

Past and current trends in labour productivity in the EGWW sector can be seen as largely reflecting these capital investment cycle effects. This is shown in Chart 9 below. The period from around 2000 to 2011 has been a period of major new construction, and also a period of declines in measured labour productivity.

Chart 9
EGW Sector Construction and Productivity



Effect of Labour Market Conditions

The period of declining labour productivity has likely been affected not just by the factors mentioned above, but also by the very tight labour market conditions in Australia, and Western Australia in particular, since the early- to-mid-2000s.

Strong demand for labour from the mining and construction sectors in Western Australia, as well as from within the EGWW itself, have made it difficult to get and keep good staff, particularly skilled workers. The mining sector has been the most able to afford the scarce labour resources, causing staffing problems amongst other industries, including the EGWW industry.

Some of the practical manifestations of this problem have been:

- Difficulty in adequately replacing retiring experienced staff,
- Loss of good people to higher offers,
- Having to pay existing staff more in order to keep them, which can mean promoting them earlier than otherwise would be the case, and
- Having to employ people of a lower standard at each particular skill level than in the past.

All of these possible factors would have the effect of lowering labour productivity within each skill level.

All of this illustrates the point that a compositional change in the skill-structure of the workforce isn't always associated with a commensurate change in labour productivity. A compositional change the workforce in favour of a higher proportion of workers in more highly paid, higher skilled, positions, can be, and most likely has been, associated with a decline in productivity within those higher skilled segments of the workforce.

4.3 Forecasts of productivity and unit labour costs

Productivity

Our view is that continued high levels of construction activity, combined with strong labour demand over the next few years, will lead to continued, but smaller, declines in productivity over the next few years.

We are forecasting a negative change in labour productivity of 3% in 2011/12, negative 1.5% in 2012/13 and negative 0.5% in 2013/14. We then expect a return to positive productivity, as the volume of construction work starts to decline and as the demand for labour from other sectors, particularly construction, starts to fall.

Our forecasts of labour productivity are shown in Table 5.

Unit Labour Costs

As discussed above, unit labour costs measure the actual labour cost of producing a unit of output. That is, unit labour costs equal total wage costs dived by total output, or average wage costs per worker (AWOTE) divided by average output per worker (productivity).

Table 5
Electricity, Gas & Water Labour Costs - Western Australia

Year Ended June	Average Weekly Ordinary Time Earnings		Wage Price Index - Ordinary Time Hourly Rate		Productivity - Real Gross Product per Hour Worked		Unit Labour Costs - $ Wages per $ Real Gross Product	
	$	Ann. % Ch	08/09=100	Ann. % Ch	08/09=100	Ann. % Ch	$	Ann. % Ch
1998	791.7	-	63.0	-	142.3	-	0.16	-
1999	827.2	4.5	64.8	2.9	137.1	-3.7	0.17	8.4
2000	871.3	5.3	67.4	4.1	144.4	5.3	0.17	0.0
2001	922.6	5.9	69.6	3.1	145.1	0.5	0.18	5.4
2002	987.5	7.0	72.1	3.7	139.9	-3.6	0.20	11.0
2003	1037.3	5.0	74.9	3.9	135.2	-3.4	0.22	8.7
2004	1072.2	3.4	77.6	3.5	131.0	-3.1	0.23	6.6
2005	1094.9	2.1	80.3	3.5	125.6	-4.1	0.25	6.5
2006	1196.2	9.2	86.7	8.0	116.8	-7.0	0.29	17.5
2007	1257.7	5.1	90.6	4.5	115.4	-1.2	0.31	6.4
2008	1319.1	4.9	94.4	4.1	106.4	-7.8	0.35	13.8
2009	1447.5	9.7	101.2	7.2	97.6	-8.2	0.42	19.6
2010	1533.4	5.9	106.4	5.2	97.1	-0.6	0.45	6.5
2011 *est.*	1675.8	9.3	111.0	4.3	88.4	-8.9	0.54	20.0
Forecasts								
2012	1780.6	6.3	116.4	4.9	85.8	-3.0	0.59	9.5
2013	1892.1	6.3	122.2	5.0	84.5	-1.5	0.64	7.9
2014	2018.4	6.7	128.7	5.4	84.0	-0.5	0.69	7.2
2015	2145.6	6.3	135.2	5.0	84.5	0.5	0.72	5.8
2016	2267.9	5.7	141.3	4.5	85.6	1.3	0.76	4.3
2017	2397.1	5.7	147.6	4.5	86.8	1.5	0.79	4.1
Average Annual Growth Rates								
2001-2006	5.3		4.5		-4.2		10.0	
2006-2011	7.0		5.1		-5.4		13.1	
Forecasts								
2011-2017	6.1		4.9		-0.3		6.5	

Source: ABS & Macromonitor

Given that we expect three further years of negative labour productivity, this implies that unit labour costs are forecast to increase more than average weekly earnings. Once productivity growth becomes positive, on our forecasts from 2014/15, forecast unit labour cost growth will become less than forecast AWOTE growth.