

SA Water
Regulatory
Business
Proposal
2016-2020

Attachment I
Labour escalation,
BIS Shrapnel



Forecasts of Labour Cost Escalation Rates to 2019/20

> Australia and South Australia

> APRIL • 2015

> SA WATER



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 April 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: E6215

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. DIFFERENT WAGE MEASURES AND BEST MEASURE OF LABOUR COSTS FOR WATER AND WASTEWATER SERVICE PROVIDERS IN AUSTRALIA AND SOUTH AUSTRALIA	3
2.1 The official or ABS measures of wage inflation	3
2.2 Our preferred labour cost measure for water and wastewater service providers	4
2.3 Why CPI inflation or all industries WPI is not the most representative measure of labour costs of service providers?	5
3. MACROECONOMIC FORECASTS: AUSTRALIA AND SOUTH AUSTRALIA	11
3.1 Overview of the Australian economy.....	11
3.2 Economic outlook: the detail	12
3.2.1 External demand	12
3.2.2 Domestic demand	16
3.2.3 Labour demand and supply.....	18
3.3 Main risks to outlook	19
3.4 Medium term issues	19
3.5 The South Australian economy: past growth, current conditions and short-to-medium term outlook.....	21
4. INFLATION AND WAGES	23
4.1 Outlook for Australian inflation	23
4.1.1 Reserve Bank of Australia CPI forecasts.....	28
4.2 Outlook for Australian all industries wages	28
4.2.1 Brief description of BIS Shrapnel's wages model	28
4.3 Outlook for Australian all industries wages	30
5. DIRECT LABOUR COST ESCALATION FORECASTS	33
6. CONTRACT LABOUR COST ESCALATION FORECASTS	43
APPENDIX A: BIS SHRAPNEL'S WAGE MODEL.....	A-1
Some Deficiencies in Econometric Models of Wage Determination for the EGW Sector	A-2
APPENDIX B: TERMS OF REFERENCE	A-3
APPENDIX C: STATEMENT OF COMPLIANCE WITH EXPERT WITNESS GUIDELINES	A-5
APPENDIX D: CURRICULUM VITAE OF KEY PERSONNEL	A-7

Tables

Table 2.1:	South Australia WPI and Adelaide CPI.....	8
Table 3.1:	Australia – Key Economic Indicators, Financial Years	17
Table 3.2:	South Australia – Key Economic Indicators, Financial Years	22
Table 4.1:	Wages and Prices – Australia Year Average Growth	26
Table 4.2:	Wages Growth, All Industries, Australia, (by Workforce Segmented by Pay Setting Method)	27
Table 4.3:	Methods of Setting Pay, Industry, May 2010 Proportion of Full-Time Adult Employees	27
Table 5.1:	Wage Price Index Growth by Industry Sector and by State	34
Table 5.2:	Australia AWOTE Growth by Industry Sector	34
Table 5.3:	Federal Wage Agreements – Collective Agreements by Industry (Average Annualised Wage Increase).....	35
Table 5.4:	Electricity, Gas, Water and Waste Services Forecasts – Australia	37
Table 5.5:	Average Weekly Ordinary Time Earnings and Wage Price Index Total Australia and Electricity, Gas, Water and Waste Services Sector (Year Average Growth).....	38
Table 5.6:	Electricity, Gas, Water and Waste Services – South Australia and Australia Year Average Growth	42
Table 6.1:	Construction Wages Growth – South Australia and Australia Year Average Growth	45

Charts

Chart 2.1:	CPI versus WPI.....	6
Chart 2.2:	New South Wales WPI versus Sydney CPI.....	7
Chart 2.3:	Victoria WPI versus Melbourne CPI.....	7
Chart 2.3:	South Australia – Utilities Employment, Output and Investment	8
Chart 4.1:	Australia – Wages and Prices	29
Chart 4.2:	Employment and Unemployment.....	29
Chart 5.1:	Wage Price Index Total Australia (All Industries) and Electricity, Gas, Water and Waste Services	35
Chart 5.1:	Australia – Utilities Employment, Output and Investment.....	37
Chart 5.2:	South Australia – Utilities Employment, Output and Investment	40
Chart 6.1:	Total Construction – South Australia Value of Work Done, Constant 2012/13 Prices	44

SUMMARY

- In April 2015, BIS Shrapnel was engaged by SA Water Corporation (hereinafter referred to as SA Water) to provide an expert opinion on direct and contract labour cost escalators relevant to water and wastewater service providers in South Australia. BIS Shrapnel was also asked to provide forecasts of relevant nominal and real labour cost escalators over a six year period from 2014/15 to 2019/20 (ie from 1 July 2014 to 30 June 2020).
- The labour cost escalators were used by SA Water to develop the level of operating and capital expenditure required to fulfil the objectives under the South Australian Water Corporation Act over their next regulatory period (ie from 1 July 2016 to 30 June 2020).
- BIS Shrapnel considers that the WPI understates the growth in ‘true’ labour costs for businesses in the water and wastewater services industry and indeed the broader electricity, gas, water and waste services sector, both historically and going forward. Despite this, BIS Shrapnel has adopted the use of the WPI inflation as a proxy for labour costs as this is the index that is preferred by many regulators including the Australian Energy Regulator (AER). That said, forecasts of labour costs based on the WPI measure provide an underlying measure of labour cost increases as it ignores a potentially important source of growth in labour costs (ie via compositional shifts in labour force). Hence forecasts based on a WPI inflation provide, at best, a conservative estimate of true increases in labour costs of business enterprises.
- In our view, a water and wastewater service provider should be provided with a reasonable opportunity to recover at least its efficient costs in providing the required service levels both now and into the future. We believe this requirement is best met by approving labour cost escalators pertinent to the narrower Electricity, Gas and Water Supply (EGW) sector and not the broader Electricity, Gas, Water and Waste Services (EGWWS) sector. In other words, we believe that wages growth in the EGW sector provides a more accurate measure of SA Water’s (and indeed all other businesses in the electricity, gas and water industry) expected labour costs for the operation and management of their networks.
- Despite this reasoning, many regulators, including the AER, have to date used wage forecasts in the broader EGWWS (or ‘Utilities’) industry to escalate service providers’ internal labour costs. BIS Shrapnel therefore has adopted regulators preference for wages growth in the EGWWS industry in its RBP2016. That being said, we remain concerned that the use of EGWWS sector potentially understates growth in its ‘true’ labour costs of electricity, gas and water and wastewater service providers.
- 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 4.9 per cent per annum over the four years to 2019/20, 0.3 per cent higher than the national ‘All Industries’ AWOTE average of 4.6 per cent per annum over the same five year period. 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 4 per cent per annum (0.4 percentage points higher than the national ‘All Industries’ WPI average of 3.6 per cent per annum) over the four 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 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. Further, Utilities infrastructure required to support the expansion of mining ventures such as Olympic Dam mine will also add to growth.

- 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 forecast to average 3.9 per cent per annum (0.1 percentage points lower than the national utilities average of 4 per cent) over the four years from 2016/17 to 2019/20 inclusive (ie over SA Water’s next regulatory period).
- Wages growth in the South Australian construction sector generally tracks growth in total construction activity, although changes in wages tend to lag construction (in work done terms) by around one to two years. Construction activity in South Australia is expected to decline sharply over the next three years driven by large falls in engineering construction before picking up strongly later in the decade. Dwellings building and non-dwelling building are largely expected to track sideways over the forecast period.
- Nonetheless, an upturn in activity is forecast from 2016/17 boosted by several smaller copper mines, and the Northern Connector road as well as infrastructure work associated with the Olympic Dam expansion project. Consequently, we expect South Australian construction wages will generally lag the national average over the next four years. However, we expect construction wages to pick up pace from 2017/18, matching Australian average in 2018/19. Our expectation is that construction wages in South Australia will outperform the national average in 2019/20 due to increased wage pressures from the commencement of the Olympic Dam expansion project, timed to start in 2018/19.

Summary – Labour Cost Escalation 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	4 yr Avg (g)
	Actuals				Forecasts		Next Regulatory Period				
NOMINAL PRICE CHANGES											
1. EGWWS WPI - South Australia (a)	4.3	3.7	3.9	3.5	3.4	3.4	3.5	3.8	4.0	4.4	3.9
EGWWS WPI - Australia (b)	4.2	3.5	4.2	3.3	3.2	3.3	3.6	3.9	4.1	4.3	4.0
EGWWS AWOTE - Australia (b)	9.1	2.5	6.1	2.0	3.4	3.8	4.4	4.9	5.1	5.3	4.9
2. Construction WPI South Australia (c)	3.4	3.9	2.9	2.2	2.8	3.1	3.4	3.7	4.1	4.5	3.9
Construction WPI - Australia (b)	4.0	4.1	3.3	3.0	2.9	3.4	3.8	3.8	4.0	4.3	4.0
Construction AWOTE - Australia (b)	5.0	3.5	4.3	2.1	3.2	3.7	4.3	4.1	4.5	5.1	4.5
3. Australian Wages											
All Industries - AWOTE (d)	4.2	4.3	4.6	3.0	3.1	3.8	4.4	4.9	4.4	4.8	4.7
All Industries - WPI (d)	3.8	3.6	3.3	2.6	2.6	2.9	3.3	3.7	3.4	3.8	3.6
Consumer Price Index (headline) (e)	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 (f)											
1. EGWWS WPI - South Australia	1.2	1.4	1.6	0.8	1.7	1.0	0.8	1.3	1.5	1.9	1.4
EGWWS WPI - Australia	1.1	1.2	1.9	0.5	1.5	0.9	0.9	1.4	1.6	1.8	1.4
EGWWS AWOTE - Australia	6.0	0.1	3.9	-0.7	1.7	1.4	1.7	2.4	2.6	2.8	2.4
2. Construction WPI South Australia	0.3	1.6	0.6	-0.5	1.1	0.7	0.7	1.2	1.6	2.0	1.4
Construction WPI - Australia	0.9	1.7	1.1	0.3	1.2	1.0	1.1	1.3	1.5	1.8	1.4
Construction AWOTE - Australia	1.9	1.2	2.0	-0.6	1.5	1.3	1.6	1.6	2.0	2.6	1.9
3. Australian Wages											
All Industries - AWOTE	1.0	2.0	2.4	0.3	1.4	1.4	1.7	2.4	1.9	2.3	2.1
All Industries - WPI	0.7	1.3	1.0	-0.1	0.9	0.5	0.6	1.2	0.9	1.3	1.0

Source: BIS Shrapnel, ABS and RBA

(a) Electricity, Gas, Water and Waste Services (EGWWS) Wage Price Index (WPI) for South Australia. Proxy for SA Water’s direct or internal labour.
 (b) Australian sector wage forecasts provided for comparison.
 (c) Construction Sector WPI for South Australia. A proxy for contractor labour hired to undertake construction and maintenance related projects.
 (d) Australian All Industries Average Weekly Ordinary Time Earnings (AWOTE) and WPI provided for comparison.
 (e) Headline CPI forecasts based on Reserve Bank of Australia forecasts to June quarter 2017 and then Commonwealth Treasury medium term projections.
 (f) Real price changes are calculated by deducting the inflation rate from nominal price changes.
 (g) Average Annual Growth Rate for 2016/17 to 2019/20 inclusive ie for RBP2016 period.

1. INTRODUCTION, OUTLINE OF REPORT & DATA SOURCES

In April 2015, BIS Shrapnel was engaged by SA Water Corporation (hereinafter referred to as SA Water) to provide the following:

- an expert opinion on direct and contract labour cost escalators relevant to water and wastewater service providers in South Australia; and
- forecasts of relevant nominal and real labour cost escalators over a six year period from 2014/15 to 2019/20 (ie from 1 July 2014 to 30 June 2020).

The labour cost escalators were used by SA Water to develop the level of operating and capital expenditure required to fulfil the objectives of the ESCOSA Final Framework and Approach, SA Water Price Determination 1 July 2016 – 30 June 2020 (Framework and Approach).

In keeping with my instructions, I (Richard Robinson, Senior Economist BIS Shrapnel) confirm that I have undertaken this engagement having regard to Rule 160 of the Supreme Court Civil Rules 2006 and Practice Direction PD 5.3, and these have been understood and the requisite statement to this effect is included in Appendix C. 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 December 2014 quarter, the latest inflation data is December 2014 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 September 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: 2014 – 2029 Update* report (published recently), *Engineering Construction: 2013/14 to 2027/28 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 the outlook for SA Water's direct and contract labour cost escalators and a summary table.
- **Section 2** provides a discussion of different wage measures and a recommendation for the most appropriate labour cost escalator for SA Water.
- **Section 3** sets the scene for our wage forecasts at the Australia and South Australia level. 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 4** 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 5** provides forecasts for SA Water's direct or internal labour cost escalation which are based on forecasts of wages growth for the Electricity, Gas, Water and Waste Services industry for South Australia.
- **Section 6** provides forecasts of SA Water's contract (ie 'out-sourced' labour) cost escalation. As most out-sourced labour is provided by firms in the construction industry, SA Water's contract labour cost escalation is based on forecasts of wages growth in the South Australian construction industry.
- **Appendices**, which includes description of BIS Shrapnel's wage model.

2. DIFFERENT WAGE MEASURES AND BEST MEASURE OF LABOUR COSTS FOR WATER AND WASTEWATER SERVICE PROVIDERS IN AUSTRALIA AND SOUTH AUSTRALIA

2.1 The official or ABS measures of wage inflation

Several different measures of wages growth are published by the Australian Bureau of Statistics (ABS), each differing slightly both in terms of their construction and appropriateness for measuring different aspects of labour costs. The following provides a brief summary of the main measures, what they are used for and why.

The main wage measures are:

- Average Weekly Ordinary Time Earnings (AWOTE) — are gross (before tax) earnings gained from working the standard number of hours per week and is derived by dividing estimates of weekly ordinary time earnings by estimates of number of employees. It includes agreed base rates of pay, over-award payments, penalty rates and other allowances, commissions and retainers; bonuses and incentive payments (including profit share schemes), leave pay and salary payments made to directors. AWOTE excludes overtime payments, termination payments and other payments not related to the reference period. The AWOTE measures for full-time adult male, female and person are published in ABS catalogue number 6302.0.
- Average Weekly Total Earnings — is equal to the sum of weekly ordinary time earnings and weekly overtime earnings of full-time adult persons divided by the number of employees.
- Average Weekly Earnings (AWE) — represents average weekly total earnings of all adult employees (ie including both full-time and part-time).
- The Wage Price Index (WPI) — a CPI-style measure of changes in wage and salary costs based on a weighted combination of a surveyed 'basket' of jobs. The WPI excludes bonuses. The WPI also excludes the effect of changes in the quality or quantity of work performed along with the quantity of labour services purchased by employers. Most importantly, the WPI is unaffected by the compositional effects of shifts within the labour market, such as shifts between part-time and full-time, junior and casual employees, promotions along with changes in occupational distribution within firms and between sectors. The WPI is published as ABS catalogue number 6345.0.

Each measure provides a slightly different gauge of labour costs. However, the main distinction between average earnings measures and the wage price index relate to the influence of compositional shifts in employment. The compositional effects include changes in the distribution of occupations within the same industry and across industries, and the distribution of employment between industries. For example, a large fall in the number of lower paid employees, or in employment in an industry with lower average wages, will increase average weekly earnings (all else being equal). While this is a true reflection of the average cost of labour to businesses, it is not necessarily the best measure of ongoing wage inflation (ie trends in wage-setting behaviour in the labour market). Another compositional problem with using the 'all persons' AWOTE is variations in the proportion of male and female employees (particularly as average female AWOTE is lower than average male AWOTE). However, in practice, the data shows only minor differences in the AWOTE growth rates between male and females (or males and all persons) — between -0.2 and +0.2 per cent — since the 1980s or basically since the equal pay legislation was enacted through the 1970s.

The wage price index was specifically designed to get around these compositional problems. It uses a weighted average of wage inflation across a range of closely specified jobs. As it measures the collective variations in wage *rates* made to the current occupants of the *same* set of specified jobs, the WPI reflects pure price changes, and does not measure variations in quality or quantity of work performed. However, like the CPI (Consumer Price Index), the weights are fixed in a base year, so that the further away from that base and the more the composition of the labour market changes over time, the more 'out of date' the measure becomes.

Importantly, the WPI does not reflect changes in the skill levels of employees within industries or for the overall workforce, and will therefore understate (or overstate) wage inflation if the overall skill levels increase (or decrease). The wage price index is also likely to understate true wage inflationary pressures as it does not capture situations where promotions are given in order to achieve a higher salary for a given individual, often to retain them in a tight labour market. Average weekly earnings would be boosted by employers promoting employees (with an associated wage increase), but promoting employees to a higher occupation category would not necessarily show up in the wage price index. However, the employer's total wages bill (and unit labour costs) would be higher.

2.2 Our preferred labour cost measure for water and wastewater service providers

AWOTE versus WPI

Under the ESCOSA Framework and Approach, we understand that SA Water should be provided with a reasonable opportunity to recover at least its efficient costs in providing water and wastewater services. We believe this requirement is best met by approving labour cost escalators based on AWOTE.

In our view, AWOTE series is a better wage series for service providers including SA Water as it is more likely to reflect the real labour costs faced by water service providers on the grounds that AWOTE:

- is a more comprehensive measure of wages than the WPI series;
- takes into account workforce compositional changes over time. Consequently, it is the best measure for capturing the change in total labour costs. Compositional labour force change is an important issue for all utility businesses including SA Water.

Despite this reasoning and the limitations of the WPI (discussed above), we presume ESCOSA will follow in the footsteps of other regulators, including the Australian Energy Regulator (AER), and choose the WPI measure over the AWOTE measure for the purposes of estimating wage cost movements in SA Water's capital and operating expenditure.

To date, the AER has rejected AWOTE in favour of WPI mainly on the grounds of its 'extreme' volatility resulting from compositional effects or shifts in the composition of employment. While the AER's argument has some validity, the WPI is a measure of change in the price of a 'fixed basket' of certain grades of labour, but, as mentioned, it is a poor measure of the growth in overall labour costs because it does not reflect changes in skill levels (which in turn, drive the compositional effects).

BIS Shrapnel considers that the WPI understates the growth in 'true' labour costs for businesses in the water and wastewater services industry and indeed the broader electricity, gas, water and waste services sector, both historically and going forward. Despite this, BIS Shrapnel has adopted the use of the WPI inflation as a proxy for labour costs. That said, forecasts of labour costs based on the WPI measure provide an underlying measure of labour cost increases as it ignores a

potentially important source of growth in labour costs (ie via compositional shifts in labour force). Hence forecasts based on a WPI provide, at best, a conservative estimate of true increases in labour costs expected over the period covered by RBP2016.

EGW versus EGWWS

In our view, as mentioned, a water and wastewater service provider should be provided with a reasonable opportunity to recover at least its efficient costs in providing the required service levels both now and into the future. We believe this requirement is best met by approving labour cost escalators pertinent to the narrower Electricity, Gas and Water Supply (EGW) sector and not the broader Electricity, Gas, Water and Waste Services (EGWWS) sector. In other words, we believe that wages growth in the EGW sector provides a more accurate measure of SA Water's (and indeed all other businesses in the electricity, gas and water industry) expected labour costs for the operation and management of their networks.

To date, regulators, including the AER, have adopted wage forecasts in the broader EGWWS (or 'Utilities') industry to escalate service providers' internal labour costs. They have argued that because there is no 'official' wages data for the EGW sector — the ABS stopped publishing wages data for the EGW from June quarter 2009 following the implementation of ANZSIC 2006 industry classifications — forecasts based on recent estimates of the EGW wages data introduces greater uncertainty and forecast error.

Under the ANZSIC 2006 industry classification, 'waste services' was added to the EGW sector. We consider the inclusion of waste services understates the growth in 'true' labour costs for the mostly higher skilled (and more highly demanded) occupations in the EGW industry, both historically and going forward.

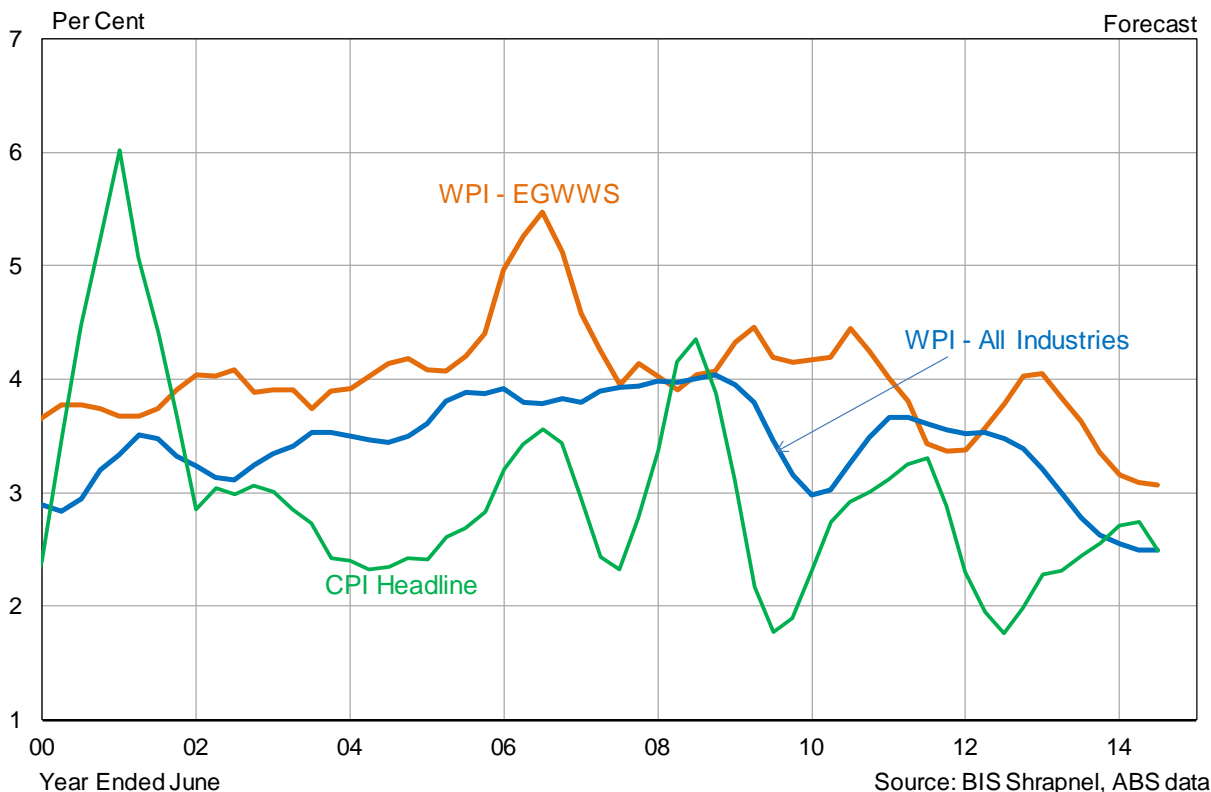
The inclusion of the waste services sub-sector (from November 2009) has led to lower wage growth outcomes for the combined EGW and Waste Services sector. Using a comparison of the historical wages and employment data of EGW versus EGW and Waste Services at the national (Australian) level, annual growth in the combined EGWWS sector is 0.1 per cent *less* on average than the EGW sector over the period from 1998/99 to 2008/09, and 0.6 per cent less on average over the same period for AWOTE — both of which are significant and can make a material difference to a service provider's overall labour costs. The overall wages growth average has also been dragged down by the fact that employment growth in the lower paid waste services sub-sector has outstripped growth in the higher paid EGW sector over the eleven years to November 2008 — 4.8 per cent per annum for waste services compared to 3.8 per cent per annum for EGW.

We propose that SA Water adopts the regulatory preference for wages growth in the EGWWS industry in its RBP2016. That being said, we remain concerned that the use of EGWWS sector potentially understates growth in its 'true' labour costs of electricity, gas and water and wastewater service providers.

2.3 Why CPI inflation or all industries WPI is not the most representative measure of labour costs of service providers?

At the national level, wages growth in the EGWWS sector is well above the national CPI inflation and is invariably higher than the total Australian national (all industry) average. EGWWS wages growth averaged 4.1 per cent since the index's inception in 1997 compared to 2.9 per cent for CPI inflation. Indeed, the utilities wage price index growth has also consistently been above the national average since the index's inception. EGWWS wage inflation averaged 0.6 per cent higher than 'all industries' wages over the decade to 2014 (see chart 2.1).

Chart 2.1: CPI versus WPI



While growth in average weekly ordinary time earnings of the electricity, gas, water and waste services sector has displayed considerable volatility (mainly related to compositional effects), AWOTE growth in the sector has also usually been higher than the national average over the past decade.

To a large extent, faster growth in the EGWWS sector has been underpinned by:

- strong capital works program in the utilities sector since the beginning of the last decade resulting in robust employment growth (this is discussed in more detail in section 5),
- strong competition from the mining and construction workers for similarly skilled labour, and
- the powerful influence of unions in the utilities sector.

In addition, the electricity, gas and water sector is a largely capital intensive industry whose employees have higher skill, productivity and commensurately higher wage levels than most other sectors. Further, the overall national average tends to be dragged down by the lower wage and lower skilled sectors such as the Retail Trade, Wholesale Trade, Accommodation, Cafés and Restaurants, and, in some periods, also Manufacturing and Construction. These sectors tend to be highly cyclical, with weaker employment suffered during downturns impacting on wages growth in particular. The EGWWS sector is not impacted in the same way due to its obligation to provide essential services and hence retain skilled labour.

The story is similar at the state level, see chart 2.2 and 2.3. Note that the ABS provides state utilities data only for NSW (since September quarter 2008) and Victoria.

Chart 2.2: New South Wales WPI versus Sydney CPI

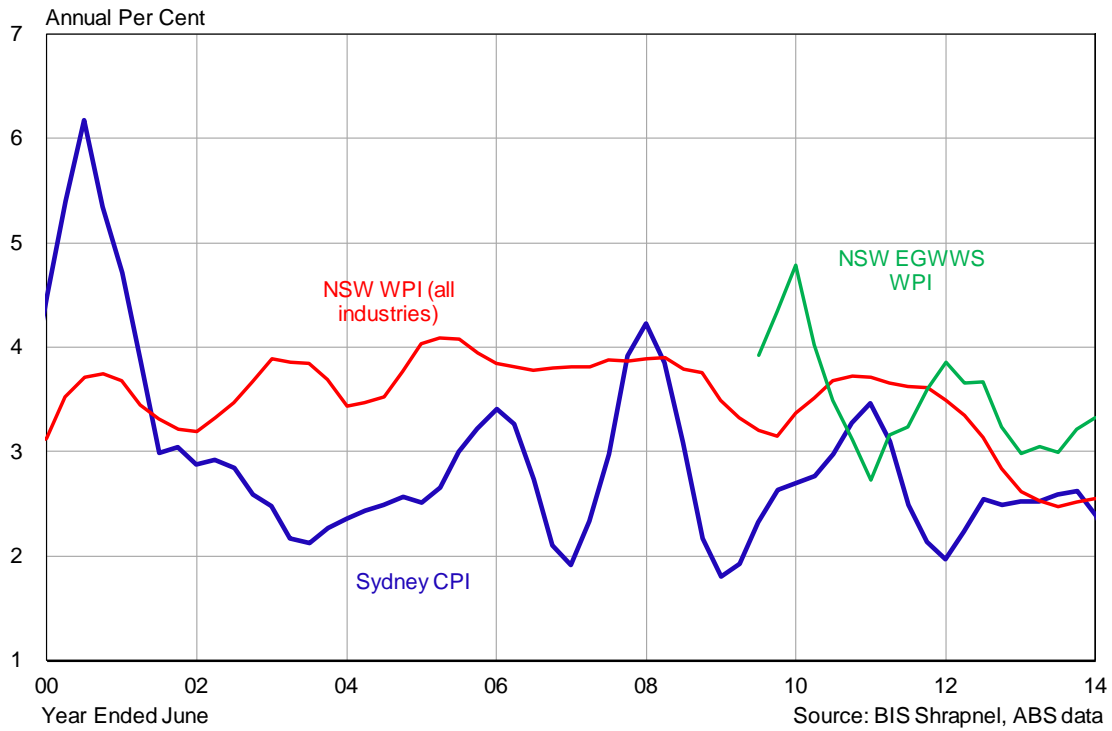
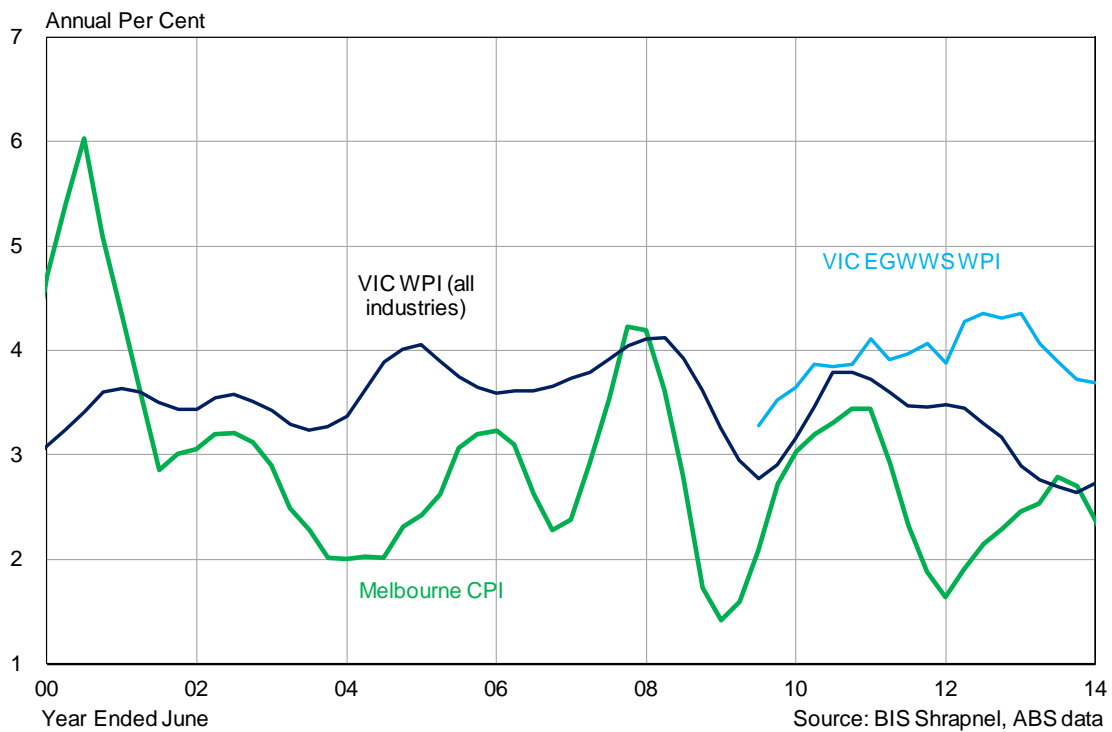


Chart 2.3: Victoria WPI versus Melbourne CPI



As mentioned, the ABS provides 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.

The historical WPI for the EGWWS sector in South Australia is calculated from the 'unknown residual' for the utilities wage price index and is presented in table below along with Adelaide CPI and South Australia all industries WPI.

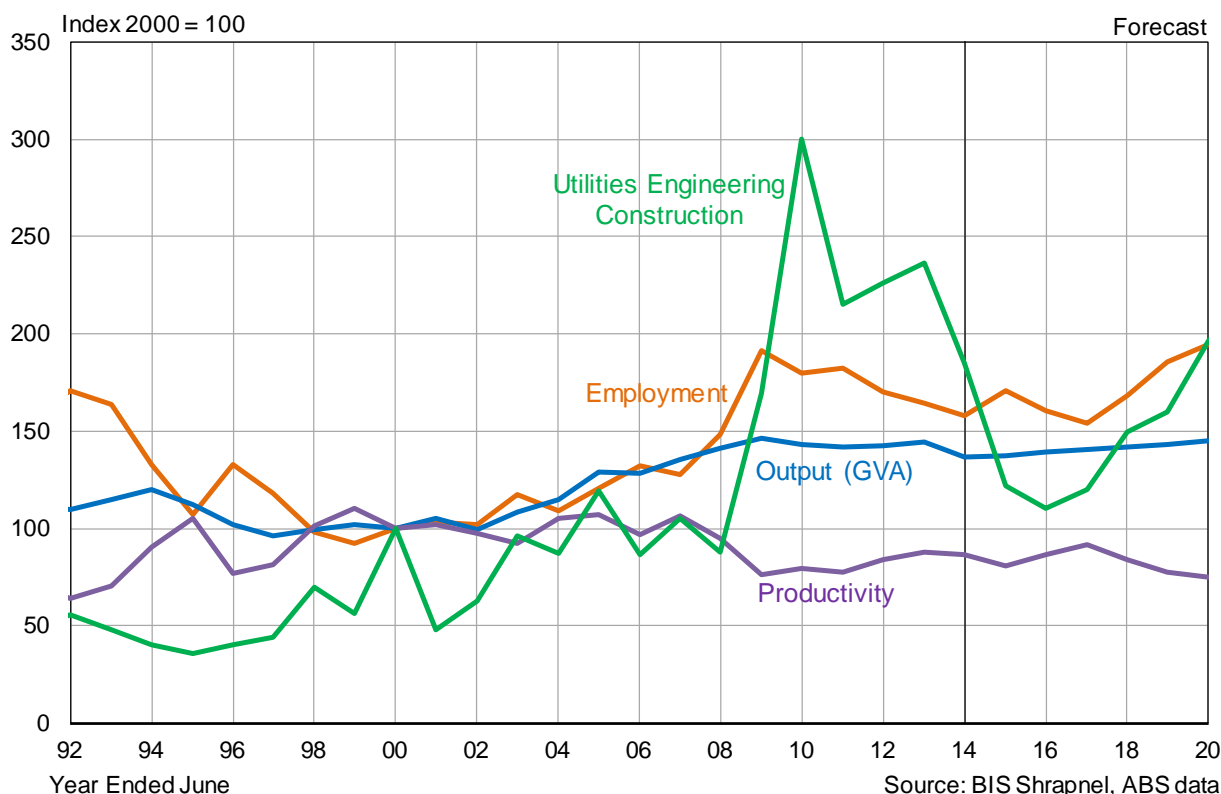
Table 2.1: South Australia WPI and Adelaide CPI

Year Ended June	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Adelaide CPI	3.0	2.4	3.1	2.6	3.3	3.2	2.2	3.2	2.6	2.0	2.6
South Australia WPI - All industries	3.9	3.5	3.7	3.9	4.8	3.9	2.8	3.5	3.4	3.3	3.3
South Australia WPI - EGWWS industry							4.3	4.3	3.7	3.9	3.5

Source: BIS Shrapnel and ABS

As can be seen from the table above, growth in South Australia EGWWS WPI has consistently outpaced increases in Adelaide CPI as well as the state's all industries WPI. Much of this has been driven by strong increases in demand for skilled labour particularly towards the end of last decade. We believe investment in the sector, especially engineering construction (including water, sewerage electricity and pipelines construction), has been the key driver of employment growth in the sector (see chart 2.3).

Chart 2.3: South Australia – Utilities Employment, Output and Investment



We expect South Australia utilities engineering construction to lift considerably late this decade pushing employment growth higher. Further, the expansion of the Olympic Dam project (timed to start in 2018/19), means increased competition for 'similarly' skilled labour and wage pressures in the South Australian utilities sector generally. Overall, wage inflation for the EGWWS sector will almost certainly outpace the state's CPI and all industries inflation.

Further, many of the specialised skills relevant to the electricity, gas and water sector expected to remain in relatively high demand as reinforced by the 2013 industry survey conducted by Energy Skills Australia and Victorian Skills and Training Needs study of the Electricity, Gas and Water sector. Consequently, wage increases are still expected to remain higher in this industry than the national average over the medium-term.

To summarise, in our view using CPI inflation or the all industries WPI would significantly understate the true wage inflation for service providers including SA Water and as a result is a poor approximation of labour costs for the utilities sector. Instead, an escalation based on increases in state EGWWS WPI, albeit conservative, is more likely to reflect true increases in labour costs.

3. MACROECONOMIC FORECASTS: AUSTRALIA AND SOUTH AUSTRALIA

3.1 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 the recovery in residential 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 recent 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. The recent Queensland election may limit the source of project finance. 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.

3.2 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.

3.2.1 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 per cent 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 an estimated 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 turning 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 from April 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 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 toward 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 20.5 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 economic 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 supported by 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.

Overall, 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.

3.2.2 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 (with the potential for another rate cut this year) 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 the second half of 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-rung 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 and, to a lesser extent, investment in electricity generation, transmission and distribution.

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. Broad-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 3.1: 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	7.6	5.5	-1.4	-5.6	1.1	5.9
– New Non-Dwelling Construction (+)	13.0	6.4	12.1	-10.2	18.5	35.7	10.7	-2.2	-9.5	-13.2	-7.5	-12.6	5.0	14.1
– New Non-Dwelling Building (+)	10.7	11.7	-3.9	-14.4	9.0	4.2	11.2	4.5	5.5	4.1	1.7	-7.9	-2.8	9.2
– New Engineering Construction (+)	15.5	1.3	29.2	-7.0	25.1	54.8	10.6	-4.8	-16.0	-22.7	-14.3	-16.8	12.6	18.2
Total New Private Investment (+)	5.2	8.3	1.2	-2.2	5.8	15.1	3.2	-2.1	-1.5	-2.0	-0.1	-4.3	4.4	10.9
New Public Investment (+)	4.8	10.6	8.1	22.6	-3.0	-3.6	-4.1	-1.5	-7.6	4.0	9.1	8.4	5.4	1.7
Gross National Expenditure (GNE)	5.1	6.0	0.6	2.2	4.2	5.0	1.4	0.7	1.3	1.9	2.7	1.6	3.6	5.0
GDP	3.8	3.7	1.7	2.0	2.3	3.7	2.5	2.5	2.6	2.7	3.1	2.7	3.7	4.1
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	2.7	3.0	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	2.6	2.9	3.3	3.7	3.4	3.8
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	4.8
Employment														
– Employment Growth (Yr Avg)	3.0	3.1	1.7	0.9	2.4	1.2	1.2	0.7	1.2	1.3	1.8	1.4	1.1	2.2
– Employment Growth (May on May) (%)	3.3	2.7	0.9	1.6	2.2	1.7	0.9	0.7	1.3	1.4	1.9	0.9	1.7	2.3
– Unemployment Rate (May) (%)	4.3	4.3	5.8	5.2	5.0	5.2	5.6	5.8	6.3	6.5	6.1	6.3	6.0	5.5
Labour Productivity Growth														
– Total	0.8	0.6	0.0	1.0	-0.1	2.5	1.3	1.7	1.4	1.3	1.3	1.3	2.6	1.8
– Non-farm	1.3	0.5	-0.4	1.1	-0.1	2.6	1.4	1.6	1.5	1.3	1.5	1.2	2.6	1.9
Exchange Rates														
– US\$ per A\$ (Yr Avg)	0.79	0.90	0.75	0.88	0.99	1.03	1.03	0.92	0.84	0.75	0.75	0.73	0.70	0.78

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, 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 component of IPP rose in the third quarter of 2014 as did research and development. 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 governments embrace the process of 'asset recycling' where mature assets are taken off the balance sheet 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.

3.2.3 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 5.0 per cent in May 2011 to 6.1 per cent in December 2014 (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 continue 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 5.9 per cent (s.a) by mid-2017, before again rising to a peak of 6.2 per cent (s.a.) in the second half of 2018 when the economy slows.

Overall, we expect employment growth to average 1.5 per cent per annum over the next five years in line with 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.

3.3 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 occurred during the 1980s and 1990s.

3.4 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 just starting to decline, 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 75 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 has begun, 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.

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

South Australia is one of the states which have paid a high price for Australia's mining boom, while seeing disproportionately low returns. Although there have been benefits from investment in oil and gas and other minerals, the benefits have been heavily outweighed by the negative effects of the high Australian dollar, which has undercut some of the state's key trade-exposed industries, particularly manufacturing, agriculture, education and tourism. Ultimately, the strong dollar is weighing heavily on employment and output.

Manufacturing jobs are set to tumble over the next five years. The withdrawal of Holden's manufacturing operations by late-2017 and the negative spill-over effects on parts and related manufacturing will have the most significant impact, but we are also seeing ongoing closures of domestic manufacturing facilities by other big employers in food and beverage and machinery and equipment manufacturing.

The prospect of some of the layoffs from the car and parts manufacturing sector being absorbed by defence projects, specifically the submarine contract, seems to have been extinguished. The Coalition has signalled its intent to have the submarines manufactured in Japan instead, citing domestic cost and productivity concerns.

The closure of Holden's Elizabeth manufacturing plant comes as yet another blow to one of South Australia's key industries and will likely leave many people jobless. The state's unemployment rate averaged 6.7 per cent over 2013/14, second only to Tasmania. In January 2015, the South Australian unemployment rate had risen to 7.3 per cent compared to national average of 6.4 per cent. Through-the-year to January 2015, employment growth was a mere 0.6 per cent.

The fragile labour market has been a key reason behind the stagnant growth in PCE (private consumption expenditure) over the past three years, which has averaged just 0.8 per cent. This is well below the 20-year average of 2.9 per cent. Although we should see some improvement over the next few years, supported by low interest rates, we expect growth will continue to

flounder below the long-term average. Retail turnover growth of 1.4 per cent in 2013/14 was an improvement on the flat-to-negative growth of the previous four years, but this is likely to be at least partly driven by pent-up demand.

Adding to the state's woes, construction detracted from South Australian GSP growth in 2013/14. Engineering construction embarked on an expected four year decline, following its peak in 2012/13. Non-dwelling construction remained marginally positive supported by ongoing works on few large private sector projects. Dwelling activity has been the redeemer, with strong increases in investment recorded across houses, other dwellings, and alterations and additions in 2013/14 (although it should be noted that this follows significant drops in activity over the preceding two years). However, in the absence of any significant stock shortage, and with population growth expected to remain sluggish, this rebound in residential activity is likely to be short-lived. Post-2014/15, we are forecasting another period of contraction in dwelling investment.

The next few years might not be dissimilar to the early-1990s and early-2000s, during which total construction activity saw considerable falls, undermining overall economic growth. In terms of non-dwelling building, construction on the Adelaide Oval Upgrade has been completed, while the New Royal Adelaide Hospital and the Adelaide Convention Centre Redevelopment are also approaching completion. This will leave a gap in major non-dwelling projects, with the \$180 million Skycity Casino Expansion and the \$260 million Adelaide Courts Precinct Redevelopment, both scheduled to commence in 2015/16, not being enough to fill the hole. Engineering construction is also set to fall for another three years. Public sector activity is forecast to fall steeply in 2014/15, to its lowest level since 2007/08, and languish around this base for the following two years, given the state government's adverse financial position.

South Australia's hope now is that non-mining business investment will benefit from the recent and forecast depreciation of the Australian dollar. The question is, though, how big of an impact will this have? The state's outlook depends quite heavily on how industry responds to a weaker dollar; there are very few other growth drivers to speak of. The \$2 billion Carrapateena copper project (scheduled to begin in 2016/17) and the Olympic Dam expansion (scheduled to begin in 2018/19) should provide a boost, but there is a dearth of other major projects on the horizon.

Even if a weaker Australian dollar does spur significant increases in non-mining business investment and overall economic growth, they will be building on a very weak base. In all, we are forecasting weak SFD growth in 2014/15, before some improvement from the following year, although this will still be modest compared to national average. Stronger growth is expected towards the end of the decade driven by the expected commencement of the Olympic Dam mine expansion project.

Table 3.2: 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	-11.4	-0.7	-3.4	0.9	12.1	18.2
State Final Demand	2.6	3.7	1.6	1.8	0.1	0.8	0.7	1.9	1.7	1.3	3.3	5.6
Gross State Product (GSP)	2.3	1.1	2.4	1.5	0.9	1.3	1.0	2.1	1.0	1.4	3.2	4.2
Employment Growth	2.0	0.3	1.5	0.7	0.0	-1.4	0.9	0.4	0.7	0.6	1.2	2.7
Australia												
Total Construction Activity ^(a)	9.2	4.0	7.2	14.6	3.6	-0.5	-4.6	-6.9	-4.0	-6.1	4.3	7.8
Australian Domestic Demand	1.3	2.2	3.7	5.2	1.6	1.0	1.1	1.7	2.8	1.6	3.4	5.0
Gross Domestic Product (GDP)	1.7	2.0	2.3	3.7	2.5	2.5	2.6	2.7	3.1	2.7	3.7	4.1
Employment Growth	1.7	0.9	2.4	1.2	1.2	0.7	1.2	1.3	1.8	1.4	1.1	2.2

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.

4. INFLATION AND WAGES

4.1 Outlook for Australian inflation

Inflation eased in calendar year 2014. Although the Australian dollar depreciated in the second half of last year, the inflationary impact of a lower dollar is likely to be swamped by ongoing weak demand inflationary pressures. Accordingly, underlying inflation is forecast to remain in the middle of the Reserve Bank's 2-3 per cent target band in calendar year 2015.

Plummeting oil prices brings inflation down in the December 2014 quarter

The headline rate for the Consumer Price Index eased to 0.2 per cent in the December quarter, with the through-the-year increase also moderating to 1.7 per cent (December quarter 2014 compared to December quarter 2013). The annual rate represented a sharp deceleration from the 3 per cent reported in the June quarter 2014 and the 2.3 per cent recorded in the September 2014 quarter. Meanwhile, the Reserve Bank's measure of underlying inflation picked up in the December quarter, rising by 0.7 per cent (compared to 0.4% in the previous quarter). However, the annual rate of underlying inflation eased to 2.3 per cent from 2.5 per cent in the September quarter.

The overall outcome was driven by a sharp fall in petrol prices, due to tumbling global oil prices. Brent prices plummeted in December 2014 from US\$102/barrel in September 2014 quarter to US\$76/barrel in the December quarter, representing a decline of 26.6 per cent. Even though the A\$ depreciated by 7.5 per cent as well, petrol prices fell by 6.8 per cent per cent in the December 2014 quarter, slicing 0.2 percentage points off the quarterly CPI inflation. If current global oil prices are maintained and the A\$ holds at present levels, we could see another significant fall in petrol prices in the March 2015 quarter.

The fall in petrol prices combined with declines in fruit and vegetable prices (-2.2%), motor vehicles purchases (-1.1%), furniture (-0.2%) and a range of household appliances, utensils and tools pushed tradeables inflation lower (-0.6%) in the December quarter. Some of the price declines were offset by a 4.8 per cent increase in the price of tobacco, with the increase in excise adding 0.15 per cent to the overall outcome.

. . . non-tradeables inflation also weak

Non-tradeables inflation (ie prices of those goods and services which are not imported or subject to competition from imported goods) rose by 0.6% in the quarter to be 2.3% higher through-the-year. Annual non-tradeables inflation is now at the lowest level since the September 2009 quarter, and is indicative of weak economy and subdued wages growth. However, a further 1.1% rise in the cost of new dwelling added 0.1% to the overall result in December 2014 quarter. Annual increase in the cost of new dwelling is now 4 per cent higher than a year ago and is well above the average for the past 10 years.

Lower dollar will put upward pressure on import prices . . .

Changes in the Australian dollar impacts on consumer prices in two stages. Initially, exchange rate movements impact the Australian-dollar cost of imports when they arrive in the country. Historically, the relationship between exchange rate movements and the Australian dollar price of imports as measured when they arrive in the country (ie 'across the docks prices') is close.

This suggests that exchange rate changes are usually passed through quickly to import prices. Typically, a 10 per cent appreciation in the exchange rate lowers import prices by around 8 per cent. Conversely, a 10 per cent depreciation of the Australian dollar raises import prices by about 8 per cent.

In the December 2014 quarter, changes in import prices tracked slightly below that suggested by history. Although the exchange rate in US\$ terms was 7.5 per cent lower on average in the December quarter than the September quarter (for the Trade Weighted Index it was only 4.2 per cent lower), prices of imported consumption goods were only 3 per cent higher. For all import goods, prices rose by a modest 0.9 per cent, due to lower intermediate goods prices, the latter including a 11.1 per cent fall in fuel import prices.

. . . but the transmission of higher import prices to overall inflation is smaller and slow to come through

The second stage of the changes in exchange rate pass-through to inflation occurs when changes in the prices of imported goods impact on tradeables (which constitutes about 40 per cent of the CPI basket) and overall consumer prices. The transmission may be direct, for example when consumers buy imported goods, or it may be indirect, where the prices of domestically produced import-competing goods change in response to changes in the cost of imported goods.

In addition, some domestically produced goods prices may change in response to movements in the cost of imported inputs to production. Historically, the effect of import price changes on overall inflation, measured in underlying terms is smaller and slower.

They may also reflect a deliberate response to the volatility in the exchange rate with some firms absorbing changes in import prices into their margins until they perceive the exchange rate shock to be permanent. Typically, firms' are reluctant to immediately pass on cost decreases associated with an appreciating currency. Moreover, it is harder to pass on cost increases due to a fall in the Australian dollar, hence a squeeze on margins along the goods supply chain. In addition, the less than one-to-one effect reflects the significant domestic component of retail goods prices. These include labour and non-labour costs (such as rents and freight) in getting the goods from the ports to consumers. These costs typically account for around 40 per cent of final price of retail goods.

At present, the tail end of the second year effect of the initial depreciation in April 2013 and the first year effect of the more recent depreciation would be reflected in final retail prices. However, given recent import prices haven't risen by as much as implied by our model, the flow through of recent exchange rate depreciation to final retail goods prices may even be weaker than historical average.

Lower oil prices will slow tradeables inflation, offset by increase in tobacco excise

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 be on a gradual shift upwards. As mentioned, if global oil prices are maintained around current levels of US\$61/barrel for Brent, petrol prices will again fall sharply in the March 2015 quarter.

The legislated increases in tobacco excise over 2015 and 2016 will add to headline inflation. However, given the proposed increases are quite large, we expect the price increase to drop out of calculations for the underlying rate.

Weak wages growth will be a drag on non-tradeables inflation

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 September 2014 quarter. In year-average terms, wages growth as measured by WPI now stands at 2.6 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 2.6 per cent for the WPI and 3.3 per cent for AWOTE (average weekly ordinary time earnings). Meanwhile, productivity has picked over recent quarters with the mining sector driving the recovery. This is largely due to the sector transiting from labour intensive investment phase to less labour-intensive production phase. That said, productivity in a broad range of other sectors including wholesale and retail trade, and finance & insurance shifted higher over 2013/14.

The subdued wage pressures and continued productivity improvements will help contain unit labour costs — the average cost of labour per unit of output — and put downward pressure on domestic goods and services inflation this year and next.

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

Going forward, our view is that inflation will be weak in the March 2015 quarter driven by lower petrol prices. Beyond, the first quarter, 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 be pushed close to 3 per cent in the second half of 2016 and over 2017. The gradual rise in underlying inflation from 2016 will be driven by rising tradeables inflation, as depreciation of the Australian dollar feeds in to higher import prices and rising domestic services inflation, largely as a result of persistence of high rates of inflation in rents, utilities, child care services and other housing costs.

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 2.6 per cent and 3.4 per cent over 2015/16 and 2016/17 respectively. We expect CPI inflation to fall back within the Reserve Bank's 2 to 3 per cent target range towards the end of the decade although inflation containment will remain a policy challenge beyond the medium term.

**Table 4.1: Wages and Prices – Australia
Year Average Growth**

Year Ended June	Average Weekly Ordinary Time Earnings ⁽¹⁾		Wage Price Index		CPI Headline Inflation (BIS Shrapnel forecasts)		Official Headline CPI ⁽²⁾	
	\$/week	%CH	All Industries 2012=100		2012=100	%CH	2012=100	%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	108.7	2.6	106.9	1.8	106.8	1.7
2016	1 543.3	3.8	111.8	2.9	109.6	2.5	109.4	2.4
2017	1 611.0	4.4	115.6	3.3	112.8	3.0	112.4	2.7
2018	1 690.7	4.9	119.9	3.7	115.9	2.8	115.2	2.5
2019	1 765.4	4.4	124.0	3.4	119.2	2.8	118.0	2.5
2020	1 851.0	4.8	128.7	3.8	122.4	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		3.3		2.6		2.4	
2016-2020	4.6		3.6		2.8		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 2016/17 to 2020/21 inclusive (ie next regulatory period).

**Table 4.2: 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	3.1	2.6	2.9
Collective Agreements	4.1	4.0	4.0	3.7	3.5	3.5	3.4	3.6	3.8	3.7	3.9	3.9	3.7
Individual Arrangements (b)	7.2	4.4	4.7	5.5	2.6	2.9	4.2	5.1	6.0	5.1	5.7	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	4.8	4.3	4.3
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	3.1	2.6	2.9
Collective Agreements	4.1	4.0	4.0	3.7	3.5	3.5	3.4	3.6	3.8	3.7	3.9	3.9	3.7
Individual Arrangements (b)	2.6	3.7	3.4	3.0	1.9	1.7	2.5	3.1	3.8	3.3	3.8	2.9	3.0
Wage Price Index (Ord. Time)	3.1	3.8	3.6	3.3	2.6	2.6	2.9	3.3	3.7	3.4	3.8	3.3	3.3
Compositional Effects + Bonuses,etc	2.5	0.4	0.7	1.3	0.4	0.5	0.9	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 4.3: Methods of Setting Pay, Industry, May 2010
Proportion of Full-Time Adult Employees (%)**

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

4.1.1 Reserve Bank of Australia CPI forecasts

The Reserve Bank and the Federal Treasury provide the 'official' view of CPI forecasts. The RBA's November 2014 'Statement on Monetary Policy' projects the headline CPI rate at 1¾ per cent in the December quarter 2014, before rising to 2 per cent (mid-point of 1½ to 2½ per cent range) in the June 2015 quarter. According to the RBA, headline CPI inflation is then expected to be in the 2½ to 3½ per cent range through to December quarter 2016 (RBA current forecasts only extend to December 2016).

The Federal Treasury in their Budget 2014/15 projected CPI inflation at 2¼ 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.

4.2 Outlook for Australian all industries wages

4.2.1 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.

Chart 4.1: Australia – Wages and Prices

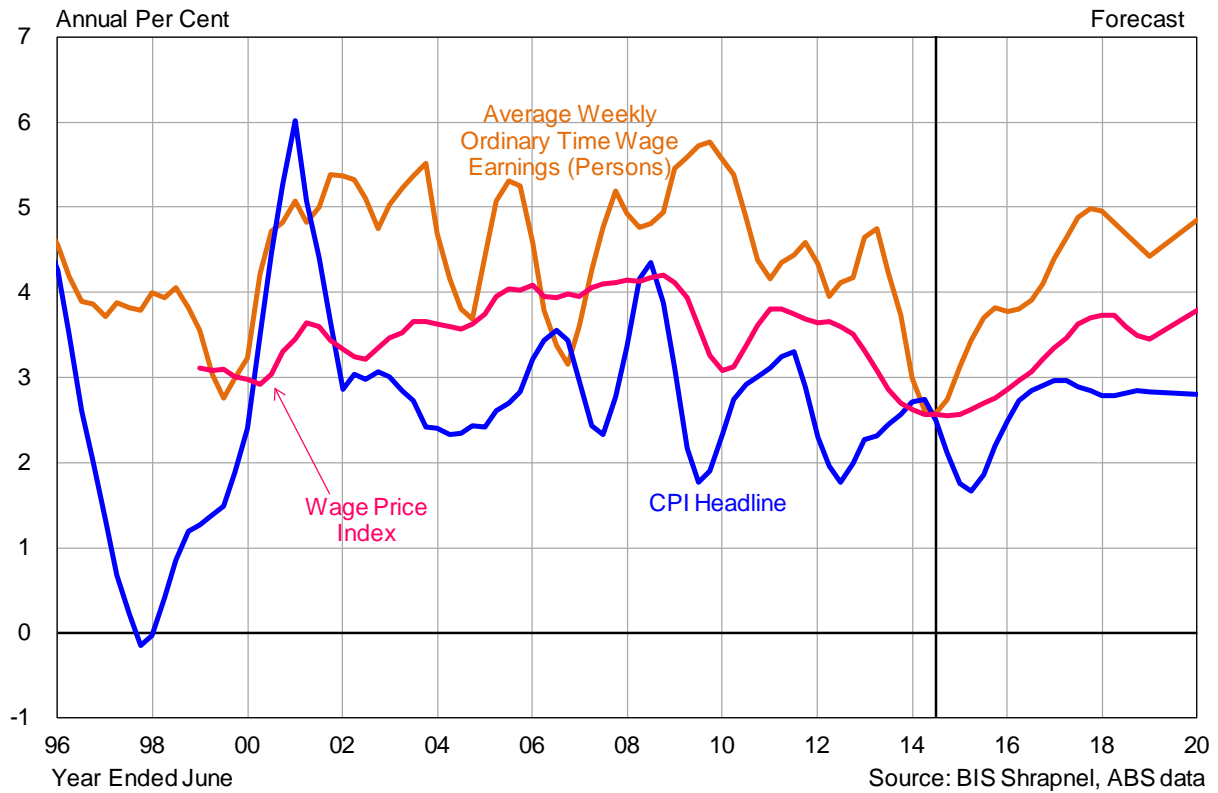
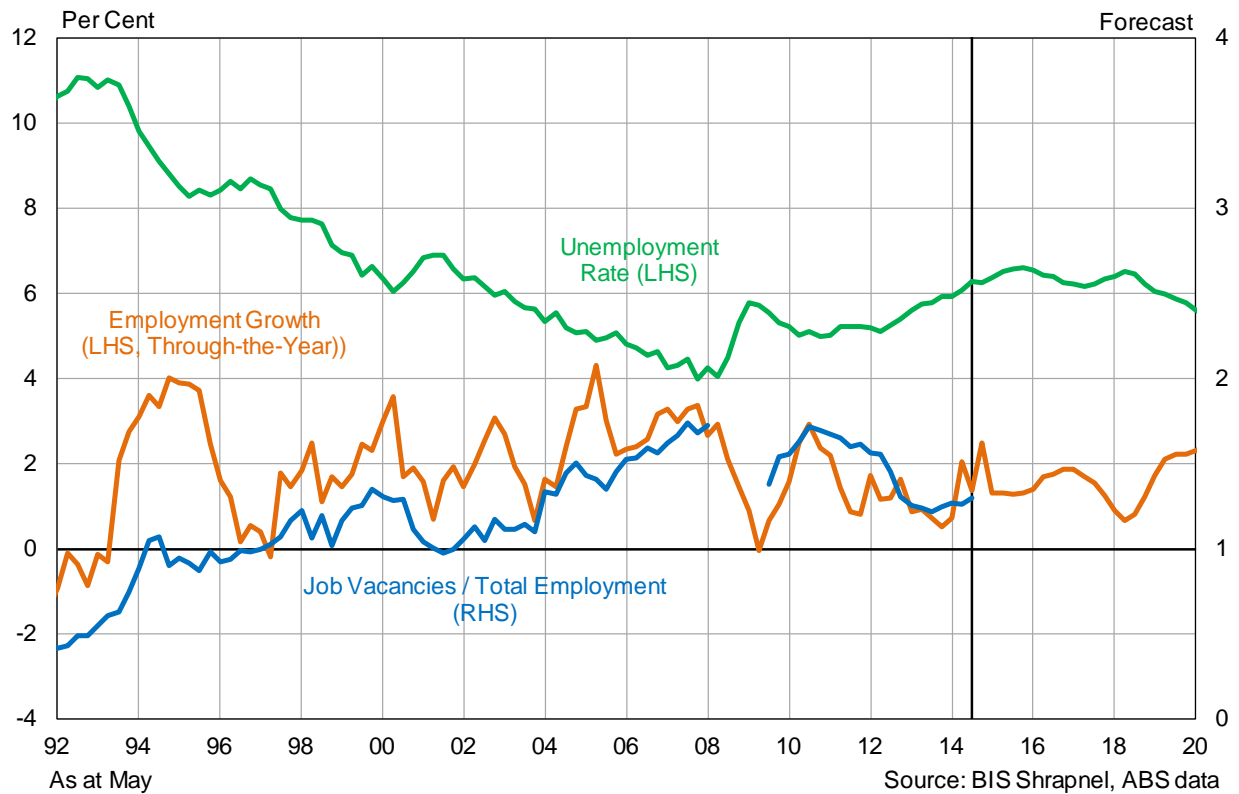


Chart 4.2: Employment and Unemployment



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 3.0 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.

- 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.

4.3 Outlook for Australian all industries wages

Wages growth slowed considerably in calendar year 2013, following a mild easing through 2012. The wage price index (WPI) grew by 2.9 per cent in year average terms in calendar 2013. Through-the-year growth to December 2013 was even weaker at 2.5 per cent — the slowest pace since the early 2000s and lower than the post GFC weakening, when WPI growth troughed at 2.9 per cent through-the-year to December 2009. This follows growth in the WPI of 3.8, 3.6 and 3.3 per cent respectively in the 2010/11, 2011/12 and 2012/13 financial years.

The WPI improved marginally to 2.6 through-the-year to March 2014, remained at 2.6 per cent in June but eased once again to 2.5 per cent in September 2014 quarter. As mentioned, in real terms, overall wages growth (in WPI terms) is only marginally positive after being negative in the past three quarters. In other words, CPI inflation rose faster than wages in the first half of last year and in the December 2013 quarter. This is a relatively rare occurrence – last occurring (briefly) in 2008 and 2009/10.

The marked slowing in wages growth over the past 18 months is largely due to spare capacity in the labour market. This, in turn, reflects weak domestic demand (due to soft non-mining business investment) 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 September 2014 quarter. In year-average terms, wages growth as measured by WPI now stands at 2.6 per cent, the lowest level since the late 1990s when the ABS first published the data.

Among the industry sectors, there has been a significant slowing in wages growth in the mining, wholesale trade, transport, finance and insurance, professional, scientific and technical services (PSTS) and administrative and support services. However, wages growth in the electricity, gas, water & waste services industry picked up in the September quarter to be 3.2 per cent higher than a year ago.

Year average growth in 2014/15 is expected to be only 2.6 per cent for the WPI and 3.3 per cent for AWOTE (average weekly ordinary time earnings). Meanwhile, productivity has picked over recent quarters with the mining sector driving the recovery. This is largely due to the sector transiting from labour intensive investment phase to less labour-intensive production phase. That said, productivity in a broad range of other sectors including wholesale and retail trade, and finance & insurance shifted higher over 2013/14.

The subdued wage pressures and continued productivity improvements will help contain unit labour costs — the average cost of labour per unit of output — and put downward pressure on domestic goods and services inflation over the short-term.

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 during 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 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 4.3 per cent at the same time. But with only a small rise expected in the average unemployment rate to 6.2 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.

5. DIRECT LABOUR COST ESCALATION FORECASTS

Direct labour includes a range of skilled labour who work directly and indirectly on the construction, maintenance, design and operation of the water and wastewater network, in both the operational (opex) and capital enhancement (capex) aspects. The workers work both in the field and in the offices.

We proxy all SA Water's direct 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. This 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 4.0 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).

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 5.1: 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	Sep '14	Dec '14	
Private		4.4	3.6	2.7	3.9	3.8	3.0	2.5	2.5	2.5	3.2
Public		3.9	4.4	4.0	3.7	3.3	2.8	2.8	2.7	2.8	3.2
Industry											
Mining	2.0	6.7	4.2	3.8	4.1	5.2	3.5	2.5	2.5	2.4	3.7
Manufacturing	7.9	4.6	2.5	2.6	4.1	3.8	2.8	2.8	2.7	2.7	3.3
Electricity, Gas, Water and Waste Services	1.2	3.5	4.7	4.7	3.7	3.7	3.9	3.0	3.2	3.0	3.7
Construction	9.1	4.7	4.5	2.9	4.0	4.1	3.2	2.9	2.5	2.5	3.3
Wholesale Trade	3.3	4.6	3.3	1.7	4.8	4.8	3.4	2.0	2.1	2.5	3.4
Retail Trade	10.8	4.5	3.5	2.8	3.3	2.7	2.7	2.4	2.2	2.3	2.7
Accommodation and Food Services	7.0	2.3	3.4	2.0	3.0	3.3	2.6	2.2	2.5	2.6	2.9
Transport, Postal and Warehousing	5.2	3.9	4.4	3.2	4.0	3.8	2.9	2.4	2.5	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	2.5	3.0
Finance and Insurance Services	3.6	3.6	3.2	3.1	4.5	4.1	2.9	2.6	2.7	2.7	3.4
Rental, Hiring and Real Estate services	1.9	4.1	3.6	2.5	3.6	3.5	3.1	2.3	2.4	2.4	3.0
Professional, Scientific and Technical Services	8.1	5.1	5.1	2.9	4.0	4.6	2.9	2.0	2.1	1.9	3.3
Administration and Support Services	3.2	4.9	2.9	2.5	3.7	3.6	2.7	2.5	2.1	2.0	3.0
Public Administration and Safety	6.3	3.9	4.5	3.7	3.4	3.6	2.9	2.8	2.2	2.2	3.1
Education	7.8	4.0	4.5	3.9	3.8	3.6	2.5	3.2	3.2	3.4	3.4
Health Care and Social Assistance	11.9	3.6	3.9	4.0	3.6	2.6	3.3	2.9	2.9	2.8	3.1
Arts and Recreation Services	2.0	3.4	3.9	2.8	3.4	3.5	2.9	3.0	3.6	3.4	3.1
Other Services	4.0	3.3	3.3	2.3	3.6	3.8	3.0	2.3	2.0	2.2	3.0
State/Territory											
New South Wales	31.4	4.0	3.6	3.1	3.7	3.6	2.8	2.5	2.6	2.5	3.1
Victoria	25.0	4.2	3.4	2.7	4.1	3.5	3.0	2.7	2.7	2.8	3.2
Queensland	19.9	3.9	4.1	3.3	3.9	3.8	2.7	2.6	2.5	2.5	3.2
South Australia	6.9	4.6	3.7	2.9	3.3	3.4	3.3	3.1	2.7	2.6	3.3
Western Australia	11.8	5.6	4.6	3.4	3.8	4.8	3.5	2.4	2.2	2.3	3.5
Tasmania	2.1	3.6	4.2	3.6	3.5	3.2	2.9	2.3	2.5	2.6	3.0
Northern Territory	1.1	4.2	3.8	3.4	3.9	3.6	3.2	2.8	2.9	2.9	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	2.5	2.6	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 5.2: Australia
AWOTE Growth by Industry Sector**

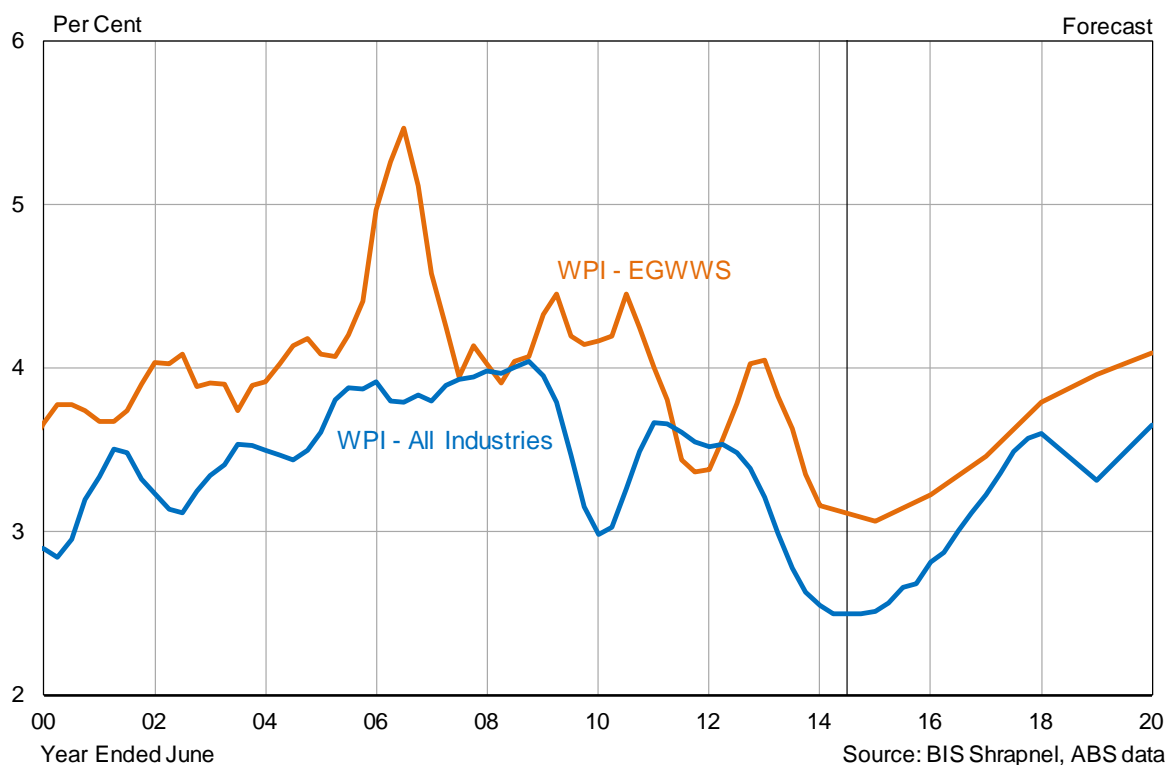
Industry Sector	% of Total Employment Nov '14	Average Weekly Earnings ⁽¹⁾							Five-Year Average
		\$ / Week Nov '14	Annual Per Cent Change						
			Nov'09	Nov'10	Nov'11	Nov'12	Nov'13	Nov'14	
Mining	2.0	2 495	7.8	6.8	5.2	8.0	4.6	1.0	5.1
Manufacturing	7.9	1 354	1.7	1.7	4.2	2.6	5.5	4.9	3.8
Electricity, 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 5.1: Wage Price Index
Total Australia (All Industries) and Electricity, Gas, Water and Waste Services**



**Table 5.3: Federal Wage Agreements – Collective Agreements by Industry
(Average Annualised Wage Increase)**

Selected Industry (ANZSIC 2006)											Average 2006-2014
	2006	2007	2008	2009	2010	2011	2012	2013	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 5.1).

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 has 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 has 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 6.4 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 6.2 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 5.4: 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	

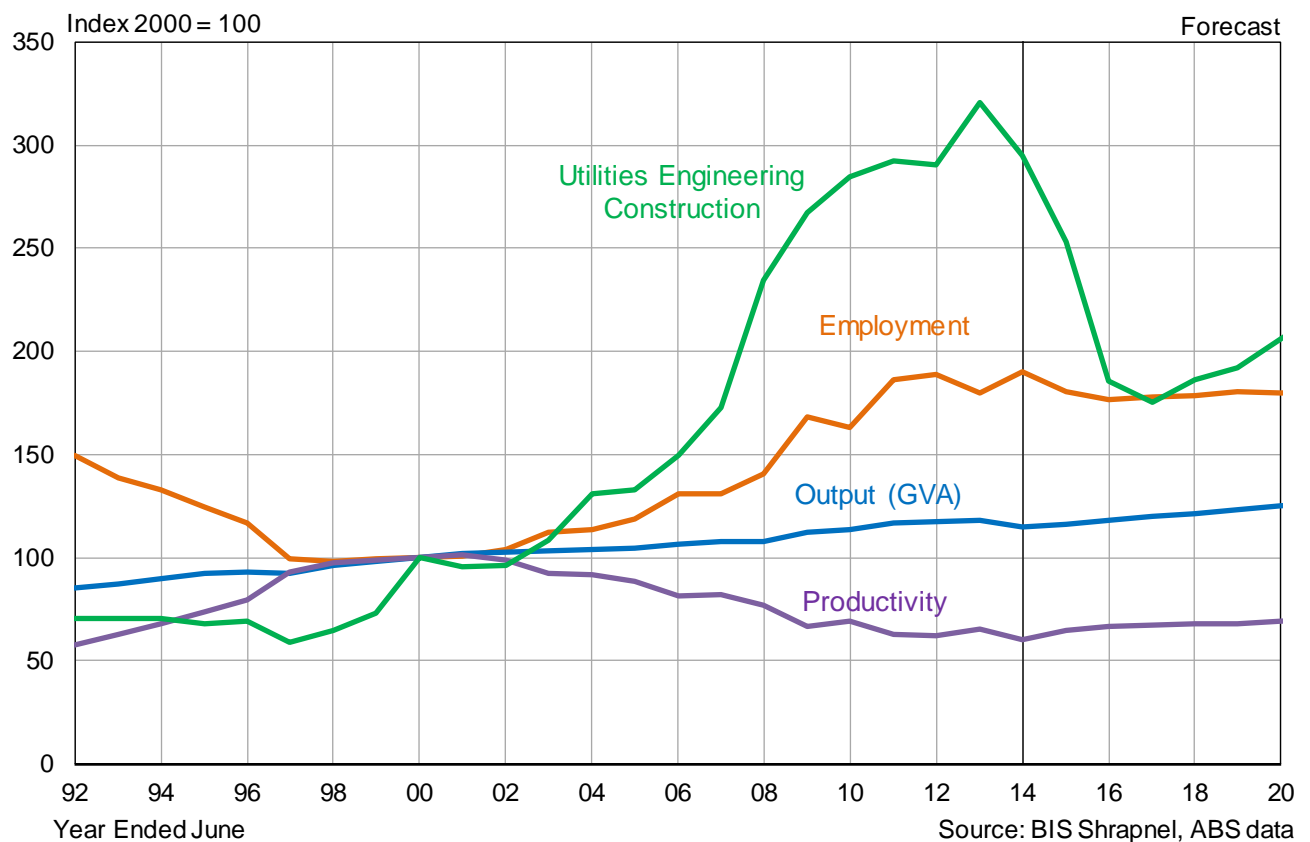
(a) Full-time Adult Persons.

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 5.1: Australia – Utilities Employment, Output and Investment



**Table 5.5: 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	108.7	2.6	111.0	3.2
2016	1 543.3	3.8	1,754.5	3.8	111.8	2.9	114.7	3.3
2017	1 611.0	4.4	1,831.9	4.4	115.6	3.3	118.8	3.6
2018	1 690.7	4.9	1,921.0	4.9	119.9	3.7	123.5	3.9
2019	1 765.4	4.4	2,019.6	5.1	124.0	3.4	128.6	4.1
2020	1 851.0	4.8	2,125.7	5.3	128.7	3.8	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		3.3		3.7	
2016-2020	4.6		4.9		3.6		4.0	

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 2016-2021 is compound annual growth for 2016/17 to 2020/21 inclusive (ie RBP2016 period).

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 4.1 per cent per annum, on average, over the four 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 4.9 per cent per annum over the four years to 2019/20, 0.3 per cent higher than the national 'All Industries' AWOTE average of 4.6 per cent per annum over the same four 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 4 per cent per annum (0.4 percentage points higher than the national 'All Industries' WPI average of 3.6 per cent per annum) over the four years to 2019/20.

5.1 Outlook for utilities wages growth in South Australia

As mentioned in section 2.2, 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 and these include:

- A desalination plant on Upper Spencer Gulf to supply additional water through a 320 kilometre pipeline to Olympic Dam
- A new gas-fired power station supplied by a pipeline from Moomba
- A new 270 kilometre electricity transmission line from Port Augusta

Chart 5.2: South Australia – Utilities Employment, Output and Investment

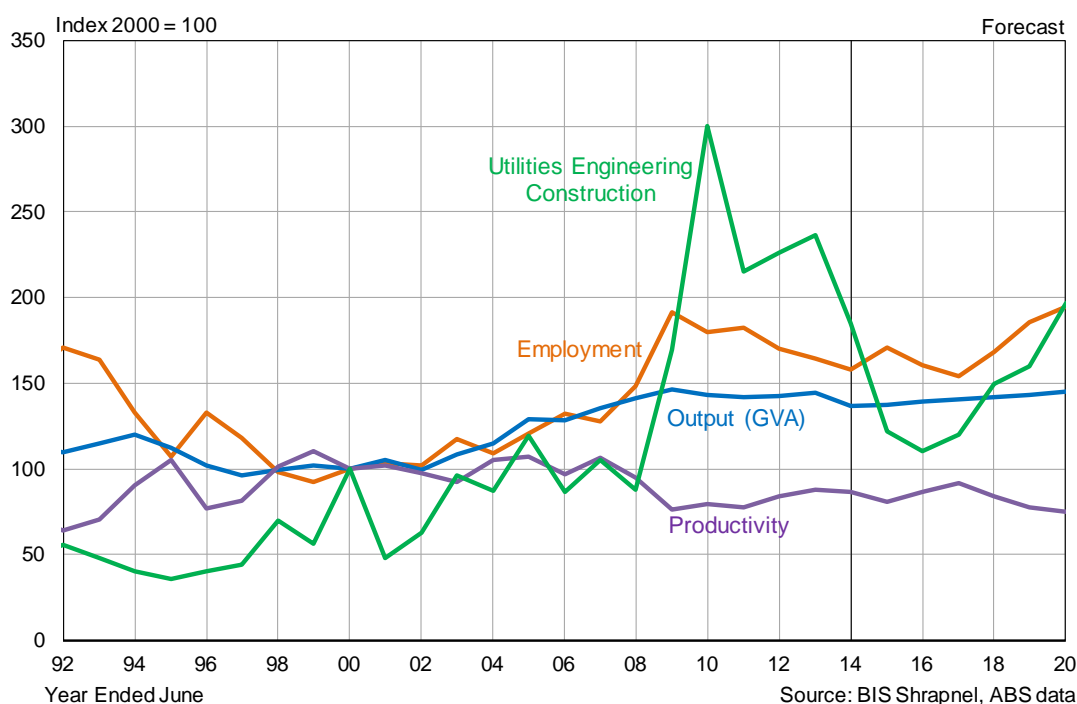


Chart 5.2 also shows that utilities investment is a key influence on employment growth in the utilities sector (even though some capital projects are outsourced to the construction sector). The combination of high levels of utility engineering construction and overall construction in the state, particularly 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 3.9 per cent per annum (0.1 percentage points lower than the national utilities average of 4 per cent) over the four years from 2016/17 to 2019/20 inclusive (ie over SA Water's next regulatory period, see table 5.6).

**Table 5.6: 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	134.2	4.4	134.1	4.3
Long Term Averages				
2001-2011			4.4	
2009-2014	3.9		3.9	
2014-2020	3.8		3.7	
2016-2020	3.9		4.0	

Source: BIS Shrapnel, ABS

(1) Ordinary time hours excluding bonuses.

6. CONTRACT LABOUR COST ESCALATION FORECASTS

This section provides forecasts of SA Water's contract or 'out-sourced' labour escalation. Given utility service providers outsourced labour is mostly supplied by firms in the construction industry, we proxy SA Water's contract labour cost escalation by wages growth (as measured by the WPI) in the South Australian construction industry.

Our research has shown that construction activity (ie work done in the sector) normally has a strong influence on construction wages. Hence, our wage forecasts are based on BIS Shrapnel's forecasts of construction activity by state (which includes residential and non-residential building, plus engineering construction) as well as predicted movements in the construction wages at the national level.

6.1 Construction sector wages growth in South Australia

As mentioned, much like the other states and territories, wages growth in the South Australian construction sector generally tracks growth in total construction activity, although changes in wages tend to lag construction (in work done terms) by around one to two years.

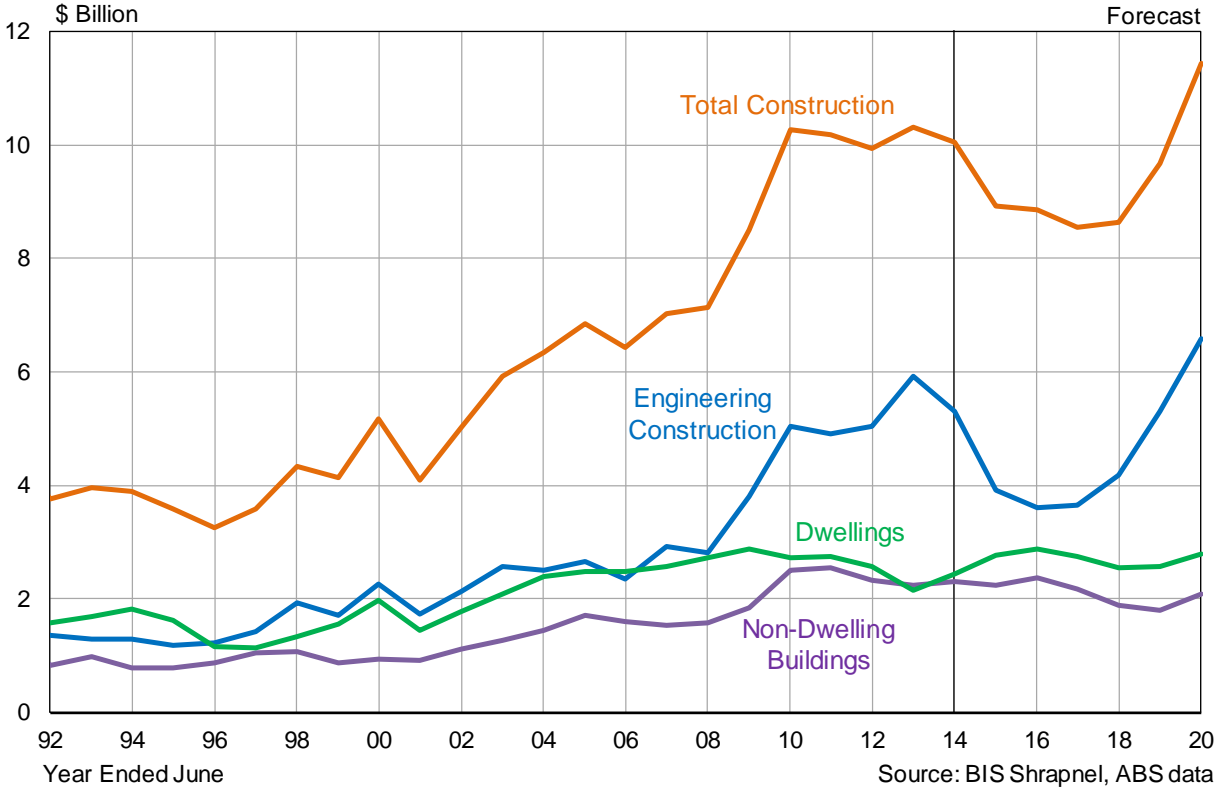
Construction activity in South Australia is expected to decline sharply over the next three years driven by large falls in engineering construction before picking up strongly later in the decade (see chart 6.1). Dwellings building and non-dwelling building are largely expected to track sideways over the forecast period.

The fall in engineering construction is mainly due to completion of few large projects and an absence of new ones to take up the slack. For example, major projects in roads (South Road package works and the Southern Expressway duplication), harbours (numerous private or public projects), rail re-vitalisation projects, Adelaide Oval's grandstand are either completed or reaching the tail end of their construction phase. This combined with retreating publicly funded work due to weaker revenue growth will drive total work done lower over the next three years.

That said, an upturn in activity is forecast from 2016/17 boosted by several smaller copper mines, and the Northern Connector road as well as infrastructure work associated with the Olympic Dam expansion project.

Consequently, we expect South Australian construction wages will generally lag the national average over the next four years. However, we expect construction wages to pick up pace from 2017/18, matching Australian average in 2018/19 (see table 5.1). Our expectation is that construction wages in South Australia will outperform the national average in 2019/20 due to increased wage pressures from the commencement of the Olympic Dam expansion project, timed to start in 2018/19.

**Chart 6.1: Total Construction – South Australia
Value of Work Done, Constant 2012/13 Prices**



**Table 6.1: Construction Wages Growth – 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			61.3	2.9
2001	67.7		63.8	4.1
2002	69.6	2.8	65.9	3.3
2003	73.4	5.4	68.1	3.3
2004	77.7	5.8	70.6	3.7
2005	79.9	2.9	74.3	5.2
2006	82.2	2.8	77.9	4.9
2007	83.8	2.0	81.7	4.9
2008	88.1	5.2	85.5	4.7
2009	90.8	3.0	89.5	4.7
2010	93.1	2.6	92.4	3.3
2011	96.2	3.4	96.1	4.0
2012	100.0	3.9	100.0	4.1
2013	102.9	2.9	103.3	3.3
2014	105.2	2.2	106.4	3.0
Forecasts				
2015	108.0	2.8	109.5	2.9
2016	111.4	3.1	113.1	3.4
2017	115.2	3.4	117.5	3.8
2018	119.5	3.7	122.0	3.8
2019	124.4	4.1	126.8	4.0
2020	129.9	4.5	132.3	4.3
Long Term Averages				
2001-2011	3.6		4.2	
2009-2014	3.0		3.5	
2014-2020	3.6		3.7	
2016-2020	3.9		4.0	

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 4.1 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 table 4.1, 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 EGW 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

In preparing the next Regulatory Business Proposal (RBP2016), SA Water needs to demonstrate that operating and capital expenditure is both prudent and efficient.

ESCOSA Framework and Approach for the SA Water Price Determination 2016 – 2020 references the use of CPI as the benchmark for cost escalation. Any escalation above this benchmark requires justification if it is to be considered in the determination.

SA Water is seeking to assess the likely labour escalation leading up to and across the regulatory period and to provide justification for submission to ESCOSA for any increase above CPI.

The review of SA Water's internal labour escalation for the period 2014 - 2020, including consideration of:

- The relevance of CPI for SA Water's labour escalation costs
- EB arrangements
- SA and national labour escalation historical and forecast
- External factors that may impact on labour rates
- Consideration of appropriate indices

Also, propose a methodology and timeframe for the review and provide details of expertise to be utilised in determining the findings.

.

APPENDIX C: STATEMENT OF COMPLIANCE WITH EXPERT WITNESS GUIDELINES

I confirm I am aware of Rule 160 of the Supreme Court Civil Rules 2006 and Practice Direction PD 5.3, and these have been understood 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, B.Comm (Hons), 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, B.A., M.Ec. (Hons), Ph.D. 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, B.Ec (Hons) Research Associate

Jehanesan joined BIS Shrapnel in December 2013, after completing his university studies. He graduated with a Bachelor of Actuarial studies and a Bachelor of Economics double degree from Macquarie University in 2011, and then completed his honours in economics degree from the University of New South Wales in 2013. Jehanesan works across both the Economics and the Infrastructure and Mining divisions, and has contributed to various subscription reports and private client jobs.