

Attachment H.4

**SAPN_H.4_BIS Shrapnel_Utillities Sector
Wage Forecasts to 2019/20**

03 July 2015





Utilities Sector Wage Forecasts to 2019/20

> Australia and South Australia

> MAY • 2015



> SA Power Networks

www.bis.com.au

BIS Shrapnel welcomes any feedback concerning the forecasts or methodology used in this report as well as any suggestions for future improvement.

© BIS Shrapnel Pty Limited May 2015

Note: Although great care has been taken to ensure accuracy and completeness in this project, no legal responsibility can be accepted by BIS Shrapnel Pty Limited for the information and opinions expressed in this report.

All rights reserved.

Job no: E6236

BIS Shrapnel contact: Kishti Sen
Senior Economist
Richard Robinson
Associate Director - Economics

BIS Shrapnel Pty Limited
Level 8, 99 Walker Street
North Sydney, NSW 2060
Australia
Tel. +61 (02) 8458 4200
Fax +61 (02) 9959 5795
ksen@bis.com.au
rrobinson@bis.com.au

Contents

SUMMARY	I
1. INTRODUCTION, OUTLINE OF REPORT & DATA SOURCES	1
2. MACROECONOMIC FORECASTS: AUSTRALIA AND SOUTH AUSTRALIA	3
2.1 Overview of the Australian economy.....	3
2.2 Economic outlook: the detail	4
2.2.1 External demand	4
2.2.2 Domestic demand	8
2.2.3 Labour demand and supply.....	10
2.3 Main risks to outlook	11
2.4 Medium term issues.....	11
2.5 The South Australian economy: past growth, current conditions and short-to-medium term outlook	13
3. INFLATION AND WAGES	17
3.1 Outlook for Australian inflation	17
3.1.1 Reserve Bank of Australia CPI forecasts.....	17
3.2 Outlook for Australian all industries wages	20
3.2.1 Brief description of BIS Shrapnel's wages model	20
4. EGWWS WPI FORECASTS.....	23
APPENDIX A: BIS SHRAPNEL'S WAGE MODEL.....	A-1
Some Deficiencies in Econometric Models of Wage Determination for the EGWWS Sector.....	A-2
APPENDIX B: TERMS OF REFERENCE	A-3
APPENDIX C: STATEMENT OF COMPLIANCE WITH EXPERT WITNESS GUIDELINES.....	A-3
APPENDIX D: CURRICULUM VITAE OF KEY PERSONNEL.....	A-5

Tables

Table 2.1:	Australia – Key Economic Indicators, Financial Years	9
Table 2.2:	South Australia – Key Economic Indicators, Financial Years	15
Table 3.1:	Wages and Prices – Australia (Year Average Growth).....	18
Table 3.2:	Wages Growth, All Industries, Australia, (by Workforce Segmented by Pay Setting Method).....	19
Table 3.3:	Methods of Setting Pay, Industry, May 2010, Proportion of Full-Time Adult Employees	19
Table 4.1:	Wage Price Index Growth by Industry Sector and by State	24
Table 4.2:	Australia AWOTE Growth by Industry Sector	24
Table 4.3:	Federal Wage Agreements – Collective Agreements by Industry (Average Annualised Wage Increase)	25
Table 4.4:	Electricity, Gas, Water and Waste Services Forecasts – Australia	27
Table 4.5:	Average Weekly Ordinary Time Earnings and Wage Price Index Total Australia and Electricity, Gas, Water and Waste Services Sector (Year Average Growth).....	28
Table 4.6:	Electricity, Gas, Water and Waste Services – South Australia and Australia (Year Average Growth)	32

Charts

Chart 3.1: Australia – Wages and Prices.....	21
Chart 3.2: Employment and Unemployment.....	21
Chart 4.1: Wage Price Index Total Australia (All Industries) and Electricity, Gas, Water and Waste Services	25
Chart 4.2: Australia – Utilities Employment, Output and Investment.....	27
Chart 4.3: South Australia – Utilities Employment, Output and Investment	31

SUMMARY

- In October 2013, BIS Shrapnel was engaged by SA Power Networks to provide an expert opinion on the outlook for labour cost escalators relevant to electricity distribution networks in South Australia over a seven year period from 2013/14 to 2019/20 inclusive (ie from 1 July 2013 to 30 June 2020). The labour cost escalators were used by SA Power Networks for their internal business planning and modelling. In April 2015, BIS Shrapnel was again engaged by SA Power Networks to update forecasts of the Electricity, Gas, Water and Waste Services wage price index for Australia and South Australia, taking into account the most recent economic and wages data. This report presents our updated real labour cost escalators.
- BIS Shrapnel expects wages growth in the Electricity, Gas, Water and Waste Services (EGWWS or 'Utilities) sector for total Australia expressed in WPI to average 3.8 per cent per annum over the five years to 2019/20. The utilities wage forecasts for South Australia are expected to ease over the next two years (in line with the national utilities sector average) but stay above the national average reflecting relatively higher EBA outcomes achieved in current agreements of major players of the South Australian utilities industry.
- We expect wages growth in the South Australian utilities industry to pick up pace from 2017/18 due to increased demand for labour from the states' utilities sector as utilities-related engineering construction ramps up again. Construction work done is expected to lift considerably late this decade as the surplus in generation capacity is slowly eroded through continued population growth and industrial activity, placing greater demands on electricity supply.
- The combination of high levels of utility engineering construction and overall construction in the state, particularly with the planned expansion of the Olympic Dam project from 2018/19, means increased competition for 'similarly' skilled labour and wage pressures in the South Australian utilities sector over the three years to 2019/20.
- Overall, South Australia utilities WPI growth is also forecast to average 3.8 per cent per annum over the five years from 2015/16 to 2019/20 inclusive (ie over SA Power Networks' next regulatory period).

Summary – EGWWS WPI Forecasts (per cent change, year average, year ended June)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	5 yr Avg (f)
	Actuals				Forecasts	Next Regulatory Period					
NOMINAL PRICE CHANGES											
EGWWS WPI - South Australia (a)	4.3	3.7	3.9	3.5	3.4	3.4	3.5	3.8	4.0	4.3	3.8
EGWWS WPI - Australia (b)	4.2	3.5	4.2	3.3	3.2	3.3	3.6	3.9	4.1	4.3	3.8
EGWWS AWOTE - Australia (b)	9.1	2.5	6.1	2.0	3.4	3.8	4.4	4.9	5.1	5.3	4.7
Australian Wages											
All Industries - AWOTE (c)	4.2	4.3	4.6	3.0	3.1	3.8	4.4	4.9	4.4	4.7	4.4
All Industries - WPI (c)	3.8	3.6	3.3	2.6	2.6	2.8	3.3	3.7	3.4	3.6	3.4
Consumer Price Index (headline) (d)	3.1	2.3	2.3	2.7	1.7	2.4	2.7	2.5	2.5	2.5	2.5
REAL PRICE CHANGES (e)											
EGWWS WPI - South Australia	1.2	1.4	1.6	0.8	1.7	1.0	0.8	1.3	1.5	1.8	1.3
EGWWS WPI - Australia	1.1	1.2	1.9	0.5	1.5	0.9	0.9	1.4	1.6	1.8	1.3
EGWWS AWOTE - Australia	6.0	0.1	3.9	-0.7	1.7	1.4	1.7	2.4	2.6	2.8	2.2
Australian Wages											
All Industries - AWOTE	1.0	2.0	2.4	0.3	1.4	1.4	1.7	2.4	1.9	2.2	1.9
All Industries - WPI	0.7	1.3	1.0	-0.1	0.9	0.4	0.6	1.2	0.9	1.1	0.9

Source: BIS Shrapnel, ABS and RBA

(a) Electricity, Gas, Water and Waste Services (EGWWS) Wage Price Index (WPI) for South Australia.

(b) Australian sector WPI forecasts including Average Weekly Ordinary Time Earnings (AWOTE) provided for comparison.

(c) Australian All Industries AWOTE and WPI provided for comparison.

(d) Headline CPI forecasts based on Reserve Bank of Australia forecasts to June quarter 2017 and then Commonwealth Treasury medium term projections.

(e) Real price changes are calculated by deducting the inflation rate from nominal price changes.

(f) Average Annual Growth Rate for 2015/16 to 2019/20 inclusive ie for SA Power Networks' next revenue regulatory period.

1. INTRODUCTION, OUTLINE OF REPORT & DATA SOURCES

In October 2013, BIS Shrapnel was engaged by SA Power Networks to provide an expert opinion on the outlook for labour cost escalators relevant to electricity networks in South Australia over a seven year period from 2013/14 to 2019/20 inclusive (ie from 1 July 2013 to 30 June 2020). The labour cost escalators were used by SA Power Networks for their internal business planning and modelling. In April 2015, BIS Shrapnel was again engaged by SA Power Networks to update the initial report prepared in January 2014 taking into account the most recent economic and wages data. The updated forecasts of labour price growth will be used by SA Power Networks to develop the labour input costs required to achieve the operating and capital expenditure objectives in the National Electricity Rules.

In keeping with my instructions, I Richard Robinson, Associate Director (Economics) at BIS Shrapnel, confirm that I have undertaken this engagement having regard to the Guidelines for Expert Witnesses in Proceedings in the Federal Court of Australia and the requisite statement to this effect is included in Appendix E. I have been assisted in the preparation of this report by Dr Kishti Sen, Senior Economist at BIS Shrapnel, and Jehanesan Konesan, Research Associate at BIS Shrapnel. Curriculum vitas of all relevant personnel are attached in Appendix D. Notwithstanding the assistance from the other two economists, the opinions in this report are my own and I take full responsibility for them. A brief description of the material upon which I have relied for the preparation of this report follows.

The Australian Bureau of Statistics (ABS) is the primary data source for the consumer price index, wages, employment, real gross value added and investment (including engineering construction) data, and for a range of other economic variables shown in table 2.1. The most recent wages data is March 2015 quarter, the latest inflation data is March 2015 quarter, and the most up-to-date industry employment data is February 2015. The December 2014 quarter was the latest available data for real gross value added (at the Australian level only), investment and indeed most of the economic variables in table 2.1. The detailed engineering construction data (by state and by category) have data up to December 2014 quarter. The latest data for Gross State Product (GSP) and real gross value added for state industry sectors was 2013/14. Other inflation and interest rates data were sourced from the Reserve Bank of Australia. Finally, data and information concerning enterprise agreements was obtained from the Department of Employment.

Forecasts of the economic variables in this report were mostly sourced from BIS Shrapnel reports, including *Economic Outlook, Long Term Forecasts: 2015 – 2030* report (currently in production), *Engineering Construction: 2014/15 to 2028/29 and Long Term Building Work Done Forecasts*, plus other unpublished forecasts and from BIS Shrapnel internal research.

The structure of this report is as follows:

- The **Summary** section presents an overview of our forecasts of the wage price index for the Electricity, Gas, Water and Waste Services industry at the Australian and South Australian level and a summary table.
- **Section 2** sets the scene for our wage forecasts for Australia and South Australia. It provides an overview of the macroeconomic outlook for Australia and South Australia, including a brief commentary of the logic and key drivers, assumptions and forecasts of key economic variables at both Australia and South Australia level.
- **Section 3** discusses BIS Shrapnel's model of wage determination and provides forecasts of national ('all industries') wages and CPI inflation, with the Reserve Bank of Australia and Treasury medium-term projections of CPI inflation. The latter is used to deflate the nominal escalators provided in this report.

- **Section 4** provides forecasts for the Electricity, Gas, Water and Waste Services industry wage price index forecasts at the Australian and South Australian level.
- **Appendices**, which includes description of BIS Shrapnel's wage model.

2. MACROECONOMIC FORECASTS: AUSTRALIA AND SOUTH AUSTRALIA

2.1 Overview of the Australian economy

The Australian economy is on the threshold of a major transition phase. It will involve a slow adjustment from an economy tilted towards servicing the mining boom over the past 10 years to broadly based growth. We'll need business growth and investment in the non-mining sectors to pick up and tilt the economy back into balance, as it was prior to the start of the mining boom.

There is little choice. It's only a question of the speed of adjustment and the damage done in the transition. Mining investment has just begun to fall, with the major shock to growth over the next four years. That will be offset by strong dwellings building and continued growth in resources exports. It will require recovery in non-mining business investment and a structural change back towards balanced growth. And that involves:

- a competitive exchange rate to underwrite structural change, and
- recovery in non-mining growth and profitability, with absorption of excess capacity allowing a shift from the cost-cutting and investment deferring psychology of businesses — a legacy of the GFC — to one of increased appetite for growth and investment.

We are delighted with the fall in the Australian dollar. It is the single most important driver of structural change and growth. We think that, allowing for the rise in the US dollar, the Australian dollar needs to be below US 70 cents for our export and import-competing industries to be competitive on average. Already, we have seen an initial recovery in tourism, both inbound and domestic. That will be joined by education, agriculture, business services and even mining and manufacturing. The fall in the dollar has helped. But more is required.

However, given sluggish business conditions and spare capacity, a generalised pickup in non-mining business investment will be slow to come through. Manufacturers' capital spend has been bumping around the bottom of the cycle since the collapse in 2012/13 brought about by the high dollar and a sharp weakening in domestic demand. While they have upgraded their expected spending recently, overall capital spending this year is likely to be nearly 14 per cent lower than last year. Meanwhile, 'other' selected industries (mainly services) have gradually downgraded their expectations having been overly optimistic early in the year.

When demand finally picks up, emerging capacity constraints will be another driver of business investment by non-mining sectors. However, that will take time. That said, firms will eventually shift their focus from cost-cutting to servicing growth in demand, including catching up computer software and hardware investment deferred in the difficult post-GFC operating environment.

Meanwhile, new public investment has been falling for some time. And we think it will fall for another year before turning around although the risk is on the downside. The main challenge, as always, is financing new infrastructure projects. Some projects will be financed by asset sales or leases, particularly in New South Wales and Victoria. Future PPPs will most likely require that the public sector takes more of the initial risk. Private investors in infrastructure, notably super and pension funds, are risk averse. Governments will have to act as developers, to Build, Own, Operate, then Transfer to the private sector to finance the next round of projects.

Overall, this is not a business-as-usual economy. We are on a threshold of structural change, switching from a mining-investment driven economy back towards balanced growth. The quicker the dollar falls to below US 70 cents, the faster we transition to a balanced economy.

Growth in the interim is supported by an upswing in dwellings building, a pick up in private consumption expenditure and growth in resources exports.

We expect the economy to remain weak for another 18 months before strengthening non-mining business investment (underwritten by a lower dollar and tightening capacity) pushes the economy closer to its potential. But it will be a 'soft cycle' as the potential growth rate of 3¼ per cent is unlikely to be realised on average. The next round of infrastructure and mining projects, plus another cycle in dwellings building (we will still have a deficiency of housing stock at the end of the current cycle), will underpin stronger growth towards the end of the decade.

2.2 Economic outlook: the detail

The next year to 18 months will be characterised by:

- falling mining investment, offset by strong housing and resources exports,
- continued tight business conditions - cutting costs and deferring investment,
- tight government expenditure,
- further rises in unemployment,
- subdued wage pressures and further labour productivity increases, offsetting the inflationary impact of falls in the dollar, and
- a sustained period of low interest rates until growth picks up.

We expect the economy to build momentum from late 2016 with growth still forecast to return to close to trend in 2016/17. Growth could ease in 2017/18 as interest rates rise, but quickly return to trend reflecting balanced growth in the final third of the decade.

The difficult period is now – waiting for the dollar to fall below US 70 cents and for structural change to deliver stronger non-mining business investment and broadly based growth.

2.2.1 External demand

World Economic Outlook, Commodity Prices and the Australian Dollar

Prospects for **global economy** are improving, although the story is markedly different across regions. There are positive signs for growth in the US. Euro Zone economies remain in the doldrums while Japan's economy is expected to gradually pick up. And, China's economy is slowing. Geopolitical tensions in Russia and the Middle East have led to trade restrictions and volatility in energy prices. The unbalanced growth profile reflects the various policy settings and stimulus measures (including unconventional monetary policy) being implemented with differing levels of success.

Overall, the world economy experienced another sluggish year of 3.3 percent growth during 2014, weighed down by problems in Japan and ongoing concerns in Europe. Global growth is expected to gain momentum over the next few years. However, expectations around the pace of this expansion have been pared back following concerns about a moderating Chinese economy, Japanese growth stalling and the continued lack of confidence in Europe as adjustment takes its toll. On the positive side, the oil price decline provides a boost to the outlook through lower production costs for businesses and higher disposable incomes for households, particularly in emerging market economies as they are mostly net importers of oil.

The **United States** economy ended 2014 strongly following a patchy start to the year. Employment growth was exceptionally strong, taking the unemployment rate down to 5.6 percent by December (from 6.7 per cent the previous year). The growth in employment has helped fuel a surge in private consumption expenditure which has joined business investment as an area of strength, while public expenditure has ceased to be a drag on growth. The current momentum is expected to carry over into the next few years with the Federal Reserve likely to take a cautious

approach and avoid tightening monetary settings in an aggressive manner. Growth is expected to be broadly based with stronger consumer spending supported by a healthy labour market and lower oil prices. Meanwhile, housing activity is gathering momentum, and business investment is improving as input prices remain subdued and corporate profits rise.

On some measures, **China** is now regarded as the world's largest economy. The economy is rebalancing, shifting away from a heavy construction focus (residential and infrastructure) to a more consumption driven approach. Growth slowed to 7.4 percent during 2014, with a weaker property market impacting fixed capital investment, while exports were hampered by the continued poor performance of the European economies. The deceleration in Chinese growth is expected to continue. The Government has introduced stimulus measures including lower taxes for small businesses, further boosts to fiscal and infrastructure spending and cuts to the benchmark lending rates. While these measures are designed to prop-up the momentum in domestic activity, going forward we will likely have to get used to seeing Chinese growth in the 6-7 per cent range later this decade. This is still significant growth given China is a much bigger economy now after experiencing double digit growth for most of last decade.

The **Eurozone** economies are struggling from a lack of competitiveness. This is due to the imbalance in cost structures exacerbated by a fixed exchange rate system which is impeding the necessary adjustments. Within the Euro area, Germany is undervalued while the other countries are overvalued. Hence, the lack of growth and high unemployment across the Euro zone, while conditions in Germany are more favourable. Debt is of concern. However it is not the central issue holding back growth. It is the cost imbalances. The current deflationary pressures are a natural consequence of the current imbalances as countries attempt to reset their cost bases against a low inflation German economy, to a lower level. Quantitative easing can help boost demand. But the key concerns are supply side issues. Unfortunately these issues can not be solved quickly and will ultimately result in years of weakness before activity turns around. We expect growth to average a modest 1.6 per cent per annum over the next five years.

Over the past year, the **Japanese** government and central bank introduced some strong stimulus measures to boost growth prospects and eliminate the persistent threat of deflation. Unfortunately, the government also shot itself in the foot when it introduced a significant increase in the sales tax in April 2014 which triggered a sharp contraction in domestic consumption. Although the economy shrank through the middle of the year, prospects have improved as the stimulus measures have gained traction. Employment growth has picked up and the unemployment rate has dropped to 3.4 per cent, the lowest level since the late 1990s. Demographics will continue to plague the Japanese economy as a declining workforce population limits overall growth potential. Attempts to increase female participation will help but the economy will continue to be held back by a lack of capacity and will ultimately limit the level of overall growth to under 2 per cent annually over the next five years.

Commodity Prices, So Much for the 'Super Cycle'

The long lead times between executing investment decisions and when the new production reaches the market means that commodity prices will always contain a natural element of volatility as commodity markets swing from periods of under-supply to over-supply. For Australia's key bulk commodity exports, the supply/demand balance saw prices peak during 2011 (in US dollar terms) before sliding back over the subsequent years towards levels that appeared to be sustainable over the long-term.

Australia's key commodity exports have suffered a further large drop in prices over the past year. Amid a backdrop of slowing consumption growth in China along with ongoing weakness in the major European and Japanese markets, major international suppliers of iron ore, thermal coal and metallurgical coal have significantly increased production. Much of this new supply has been due to the massive program of resource investment which were commissioned or committed to during the commodity price boom.

Major global producers have also ramped up output in order to lower overall unit costs. This has flooded commodity markets with an excess of supply and now producers are scrambling to further reduce their costs of production. A consolation for domestic producers has been the decline in the Australian dollar, which has softened the impact of the commodity price falls as revenues have not fallen as fast in Australian dollar terms.

Even so, the price weakness for commodities is expected to continue in the short term. We expect only a moderate recovery in the prices of oil, coal and iron ore over the next few years. A key element of the price recovery will be international producers reacting to weak prices and oversupply by closing uneconomic mines and/or cutting back production. The second driver will be strengthening demand for commodities as global economic growth gradually picks up.

The recent plunge in oil prices has been caused by a substantial increase in oil production by producers outside OPEC – namely the US, Canada and Brazil. Despite plunging prices, OPEC has committed to retaining current production levels. That will maintain the current oversupply and act to suppress prices over the short term. Meanwhile, consumption growth has been modest, leading to large increases in inventories. At this stage, it appears the traditional lower cost producers are trying to regain market share and force out the newer US shale oil producers who have higher costs of production. The impact of these decisions will be twofold. Firstly, the current low prices would deter future US investment in new shale oil capacity. Secondly, we expect to see further volatility in prices going forward, although the trend is expected to point upwards.

The decline in coking and thermal coal prices is reflective of a recent oversupply and weaker import demand growth from major global consumers. With the significant decline in prices, producers will be increasingly reliant on the lower Australian dollar to mitigate some of the losses incurred at current prices. The outlook for thermal and coking coal prices is for a moderate recovery over the next couple of years as the global economy gradually strengthens and the availability of new sources of supply are restricted.

Exchange Rates

The fall in commodity prices and good news on the United States economy has driven the dollar lower in recent months. At the time of writing, the Australian dollar depreciated nearly 17 per cent against the US dollar since July last year. Similarly, the Australian dollar has also declined against the currencies of our major trading partners, which measured on a trade weighted basis, depreciated 11 per cent.

While there may still be an element of volatility, we forecast commodity prices to bottom in mid-2015 and will start to achieve moderate gains through the second half of 2015. The forecast rise in commodity prices should stabilise the Australian dollar around US 75 cents over 2015/16 and 2016/17. That said, factors such as the Reserve Bank cutting the cash rate and a more buoyant US economy may see the exchange rate drift lower than our forecast. Eventually, we expect the dollar will attain around US 70 cents during 2018/19.

Strong external demand will underwrite Australia's GDP growth

The outlook for Australia's **exports**, in particular resources exports, is largely dependent on the prospects of the Chinese economy as China alone accounts for a nearly a third of Australia's merchandise exports.

As mentioned, China's economic growth, although slowing, is expected to remain solid, supported by near-term targeted stimulus measures and ongoing medium-term economic reforms aimed at reorienting growth towards domestic consumption and away from investment and exports. Overall, we expect economic growth in China to remain between 6½ and 7 per cent over the next five years.

The level of infrastructure in China however remains well below that in developed countries. This suggests that infrastructure investment — encompassing municipal infrastructure, utilities, transportation and social infrastructure such as schools and hospitals — is likely to remain strong well into the next decade and possibly beyond. As infrastructure investment is intensive in its use of steel which, in turn, requires iron ore and coking coal as inputs, the prospects of Australia's bulk commodity exports remain bright. A consumption driven Chinese economy is also good news for Australia as it will drive the demand for thermal coal higher.

Meanwhile, the expected improvement in world economic growth rates over the next two years coupled with the lower exchange rate, will facilitate a recovery in export volumes of non-commodity manufactures. Even though the Australian dollar has fallen 20 per cent since April 2013, improvements in manufacturing exports will still depend on future world economic conditions. We expect manufacturing year average export growth rates to reach 2.6 per cent in 2014/15, picking up even further over the next two years. This recovery will gain more speed over the medium term as world economies return to trend growth rates, and the dollar falls toward (and below) US 75 cents.

Service exports which is dominated by travel services (ie tourism and education exports) picked up in the September 2014 quarter and is expected to gather momentum over the next three to five years due to a lower dollar. Overall, we forecast services exports to grow by 5.8 per cent per annum over the next five years compared to -0.2 per cent over the previous five years.

In summary, we expect export growth to ease to around 5.5 per cent per annum average over the next two years as China's economy slows, before strengthening to 6 per cent over the subsequent two years. Total goods and services export volumes are forecast to average a solid 5.5 per cent annual growth over the next five years, supported by improving world economic conditions and a further depreciation of the Australian dollar. Leading the charge is very strong growth in energy, mineral and metals exports volumes, currently accounting nearly 60 per cent of the value of exports of goods and services.

Import volume growth slowed dramatically from over 11 per cent in 2011/12 to 0.7 per cent in 2012/13 before declining by 2.1 per cent in 2013/14. Falls were recorded across most categories with only consumer goods maintaining growth. Much of the contraction can be directly attributable to the easing of mining and heavy industry construction, but the fall in the Australian dollar and weaker domestic demand were also contributing factors.

The fall in the dollar will help the competitiveness of local producers against importers, including domestic tourism. Still, the dollar really needs to fall to below US 70 cents before many local producers can really be competitive. Added to this is the lack of local production capacity in discretionary consumer goods and capital goods — often because that production has moved overseas — so there is effectively little prospect of replacing these imports.

The upshot is that net exports is expected to contribute 0.9 percentage points to real GDP growth over the next four years.

Australia's **current account deficit** (CAD) is expected to improve this year. The impact of falls in commodity export prices will largely be offset by a lower deficit in net income & transfers due to declines in repatriated profits from mostly foreign owned mining companies. Overall, strong trade balance surpluses in the second half of the decade will cause the CAD to fall. As a percentage of real GDP, CAD is forecast to average 1.9 per cent per annum compared to 3.7 per cent over the past five years.

2.2.2 Domestic demand

Consumer expenditure to marginally outpace growth in incomes

Household consumption expenditure growth slowed sharply in the immediate aftermath of the global financial crisis as people cut spending and sharply increased savings. That came after the spending binge of the previous decade when the banks turned mortgages into lines of credit allowing households to borrow against the value of their home to boost current expenditure. And they did, sharply reducing savings ratios. Increased concern about high household debt was brought to a head by the GFC and concerns about job security. The decline in household consumption expenditure growth was more marked than the decline in real household disposable income with the household saving rate rising to its highest level since the 1980s.

Over the past three years, households have stayed cautious, keeping savings high and only slightly loosening the purse strings, resulting in growth in consumption expenditure marginally outpacing growth in household disposable income.

We expect that to continue over the next few years. Households have built up a considerable savings buffer after several years of high savings ratios. While household income growth slowed in 2012/13, it picked up last year. Improved financial security and record low interest rates will see expenditure continue to pick up. With the Australian dollar now lower, the ongoing growth in household consumption expenditure is expected to translate into increased retail turnover and activity in Australia over the next few years.

We expect the Reserve Bank to keep rates low while the economy stays weak, only beginning to increase interest rates from late calendar year 2016 and through 2017. This would dampen consumer spending in 2017/18 before it picks up strongly towards the end of the decade. Overall, household consumption expenditure is forecast to average growth of 3.0 per cent per annum over the five years to 2018/19.

Over the longer term, population growth is expected to be the primary driver of household expenditure. As such, slowing population growth will see household consumption expenditure growth moderate slightly over the following decade, averaging 2.9 per cent per annum between 2019 and 2029. Although the economy is expected to remain healthy through this period, we do not expect a return to the debt-driven increases in consumption that occurred through the late 1990's and early 2000's when growth rates often approached and exceeded 5 per cent.

Offsetting cycles will keep investment subdued

Private investment will be characterised by offsetting cycles. The mining and heavy industry construction boom which underwrote the strength in Australia's GDP growth last decade peaked in 2013/14 and will detract from investment growth over the next four years. We initially estimated that **mining and heavy industry construction** would decline by 41 per cent over the next four years. We now believe the decline will be closer to 60 per cent as some projects included in our initial modelling will struggle to get off the ground given lower commodity prices.

It is important to note that total resources construction will still be above long-run average levels. Projects already under construction and their outstanding activity (ie work yet-to-be-done), will place a floor under the level of work, ensuring investment remains at healthy levels with activity supported by roads.

On the bright side, the long-awaited recovery in **dwelling investment** is now entrenched. This upswing was delayed due to weak housing market sentiment and excessive caution by investors. However, with the expectation of low interest rates for an extended period, and a growing deficiency of stock, a solid increase in dwellings building is now well under way and will

build momentum from here. We are comfortable that we have another two years of strong residential building along with improved alterations and additions activity before the current dwelling investment cycle runs out of puff. But this recovery will not be uniform between regions, with sizeable stock deficiencies set to drive the markets in parts of Queensland and New South Wales in particular.

Private non-dwelling building is also likely to experience solid growth over the next two years. But that will be offset by falling government building in particular hospital projects. A healthy pipeline of projects in the offices, retail accommodation, warehouses, aged care and entertainment and recreation segments will push overall building higher this year and next. However, completion of these projects and absence of new ones will cause activity to decline from 2016/17. Nonetheless, the longer term outlook is positive, as improving demand across non-mining industries will see capacity constraints emerge and prompt the next round of investment in commercial and industrial buildings.

The maturing of the mining investment boom will detract from private **plant and equipment investment** in the near-term. However, stronger spend by small-to-medium sized firms and businesses in the Agriculture, Education and Training, and Health Care and Social Services will offset some of this resulting in a modest rise in expenditure this year and next. Broadly based growth in equipment investment will return when capacity constraints emerge as demand picks up. That we think is at least another year away.

Table 2.1: Australia – Key Economic Indicators, Financial Years

Year Ended June	Actuals								Forecasts					
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Private Investment														
– Dwellings	-0.2	1.8	-1.4	1.2	3.8	-2.9	-3.8	5.1	7.7	6.1	-1.3	-5.5	0.6	4.9
– New Non-Dwelling Construction (+)	13.0	6.4	12.1	-10.2	18.5	35.7	10.7	-2.2	-10.6	-12.7	-7.7	-12.2	5.0	13.3
– New Non-Dwelling Building (+)	10.7	11.7	-3.9	-14.4	9.0	4.2	11.2	4.5	3.0	4.8	2.7	-6.7	-3.3	6.2
– New Engineering Construction (+)	15.5	1.3	29.2	-7.0	25.1	54.8	10.6	-4.8	-16.6	-22.1	-15.3	-17.1	13.2	19.3
Total New Private Investment (+)	5.2	8.3	1.2	-2.2	5.8	15.1	3.2	-2.1	-1.9	-1.6	-0.2	-4.1	4.3	10.2
New Public Investment (+)	4.8	10.6	8.1	22.6	-3.0	-3.6	-4.1	-1.5	-8.3	4.2	9.4	8.4	5.6	1.1
Gross National Expenditure (GNE)	5.1	6.0	0.6	2.2	4.2	5.0	1.4	0.7	1.2	2.0	2.7	1.6	3.5	4.6
GDP	3.8	3.7	1.7	2.0	2.3	3.7	2.5	2.5	2.5	2.8	3.2	2.7	3.6	3.7
Inflation and Wages														
CPI (Yr Avg)- RBA/Treasury forecasts (*)	3.0	3.4	3.1	2.3	3.1	2.3	2.3	2.7	1.7	2.4	2.7	2.5	2.5	2.5
Wage Price Index (Jun on Jun)**	4.0	4.2	3.8	3.1	3.8	3.7	2.9	2.6	2.4	2.9	3.5	3.6	3.4	3.8
Wage Price Index (Yr Avg)**	3.9	4.1	4.1	3.1	3.8	3.6	3.3	2.6	2.4	2.7	3.3	3.7	3.4	3.6
Average Weekly Earnings (Yr Avg)	3.6	4.9	5.5	5.6	4.2	4.3	4.6	3.0	3.1	3.8	4.4	4.9	4.4	4.7
Employment														
– Employment Growth (Yr Avg)	3.0	3.1	1.7	1.0	2.4	1.2	1.2	0.7	1.3	1.5	1.8	1.4	1.1	2.1
– Employment Growth (May on May) (%)	3.3	2.7	0.9	1.6	2.2	1.7	0.9	0.7	1.6	1.4	1.9	0.9	1.7	2.1
– Unemployment Rate (May) (%)	4.3	4.3	5.8	5.2	5.0	5.2	5.6	5.8	6.2	6.3	6.0	6.2	5.7	5.2
Labour Productivity Growth														
– Total	0.8	0.6	0.0	1.0	-0.1	2.5	1.3	1.8	1.1	1.3	1.4	1.4	2.5	1.6
– Non-farm	1.3	0.5	-0.4	1.1	-0.1	2.6	1.3	1.7	1.3	1.3	1.5	1.3	2.5	1.7
Exchange Rates														
– US\$ per A\$ (Yr Avg)	0.79	0.90	0.75	0.88	0.99	1.03	1.03	0.92	0.83	0.75	0.75	0.73	0.69	0.70

Source: BIS Shrapnel, ABS and RBA

+Expenditure on new assets (or construction work done). Excludes sales (or purchases) of second hand assets.

*Headline CPI forecasts based on Reserve Bank of Australia's forecasts to June 2017 and then Commonwealth medium term projections.

** Based on Ordinary Time Hourly Rates of Pay

Total investment in **intellectual property products** (IPP) fell sharply in the September 2014 quarter but recovered slightly in the December quarter.

The decline in the September quarter was driven by a collapse in mining and petroleum exploration. Most commodity prices, while still high from a historical perspective, have retreated significantly from their record levels in 2011 as greater capacity led to supply catching up to demand. The miners are now shifting their attention toward production from existing projects, rather than exploration for new ones. Hence, we expect declines in exploration expenditure over the next two years.

However, computer software investment and R&D rose over calendar year 2014. Both these categories will gradually strengthen over the next few years reflecting catch-up of necessary investment after a period of deferrals by many businesses. In addition, emerging capacity constraints when demand finally picks up will boost investment as firms begin to shift their focus from cost-cutting to servicing growth in demand. Overall, investment in IPP is expected to be flat this year before growing by 6.1 per cent per annum over the subsequent four years.

The completion of the last of the post GFC stimulus in particular health projects and belt tightening to control budget deficits and debt will be a drag on **public investment** in the short-term. However, we expect a recovery in the second half of the decade. This will be underwritten by the next round of infrastructure projects as state governments embrace the process of 'asset recycling' where mature assets are sold or leased to finance new ones.

State Government finances in Queensland and Western Australia in particular will be boosted by increased royalties as the large mining projects come on stream, but the other states will remain dependent on the Commonwealth Government, and may not fare so well.

2.2.3 Labour demand and supply

Employment growth has generally been subdued since mid 2011 reflecting a weakening in employers' demand for labour due to a prevailing orthodoxy of cost cutting including labour costs. More recently, the slowdown in mining investment — and the transition to less labour-intensive production phase of the mining boom — have weighed on the demand for labour in mining and mining-related sectors such as employment services firms, engineering & technical services firms and vehicle and equipment leasing providers.

Notwithstanding the pick up in employment growth in the December 2014 quarter, the slow pace of employment growth over the past three years has not kept pace with the growth in the labour force (the number of people working or available and actually looking for work). This has resulted in the unemployment rate rising from 5 per cent in May 2011 to 6.2 per cent in February 2015 (seasonally adjusted).

Employment growth will remain weak over the next 18 months as trade-exposed businesses continue to focus on cost-cutting to deal with problems of competitiveness associated with the still too 'high' Australian dollar. Other businesses' demand for labour will also be weak due to slower growth in output. Miners are also cutting costs including labour to preserve profitability in the face of lower commodity prices. With the labour force expected to outpace employment growth (albeit marginally), the unemployment rate is forecast to remain above 6 per cent well into 2016.

However, employment growth should pick up from the late 2016. This will see the unemployment rate drop to 6 per cent (s.a) in the second half of 2017, before again rising to a peak of 6.3 per cent (s.a.) by mid-2018 when the economy slows.

Overall, we expect employment growth to average 1.6 per cent per annum over the next five years slightly stronger than the labour force growth. In the medium-to-longer term, continued solid employment growth should see the unemployment rate cycle between 4.5 and 5.5 per cent, with any further decrease in the unemployment rate moderated by increases in migration and/or higher interest rates. An unemployment rate much below 5 per cent — which is thought to be the non-accelerating inflation rate of unemployment (NAIRU) — would cause a rise in wage inflation, as employers bid up wages for scarce skilled labour in a tightening labour market.

The labour supply will be critical for medium-term economic growth potential, given relatively low unemployment rates (ie there is not a large pool of spare labour currently available). We expect the labour force to grow at slightly below total population growth over the next 15 years as the 65 years and over category grows strongly. This is in contrast to previous decades where the baby boomers, immigration and increased participation rate provided a significant boost to the working age population.

2.3 Main risks to outlook

There is a risk that commodity prices don't rebound and we have a bigger collapse in mining investment. Our assumption is for a large decline in resources investment. A drastic deterioration in the prospects of mining projects could trigger a bigger fall in mining investment and a recession in Australia. However, we see this as a low probability (tail) event as the Federal Government has scope to loosen fiscal policy to support growth in Australia if needed.

There is a risk that the dollar will fall further or more quickly than currently anticipated. But this would be a positive outcome for many Australian industries, including the perpetually weak manufacturing sector, as well as other trade-exposed industries such as agriculture, tourism and education.

There is a risk that our forecast recovery in non-mining business investment will take longer to come through, which means that the economy will stay softer for longer. If the recovery does not come through, we expect the Reserve Bank to keep interest rates at historically low levels even longer than our current forecast to support economic recovery.

Longer term, the main risk to Australia's growth prospects relate to the fundamental drivers of growth – lower population growth and a failure for labour productivity growth to maintain its long-term average. However, we expect Australia's relatively high level of income to continue to attract migrants. Furthermore, as the positive benefits of the terms of trade and increased labour supply of the past decade or two start to wane, we expect both governments and businesses to make a more concerted effort to invest in productivity – much as it occurred during the 1980s and 1990s.

2.4 Medium term issues

The Australian economy is subject to strong internally generated cyclical swings. In addition, Australia's market economy orientation and non-interventionist policy means that the economy has to adjust to short-term external forces beyond our control with little regard to the longer term consequences. The commodities demand and price boom with the associated rise in the Australian dollar driving structural change is a case in point. The financial engineering boom followed by the GFC-induced correction was another.

A decade ago, the Australian economy was just recovering from the overinvestment of the 1980s debt-driven investment boom and the subsequent financial crisis and recession. It took a long time to absorb the excess capacity created during the boom. But capacity constraints eventually drove a recovery in business investment early last decade, spreading through to balanced growth in the economy by mid-decade.

The minerals boom, and the consequent minerals investment boom, left everything else in abeyance. Since that time, underwritten by the strong rise in the Australian dollar, we have built up our capability to service much higher levels of minerals investment at the expense of trade-exposed activity, focused in regions servicing those major projects. The boost to activity from strong mining investment, albeit now declining, has been the primary driver of growth in the economy and masked the weakness of other sectors. That was aided by the boost from the Government's GFC (global financial crisis) stimulus package and lower interest rates.

We went through a process of structural change, shifting labour and operational resources towards mining investment and away from non-mining, and particularly non-mining trade-exposed export and import-competing, industries. This has resulted in a corresponding shift between regions. Those regions servicing mining investment, and the capital cities where much of that took place, prospered largely at the expense of non-mining-related activities and regions.

Many workers involved in those projects work on a 'fly-in fly-out' rotation, boosting associated residential, hospitality, retail and transportation services. The cities servicing those projects have boosted their capacity to undertake design, construction, project management, legal, financial, accounting and other services, requiring increased facilities such as office space to house that activity and flowing on to stimulate the broader economy.

The main transmission mechanism for the shift of resources towards minerals investment was the rise in the Australian dollar. The resultant reduction in international competitiveness underwrote the process of structural change mentioned above, with the hollowing out of trade-exposed industries 'making room for the minerals boom'. Consequently, the continued loss of industry, regular announcements of job losses and shifting of activities offshore. These businesses are under enormous competitive pressure. Typically, in what has become an increasingly global economy, the decision whether to remain operating in Australia is made when the next major investment or retooling decision has to be made. Hence, the protracted adjustment period.

That structural change process is ongoing as the impact of the 'still too high' Australian dollar continues to work its way through the system. We think the Australian dollar needs to be below US 70 cents for Australian trade-exposed industries to be competitive.

Nor has the weakness only been felt in the non-mining trade-exposed sectors. Much of the rest of the economy, sheltered from the impact of the high dollar, is still suffering from the consequences of the GFC. Weak confidence, revenue and profits continue to impact on business psychology. Further, cost-cutting and cash preservation is deferring and delaying investment. The weakness of non-mining business investment, coupled with long lead times between investment and capacity coming on stream, is setting up Australian industry for a period of tight capacity through the second half of the decade, leading to a surge in investment. But not yet. There is still sufficient capacity to cater for another 18 months to two years of growth, with weak confidence delaying the next round of investment. Hence the current weakness of the non-mining economy.

The 'new normal' of weak demand and profits driving cost-cutting 'productivity initiatives' is a child of the long period of weakness of non-mining-related industries since the GFC. This psychology is self-fulfilling, perpetuating the weakness of confidence, demand and profits. But it also contains the seeds of the next upswing. Eventually, inadequate investment will lead to capacity constraints, underwriting the next phase of investment. Indeed, investment delayed will require a catch-up to increase capacity to levels required to service demand, later adopting new labour-saving technologies to improve efficiency and allow companies to service market shifts. As the cycle moves into the investment phase, the psychology of business will shift from survival to growth mode.

Rolling investment cycles will continue to dominate as drivers of Australia's economic growth

The extraordinary stimulus to GDP from minerals investment growth is over. That contribution will turn negative from now on as minerals investment recedes from peak levels. Even so, minerals investment remains extraordinarily high, at a level adding substantially to our capacity to produce and export. That is both a strength and a weakness, the risk being that a substantial decline will have a major negative impact on demand and activity. Meanwhile, growth in resources production and exports is sustaining GDP growth, but with a lesser effect on employment.

And now a phase of residential investment is well entrenched, with activity strengthening for another two years.

After that, the main driver of growth will be non-mining business investment. We do not think it will pick up pace for another year or two. However, once it picks up momentum, it will constitute a long and strong upswing. Some sectors, notably commercial property, look like peaking in some cities around the end of this decade, though others will turn down earlier. The delay to the commencement of this investment is setting the preconditions for a strong cyclical upswing.

We are a long way from stable, balanced growth. It looks as though the continuation of strong cycles in investment will continue to drive cyclical shifts in the economy.

2.5 The South Australian economy: past growth, current conditions and short-to-medium term outlook

Over the four years to 2013/14, South Australian SFD growth (which measures change in total household, business and government spending) averaged 1.1 per cent per annum compared with a 3.2 per cent average over the previous twenty years. South Australia is struggling through a particularly tough economic period, paying the price for the nation's mining boom. GSP is suffering, with the 1.5 per cent average annual growth over the past four years about half national GDP growth.

This story hasn't changed over the first two quarters of 2014/15, with SFD largely tracking sideways. Unfortunately there are very few growth drivers apparent over the coming years. Total construction is forecast to cut more than 2 per cent from GSP growth in 2014/15, and will likely make either zero or negative contributions to growth in the subsequent three years. The public financial position remains weak. The submarines contract remains up in the air. South Australia's recovery essentially rests on industry's response to the lower Australian dollar.

Public investment has been in decline since the stimulus-induced peak of 2009/10, yet the South Australian Government's fiscal deficit in 2013/14 was a record \$1.2 billion. The decline in public investment got larger in the first two quarters of 2014/15, reflecting the array of spending cuts and revenue measures in the 2014/15 Budget. Consequently, we are forecasting that the double-digit fall in public investment in 2014/15 will be followed by another two years of decline, as the Government attempts to return the budget to surplus.

A number of major public engineering construction projects have been recently completed, including the Noarlunga Line Electrification, the South Road Superway and the Southern Expressway Duplication. These projects will not be replaced with new projects of similar scale, causing activity to plunge by around a third in 2014/15. We then expect work done to plateau over the following two years.

Public non-dwelling building investment is expected to fall by more than 20 per cent in 2014/15, and continue to fall in the succeeding two years, if not longer. Following completion of the \$535 million Adelaide Oval Redevelopment, the \$350 million Adelaide Convention

Centre Redevelopment has been left to hold up activity, supported by a handful of university, defence, and health projects. Once the major hospital projects are completed, building work done will fall. The \$500 million Adelaide Courts Precinct Redevelopment was expected to boost activity from 2015, but it has now been abandoned, with the Government citing concerns over value for money.

Private investment has fared better than public, recording a 1.5 per cent improvement in 2013/14. This was largely driven by residential building, which saw a 13.6 per cent rebound during the year. However, this came off its lowest level of investment in a decade. Despite a 2.6 per cent (s.a.) decline in the December 2014 quarter, we are forecasting dwelling activity to continue to climb over 2014/15 and 2015/16. Although our estimates indicate that there is a current oversupply of housing in the state, it appears that historically low interest rates are encouraging new home purchases.

New residential building increased by 14.4 per cent in 2013/14, and we expect a further two years of solid growth, before a downturn emerges in 2016/17, as the oversupply widens and interest rates start to lift. Alterations and additions also saw double-digit growth in 2013/14, and should continue to trend upwards over the next two years before also going into decline.

Private non-dwelling building has gained a cumulative 13 per cent over 2012/13 and 2013/14, largely driven by the first two years of construction on the \$2 billion New Royal Adelaide Hospital (a PPP). This mammoth project has more than offset a collapse in office building over the same period, and will continue to be a significant driver of activity until its expected completion in mid-2016. Although the \$300 million Skycity Casino Expansion is anticipated to commence around this time, it will not be enough to plug the hole. Consequently, after robust growth across 2014/15 and 2015/16, we are forecasting a downturn from 2016/17.

On the other hand, private new engineering construction fell by 6.6 per cent in 2013/14, and we expect this slump to persist for a further three years. The majority of the decline will be due to a collapse in mining and heavy industry investment, caused by the sharp decline in prices for iron ore, coal, copper and other commodities. Several projects that were in the pipeline have now been cancelled, postponed, or appear unlikely in these new conditions, such as the \$900 million Hillside copper project by Rex Minerals, and the development of shale oil reserves in the Arckaringa Basin.

Although private investment has begun to creep up again, and the weaker dollar has started to alleviate pressure on trade-exposed industries, South Australia's unemployment rate is now the highest of all the states and territories. As of April 2015, it stood at 7.1 per cent (s.a.) well above the national average of 6.2 per cent (sa). Annual employment growth was just 0.3 per cent. Unfortunately, there are many reasons to think that state's labour market will not get much better for a while yet.

The aforementioned fall in construction activity forecast for the next three years will see construction jobs cut. The closure of Holden's manufacturing plant and the associated loss of parts and related manufacturing will take a heavy toll on manufacturing workers. What must be painful for South Australia is that in the absence of the mining boom-driven appreciation of the Australian dollar, the decision to close Holden's Australian manufacturing operations might well have been different.

The 15 per cent fall in the dollar (against the US dollar) since August 2014 should halt the attrition of the state's manufacturing industry, but much of the damage already inflicted is irrevocable.

On a more positive note, the state's trade-exposed industries should slowly start to reap the benefits of the depreciation of the Australian dollar. Tourism will pick up as Australians become more likely to holiday domestically and overseas tourists are encouraged by the improved value for money. A recovery in agriculture exports, a rise in foreign student numbers, and increased mining production and exports will see net exports contribute to growth over the next two years. Later, the lower dollar will underwrite opportunities for secondary processing and, when the cost of investment is lower, we could well see the re-emergence of the Olympic Dam project.

Meanwhile, PCE (private consumption expenditure) has shown some signs of improvement over the first half of 2015, following three years of sluggish growth. Persistently low interest rates and ongoing discounting are likely supporting the upturn in spending, but given the weakness in the state's labour market, we do not believe that this pickup will be sustained over the remaining two quarters of 2014/15. Nevertheless, the average annual PCE growth of 2.2 per cent forecast for the next three years will be a material improvement on the previous three years.

Overall, we are forecasting SFD growth of 1.1 per cent and GSP growth of 1.2 per cent in 2014/15, with economic growth expected to improve gradually before picking up pace towards the end of the decade.

Table 2.2: South Australia – Key Economic Indicators, Financial Years

Year Ended June	Actuals						Forecasts					
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
South Australia												
Total Construction Activity ^(a)	18.8	22.0	-0.2	-3.8	3.5	-2.4	-8.7	-2.8	-4.6	1.8	13.1	14.0
State Final Demand	2.6	3.7	1.6	1.8	0.1	0.8	1.0	1.7	1.6	1.3	3.4	4.8
Gross State Product (GSP)	2.3	1.1	2.4	1.5	0.9	1.3	1.1	1.9	0.9	1.4	3.1	3.9
Employment Growth	2.0	0.3	1.5	0.7	0.0	-1.4	1.0	0.4	0.7	0.6	1.4	2.6
Australia												
Total Construction Activity ^(a)	9.2	4.0	7.2	14.6	3.6	-0.5	-5.3	-6.3	-4.1	-5.9	4.1	7.0
Australian Domestic Demand	1.3	2.2	3.7	5.2	1.6	1.0	1.0	1.8	2.8	1.6	3.3	4.6
Gross Domestic Product (GDP)	1.7	2.0	2.3	3.7	2.5	2.5	2.5	2.8	3.2	2.7	3.6	3.7
Employment Growth	1.7	1.0	2.4	1.2	1.2	0.7	1.3	1.5	1.8	1.4	1.1	2.1

Source: BIS Shrapnel and ABS

(a) Total Construction work done (constant prices), equals sum of new dwellings, building, alterations and additions activity over \$10 000, non-residential building and engineering construction by private and public sectors.

3. INFLATION AND WAGES

3.1 Outlook for Australian inflation

The Consumer Price Index (CPI) inflation remains contained. The headline rate for the CPI rose by 0.2 per cent in the March 2015 quarter (same as the December 2014 quarter), resulting in a weak through-the-year rate of 1.3 per cent (March quarter 2015 compared to March quarter 2014). Annual inflation has been falling since June 2014 and is now at its lowest level since June 2012. Meanwhile, the Reserve Bank's measure of underlying inflation eased slightly in the March quarter, rising by 0.7 per cent (compared to 0.6 per cent in the previous quarter). However, annual underlying inflation picked up a little rising by 2.4 per cent compared to 2.3 per cent in the December 2014 quarter.

Overall, inflation to remain contained in the short-term . . .

Going forward, our view is that inflation will be weak reflecting spare capacity in the economy. We expect inflation to generally remain contained over the next 9 months (with prices rises fluctuating between 0.3 to 0.9 per cent per quarter) due predominantly to weak growth in unit labour costs (ie price of labour such as wage price index inflation adjusted for productivity). However, higher import prices from the recent fall in the dollar will put upward pressure on tradeables goods and services.

. . . before gradually rising over the medium term

However, we expect that underlying inflation will rise over calendar year 2016 and reach 2.8 per cent by the end of the year. As the economic recovery gathers momentum through 2016, we believe retailers will rebuild margins and pass on some of the higher import costs of tradeable goods, to consumers. Reduction in spare labour capacity will also add to inflation from late 2016, via rising wages.

In year-average terms, BIS Shrapnel is forecasting CPI inflation to ease to 1.7 per cent in 2014/15 before rising to 2.5 per cent and 2.8 per cent over 2015/16 and 2016/17 respectively. We expect CPI inflation to remain within the Reserve Bank's 2 to 3 per cent target range (albeit in the upper half) towards the end of the decade. Inflation containment will remain a policy challenge beyond the medium term.

3.1.1 Reserve Bank of Australia CPI forecasts

The Reserve Bank and the Federal Treasury provide the 'official' view of CPI forecasts. The RBA's May 2015 'Statement on Monetary Policy' projects the headline CPI rate at 1½ per cent in the June quarter 2015, before rising to 2½ per cent in the December 2015 quarter. According to the RBA, headline CPI inflation is then expected to be in the 2 to 3 per cent range through to June quarter 2017 (RBA current forecasts only extend to June 2017).

The Federal Treasury in their Budget 2015/16 projected CPI inflation at 1¼ per cent in 2014/15 and 2½ per cent in 2015/16. For the budget forward estimate period (ie 2016/17 and 2017/18), the Federal Treasury forecast CPI inflation at 2.5 per cent

**Table 3.1: Wages and Prices – Australia
(Year Average Growth)**

Year Ended June	Average Weekly Ordinary Time Earnings ⁽¹⁾		Wage Price Index All Industries 2012=100		CPI Headline Inflation (BIS Shrapnel forecasts) 2012=100		Official Headline CPI ⁽²⁾ 2012=100	
	\$/week	%CH				%CH		%CH
2000	765.4	3.2	64.7	3.0	69.4	2.4	69.4	
2001	804.2	5.1	66.9	3.5	73.6	6.0	73.6	6.0
2002	847.4	5.4	69.1	3.3	75.7	2.9	75.7	2.9
2003	890.0	5.0	71.5	3.5	78.0	3.0	78.0	3.0
2004	931.6	4.7	74.1	3.6	79.9	2.4	79.9	2.4
2005	972.9	4.4	76.9	3.7	81.8	2.4	81.8	2.4
2006	1 017.5	4.6	80.0	4.1	84.4	3.2	84.4	3.2
2007	1 054.1	3.6	83.2	3.9	86.9	3.0	86.9	3.0
2008	1 106.1	4.9	86.6	4.1	89.8	3.4	89.8	3.4
2009	1 166.5	5.5	90.2	4.1	92.6	3.1	92.6	3.1
2010	1 231.3	5.6	92.9	3.1	94.8	2.3	94.8	2.3
2011	1 282.5	4.2	96.5	3.8	97.7	3.1	97.7	3.1
2012	1 338.1	4.3	100.0	3.6	100.0	2.3	100.0	2.3
2013	1 400.3	4.6	103.3	3.3	102.3	2.3	102.3	2.3
2014	1 442.2	3.0	106.0	2.6	105.1	2.7	105.1	2.7
Forecasts								
2015	1 487.2	3.1	108.6	2.4	106.9	1.7	106.8	1.7
2016	1 543.3	3.8	111.5	2.7	109.6	2.5	109.4	2.4
2017	1 611.0	4.4	115.1	3.3	112.7	2.8	112.4	2.7
2018	1 690.7	4.9	119.4	3.7	115.8	2.8	115.2	2.5
2019	1 765.4	4.4	123.5	3.4	119.0	2.8	118.0	2.5
2020	1 847.9	4.7	128.0	3.6	122.2	2.7	121.0	2.5
Compound Annual Growth Rates ⁽³⁾								
2001-2011	4.8		3.7		2.9		2.9	
2009-2014	4.3		3.3		2.5		2.5	
2014-2020	4.2		3.2		2.6		2.4	
2016-2020	4.4		3.3		2.7		2.5	

Source: BIS Shrapnel, ABS

(1) Earnings per person for full-time adults. Data is year ended May (available only mid month of quarter).

(2) Headline CPI forecasts based on Reserve Bank of Australia forecasts to June 2017 quarter and then Commonwealth Treasury medium term projections.

(3) e.g. CAGR (Compound Annual Growth Rates) for 2016-2021 is CAGR for 2015/16 to 2019/20 inclusive (ie next regulatory period).

**Table 3.2: Wages Growth, All Industries, Australia
(by Workforce Segmented by Pay Setting Method)**

Year Ended June						Forecast						Averages	
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2010-14	2015-20
Proportion of Workforce by Pay setting Method (a)													
Awards Only	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%
Collective Agreements	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%
Individual Arrangements	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AWOTE													
Awards Only	0.7	3.5	3.4	2.9	2.6	3.0	2.3	2.9	3.3	2.9	2.8	2.6	2.9
Collective Agreements	4.1	4.0	4.0	3.7	3.5	3.4	3.4	3.6	3.8	3.7	3.9	3.9	3.6
Individual Arrangements (b)	7.2	4.4	4.7	5.5	2.6	2.9	4.2	5.1	6.0	5.1	5.4	4.9	4.8
AWOTE (Persons)(c)	5.6	4.2	4.3	4.6	3.0	3.1	3.8	4.4	4.9	4.4	4.7	4.3	4.2
Wage Price Index													
Awards Only	0.7	3.5	3.4	2.9	2.6	3.0	2.3	2.9	3.3	2.9	2.8	2.6	2.9
Collective Agreements	4.1	4.0	4.0	3.7	3.5	3.4	3.4	3.6	3.8	3.7	3.9	3.9	3.6
Individual Arrangements (b)	2.6	3.7	3.4	3.0	1.9	1.5	2.2	3.1	3.8	3.3	3.4	2.9	2.9
Wage Price Index (Ord. Time)	3.1	3.8	3.6	3.3	2.6	2.4	2.7	3.3	3.7	3.4	3.6	3.3	3.2
Compositional Effects + Bonuses,etc	2.5	0.4	0.7	1.3	0.4	0.6	1.0	1.1	1.2	1.0	1.1	1.0	1.0

Source: BIS Shrapnel, ABS, Department of Employment

(a) Full-time Adult Persons

(b) Indiv Agreements picks up all the compositional effects and bonuses plus all the standard errors of WPI and AWOTE estimates by the ABS

(c) Full-time Adult Persons, excluding overtime

**Table 3.3: Methods of Setting Pay, Industry, May 2010
Proportion of Full-Time Adult Employees (per cent)**

Industry (ANZSIC 2006)	Award Only	Collective Agreements	Individual Arrangements	All Methods of Pay Setting
Mining	1.8%	42.1%	56.1%	100.0%
Manufacturing	9.1%	29.3%	61.6%	100.0%
Electricity, Gas, Water & Waste Services	2.7%	67.7%	29.6%	100.0%
Construction	6.7%	26.3%	67.0%	100.0%
Wholesale trade	7.7%	11.3%	81.0%	100.0%
Retail trade	16.6%	20.7%	62.7%	100.0%
Accommodation and Food Services	31.7%	23.0%	45.3%	100.0%
Transport, Postal and Warehousing	3.9%	55.9%	40.2%	100.0%
Information Media and Telecommunications	3.6%	29.0%	67.4%	100.0%
Finance and Insurance Services	1.5%	39.9%	58.7%	100.0%
Rental, Hiring and Real Estate Services	13.1%	10.4%	76.5%	100.0%
Professional, Scientific and Technical Services	2.2%	11.5%	86.3%	100.0%
Administrative and Support Services	15.9%	30.1%	54.1%	100.0%
Public Administration and Safety	1.2%	92.5%	6.3%	100.0%
Education and Training	2.9%	88.9%	8.1%	100.0%
Health Care and Social Assistance	12.3%	66.6%	21.1%	100.0%
Arts and Recreation Services	10.4%	40.1%	49.4%	100.0%
Other Services	15.7%	11.0%	73.3%	100.0%
All Industries 2010 Survey	8.1%	41.9%	50.0%	100.0%

Source: ABS

3.2 Outlook for Australian all industries wages

3.2.1 Brief description of BIS Shrapnel's wages model

The key determinants of nominal wages growth are consumer price inflation, productivity and the relative tightness of the labour market (ie the demand for labour compared to the supply of labour). Price inflation, in turn, is primarily determined by unit labour costs. Other factors which influence price inflation include the exchange rate, the stage of the business cycle and the level of competition in markets generally.

BIS Shrapnel's model of wage determination is based on the analysis of past and future (expected) wage movements in three discrete segments of the workforce, based on the three main methods of setting pay and working conditions (see table 3.1):

- Those dependent on awards rely on pay increases given in the annual National Wage case by Fair Work Australia (formerly by the Fair Pay Commission and Australian Industrial Relations Commission). Most of the wage increases in the National wage case over the past decade have been given as flat, fixed amount (ie dollar value) increases, rather than as a proportional increase although the last two increases were given as a percentage increase. At the all industries level, 8.1 per cent of all full-time employees (data excludes those in agriculture, forestry and fishing) have their pay rises determined by this method. In the electricity, gas, water & waste services sector, only 2.7 per cent of workers have their pay set by this method.
- Collective agreements negotiated under enterprise bargaining account for 41.9 per cent of all employees, but 67.7 per cent of electricity, gas, water and waste services employees' wage increases are determined by this method.
- The remaining 50 per cent of all industries employees have their pay set by individual arrangements, such as individual contracts or other salary arrangements (including incentive-based schemes), while the proportion for electricity, gas, water and waste services is currently estimated to be around 30 per cent.

The key influences on the different wage determination mechanisms of each discrete segment are described below:

- Fair Work Australia (the body responsible for setting minimum wages in Australia) is responsible for establishing and maintaining a safety net of fair minimum wages for employees' dependant on Awards. This requires maintenance of employees' cost of living. Hence, in setting minimum wages, Fair Work Australia takes into account the performance and competitiveness of the national economy, including productivity, business competitiveness and viability, inflation and employment growth.

Accordingly, increases in the Federal Minimum Wage (on which a range of mostly lower paid awards are also based) granted by the Fair Work Australia each year are usually set in relation to recent increases in the CPI and with regard to the Fair Work Australia's view of both current and short-term economic conditions. Fair Work Australia granted a 3 per cent (\$18.70) increase in minimum wages, effective July 2014. The \$18.70 per week increase lifted the Federal Minimum Wage to \$640.90 per week.

Chart 3.1: Australia – Wages and Prices

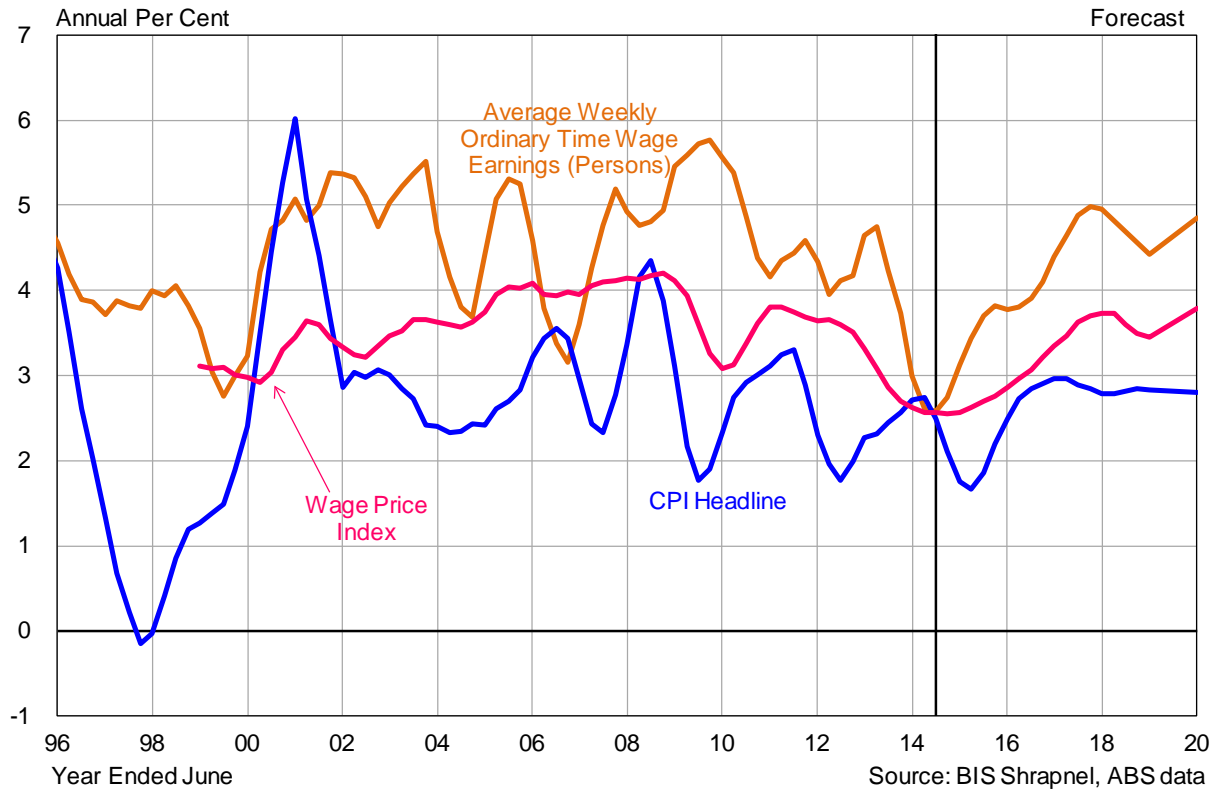
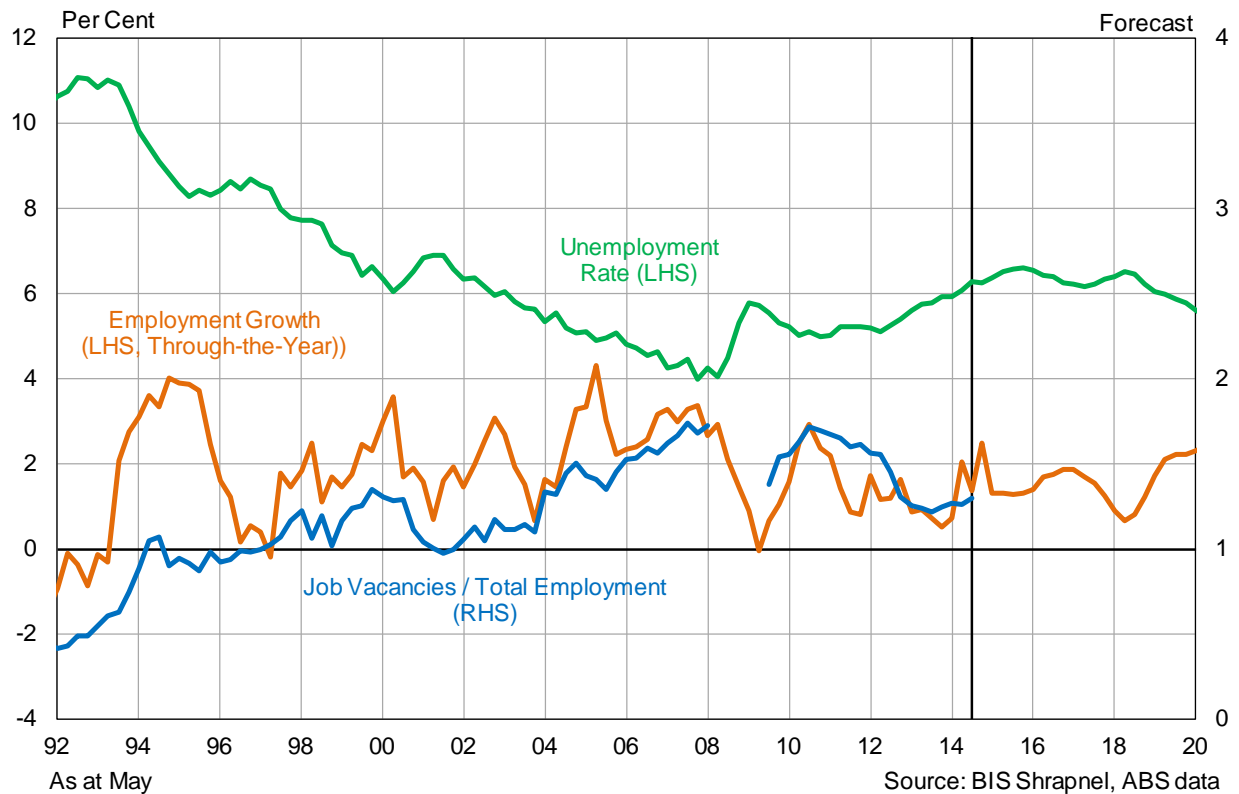


Chart 3.2: Employment and Unemployment



- Increases in collective agreements under enterprise bargaining are influenced by a combination of recent CPI increases, inflationary expectations, the recent profitability of relevant enterprises, current business conditions and the short-term economic outlook, and by the industrial relations 'strength' of relevant unions. Because the average duration of agreements now runs for two-to-three years, BIS Shrapnel bases its near-term forecasts on the strength of recent agreements, which have been 'formalised' over recent quarters. Thereafter, collective agreements are based on BIS Shrapnel's macroeconomic forecasts.
- Increases in individual agreements are primarily influenced by the strength of the labour market (especially the demand-supply balance of skilled labour), inflationary expectations, the recent profitability of relevant enterprises, current business conditions and the short-term economic outlook.

Wages growth slowed considerably over the past 18 months due to spare capacity in the labour market. This, in turn, reflects weak domestic demand and cost cutting by businesses. Accordingly, much lower wage increases have been awarded to 50 per cent of workers who have their pay set by 'individual arrangements'. We estimate that wage increases for employees in this segment eased from 3.5 per cent in September 2012 quarter to 1.7 per cent in the March 2015 quarter. In year-average terms, wages growth as measured by WPI now stands at 2.5 per cent, the lowest level since the late 1990s when the ABS first published the data.

Year average growth in 2014/15 is expected to be only 2.4 per cent for the WPI and 3.1 per cent for AWOTE (average weekly ordinary time earnings).

A broadening in employment, profits and investment is expected from late 2016 as the next set of economic drivers, in particular non-mining business and public investment, slowly come through. Meanwhile, current low interest rates will also stimulate wider economic activity, lifting confidence and spending and encouraging businesses to switch out of cost-containment mode.

The increase in profits, rising price inflation through 2016 and 2017 will push up wages growth over 2016 and 2017. There is usually a lag of at least a year for wages to respond upward to a strengthening in employment and falls in unemployment (and conversely downward wage pressure responding to weaker economic conditions). Wages growth (in year average terms) is expected to rise further and peak at 3.7 per cent for WPI (4.9 per cent for AWOTE) in 2017/18 – which would be the strongest result in WPI terms in nearly a decade. While the RBA will not be too alarmed at wage inflation of around 3.7 per cent (which, with long term productivity of around 1.5 per cent puts unit labour costs around 2.2 per cent – below the mid-point of its target band), it will nevertheless raise rates from late 2016 and in the first half of 2017 to prevent any serious inflationary pressures emerging.

The higher interest rates are expected to cause a slowdown in economic and employment growth during 2018, and this will eventually feed through to wages growth, with wages growth in the individual arrangements segment slowing first. Wages growth is forecast to ease to 3.4 per cent in WPI terms in 2018/19, while AWOTE growth eases to 4.4 per cent at the same time. But with only a small rise expected in the average unemployment rate to 6.3 per cent in 2018 — because of slower labour force growth due to the deceleration in the 'working population' — ongoing tight labour market is expected to see wage pressures re-emerge again towards the end of the decade once the subsequent recovery resumes from the second half of 2019.

4. EGWWS WPI FORECASTS

We proxy all SA Power Networks' labour cost escalator by wages growth in the South Australian Electricity, Gas, Water and Waste Services (EGWWS) industry. In this section, we provide an outlook for EGWWS wages at the national level followed by a discussion and forecasts of wages growth in EGWWS industry in South Australia. Note that our wages model is described in section 3 and Appendix A.

Utilities wages growth will ease over the next two years

The mining investment boom has reached its peak and will decline over the next four years. Similarly, utilities engineering construction reached its peak in 2012/13 and will fall over the next three years. Accordingly, wages growth in the utilities sector (in WPI terms) will be relatively modest over 2014/15 and 2015/16.

However, strong union presence in the utilities sector will ensure utilities wage inflation remain above the all industry average

The key elements of the utilities wage forecast are set out in table 4.4. It shows that collective bargaining dominates the pay setting arrangements in the utilities sector, while the relative absence of workers relying on (often) low-increase awards (set in the National Wage Case) means the overall average for total utilities wages will generally be higher than the all industries average. Over the past decade, the outcomes from collective agreements have been 0.4 per cent higher, on average, than the all industries average, at 4.4 per cent compared to 4 per cent. We expect this trend to continue over the outlook period, with collective agreements achieving average increases of 3.8 per cent for the utilities sector, compared to 3.7 per cent for all industries.

Despite the relative weakness of the economy over 2008/09 and 2009/10, wages remained elevated in the utilities sector due to the comparative strength of demand for skilled labour, and particularly because of the strength of unions in what is an essential service sector. The industrial relations reality is that there are powerful utilities unions such as the Communications, Electrical and Plumbing Union (CEPU) and Australian Services Union (ASU), which have a history of achieving high wage outcomes for the sector. Other unions active in the sector include the Australian Workers Union (AWU), the National Union of Workers (NUW) and Professionals Australia (formerly known as Professional Engineers, Scientists and Managers Australia).

BIS Shrapnel analysis shows collective agreements in the EGWWS sector have been on average around 1.5 per cent higher than CPI inflation over the decade to 2010 (excluding the effects of GST introduction in 2000/01). In the five years to 2010 when the labour market was very tight, collective agreements were on average 1.7 per cent above the CPI. Given the strength of unions in the sector and a still strong demand for skilled labour over the next four years (and possibly beyond) than for most of the 2000s, collective agreements are forecast to remain around 1.1 per cent above the CPI in the forecast period.

As well as increases in CPI, increases in collective agreements under enterprise bargaining are also influenced by a combination of inflationary expectations, the recent profitability of relevant enterprises, current business conditions and the short-term economic outlook, and by the industrial relations 'strength' of relevant unions. Because the average duration of agreements runs for two-to-three years, BIS Shrapnel bases its near-term forecasts of Enterprise Bargaining Agreement (EBA) wages on the strength of recent agreements, which have been 'formalised' or 'lodged' (ie an agreement has been 'reached' or 'approved') over recent quarters.

Table 4.1: Wage Price Index Growth by Industry Sector and by State

Sector	% of Total Employment Nov 2014	Wage Price Index ⁽¹⁾									
		Annual Per Cent Change									Five-Year Average
		Jun'08	Jun'09	Jun'10	Jun'11	Jun'12	Jun'13	Jun '14	Dec '14	Mar '15	
Private		4.4	3.6	2.7	3.9	3.8	3.0	2.5	2.5	2.2	3.2
Public		3.9	4.4	4.0	3.7	3.3	2.8	2.8	2.8	2.4	3.2
Industry											
Mining	2.0	6.7	4.2	3.8	4.1	5.2	3.5	2.5	2.4	2.4	3.6
Manufacturing	7.9	4.6	2.5	2.6	4.1	3.8	2.8	2.8	2.7	2.6	3.3
Electricity, Gas, Water and Waste Services	1.2	3.5	4.7	4.7	3.7	3.7	3.9	3.0	3.0	2.5	3.5
Construction	9.1	4.7	4.5	2.9	4.0	4.1	3.2	2.9	2.5	1.8	3.3
Wholesale Trade	3.3	4.6	3.3	1.7	4.8	4.8	3.4	2.0	2.5	2.2	3.4
Retail Trade	10.8	4.5	3.5	2.8	3.3	2.7	2.7	2.4	2.3	2.1	2.7
Accommodation and Food Services	7.0	2.3	3.4	2.0	3.0	3.3	2.6	2.2	2.6	2.5	2.8
Transport, Postal and Warehousing	5.2	3.9	4.4	3.2	4.0	3.8	2.9	2.4	2.4	2.4	3.0
Information Media and Telecommunications	1.9	3.9	3.0	2.0	3.2	3.5	2.9	2.4	2.5	2.4	2.9
Finance and Insurance Services	3.6	3.6	3.2	3.1	4.5	4.1	2.9	2.6	2.7	2.5	3.3
Rental, Hiring and Real Estate services	1.9	4.1	3.6	2.5	3.6	3.5	3.1	2.3	2.4	2.2	2.9
Professional, Scientific and Technical Services	8.1	5.1	5.1	2.9	4.0	4.6	2.9	2.0	1.9	1.7	3.2
Administration and Support Services	3.2	4.9	2.9	2.5	3.7	3.6	2.7	2.5	2.0	1.8	2.9
Public Administration and Safety	6.3	3.9	4.5	3.7	3.4	3.6	2.9	2.8	2.2	2.1	3.0
Education	7.8	4.0	4.5	3.9	3.8	3.6	2.5	3.2	3.4	2.8	3.2
Health Care and Social Assistance	11.9	3.6	3.9	4.0	3.6	2.6	3.3	2.9	2.8	2.6	3.0
Arts and Recreation Services	2.0	3.4	3.9	2.8	3.4	3.5	2.9	3.0	3.4	2.4	3.1
Other Services	4.0	3.3	3.3	2.3	3.6	3.8	3.0	2.3	2.2	2.3	3.0
State/Territory											
New South Wales	31.4	4.0	3.6	3.1	3.7	3.6	2.8	2.5	2.5	2.1	3.1
Victoria	25.0	4.2	3.4	2.7	4.1	3.5	3.0	2.7	2.8	2.6	3.2
Queensland	19.9	3.9	4.1	3.3	3.9	3.8	2.7	2.6	2.5	2.3	3.2
South Australia	6.9	4.6	3.7	2.9	3.3	3.4	3.3	3.1	2.6	2.5	3.3
Western Australia	11.8	5.6	4.6	3.4	3.8	4.8	3.5	2.4	2.3	2.1	3.5
Tasmania	2.1	3.6	4.2	3.6	3.5	3.2	2.9	2.3	2.6	2.4	3.0
Northern Territory	1.1	4.2	3.8	3.4	3.9	3.6	3.2	2.8	2.9	2.4	3.3
Australian Capital Territory (ACT)	1.8	4.0	4.1	3.0	3.5	3.9	2.9	2.3	1.7	1.7	3.0
Total All ⁽²⁾	100	4.1	3.8	3.1	3.8	3.7	2.9	2.6	2.6	2.3	3.2

(1) Measures changes in the price of labour. Ordinary hourly rates of pay (excludes overtime and bonuses)

Source: BIS Shrapnel, ABS data

(2) Excludes Agriculture, Forestry and Fishing sector

Table 4.2: Australia
AWOTE Growth by Industry Sector

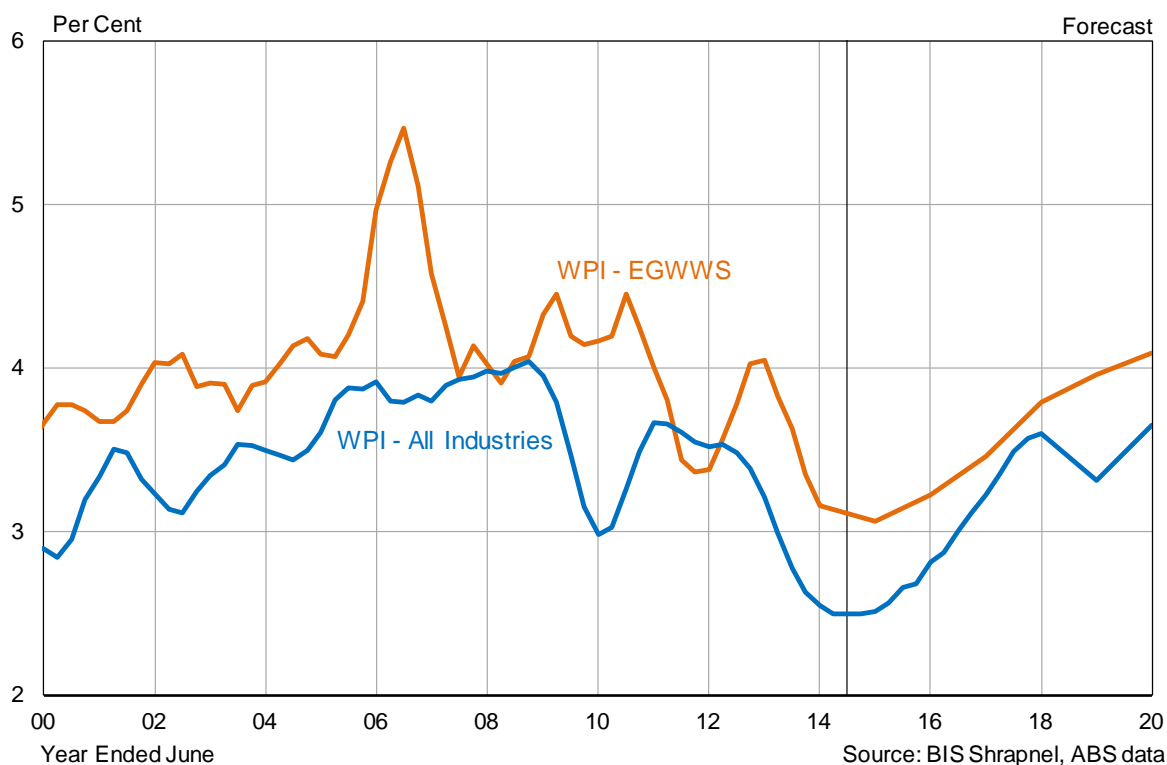
Industry Sector	% of Total Employment Nov '14	Average Weekly Earnings ⁽¹⁾							Five-Year Average
		\$ / Week Nov '14	Annual Per Cent Change						
			Nov'09	Nov'10	Nov'11	Nov'12	Nov'13	Nov'14	
Mining	2.0	2 495	7.8	6.8	5.2	8.0	4.6	1.0	5.1
Manufacturing	7.9	1 354	1.7	1.7	4.2	2.6	5.5	4.9	3.8
Electricity, gas, water and waste services	1.2	1 631	6.8	9.1	3.2	6.8	0.6	0.7	4.0
Construction	9.1	1 475	7.8	4.4	5.3	3.7	2.2	1.7	3.5
Wholesale trade	3.3	1 414	3.1	2.5	11.7	5.6	-1.9	1.9	3.9
Retail trade	10.8	1 064	5.6	1.4	3.6	3.0	2.3	3.1	2.7
Accommodation and food services	7.0	1 037	5.7	3.4	3.5	3.7	5.6	-1.1	3.0
Transport, postal and warehousing	5.2	1 452	4.1	10.3	4.9	6.3	1.5	4.4	5.4
Information media and telecommunications	1.9	1 671	6.3	4.2	2.2	5.7	2.5	0.0	2.9
Finance and insurance	3.6	1 726	2.4	8.8	-0.1	6.1	0.4	4.6	3.9
Rental hiring and real estate services	1.9	1 283	4.4	-2.6	0.9	7.5	-1.7	-0.3	0.7
Professional, scientific and technical services	8.1	1 795	4.7	5.8	2.8	3.3	5.9	3.7	4.3
Administration and support services	3.2	1 273	4.4	1.3	-4.8	10.2	0.9	-0.7	1.3
Public administration and defence	6.3	1 539	7.2	5.8	2.4	5.5	3.8	0.3	3.5
Education and training	7.8	1 566	5.7	5.2	4.2	4.8	3.1	3.0	4.1
Health and social assistance	11.9	1 400	7.7	2.2	4.6	3.0	4.7	2.3	3.4
Arts and recreational services	2.0	1 292	7.7	4.5	5.0	2.7	7.1	-2.2	3.3
Other services	4.0	1 096	7.7	4.9	1.1	5.3	-0.2	-0.6	2.0
Total All Industries ⁽²⁾	100	1 477	7.7	3.9	4.3	5.0	2.9	2.8	3.8

(1) Full Time Adult Ordinary Time earnings for persons

Source: BIS Shrapnel, ABS data

(2) Excludes Agriculture, Forestry and Fishing sector

**Chart 4.1: Wage Price Index
Total Australia (All Industries) and Electricity, Gas, Water and Waste Services**



**Table 4.3: Federal Wage Agreements – Collective Agreements by Industry
(Average Annualised Wage Increase)**

Selected Industry (ANZSIC 2006)	Average Annualised Wage Increase									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2006-2014
Electricity, Gas, Water and Waste Services	4.4	4.5	4.7	4.8	4.8	4.4	4.2	4.1	3.6	4.4
Agriculture, Forestry and Fishing	3.0	2.9	3.0	3.7	3.7	3.7	3.8	3.7	3.4	3.4
Mining	3.7	4.0	4.3	4.4	4.3	4.2	4.5	4.6	4.1	4.2
Manufacturing	4.2	4.3	4.2	4.1	3.9	3.9	3.9	3.8	3.5	4.0
Construction	4.9	4.9	4.6	5.3	5.4	4.8	5.1	5.3	4.9	5.0
Wholesale Trade	3.7	3.6	3.8	4.1	4.0	3.7	3.8	3.8	3.4	3.8
Retail trade	3.5	3.5	3.5	3.6	3.5	3.4	3.6	3.3	3.1	3.4
Accommodation and Food Services	3.3	3.4	3.2	3.6	3.9	3.9	3.8	3.7	3.0	3.5
Transport, Postal and Warehousing	3.7	3.9	4.0	4.2	4.2	4.0	3.9	3.9	3.6	3.9
Information Media and Telecommunications	3.6	3.2	3.3	3.8	3.8	3.4	3.4	3.5	3.3	3.5
Financial and Insurance Services	4.1	4.1	3.8	4.0	3.6	3.7	3.5	3.3	3.0	3.7
Rental, Hiring and Real Estate Services	3.8	4.8	4.5	3.5	3.7	3.9	4.7	4.4	4.2	4.2
Professional, Scientific and Technical Services	3.8	4.0	4.0	4.5	4.3	4.0	4.1	4.1	4.0	4.1
Administrative and Support Services	3.8	3.6	3.6	3.8	3.7	3.6	4.2	4.3	4.0	3.8
Public Administration and Safety	4.0	4.1	4.2	4.3	3.9	3.7	3.7	3.7	3.5	3.9
Health Care and Social Assistance	4.0	4.0	4.0	4.1	4.0	4.0	3.6	3.3	3.1	3.8
Education and Training	4.9	4.8	4.9	4.4	4.6	4.6	4.7	3.9	3.6	4.5
Arts and Recreation Services	3.5	3.8	4.0	4.1	3.5	3.5	3.4	3.3	3.2	3.6
Other Services	4.0	4.1	4.0	3.9	3.7	3.6	4.5	4.4	3.7	4.0
ALL INDUSTRIES	4.1	4.1	4.0	4.2	4.1	4.0	4.0	3.7	3.5	4.0

(1) Current agreements in June of each year.

Source: Department of Employment

We expect EBA outcomes to ease over the next two years but remain above inflation and the 'all industries' average given still strong demand for skilled labour and particularly given the recent high enterprise agreement outcomes in the construction sector. This will influence negotiations in the EGWWS sector, as some skills can be transferable. A mild recovery in EBA outcomes will occur over subsequent years as the labour market begins to tighten, unemployment falls and business profitability improves. However, forecast growth in wage agreements of 3.8 per cent per annum remains below that experienced over much of the past decade.

Demand for skilled labour also a key driver of utilities wages

Employment growth in the utilities sector over the past ten years (2003/04 to 2013/14 inclusive) averaged 5.4 per cent per annum, the second fastest growth among the 18 main industry sectors behind the Mining sector (11 per cent per annum), with Health and Social Assistance employment growth third at 4.1 per cent per annum.

We believe investment in the sector, particularly engineering construction, has been the key driver of employment growth in the sector over the past decade (see chart 4.1).

As well as the pick-up in infrastructure work, this strong growth in utilities employment has also been associated with an ongoing reversal in the sharp losses in employment seen through the 1990s. Privatisation and rationalisation were the drivers of the job cuts in the 1990s, but in some cases the desire to be streamlined left only a 'skeleton' crew in-house for routine operations and emergency disruptions, while capital and maintenance works (both minor and major) tended to be contracted out. Capital expenditure in the utilities sector during the 1990s was also relatively low, and this may also have contributed to weaker employment.

The emergence of skilled labour shortages across many industry sectors over the 2000s encouraged utilities businesses to boost their in-house response capabilities, while increasing competition shifted the business focus towards customer service in order to enhance product differentiation with an accompanying increase in employment not directly related to the provision of electricity, gas, and water services. The entrance of new players in the sector (such as new businesses related to renewable energy provision, new private electricity and gas businesses, etc.) also exacerbated this situation as it increased demand for all occupations within this sector.

The strong growth in employment in the Utilities, Mining and Construction sectors, and the associated sustained strong demand for skilled labour, contributed to above average wages growth in all three sectors. At the same time, the overall labour market tightened considerably during the 2000s, with the unemployment rate falling from around 7 per cent in 2001 to 5 per cent by 2005, and to 4.0 per cent in early 2008. This saw skilled labour shortages worsen and employers in these sectors bid up wages.

The global financial crisis and the subsequent slowing in the economy over 2008/09 along with a slow transition from mining investment-led growth to broadly based growth reduced labour demand and wage pressures. Consequently, the unemployment rate rose reaching a peak of 6.3 per cent in January 2015.

However, with the economy expected to grow close to trend in about two years, employment growth will outpace population and labour force growth and the unemployment rate is expected to fall to 6 per cent by late 2017. Hence, we expect to again witness the re-emergence of skilled labour shortages and competition for scarce labour through 2017, particularly from the construction sector, which will push up wage demands in the utilities sector towards the end of the decade.

Table 4.4: Electricity, Gas, Water and Waste Services Forecasts – Australia

Year Ended June	Year Average Percent Change												Averages	
	2010	2011	2012	2013	2014	Forecast						2010-14	2015-20	
Proportion of Workforce by Pay setting Method (a)														
Awards Only	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	
Collective Agreements	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	
Individual Arrangements	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
AWOTE														
Awards Only	0.7	3.2	3.4	2.9	2.6	3.0	2.3	2.9	3.3	2.9	2.8	2.6	2.9	
Collective Agreements	4.6	4.2	4.1	3.9	3.6	3.3	3.4	3.6	4.0	4.1	4.2	4.1	3.8	
Individual Arrangements (b)	14.5	19.0	-0.4	10.2	-0.7	3.4	4.6	5.9	6.4	6.9	7.1	8.5	5.7	
AWOTE (Persons)(c)	7.6	9.1	2.5	6.1	2.0	3.4	3.8	4.4	4.9	5.1	5.3	5.5	4.5	
Wage Price Index														
Awards Only	0.7	3.2	3.4	2.9	2.6	3.0	2.3	2.9	3.3	2.9	2.8	2.6	2.9	
Collective Agreements	4.6	4.2	4.1	3.9	3.6	3.3	3.4	3.6	4.0	4.1	4.2	4.1	3.8	
Individual Arrangements (b)	4.2	4.2	2.2	5.0	2.4	2.7	3.2	3.6	3.9	4.2	4.6	3.6	3.7	
Wage Price Index (Ord. Time)	4.3	4.2	3.5	4.2	3.3	3.2	3.3	3.6	3.9	4.1	4.3	3.9	3.7	
Compositional Effects + Bonuses, etc	3.2	4.9	-1.0	1.9	-1.2	0.2	0.5	0.8	0.9	1.0	1.0	1.6	0.7	

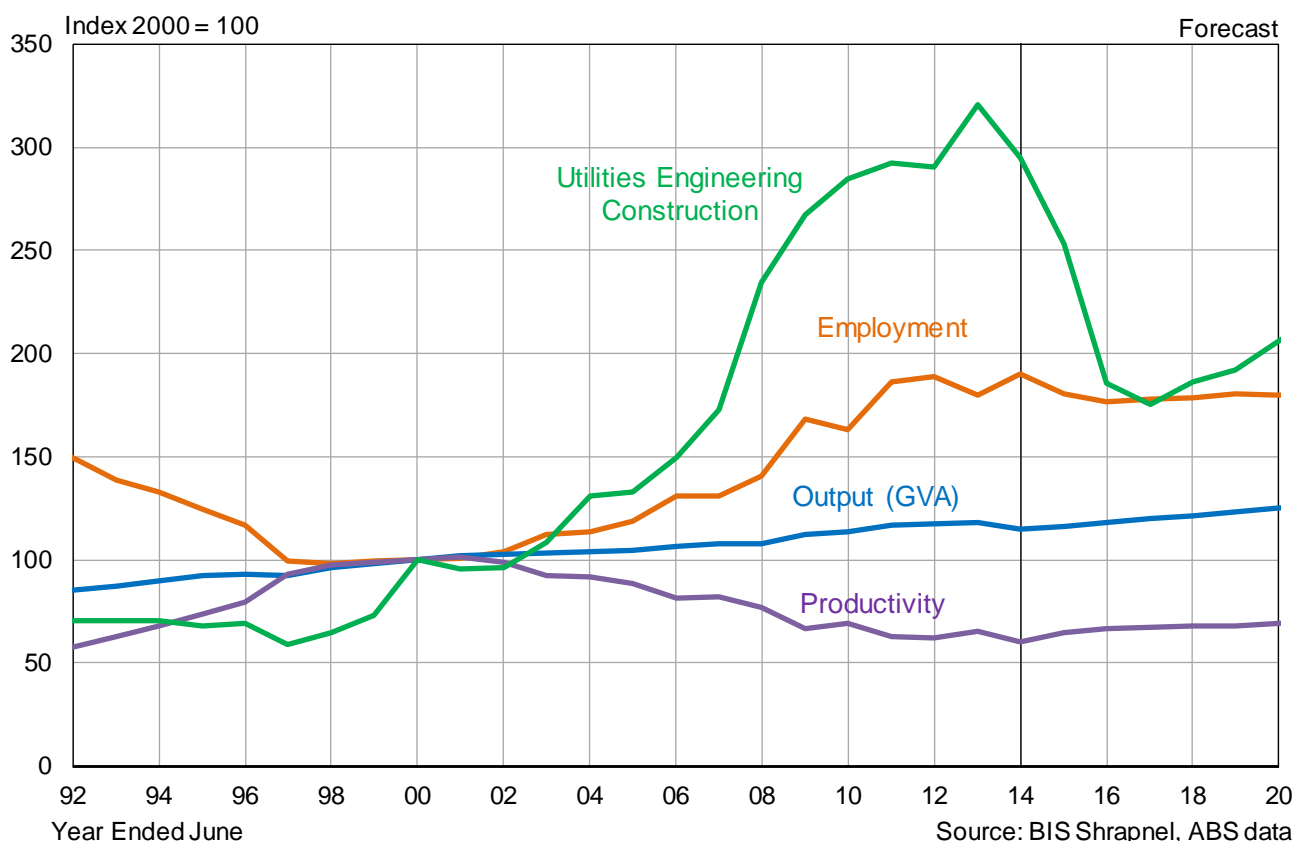
(a) Full-time Adult Persons.

Source: BIS Shrapnel, ABS, Department of Employment

(b) Because of relatively small workforce (and therefore small sample size) in EGWWS, Indiv Agreements picks up all the standard errors of WPI and AWOTE estimates by ABS.

(c) Full-time Adult Persons, excluding overtime.

Chart 4.2: Australia – Utilities Employment, Output and Investment



**Table 4.5: Average Weekly Ordinary Time Earnings and Wage Price Index
Total Australia and Electricity, Gas, Water and Waste Services Sector
(Year Average Growth)**

Year Ended June	Average Weekly Ordinary Time Earnings ⁽¹⁾				Wage Price Index ⁽²⁾ 2011/12=100			
	All Industries		Electricity, Gas, Water and Waste Services		All Industries		Electricity, Gas, Water and Waste Services	
	\$	%CH	\$	%CH	Index	%CH	Index	%CH
1989	487.3	7.2	513.4	6.4				
1990	521.0	6.9	559.2	8.9				
1991	555.4	6.6	585.2	4.7				
1992	580.8	4.6	620.5	6.0				
1993	591.0	1.8	638.3	2.9				
1994	609.1	3.1	657.9	3.1				
1995	634.9	4.2	668.6	1.6				
1996	663.8	4.6	707.6	5.8				
1997	688.5	3.7	748.6	5.8				
1998	716.0	4.0	796.1	6.3	60.9		56.7	
1999	741.4	3.5	827.1	3.9	62.8	3.1	58.4	3.0
2000	765.4	3.2	866.8	4.8	64.7	3.0	60.6	3.8
2001	804.2	5.1	918.5	6.0	66.9	3.5	62.9	3.8
2002	847.4	5.4	981.0	6.8	69.1	3.3	65.6	4.2
2003	890.0	5.0	1,001.3	2.1	71.5	3.5	68.2	4.1
2004	931.6	4.7	1,056.7	5.5	74.1	3.6	71.0	4.1
2005	972.9	4.4	1,090.6	3.2	76.9	3.7	74.0	4.3
2006	1 017.5	4.6	1,110.9	1.9	80.0	4.1	77.9	5.2
2007	1 054.1	3.6	1,151.9	3.7	83.2	3.9	81.6	4.8
2008	1 106.1	4.9	1,182.8	2.7	86.6	4.1	85.0	4.2
2009	1 166.5	5.5	1,255.5	6.1	90.2	4.1	88.9	4.5
2010	1 231.3	5.6	1,350.8	7.6	92.9	3.1	92.8	4.3
2011	1 282.5	4.2	1,473.9	9.1	96.5	3.8	96.6	4.2
2012	1 338.1	4.3	1,510.0	2.5	100.0	3.6	100.0	3.5
2013	1 400.3	4.6	1,602.5	6.1	103.3	3.3	104.2	4.2
2014	1 442.2	3.0	1,635.0	2.0	106.0	2.6	107.6	3.3
Forecasts								
2015	1 487.2	3.1	1,689.8	3.4	108.6	2.4	111.0	3.2
2016	1 543.3	3.8	1,754.5	3.8	111.5	2.7	114.7	3.3
2017	1 611.0	4.4	1,831.9	4.4	115.1	3.3	118.8	3.6
2018	1 690.7	4.9	1,921.0	4.9	119.4	3.7	123.5	3.9
2019	1 765.4	4.4	2,019.6	5.1	123.5	3.4	128.6	4.1
2020	1847.9	4.7	2,125.7	5.3	128.0	3.6	134.1	4.3
Compound Annual Growth Rates ⁽³⁾								
1991-2001	3.8		4.6					
2001-2011	4.8		4.8		3.7		4.4	
2009-2014	4.3		5.4		3.3		3.9	
2014-2020	4.2		4.5		3.2		3.7	
2016-2020	4.4		4.7		3.3		3.8	

Source: BIS Shrapnel, ABS

(1) Earnings per person for full-time adults. Data is year ended May (available only mid month of quarter).

(2) Ordinary time hours excluding bonuses.

(3) e.g. CAGR (Compound Annual Growth Rates) for 2016-2020 is compound annual growth for 2015/16 to 2019/20 inclusive.

Individual agreements will recover from their current weakness

Increases in individual agreements or contracts (ie non-EBA wages) are primarily influenced by the strength of the labour market (especially the demand-supply balance of skilled labour), inflationary expectations, recent profitability of relevant enterprises (which influences bonuses and incentives, etc.), current business conditions and the short-term economic outlook.

Across all industries, wage growth from individual agreements rose by just 1.9 per cent in 2013/14, reflecting general weakness in the economy and the labour market. However, this is expected to gradually recover over the next five years. With the economy expected to grow close to potential in two years, we expect further growth in wages in the segment to come through, as employers bid up wages for skilled labour in scarce supply. Businesses will find they must 'meet the market' on remuneration in order to attract and retain staff and we expect wages under individual arrangements to continue to rise through the second half of the decade.

Two other factors which will act to push up EGWWS wages growth attributable to the individual arrangements segment — that is the compositional effects — include the up skilling of the workforce and, later in the period, the ageing of the workforce. Apprentices, trainees and numbers of new staff have increased markedly over recent years, across the electricity, gas and water sector generally. Given slower growth in employment numbers over the outlook period, it is likely that there will be overall up skilling of the existing workforce, which will see a commensurate movement by much of the workforce into higher grades (ie on higher pay). As the 'base' movement — the nominal increase in EBA's — will not reflect this, this upgrading will end up as compositional increases in the individual arrangements segment.

A related aspect is an ageing labour profile, which will particularly affect the 'professionals' on non-EBA's, who tend to be older and more experienced.

The net result is that all the compositional effects from the up skilling of the workforce will fall into the individual arrangements wage setting residual. This is because the electricity, gas and water sector has a relatively small workforce and the individual arrangements segment picks up the standard errors of WPI and AWOTE estimates by the ABS. Overall, BIS Shrapnel expects individual wage agreements for the EGWWS sector to grow by 3.7 per cent per annum, on average, over the five years to 2019/20.

Together with the awards and collective agreements, BIS Shrapnel expects total wage costs for the Australian Electricity, Gas, Water and Waste Services (EGWWS or 'Utilities) sector — expressed in Average Weekly Ordinary Time Earnings (AWOTE) — will average 4.7 per cent per annum over the five years to 2019/20, 0.3 per cent higher than the national 'All Industries' AWOTE average of 4.4 per cent per annum over the same five year period (see table 4.5). In terms of *underlying* wages growth in the 'utilities' sector for total Australia — expressed in wage price index (WPI) terms — BIS Shrapnel is forecasting an average of 3.8 per cent per annum (0.5 percentage points higher than the national 'All Industries' WPI average of 3.3 per cent per annum) over the five years to 2019/20.

4.1 Outlook for utilities wages growth in South Australia

The ABS does not provide WPI data for the Utilities sector in South Australia, providing state utilities data only for NSW and Victoria. These two states collectively account for almost 54 per cent of total Australian utilities employment, with Queensland accounting for just over 22 per cent, then Western Australia and South Australia at 11.4 per cent and 7.4 per cent respectively. Forecasts of WPI for the EGWWS sector in South Australia therefore is based on national EGWWS WPI forecasts, as well as movements in the 'unknown residual' for the utilities wage price index.

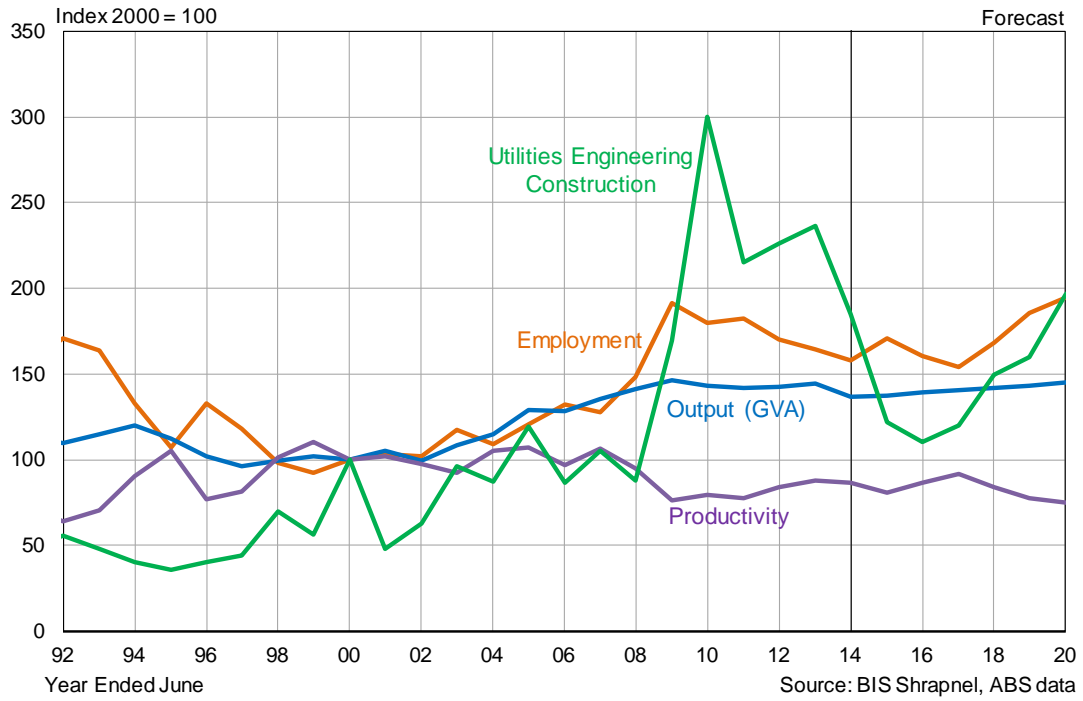
The utilities wage forecasts for South Australia are expected to ease over the next two years (in line with the national utilities sector average) but stay above the national average reflecting relatively higher EBA outcomes achieved in current agreements of major players of the South Australian utilities industry.

We expect wages growth to pick up pace from 2017/18 due to increased demand for labour from the states' utilities sector as utilities-related engineering construction ramps up again. Chart 4.2 shows BIS Shrapnel's engineering construction forecasts for the utilities-related segments. South Australia utilities engineering construction is projected to fall over the next three years (but remain at historically high levels), before increasing significantly from 2016/17. Construction work done is expected to lift considerably late this decade as the surplus in generation capacity is slowly eroded through continued population growth and industrial activity, placing greater demands on electricity supply. In addition, Utilities infrastructure required to support the expansion of the Olympic Dam mine will also add to growth.

Chart 5.2 also shows that utilities investment is a key influence on employment growth in the utilities sector (even though some capital projects are outsourced to the construction sector). The combination of high levels of utility engineering construction and overall construction in the state, particularly with the expansion of the Olympic Dam project from 2018/19, means increased competition for 'similarly' skilled labour and wage pressures in the South Australian utilities sector over the three years to 2019/20.

Overall, South Australia utilities WPI growth is forecast to average 3.8 per cent per annum over the five years from 2015/16 to 2019/20 inclusive (ie over SA Power Networks' next regulatory period, see table 5.6).

Chart 4.3: South Australia – Utilities Employment, Output and Investment



**Table 4.6: Electricity, Gas, Water and Waste Services – South Australia and Australia
(Year Average Growth)**

Year Ended June	WPI ⁽¹⁾ 2011/12=100			
	South Australia		Australia	
	Index	A% CH	Index	A% CH
2000			60.6	
2001			62.9	3.8
2002			65.6	4.2
2003			68.2	4.1
2004			71.0	4.1
2005			74.0	4.3
2006			77.9	5.2
2007			81.6	4.8
2008			85.0	4.2
2009	88.7		88.9	4.5
2010	92.5	4.3	92.8	4.3
2011	96.5	4.3	96.6	4.2
2012	100.0	3.7	100.0	3.5
2013	103.9	3.9	104.2	4.2
2014	107.5	3.5	107.6	3.3
Forecasts				
2015	111.2	3.4	111.0	3.2
2016	115.0	3.4	114.7	3.3
2017	119.0	3.5	118.8	3.6
2018	123.6	3.8	123.5	3.9
2019	128.6	4.0	128.6	4.1
2020	134.1	4.3	134.1	4.3
Long Term Averages				
2001-2011			4.4	
2009-2014	3.9		3.9	
2014-2020	3.7		3.7	
2016-2020	3.8		3.8	

Source: BIS Shrapnel, ABS

(1) Ordinary time hours excluding bonuses.

APPENDIX A: BIS SHRAPNEL'S WAGE MODEL

BIS Shrapnel's wage model (for both AWOTE and WPI) is based on the analysis of past and future (expected) wage movements in three discrete segments of the workforce, based on the three main methods of setting pay and working conditions (see tables 3.2, 3.3 and 4.2):

- Those dependent on awards rely on pay increases given in the annual National Wage case by Fair Work Australia (formerly by the Fair Pay Commission and the Australian Industrial Relations Commission). Most of the wage increases in the National Wage case over the past decade have been given as flat, fixed amount (ie dollar value) increases, rather than as a proportional increase. At the all industries level, 8.1 per cent of all employees (data excludes those in agriculture, forestry and fishing) have their pay rises determined by this method. In the electricity, gas, water and waste services sector, only 2.7 per cent of workers have their pay set by this method.
- Collective agreements negotiated under enterprise bargaining account for 41.9 per cent of all employees, but 67.7 per cent of electricity, gas, water and waste services employees' wage increases are determined by this method.
- The remaining 50 per cent of all industries employees have their pay set by individual arrangements, such as individual contracts or other salary arrangements (including incentive-based schemes), while the proportion for electricity, gas, water and waste services is 30 per cent.

Future movements of forecasts of wage inflation are based on the key influences on the different wage determination mechanisms of each discrete segment ie:

- Increases in the Federal Minimum Wage (on which a range of mostly lower paid awards are also based) granted by Fair Work Australia (and by the Fair Pay Commission and the AIRC previously) each year are usually set in relation to recent increases in the CPI and with regard to the wage-setting body's view of both current and short-term future economic conditions. For instance, the \$21.66 increase granted by the Fair Pay Commission in its decision in mid-2008 (effective October 2008) amounted to a 4.1 per cent increase for those on the Federal Minimum Wage of \$522/week. This reflected the marked acceleration in the CPI in the first half of 2008 (to 4.2 per cent in the March quarter and to 4.5 per cent in the June quarter). It also reflected the strong economic conditions apparent around mid-2008 (the unemployment rate was just over 4 per cent). Conversely, the Fair Pay Commission gave no increase in its July 2009 decision, citing as its reasons, the deterioration of economic conditions and what we believe is a spurious link between minimum wage increases and higher unemployment.
- Increases in collective agreements under enterprise bargaining are influenced by a combination of recent CPI increases, inflationary expectations, the recent profitability of relevant enterprises, current business conditions and the short-term economic outlook, and by the industrial relations 'strength' of relevant unions. Because the average duration of agreements now runs for two-to-three years, BIS Shrapnel bases its near-term forecasts on the strength of recent agreements, which have been 'formalised' over recent quarters. Thereafter, collective agreements are based on BIS Shrapnel's macroeconomic forecasts.
- Increases in individual agreements are primarily influenced by the strength of the labour market (especially the demand-supply balance of skilled labour), inflationary expectations, the recent profitability of relevant enterprises, current business conditions and the short-term economic outlook.

Note in tables 3.3 and 4.2, wage increases under 'individual arrangements' are calculated by deduction. Data from Department of Employment are used for wage increases under collective agreements.

The limitation of this methodology is that because individual arrangements are calculated as a residual, all of the compositional effects in terms of AWOTE (ie from more or less lower-paid workers being employed in the relevant year) plus all (or most) of the bonuses and incentives from those under award or collective agreements end up in the individual arrangements residual, which distorts the pay increases in this segment. However, the methodology works well for the WPI, particularly at the all industries level, although some compositional problems occur at the sectoral level, particularly for sectors with a relatively small employment base (such as electricity, gas, water and waste services).

Some Deficiencies in Econometric Models of Wage Determination for the EGWWS Sector

We believe that BIS Shrapnel's institution-based or bottom-up wage model for the EGWWS sector better approximates the underlying (actual) data generating process than a straight application of an econometric model. As a result, we strongly believe our model of wage determination for the EGWWS or utilities sector is superior to methodology utilising purely econometric regression techniques, in particular linear regression models to forecast wages. This opinion is based on a number of factors, some of which are described below:

- The evolution of the wage determination system from the 1980s and particularly during the 1990s in the utilities sector means that econometric equations struggle with the changes in the relative importance of different factors influencing wages growth that have occurred over the past two-to-three decades. As such, we believe that an econometric equation would struggle to properly model the present complexity of the wage determination processes in this sector.
- BIS Shrapnel's model of wage determination does take account of the present complexity of the wage determination process, both at the national (all industries) level and at the industry sector level. Our methodology and explanation of the macroeconomic influences are, we believe, clear and transparent. We use small sector mathematical models to derive forecasts for discrete segments, rather than an over-riding, overall macroeconomic model.
- BIS Shrapnel believes the use of univariate or multi-equation time series econometric modelling is not the best method for forecasting wages growth in the utilities sector. This is because many regression equations include lagged dependent variables, and econometric models that include lagged dependant variables tend to miss turning points in the cycle, often producing results we know to be spurious. Indeed, the models performed no better (or worse) than a combination of a large range of 'mini' sectoral models overlaid with our expertise and knowledge of key influences.

APPENDIX B: TERMS OF REFERENCE

SA Power Networks – Updating EGWWS labour escalators for South Australia to 2019/20 – Terms of Reference



24 April 2015

1 OVERVIEW

SA Power Networks seeks to engage BIS Shrapnel to provide forecasts of the Electricity, Gas, Water and Waste Services (**EGWWS**) wages price index (**WPI**) for Australia and South Australia for submission in our Revised Regulatory Proposal for the 2015-20 regulatory control period (**RCP**).

2 BACKGROUND AND CONTEXT

SA Power Networks engaged BIS Shrapnel in October 2013 to provide an expert opinion on the outlook for labour cost escalators relevant to electricity distribution networks in South Australia over a seven year period from 2013/14 to 2019/20 inclusive.

The labour cost escalators were used by SA Power Networks for our internal business planning and modelling, and SA Power Networks subsequently submitted BIS Shrapnel's forecast of the Construction sector WPI to apply to its contracted services in its Original Regulatory Proposal for the 2015-20 RCP.

The AER accepted SA Power Networks' escalation rates to apply to contracted services for capital expenditure in its Preliminary Decision in April 2015. However, the AER rejected the escalation rates to apply to operating expenditure contracted services, substituting it with Deloitte Access Economics' (**DAE**) forecast of the WPI for the EGWWS industry sector. The AER has applied DAE's escalator to 62% of operating costs, which it has assessed to represent the portion that is labour related.

3 SCOPE OF ENGAGEMENT

SA Power Networks now wishes to engage BIS Shrapnel to provide a forecast of the WPI for the EGWWS Industry sector for Australia and South Australia to 2019/20, taking into account the most recent economic and wages data.

4 CONTACT DETAILS

If you have any questions or queries in relation to this RFP document, please contact Trevor Gusling from SA Power Networks via the contact details below:

Trevor Gusling
Regulatory Strategy Manager
SA Power Networks
1 Anzac Highway Keswick SA 5035
Tel 0403 582 228
Email: trevor.gusling@sapowernetworks.com.au

APPENDIX C: STATEMENT OF COMPLIANCE WITH EXPERT WITNESS GUIDELINES

I have read the Guidelines for Expert Witnesses in Proceedings of the Federal Court of Australia and confirm that I have made all inquiries that I believe are desirable and appropriate and that no matters of significance that I regard as relevant have, to my knowledge, been withheld from the Court.

APPENDIX D: CURRICULUM VITAE OF KEY PERSONNEL

Richard Robinson

Senior Economist and Associate Director - Economics

Richard Robinson has been employed with BIS Shrapnel since 1986.

Richard is the company's principal economic forecaster, being largely responsible for the short term economic forecasts presented at BIS Shrapnel's half yearly conferences in March and September. He contributes forecasts and analysis to the regular subscription services, *Economic Outlook* and *Long Term Forecasts*.

Richard regularly analyses and forecasts resources investment and civil engineering construction activity, and production of manufactures, consumer goods and commodities. In this work, he has developed considerable industry expertise in the construction, manufacturing, agriculture, services, commodity and resources sectors of the Australian and state economies.

Richard has also been involved in a wide range of consultancy and private client projects including formulating end-use sector demand models for forecasting product demand, project evaluation studies, cost-benefit analysis, assessments of individual property markets and analysing the consistency of escalators in contracts. Some other projects have included analysing and forecasting freight tonnages; a study of the repair and maintenance market; the preparation of economic arguments for the National Wage Case for a private industry group; regular analysis and detailed short and long term forecasts of economic variables in a number of overseas countries; and contributing discussion papers to CEDA (Committee for Economic Development of Australia).

Kishti Sen

Senior Economist

As a senior economist, Kishti contributes to the formulation of BIS Shrapnel's economic forecasts, at the Australia, State, and industry level. In addition, he manages BIS Shrapnel's subscriptions services including *Economic Outlook* and *Long Term Forecasts* report.

Kishti is the resident expert on labour cost escalation. He has worked on numerous cost escalation reports for clients in the utilities, mining and construction sectors. In addition, Kishti has prepared economic impact assessments reports, expert witness reports in wage negotiations and skills demand and supply analysis by industry and by occupation.

Kishti holds a PhD in Economics from the University of Sydney and Bachelors Degree in Economics and Mathematics from Massey University, New Zealand. Kishti has special interest in labour economics, cost escalation, benefit-cost assessments and econometric modelling.

Jehanesan Konesan

Research Associate

Jehanesan works across both the Infrastructure and Mining and the Economics units where he has contributed to a number of reports and private client studies including several cost escalation projects. He has a double degree in Actuarial Science and Economics from Macquarie University and an honours degree in Economics from the University of New South Wales.