Appendix F:

SPI PowerNet Pty Ltd

Transmission Revenue Reset (TRR)
2014/15 – 2016/17

Real Labour Cost Escalation Forecasts to 2017 - Australia and Victoria - BIS Shrapnel

11 October 2013

Real Labour Cost Escalation Forecasts to 2017 – Australia and Victoria

Prepared by BIS Shrapnel for SP AusNet
FINAL REPORT

SEPTEMBER • 2013

ECONOMICS

BIS Shrapnel
BUSINESS RESEARCH AND FORECASTING

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

Job no: E5958

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

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

Contents

Tables

Charts

SUMMARY

- In June 2012, BIS Shrapnel was engaged by SP AusNet to provide an expert opinion regarding the outlook for labour cost escalators and labour market issues relevant to electricity networks in Victoria over a three year period from 2014/15 to 2016/17 in year-ended March terms (ie from 1 April 2014 to 31 March 2015 etc). The labour cost escalators were used by SP AusNet to escalate their labour costs to develop their operating and capital expenditure forecasts for inclusion in SP AusNet's revenue proposal for 1 April 2014 to 31 March 2017 to the Australian Energy Regulator on 28th February, 2013.

- In September 2013 BIS Shrapnel was again engaged by SP AusNet to update the initial report prepared in November 2012. Table 1 presents a summary of our updated annual escalation (in year average terms) for the relevant escalators in both nominal and real terms. The latter is adjusted for the RBA's/ Commonwealth Treasury forecasts of CPI inflation which is projected to average 2.4 per cent over SP AusNet's next regulatory period ie from 2014/15 to 2016/17 inclusive.

- Overall, 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 three years from 2014/15 to 2016/17 inclusive, 0.5 per cent higher than the national 'All Industries' AWOTE average of 4.4 per cent per annum over the same three 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 3.9 per cent per annum (0.2 percentage points higher than the national 'All Industries' WPI average of 3.7 per cent per annum) over the three years to 2016/17 inclusive.

- Victoria's utilities WPI growth is forecast to average 3.9 per cent per annum (0.1 percentage points higher than the national utilities average of 3.8 per cent per annum) over the three years from 2014/15 to 2016/17 inclusive. The slightly stronger utilities wages growth in Victoria is due to: the state's lower exposure to the resources investment boom of the past five years, compared to Queensland, Western Australia and more recently Northern Territory. Hence, Victoria will be less affected by the easing in wage pressures coming from the peak of the mining investment boom.

- In addition, we are likely to see still strong levels of electricity-related engineering construction in the state. Electricity-related engineering construction is currently the second biggest contributor to total activity after roads, and we anticipate that it will more or less hold this position over the next decade. Strong levels of utilities investment will support employment growth and keep upward pressure on wages growth in the utilities sector.

- On the other hand, the comparative weakness of Victoria's overall construction sector over the next three years means there will be less pressure coming from the state's construction sector. However, the projected recovery in construction from 20016/17 will see the re-emergence of wage pressures from the construction sector at that time.

- Construction wages growth in Victoria is expected to move in line with the national average over SP AusNet's next regulatory period. That is, over the three years to 2016/17, we expect construction wages in Victoria to average 3.8 per cent per annum, similar to the national average.

- The AER in its draft determination rejected our Victorian construction industry wage forecasts on the grounds that:
  - it inaccurately reflected the ABS data for 2011/12
  - our forecasts were inconsistent with the commentary. In particular, the AER asserted that the strengthening in wages over the next regulatory control period especially for 2013/14 did not reconcile with the easing in the Victorian construction activity.

We reject the AER's criticisms.

- Our historical construction wages data matches the ABS data exactly. According to the ABS, wages increased by 3.8 per cent in 2011/12, exactly what we had presented in our initial report. Hence, the DAE figure of 3.1 per cent is 'out-of-step' with the ABS data. It is understated by a very significant 0.7 percentage points. The DAE wages growth for 2012/13 also inaccurately reflects the ABS data. Wages grew by 3.1 per cent in 2012/13 where as DAE has reported a figure of 2.8 per cent. **We can only conclude that the AER falsely assumed that the DAE historical data was consistent with the ABS data.**
- In addition, construction activity is not the sole driver of our construction industry wage forecasts. In deriving our state industry wage forecasts we also consider several other factors including recent wage increases at the state level, wages growth at the national level along with wage outcomes contained in EBAs expiring over the short-to-medium term. For this reason, it is not the case that there were inconsistencies between the commentary in our report and our forecast, as concluded by the AER.
- At the time of writing our initial report (in November 2012), we expected some easing in wages growth for 2012/13 (given low quarterly outcome for September 2012 quarter) followed by a strong pick up in 2013/14. The latter reflecting a catch up in wages given activity was still strong over year-ended June 2013.
- In fact our forecast for the 2013/14 financial year may yet prove to be conservative.
- The most recent (June 2013 quarter) ABS data shows that construction wages in Victoria grew by 2.7 per cent, reflecting a catch-up following lower wage outcomes in the first half of 2012. Allowing for a very conservative growth of 0.2 per cent in each of the three remaining quarters of the 2013/14 financial year, we end up with an annual growth of 4.1 per cent for 2013/14, precisely what we forecast in our initial report produced nearly a year ago. The 0.2 per cent quarterly growth assumed is on the extreme low side as the average quarterly outcome for Victoria since the series began in December 2008 quarter is 1.1 per cent. Even the national average of 0.9 per cent over the same period is much higher then what we have allowed for over the remaining three quarters.
- Our wage forecasts for 2013/14 and 2015/16 in our initial report were also influenced by our national industry forecasts.
- When writing our initial report, we expected construction activity at the national level to increase further and peak in 2014/15 putting upward pressure on wages. In addition, wage outcomes achieved in EBAs expiring over 2015 calendar year averaged 5.5 per cent per annum. In an environment of increasing activity, our expectation was that the new agreements negotiated over this period would have relatively high wage outcomes, pushing overall wage increases in the sector higher.

- Victoria is the second largest state economy and employs nearly a quarter of the nation's construction workforce. Hence, one would expect Victorian wages to move in line with national wage increases. Accordingly, we had Victorian construction wages picking up in 2014/15 (but remaining below national average due to relative weakness in construction activity) before stabilising in 2015/16 as activity started to trend higher again.
- In summary, we consider several variables in deriving out state construction industry wage forecasts. Construction activity is one of the variables. On occasions other factors may be weighted more heavily which can result in a divergence between activity and wages growth.
- Meanwhile, DAE in June 2013 has forecast a growth rate of 2.8 per cent for the Victorian construction industry in 2013/14. This forecast cannot be reconciled with recent observed data. This, combined with using inaccurate historical ABS data makes the DAE forecasts unreliable.
- DAE utilities industry wage forecasts are based on inaccurate ABS data. The year average wage growth (in WPI terms) for the utilities industry was 3.5 per cent in 2011/12 and 4.2 per cent in 2012/13. The DAE values for the same period are 4.2 per cent and 3.5 per cent respectively. DAE historical data for Victorian utilities industry is also incorrect. According to the ABS, wages increased by 3.9 per cent in 2011/12 and by 4.3 per cent in 2012/13. DAE reports wages growth of 4.3 per cent and 3.9 per cent respectively.
- Accordingly, we would argue that the AER should apply the same criteria that it applied to reject out construction industry forecasts to **now reject the DAE wage forecasts for the construction and utilities industry outright**. DAE forecasts are based on incorrect ABS data which makes them less reliable and should be resisted. Put simply, the DAE forecasts cannot be considered as representing realistic expectation of cost inputs required by SP AusNet to achieve the opex and capex objectives over its next regulatory control period.

Table 1: Summary – Labour Cost Escalation Forecasts

(per cent change, year average, year ended March)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	3 yr Avg (f)
	Actuals			Forecasts	Next Regulatory Period			
NOMINAL WAGE PRICE CHANGES								
1. Internal Labour								
EGWWS WPI - Victoria (a)	**3.9**	**3.9**	**4.3**	**4.0**	**3.6**	**3.8**	**4.3**	**3.9**
EGWWS WPI - Australia (b)	4.4	3.5	4.2	3.7	3.6	3.7	4.2	3.8
2. External Labour								
Construction WPI - Victoria (c)	**4.6**	**3.8**	**3.1**	**4.1**	**3.3**	**3.7**	**4.3**	**3.8**
Construction WPI - Australia (b)	3.7	4.0	3.6	3.2	3.4	3.7	4.2	3.8
3. Australian Wages								
All Industries - WPI (d)	3.6	3.7	3.5	3.0	3.4	3.7	4.1	3.7
Consumer Price Index (headline) (e)	3.0	2.9	2.0	2.1	2.4	2.4	2.5	2.4
REAL WAGE PRICE CHANGES (g)								
1. Internal Labour								
EGWWS WPI - Victoria (a)	**0.9**	**1.0**	**2.3**	**1.9**	**1.2**	**1.4**	**1.8**	**1.5**
EGWWS WPI - Australia (b)	1.4	0.6	2.3	1.6	1.2	1.3	1.7	1.4
2. External Labour								
Construction WPI - Victoria (c)	**1.6**	**0.9**	**1.2**	**2.0**	**0.9**	**1.3**	**1.8**	**1.4**
Construction WPI - Australia (b)	0.7	1.1	1.6	1.1	1.0	1.3	1.7	1.4
3. Australian Wages								
All Industries - WPI (d)	0.6	0.8	1.5	0.9	1.0	1.3	1.6	1.3

(a) Electricity, Gas, Water and Waste Services (EGWWS) Wage Price Index (WPI) for Total Hourly Rates of Pay for Victoria.
(b) Australian sector wage forecasts provided for comparison.
(c) Construction Sector WPI for Victoria.
(d) Australian All Industries WPI provided for comparison.
(e) Headline CPI forecasts based on Reserve Bank of Australia forecasts to calendar year 2015 and then Commonwealth Treasury medium term projections.
(f) Average Annual Growth Rate for 2014/15 to 2016/17 inclusive ie for next regulatory period.
(g) Real price changes are calculated by deducting the inflation rate from nominal price changes.

1. INTRODUCTION, OUTLINE OF REPORT & DATA SOURCES

In June 2012, BIS Shrapnel was engaged by SP AusNet to provide an expert opinion regarding the outlook for labour cost escalators and labour market issues relevant to electricity networks in Victoria over a three year period from 2014/15 to 2016/17 in year-ended March terms (ie from 1 April 2014 to 31 March 2015 etc). The labour cost escalators were used by SP AusNet to escalate their labour costs to develop their operating and capital expenditure forecasts for inclusion in SP AusNet's revenue proposal for 1 April 2014 to 31 March 2017 to the Australian Energy Regulator (AER) on 28th February, 2013.

In September 2013, I Richard Robinson, Associate Director (Economics) at BIS Shrapnel was again engaged by SP AusNet to update the initial report prepared in November 2012. In keeping with my instructions, I confirm that I have undertaken this engagement having regard to the Guidelines for Expert Witnesses in Proceedings in the Federal Court of Australia and the requisite statement to this effect is included in Appendix C. I have been assisted in the preparation of this report by Dr Kishti Sen, Senior Economist at BIS Shrapnel and Husam El-Tarifi, Research Assistant 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 June 2013 quarter and the latest industry employment data is May 2013. The June 2013 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 only up to March 2013 quarter. The latest data for Gross State Product (GSP) and real gross value added for state industry sectors was 2011/12 (annual data only is available). Other inflation and interest rates data were sourced from the Reserve Bank of Australia. Other data and information concerning enterprise agreements and skills shortages was obtained from the Department of Education, Employment and Workplace Relations (DEEWR).

Forecasts of the economic variables in this report were mostly sourced from BIS Shrapnel reports, including *Economic Outlook, Long Term Forecasts: 2013 – 2028* report*, Engineering Construction: 2012/13 to 2026/27 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 the labour cost escalators and a summary table.
- **Section 2** provides an overview of the macroeconomic outlook for Australia and Victoria, including a brief commentary of the logic and key drivers, plus forecasts of key economic variables.
- **Section 3** discusses BIS Shrapnel's model of wage determination and provides forecasts of national ('all industries') wages and CPI inflation, with the Reserve Bank of Australia and Treasury medium-term projections of CPI inflation. The latter is used to deflate the nominal escalators provided in this report.

- **Section 4** provides an outlook for SP AusNet's internal labour cost escalation which are based on forecasts of wages growth for the Electricity, Gas, Water and Waste Services industry for Australia and Victoria. This section also analyses and provides forecasts of wages in industries which compete with the utilities sector for similar types of skilled labour, namely Mining, Construction and Manufacturing.
- **Section 5** provides forecasts of SP AusNet's external or 'out-sourced' labour cost escalation. As most out-sourced labour is provided by firms in the construction industry, SP AusNet's external cost labour escalation is based on forecasts of wages growth in the Victorian construction industry.
- **Appendices,** which includes a note on different wage measures and a description of BIS Shrapnel's wage model.

2. MACROECONOMIC FORECASTS — AUSTRALIA AND VICTORIA

2.1 Overview of the Australian economy

Australia has experienced uninterrupted growth over the past 20 years, recently performing better than most advanced economies due to its trade linkages with Asia, particularly China.

That said, recent growth has been uneven, with marked differences between industries and regions. While resources and resources investment-related activities, importers and those with economic power have done well, most Australian businesses are doing it tough both in terms of revenue and profitability. Many haven't recovered from the GFC (global financial crisis). They are in cost-cutting mode, some to increase profits some to survive.

Notwithstanding the post-GFC fiscal stimulus, Australia's economic growth following the GFC, and more recently, has largely been underwritten by an investment boom in the resources sector. An investment boom made possible by the high commodity prices and strong Chinese and Asian demand for bulk commodities. The escalation in resources investment resulted in a significant reallocation of resources (capital and labour) away from the non-mining industries to the mining and mining-related sectors. Meanwhile, high commodity prices drove the Australian dollar above parity with the US dollar, creating competitive challenges and enormous pressure on other trade-exposed industries including manufacturing, tourism, education and business services. This further exacerbated the structural change brought about by the surge in resources investment, resulting in unbalanced growth.

Resources investment has now peaked and begun what we think will be an orderly decline, at least for the next few years. We don't expect a collapse. A strong pipeline of work through work in progress will place a floor under construction in the short to medium-term, mainly driven by several large LNG projects in WA, Queensland and the NT and further strength of iron ore. Commodity prices have fallen from peak levels as supply has caught up to demand. However, they remain relatively high historically, enough to support investment decisions for a number of large projects on which decisions will be made over the next few years. Ratification of those projects would support still high levels of activity in the second half of the decade.

Nonetheless, after a long period of positive contributions to economic growth, falls in resources investment will now make negative contributions to growth. Eventually, this process will unwind all the positive stimulus of the investment boom, either gradually or, at some stage, with a sharper correction. The offset is that resources-related investment has substantially increased Australia's capacity to produce and export minerals, contributing to future growth. However, these projects employ a lot more people in the construction phase than in the operational phase. That means that, having tilted the economy to service high levels of resources investment, we now need to rebalance the economy.

Major changes are in process, affecting both regions and industrial structure.

Meanwhile, falling government investment as the GFC stimulus package unwinds in a tighter fiscal environment together with falling resources investment has led to a soft economy, exacerbating the business focus on cutting costs, preserving cash and deferring investment. The economy is in transition, in a soft patch with underlying growth running around 2.8 per cent compared with 3.4 per cent a year ago, awaiting the switch to a new set of growth drivers.

Thanks to the interest rate reductions by the RBA, the residential property recovery has finally taken root. We welcome this much needed recovery, albeit only in the undersupplied markets (Sydney, Brisbane, Perth and Darwin). It will build into an upswing and make positive contributions to growth. However, Adelaide, Melbourne, Canberra and Hobart will miss this cycle as their markets have an oversupply of housing stock. The upswing in these cities will be deferred until excess stock is absorbed and a deficiency emerges.

But mining production and the housing recovery alone will not be a sufficient offset for declining government expenditure and resources investment.

For the Australian economy to experience growth above 3 per cent, non-mining business investment will need to come through. That, we think is another two years away.

The non-mining-related industries are still suffering from the aftermath of the GFC. The overriding trend has been to cut costs. Some called it 'productivity' enhancement. While this is true to some extent, for many the real story was one of survival. Faced with weak demand and profits and, for some, competitiveness challenges arising from the high dollar, businesses deferred investment and cut costs to improve profits. For many, cost cutting was necessary for survival. For others, mining companies included, it was a means of increasing profits. Nonetheless, by being financially conservative and deleveraging following the GFC, many businesses have rebuilt their balance sheets. But they will not invest until capacity constraints emerge.

Meanwhile, all levels of government are in fiscal repair mode. They will be constrained by the need to bring budget deficits under control. Long-term expenditure commitments are locked in with pressure on government revenue in a soft economy. Because infrastructure spending is easier to cut (through grants to states who do most of the infrastructure spending), the 'productivity enhancing' infrastructure investment discussed during the election campaign is likely to be the first casualty of government cost-cutting.

The upshot is that the Australian economy is in transition – from mining and government investment-led growth to what will eventually turn into more broadly-based growth. The shift in growth drivers is reflected in the latest (June 2013 quarter) national accounts data. New engineering construction, which includes mining construction, has fallen from a peak of $25.6 billion in the December 2012 quarter to $23.9 billion in the June 2013 quarter. Dwellings construction is in the early stages of an upswing (+4.0 per cent through-the-year) while net exports contributed 1.8 percentage points to GDP growth over the past year.

However, with strong growth in mining production and exports, there is little risk of recession. Just a soft economy. We expect the economy to grow at a moderate pace, 2.4 per cent this year picking up to 2.9 per cent in 2014/15. We expect the Australian economy to grow above trend (by 4.1 per cent) in 2015/16 before easing to close to trend growth of 3.4 per cent over the following two years as the Reserve Bank is likely to raise rates to dampen domestic demand.

Forget sensationalist talk of recession. It won't happen in the next few years. After that, it's possible but low probability, and will realistically only happen if there is a sharp fall in mining investment in the second half of the decade. Certainly, tight government spending and falling mining investment will make a negative contribution to growth. We expect a continued orderly decline in economic growth, offset by a strong contribution from net exports, underpinned by resources exports growth averaging 8 per cent per annum over the next three years. Households, having built up a savings buffer, will remain cautious. Nonetheless, household consumption expenditure has increased to now be in line with growth in real household disposable income. And failing a major shock, growth will pick up as non-mining investment builds momentum.

We are experiencing a shift in growth drivers and structural change, with substantial differences in performance between industries and regions.

2.2 Outlook for the Australian Economy: Detailed Assumptions and Forecasts

Global Economy

Much of the urgency has gone out of concerns about the global economy. The United States is midway through that long hard haul post-GFC, with expansion continuing at a modest pace and with gradually strengthening private demand partly offset by accelerated fiscal consolidation. So much so that markets are starting to prepare for the end of quantitative easing. In Japan aggressive monetary policy easing and increased public spending is contributing to a rapid recovery in economic growth. In contrast, economic activity in the Euro area remains weak. Growth is constrained by competitiveness imbalances, fiscal austerity, low confidence and tight credit conditions. After picking up sharply in the second half of 2012, growth in China has eased.

Commodity prices received by Australian producers have fallen, but remain elevated by historical standards.

Economic conditions in Australia's major export markets are driving considerable domestic shifts. The US economy is set to accelerate, with the recovery being broad based with robust corporate profits and housing picking up. Strengthening of the US labour and housing markets will create a virtuous self-sustaining cycle over the medium term. The austerity shackled euro area is expected to struggle for growth as long-term challenges remain unaddressed: monetary union without fiscal union, persistently tight credit conditions, rigid labour markets, and persistently high unemployment and competitive differences that will continue to drag on growth and dent confidence. Japan on the other hand is expected to receive a short and medium-term lift from unprecedented stimulus.

Over the next five years, we expect Chinese growth to gently moderate to a "new normal" in comparison to the past five-year period, but otherwise continue to remain strong over the medium to long-term. Meanwhile, India's outlook is also strong over the medium and long-term, but yet remains a country of unrealised economic potential. Overall, emerging economies will assume the leadership mantle in driving world growth over the medium to long term, resulting in a substantial increase in share of world GDP.

Global economic activity is expected to grow modestly in 2013, at a rate of 3.2 per cent, before strengthening to 3.7 per cent in 2014 and 4.0 per cent in 2015. Our base-case projection is predicated on the assumption that the crisis in the euro area will continue to be contained.

In response to significant excess capacity and declining inflationary pressures, central banks in some advanced economies have provided additional, substantial unconventional monetary easing while keeping policy rates at historically low levels. These actions have helped to anchor medium-term inflation expectations and support stimulative global financial conditions.

Longer-term, world GDP growth is expected to ease in 2017 to 3.2 per cent as global interest rates rise but quickly rebound in 2018 to 4.1 per cent as the US, Chinese, India and other Asian economies regain their growth momentum.

Commodity prices

In US$ terms, most metals and energy prices peaked during 2011, and then fell sharply through 2012 as global economic growth faltered. A surge of optimism about global growth prospects elicited a brief, but premature rally in early 2013, but over recent months prices have again tumbled as economic growth in China, Asia and Europe has disappointed. As mentioned, there is a growing realisation that China is sticking to its target growth of 7.5 per cent and will not pump prime its economy as it did post-GFC. On top of this, the US Federal Reserve recently announced that it would review the pace of its bond purchases to ensure that the stance of

monetary policy remains appropriate as the outlook for the labour market and inflation changes. This caused a further downshift in prices during June.

Iron ore spot prices bounced back over US$150/tonne in early 2013, but have since fallen back to around US$110-130/t, around which they are expected to oscillate over the next two years.

Some analysts are predicting prices to fall back below US$90/t, to where they briefly plunged late last year. However, the iron ore market still needs Chinese iron ore, and their average marginal cost of production is around US$130/t. Hence, any price drops to below US$90/t will again be brief, because the high-cost Chinese producers will stop producing, but then restart when the price reverts to above US$100/t.

Meanwhile, China's industrialisation and urbanisation still has some way to run. The ongoing urbanisation process will underpin the demand for high-density dwelling construction, including increased demand for higher quality apartments (as incomes increase) and more amenities, such as underground car parks, which tend to increase the steel intensity of these buildings. Some estimates suggest that China's demand for steel used in residential construction will not peak until several years from now. In addition, the continued development of countries such as India, Indonesia and Vietnam will add significantly to global demand for commodities. Also, the growing urban population will require more infrastructure and increase the demand for household appliances and cars.

Strong Chinese and other Asian economies steel demand will keep iron ore and coking coal, the other key raw material for steel making, prices elevated over the next five years.

Nevertheless, iron ore supply is still coming on in droves. Beyond mid-decade, large increases in supply from Australia and Brazil will eventually drive down prices below US$100/t and wipe out the high cost producers permanently.

Coking coal tends to track the fortunes of iron ore, although in the near-term the benchmark hard coking contract price is expected to fall from US$172/t in the June quarter 2013 to around US$140/t. It will then drift up as demand strengthens, but it is not expected to again reach the US$200/t price it hit last year. Thermal coal prices are currently languishing at prices below US$90/t, but are expected to gradually recover to over US$100/t by mid-2016 due to rising Japanese, Indian and other Asian demand. However, increasing supply coming on-stream in Australia and Indonesia and adding to a currently oversupplied market, will limit the upside for prices over the medium term, despite rising demand.

Oil prices recently pushed over US$100/barrel for West Texas Intermediate (WTI) and US$110/barrel for Brent crude, due to Middle East tensions. However, the global oil market appears evenly balanced, with modestly rising demand matched by new supply coming on-stream in North America, Brazil, and Iraq, offsetting declining production elsewhere. In the absence of geo-political tensions, WTI crude prices are likely to ease back below US$100/brl for the short-term, before rising as global growth accelerates.

Meanwhile, lower commodity prices are to some extent offset by the fall in the Australian dollar.

Implications for the Australian economy

The key implication of the external environment is that lower commodity prices, as supply catches up to demand, have heralded the end of the resources investment boom. While the LNG investment phase may continue a little longer, resources investment will decline substantially, with the main question being about how sharply.

But that doesn't mean the end of resources exports. On the contrary, increased capacity and sustained demand mean strong increases in exports over the next five years.

Australia is an Asian economy. The majority of our exports now go to Asian markets — China alone accounts for nearly a third of Australia's merchandise exports. As a result, Australia has been well insulated from low growth in the United States and the negative growth in Europe. Hence, external demand for Australia's commodity exports is expected to remain strong over the forecast period.

In fact, exports are now a key driver of growth. While the positive net export contribution from accelerating mining exports (due to increased capacity) and weaker import volumes (in line with falling mining investment) will not be enough to fully offset the negative impact on GDP from falling resources investment, export growth will keep Australia out of recession.

Leading the charge is strong growth in energy, minerals and metals export volumes, which increased by 9.0 per cent in 2012/13, and then are forecast to increase by a still strong 8.5 per cent and 6.4 per cent respectively in 2013/14 and 2014/15, before growth lifts further over the subsequent two years to 10.2 and 12.6 per cent respectively.

Over the next five years, the total volumes of exports of goods and services are forecast to increase at an average rate of 6.8 per cent per annum and will be driven by increased capacity from mining investment coming on-stream, ongoing recovery in the global economy, and robust demand from China and India. Meanwhile, rural exports are likely operating at close to their peak, and will therefore cycle around current levels over the next five years. As world demand picks up over the forecast period, growth of non-commodity manufacturing and services exports (mainly tourism and education) will gradually improve. However, as growth in mining-related investment comes off its peak, growth in imports will also slow, meaning more of the forecast growth in domestic demand will be met by increased production in Australia. Consequently, the slow down in domestic demand over 2012/13 and 2013/14 will be more marked than the slowdown in GDP.

The Australian Dollar

The Australian dollar has depreciated 11 per cent against the US$ since April 2013, to sit at a near 3-year low of around US$0.93 at the time of writing. We believe the dollar will settle around this level. A return to parity appears unlikely.

The recent fall in the currency was driven by doubts about performance of the Australian economy in a lower commodity price / falling investment environment. The most recent rate cut by the RBA reinforced these concerns and created doubts amongst investors about the 'safe haven' qualities of Australian investment.

Now that investor weight of money is largely removed as a driver of the currency's value, the largest risk facing the dollar is the growth outlook in the Asia region, particularly China. Because the currency is so sensitive to commodity price fluctuations, a significant shift in minerals demand (through Chinese growth accelerating or slowing more than expected) will have a direct effect on the value of the dollar. Nevertheless, the current value of the A$ (US$0.90 or 70.0 for the Trade Weighted Index) is about right according to BIS Shrapnel's model of the fundamental drivers of commodity prices and interest rate differentials (vis-à-vis overseas rates), after having been over-valued for the past one-to-two years. Overall, we believe the Australian dollar will drift down slowly from current levels over the next three years, but continue to fluctuate in a US10cents band around current levels.

Nevertheless, while the recent depreciation to US$0.90 has alleviated some of the pressure on the tradeables sector, many parts of the tradeables sector are still not competitive, particularly against imports. Our assessment is that most parts of Australia's tradeables sectors of

manufacturing, tourism and education services and agriculture are internationally competitive at an exchange rate below US$0.80. The Australian dollar has been below this level for most the period since the dollar was floated in 1983, the notable exceptions being the late 1980s, mid 2007 to September 2008 (when the GFC hit) and from mid-2009 to now.

However, we are forecasting the A$ to fall another 10 per cent from mid-2016 to mid-2018, to US$0.79. This mid-decade depreciation will be the result of further sharp falls in commodity prices and a narrowing of the interest rate differentials between Australian and overseas rates, the latter expected in 2017/18. The decline in commodity prices will be driven on the one hand by additional supply coming onstream in the key Australian exports of iron ore and coal, while, on the other hand, we expect a softening in global demand after the initial strengthening in world economic growth over 2014 to 2016. Note we are not forecasting a major slowdown in world growth, just a slowing as unsustainable current expansionary settings are wound back.

It's possible that the fall to sub-US80 cent levels could come sooner than early 2018. Exchange rates are notorious for overshooting fundamentals both on the way up and way down. But the key here is that by the second half of the decade, we anticipate the key factor to drive structural change back in favour of the tradeables sectors – an exchange rate below US$0.80 – will be in place.

Longer term, we expect the Australian dollar to average US$0.79. However, if the prospects for the world economy, in particular China and India, remain strong, commodity prices could be sustained at high levels and the Australian dollar could remain around current levels for longer. Alternatively, a shock to the world economy could trigger a sharper fall in commodity prices and the dollar.

Australian Economic Outlook

The Australian economy is in transition. Most recently, high commodity prices drove an investment boom in the resources sector. The surge in resources investment, in turn, underwrote Australia's strong economic recovery following the global financial crisis. However, the boom in resources investment has now peaked and will gradually shift lower from here, detracting from economic growth.

Meanwhile, high commodity prices and the associated high Australian dollar drove a structural change in the economy with a significant reallocation of labour and capital away from trade-exposed industries towards the mining-related sectors. Essentially, the rise in commodity prices and the associated high dollar tilted the economy 'out of balance' — away from the trade-exposed industries towards to the mining-related sectors.

The high dollar also impacted on competitiveness creating enormous pressure on other trade-exposed industries including manufacturing, tourism, education and business services. This, combined with global uncertainty, fiscal consolidation and political uncertainty, contributed to the general pessimistic mood and weak investment growth outside the mining sector. At the same time, dwellings investment and non-mining business investment were flat to falling, and public sector investment has fallen sharply as the post-GFC stimulus wound down. Nonetheless, thanks to the strong mining sector, Australia's GDP grew by 3.6 per cent in calendar year 2012.

While Australia's strong increase in activity and low unemployment rate (relative to many advanced economies) is welcome, we still have a long way to go to rebalance the economy and reverse some of the high commodity prices, high dollar-induced structural change and reach what feels like a healthy economy.

As the mining boom matures and with the dollar depreciating 11 per cent recently, Australia will gradually transition from a mining-led growth to a more broadly based economy.

Naturally, driven by resources, exports will make larger contributions to growth. The next stage is for residential investment to build momentum. But that alone will not be enough to underpin a rise in GDP growth. We will need non-mining business investment to come through. However, a combination of continuation of the cost-cutting, investment-deferring mentality in a weak demand environment and low capacity utilisation suggest that a recovery in investment is still 18 months to two years away. As a result, the Australian economy currently sits in a soft patch and is likely to remain soft for another 18 months at least.

Accordingly, GDP is forecast to grow at 2.4 per cent in 2013/14 before picking up to 2.9 per cent in 2014/15. We expect the Australian economy to grow above trend (at 4.1 per cent) in 2015/16 before easing to close to trend growth of 3.2 per cent over the following two years as the Reserve Bank raises rates to dampen domestic demand.

Consumer Expenditure

Household consumption expenditure growth slowed sharply in the immediate aftermath of the global financial crisis. This reflected a combination of lagged effects of high interest rates leading into the financial crisis, slower income growth, increased concern about high household debt and reduced perceived job security. The decline in household consumption expenditure growth was more marked than the decline in real household disposable income, resulting in a sharp increase in the household saving rate to its highest level since the 1980s. This reversed a long-running downward trend, which culminated last decade in households borrowing against the value of their homes to boost current expenditure.

Over the past two years, households appear to have once again become comfortable with their financial position, such that growth in household consumption expenditure has increased to now be in line with growth in real household disposable income. As a result, the household saving rate has largely tracked sideways albeit at a historically high level of 10 per cent.

Further growth in household consumption expenditure is expected over the next three years, supported by a recovery in dwelling building, rising income growth and improving consumer confidence. We believe households have built up a considerable savings buffer after several years of high savings ratios. Improved financial security will see expenditure continue to pick up. The ongoing growth in household consumption expenditure and a lower dollar is expected to translate into increased retail turnover and activity in Australia over the next few years.

Interest rates may fall further, but they are close to their bottom this cycle. But they won't stay low indefinitely. On current timing, increased expenditure (and strength in the broader economy) will see the Reserve Bank begin to increase interest rates in 2016. This will dampen consumer spending, but the lagged effects mean that we will see most of the slowdown come through in 2017/18. Lower consumer confidence in response to weakening economic and income growth will cause an uptick in the household saving ratio in 2017/18, further restraining growth in consumer demand.

Overall, household final consumption expenditure is forecast to average growth of 2.9 per cent per annum over the five years to 2017/18. This will be a significant improvement on the previous five-year period (when growth averaged 2.3 per cent), but is still well below average growth rates of the pre-GFC years.

Over the longer term, population growth is expected to be the primary driver of household expenditure. As such, slowing population growth is expected to see household consumption expenditure growth moderate slightly over the following decade, averaging 3.0 per cent per annum between 2018 and 2028. 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.

Investment Forecasts

Total investment has continued to rise, uninterrupted, for over a decade, driven by the mining investment boom. Recently, growth has also come from a large increase in public investment in response to the GFC. However, both these drivers have begun to unwind. That will continue over the next few years, leading to a weak overall outlook for investment.

Public investment has the weakest outlook over the next two years, but will subsequently rebound strongly. The GFC stimulus package is beginning to unwind, driving strong declines in non-dwelling building, firstly in education, and soon in the health sectors. In addition, weak revenues are affecting finances at all levels of Government. The Commonwealth is continuing to squeeze the States, who do most of the investing. Unfortunately, investment in one of the first areas to suffer when funding gets cut. This is driving down engineering construction, in key areas such as roads and utilities. However, we expect a pick-up in 2-3 years, particularly on the engineering construction side.

On the **private** side, falling minerals investment will be the primary cause of ongoing weakness in total business investment. Engineering construction will bear the brunt of this as mining and heavy industry construction retreats from its peak, falling for four consecutive years. We expect an orderly decline, rather than collapse. Committed projects will underpin construction levels near term, but the next few years will see decisions about the projects which will underpin activity in the second half of the decade. Our forecast is for private engineering construction to fall by 31 per cent between now and 2017/18.

The outlook for **Dwellings** investment is more positive. After a decade of weakness with building below underlying demand and increasing deficiency of residential stock, a recovery in residential property and building has now begun. This upswing was delayed by weak confidence. That's still affecting home improvements. However, low interest rates have triggered the start of a solid increase in dwellings building. But this recovery will not be uniform between regions, with sizeable stock deficiencies set to drive the markets in parts of WA, NSW and Queensland. But oversupply will see Victoria, ACT, SA and Tasmania miss this upswing.

Private non-dwelling building should also experience solid growth over the next few years, although the outlook varies across states and sectors. With some cities building ahead of demand and the likelihood of fluctuations in demand, the outlook for offices is mixed. But growth in retail building and warehouses, in line with improving economic conditions, will see total activity rise. Given that building has just picked up from the trough, 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.

After strong growth over the previous two years, **machinery and equipment** expenditure declined 2.6 per cent in 2012/13 as businesses have continued to wind back their expectations. Further sharp declines are expected over the near term, driven by mining, but initially in most industries, before improved business and consumer confidence leads a recovery. Average growth will remain well below historical averages, at only 0.9 per cent per annum over the next five years, although this is mostly due to the 10 per cent decline forecast for 2013/14.

Due to our forecasts of steady growth in demand and industry output, we expect emerging capacity constraints will become more of an issue later in the forecast period. As a result, expenditure on total new machinery and equipment is expected to accelerate to an average growth rate of 4.6 per cent per annum over the decade to 2027/28.

Table 2.1: Australia – Key Economic Indicators, Financial Years

Year Ended June	2007	2008	2009	2010	2011	2012	2013	Forecasts 2014	2015	2016	2017
Selected Expenditure Categories											
Private Investment											
– Dwellings	-0.2	1.9	-1.5	1.2	2.2	-3.6	1.1	3.8	5.6	4.0	-2.8
– New Non-Dwelling Construction (+)	13.0	6.3	12.3	-10.1	11.7	37.6	14.4	-2.7	-1.6	-4.0	-9.3
– New Non-Dwelling Building (+)	10.5	11.6	-4.1	-14.6	0.6	14.6	9.8	6.2	7.0	1.2	-5.0
– New Engineering Construction (+)	15.5	1.3	29.5	-6.7	19.3	50.9	16.4	-6.3	-5.6	-6.8	-11.9
Total New Private Investment (+)	**5.2**	**8.7**	**1.2**	**-2.4**	**5.2**	**13.7**	**5.4**	**-2.0**	**2.1**	**3.1**	**-2.3**
New Public Investment (+)	**4.7**	**10.3**	**7.7**	**23.1**	**-1.9**	**-2.1**	**-8.9**	**-2.0**	**-0.1**	**5.2**	**8.5**
Gross National Expenditure (GNE)	**4.9**	**6.0**	**0.6**	**2.2**	**4.3**	**5.2**	**2.2**	**1.1**	**2.5**	**3.5**	**1.8**
GDP	**3.8**	**3.8**	**1.6**	**2.1**	**2.4**	**3.4**	**2.8**	**2.4**	**2.9**	**4.1**	**3.3**
Inflation and Wages											
CPI (Yr Avg)- RBA/Treasury forecasts (*)	3.0	3.4	3.1	2.3	3.1	2.3	2.3	2.0	2.4	2.5	2.5
Wage Price Index (Jun on Jun)(**)	4.0	4.2	3.8	3.1	3.8	3.7	2.9	3.3	3.5	3.9	4.2
Wage Price Index (Yr Avg)(**)	3.9	4.1	4.1	3.1	3.8	3.6	3.3	3.1	3.4	3.8	4.1
Average Weekly Earnings (Yr Avg)	3.6	4.9	5.5	5.6	4.2	4.3	4.6	4.1	4.0	4.4	5.1
Employment											
– Employment Growth (Yr Avg)	3.1	3.1	1.7	1.1	2.5	1.2	1.3	0.9	1.4	2.3	2.1
– Employment Growth (May on May) (%)	3.3	2.7	0.9	1.7	2.3	1.5	1.1	0.8	1.6	2.6	1.3
– Unemployment Rate (May) (%)	4.3	4.3	5.8	5.2	5.0	5.2	5.5	6.2	6.1	5.6	5.7
Labour Productivity Growth											
– Total	0.7	0.7	-0.1	1.0	-0.1	2.2	1.6	1.5	1.5	1.8	1.1
– Non-farm	1.2	0.6	-0.4	1.1	-0.2	2.1	1.7	1.5	1.7	1.7	1.3
Exchange Rates											
– US$ per A$ (Yr Avg)	0.79	0.90	0.75	0.88	0.99	1.03	1.03	0.89	0.89	0.88	0.88

+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 calendar year 2015 and then Commonwealth medium term projections.

** Based on Ordinary Time Hourly Rates of Pay

The net result is a weak 5 year outlook for total investment. Although the public sector will be responsible for a proportion of the overall decline, the private sector is also set for a soft period as the transition between mining and non-mining industries takes place. Overall, gross investment is forecast to average growth of just 0.2 per cent per annum, through to 2017/18, making it the weakest period of growth on record. But remember that this is coming off an exceptionally high base, so even remaining around these levels is an achievement.

Further ahead, growth in investment is expected to resume, at 3.6 per cent per annum over the decade to 2027/28. Ongoing population growth will require investment, from both the private and public sectors, to meet demands for housing, energy supply, and transport infrastructure. Improved financial positions, again for both sectors, will allow this investment to progress faster than in the current environment.

Government Spending

Public sector expenditure is expected to largely track sideways for the next few years as all levels of government try to restrain spending and improve their fiscal position.

Because it is extremely difficult and politically unpalatable to rein in ongoing (or recurrent) expenditure, we expect public investment to bear the brunt of the fiscal restraint. We fear that this will deny the domestic economy a much-needed source of demand over the next few years, and result in a significant under-investment in infrastructure, hence undermining medium-term economic growth — as occurred during the 1990s.

Public investment will likely pick up in the second half of this decade as mining royalties increase in WA and Qld. However, the other states will be dependent on the Commonwealth Government, who in turn might be forced to find new revenue sources or expand the existing ones.

2.3 Medium Term Issues

Life beyond the minerals boom

Resources investment is currently at a level adding substantially to our capacity to produce and export minerals. Investment could not continue indefinitely at these levels. Eventually, worldwide supply would catch up to demand. That is now happening. Commodity prices have come back from their recent highs. Resources investment has peaked and begun what we expect to be a long and orderly decline. Even so, investment remains substantially above depreciation/depletion levels.

The result is that, having tilted the economy towards servicing high levels of resources investment as rising commodity prices because a rise in the dollar and reduction in competitive trade-exposed industries, that process will now be reversed.

As resources investment declines, much of the boost to the economy from strong mining investment growth will be reversed, impacting on the industries and regions servicing that investment. The offset is stronger production as a result of increased capacity. But the production phase employs far fewer people than the investment phase.

The offset is that rebalancing of the economy will involve a strengthening of those sectors and regions that languished as we 'made room for the minerals boom.' We suspect that some industries lost during the last structural change will not return. The challenge will be to find new activities and to transform to a balanced growth economy, as we had before the minerals boom, with minimal transition cost.

At the end of the process we expect:

- A much lower Australian dollar.
- That means a significant fall in the purchasing power of Australia incomes as import prices rise faster than domestically produced goods and services.
- It also means a boost to the competitiveness of trade-exposed industries.
- Ongoing minerals investment will be significantly lower. The adjustment involves a corresponding negative impact on growth, with much of that impact focusing on the activities and regions currently servicing strong minerals investment.

There are risks.

[1] The key uncertainty is the magnitude and timing of the weakness in the commodity cycle as world supply catches up to world demand, and how precipitately it will happen. Our forecast is for an orderly decline in minerals investment. However, the risk is that a fall in commodity prices will precipitate a much sharper decline in investment, leading to a substantial negative shock to the economy (albeit partially offset by lower imports of capital goods). The sharper the fall in commodity prices, and by extension resources investment, the greater the impact on the economy. If sharp enough, it could trigger a recession in Australia.

That would be partially offset by a sharper fall in the Australian dollar, hastening structural change back towards domestic trade-exposed industries. And we should expect fiscal and monetary stimulus to soften the blow.

The choice is between a protracted adjustment or a substantial shock. Our forecast is for a long slow structural change. Some would prefer a quick structural adjustment towards a balanced, more competitive economy.

[2] In the short term, a delay to the recovery in non-mining private investment would have a negative impact, prolonging the weakness in the economy. However, while painful, it would just be a delay the next upswing since current investment is insufficient to cater for even moderate growth — and we have moderate growth.

- The residential recovery remains fragile and patchy. The question is how quickly property markets and building activity will pick up pace. If too slow, we should expect further stimulus from the RBA.
- For non-mining business investment, the emergence of capacity constraints will underwrite the next round of business investment. Again, the question is about timing.
- We expect to hear more bad news out of Europe over the next few years. We are assuming continued weakness in the non-Germany Euro Zone, largely because of the 'currency mismatch,' or rather a mismatch of cost structures with most bar Germany overvalued in the fixed currency regime. While receding, sovereign debt issues could still come to a head in some countries, affecting financial markets. However Australia is relatively unexposed. Our financing issues relate more to the availability of funds as the minerals cycle falls.

The next structural shift

In any case, the next structural shift will come when the dollar falls. That will again be a painful process involving substantial change at the industry and regional levels, with declining minerals investment offset by a recovery in other parts of the economy. Most likely, the dollar will fall when commodity prices fall. The extent of structural change will depend on the extent to which the dollar falls. That will offset part of the negative impact of the fall in mining investment and partially reverse the structural change we have been going through, with an improvement in the competitiveness of industries currently hit by the high dollar. It means a boost to manufacturing, agriculture, tourism, education, finance and business services. But we are unlikely to go back to where we started. The question is the extent to which industry lost in the current episode is irreversible. Manufacturing may never recover all the ground lost — unless new highly capital intensive technologies change the game. Services are likely to be the major beneficiaries.

2.4 The Victorian Economy: Past Growth, Current Conditions and Short-to-Medium Term Outlook

The Victorian economy has weakened consistently over the past two years (see table 3). A fall in dwellings building and a significant downturn in new public investment as the state government clamped down on spending have been exacerbated by the continuing impact of a high A$ on manufacturing and certain services sectors. Despite recent falls, the Australian dollar needs to fall further to boost the competitiveness of the state's trade exposed sectors.

Slowing economic growth in the state has also had an impact on employment growth and household spending. Notwithstanding the jump in annual employment growth in August 2013, Victoria's annual rate has trailed the national average for more than two years now. As a result of the weakness in employment growth, the unemployment rate has climbed steadily, from 4.6 per cent in June 2011 to 5.7 per cent in August 2013.

Overall, state final demand (SFD), which is the sum of consumption and investment spending by household, business and government sectors slowed to 0.7 per cent over the year to March 2013 and stalled over the year to June 2013 quarter. This was a substantial slowdown from the 2.6 per cent recorded in 2011/12 and the average of 3.7 per cent in the two years before that. Gross State Product (GSP) followed SFD in slowing significantly over the last two years, easing back from 2.5 per cent to an estimated 1.4 per cent in 2012/13.

We expect the weakness in the Victorian economy to continue for at least the next year, before stronger fundamentals begin to reassert themselves.

The funding squeeze from the Federal Government, combined with the Victorian state government's desire to stabilise its own finances, has seen the Victorian Government make significant steps to reduce public spending — both investment and ongoing expenditure. Stalling public spending growth last financial year is expected to turn negative during 2013/14. This is likely to create a significant drag on the economy. The squeeze on infrastructure spending will ultimately negatively impact the medium-term growth prospects of the state.

In some states a deficiency of dwelling stock should provide a boost to growth as dwelling building picks up to meet demand. However, Victorian dwelling building has kept pace with its population growth, such that no shortage exists. In fact, Victoria now finds itself with an excess of dwellings. As a result, we expect dwelling building to decline over the next two years at least, compounding the weakness in the broader building industry which is already under pressure from falling total non-dwelling building. Because of its significant spill-overs into other industries, the wider economy is also suffering as industries that support building activity go into reverse.

The high A$ is also taking its toll, not just on the manufacturing industry, but also on industries like financial services. For a while, this industry was a real strength for the Victorian economy, as Melbourne established itself as the low-cost option to locate back-office operations within Australia. But the high A$ has eroded that advantage as some companies have taken business operations offshore.

The Victorian labour market has already suffered, with the unemployment rate edging towards 6%. We expect employment in Victoria to show little improvement over the short term. Combined with moderate ongoing population growth over the next few years, we do not expect to see a notable improvement in the unemployment rate. This will weigh on household income growth and consumer confidence. With Melbourne being an important trade, transport and distribution centre and Victoria normally running a positive international trade and services balance, the wholesale trade and transport industries should receive some benefit from activity in the rest of Australia, although a strong pick-up in the national economy is not expected for another 18 months.

Although the outlook for Victoria is quite pessimistic over the next 12 to 18 months, the economy is fundamentally strong — with the key drivers that drove the state's previous outperformance still in place (ie the availability of reasonably priced land for housing and industry as well as a competitively priced office markets and strong finance and business services sectors). Despite continued weakness in dwellings building beyond the next 12 months, we expect ongoing population growth to underpin a revival in other parts of the economy to drive Victoria's recovery.

By 2014/15 and 2015/16, private non-residential building and plant & equipment spending is forecast to be increasing, driving a recovery in business investment, as shown in table 2.1. Public investment falls should also taper off in 2014/15, before picking up in 2015/16, removing negative drag on economic growth. However, rising interest rates are expected to dampen economic growth both nationally and in Victoria during 2016/17. The closure of Ford's

manufacturing plants in Geelong and Broadmeadow in October 2016 will have a significant effect on component suppliers as well as raise doubts about whether the industry has sufficient scale to support Toyota and Holden's manufacturing activities. Fortunately for the Victorian economy as a whole, manufacturing accounts for about 8 per cent of Gross State Product (GSP), with motor vehicle production accounting for about 1 per cent of GSP.

Overall, however, the Victorian economy is forecast to record moderate growth over the four years to 2016/17, with SFD and GSP averaging 2.2 per cent and 2.5 per cent per annum respectively. This is, however, a marked underperformance when compared with forecast Australian GDP growth of 3.2 per cent.

Table 2.2: Victoria – Key Economic Indicators, Financial Years

	Annual Per Cent Change								
Year Ended June	2009	2010	2011	2012	2013	2014	2015	2016	2017
VIC									
Total Construction Activity[a,b]	7.3	8.3	6.6	1.7	-3.2	-4.8	-1.2	0.5	0.4
State Final Demand	1.1	3.5	3.8	2.6	0.3	0.4	2.4	3.7	2.9
Gross State Product (GSP)[b]	**1.1**	**1.9**	**2.7**	**2.3**	**1.4**	**1.4**	**2.2**	**3.6**	**2.7**
Employment Growth	0.9	2.5	3.1	0.6	1.0	0.6	1.4	2.5	2.1
AUST									
Total Construction Activity[a]	9.1	3.9	6.9	14.1	3.9	-1.7	-0.6	-1.4	-4.9
Australian Domestic Demand	1.4	2.0	3.6	5.3	2.4	1.1	2.5	3.4	2.1
Gross Domestic Product (GDP)	**1.6**	**2.1**	**2.4**	**3.4**	**2.8**	**2.4**	**2.9**	**4.1**	**3.3**
Employment Growth	1.7	1.1	2.5	1.2	1.3	0.9	1.4	2.3	2.1

Source: BIS Shrapnel, ABS Data

(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.

(b) 2013 figures are estimates.

3. INFLATION AND WAGES

3.1 Outlook for Australian Inflation

Inflationary pressures remain contained, reflecting weak conditions in the non-mining economy. CPI inflation was 2.4 per cent through-the-year to June, 2013. Underlying inflation was also weak, recording 2.4 per cent.

We believe inflationary pressures will remain subdued for the rest of calendar year 2013 and 2014 despite the recent sharp depreciation of the Australian dollar. Ongoing competitive pressures faced by businesses and a soft economy means that the recent depreciation won't lead to a sudden spike in the retail prices of traded goods in the CPI basket.

The fall in the A$ affects import prices and tradeables and hence overall consumer 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 – see chart on exchange rate and import prices.

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.

Import prices haven't really moved yet. Although the exchange rate in US$ terms was 4.5 per cent lower on average in the June quarter than the March quarter (for the Trade Weighted Index it was only 3.3 per cent lower), prices of imported consumption goods were only 1.1 per cent higher. For all import goods, prices actually fell -0.3 per cent, due to lower capital goods and intermediate goods prices, the latter including a 5 per cent fall in fuel import prices.

However, we expect to see much stronger rises in import prices in the September quarter, including in imported fuels, which have risen sharply over the past six weeks.

However, the transmission of import price changes 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 hence 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 (see chart on import prices and CPI inflation).

Some consumer prices, such as automotive fuel, tend to respond quickly to higher import prices. But we estimate that – in general – a 10 per cent rise in import prices would add 0.31 percentage points to inflation over the first year, 0.48 percentage points over the second year and 0.36 percentage points over the third year before washing out in the fourth year. Overall, a 10 per cent increase in the import prices will lift the underlying inflation by just over one percentage point over a period of three years.

The protracted nature of import price effects on consumer prices can be explained by several factors, such as some importers having a significant degree of exchange rate hedging, some prices are subject to pre-existing contracts, and inventory behaviour of businesses where firms' typically clear older stock acquired at the original exchange rate before repricing.

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. 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.

Added to this is the effect of the strength of consumer spending and confidence on retailers' margins. Currently, with consumer confidence low and retail spending weak, we are seeing some compression of retail margins, with widespread discounting occurring. The likely continuation of this weakness in households means retailers will experience a further deterioration in margins in the near term.

Hence, underlying inflation to remain within the RBA's 2- 3 per cent target range over the next 18 months

We expect the fall in the Australian dollar to add around a third of one per cent to overall inflation in 2013/14. This will be offset by wage moderation due to a soft economy and productivity improvements.

However, we expect that underlying inflation will rise over 2014/15 and be pushed above 3 per cent during 2016. The gradual rise in underlying inflation from calendar year 2014 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 2015, 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 2015, via rising wages.

BIS Shrapnel is forecasting **headline** CPI inflation to stay subdued at 2.3 and 2.4 per cent in 2013/14, respectively. Note that we estimate there will be a negative impact of -0.3 to -0.4 per cent on headline CPI in 2014/15 from the move from a fixed carbon price to an emissions trading scheme, with the current ETS carbon price much lower than the current price under the present carbon tax. We expect a similar impact from the Coalition's policy of scrapping the carbon tax and moving to their 'Direct Action' policy.

CPI inflation is then forecast to rise to 2.8 per cent in 2015/16 and peak at 3.1 per cent in 2016/17. We then expect it to fall back within the Reserve Bank's 2 to 3 per cent target range in the second half of this decade. But inflation containment will remain a policy challenge beyond the medium term.

Table 3.1: Wages and Prices – Australia
Year Average Growth

Year Ended March	Average Weekly Ordinary Time Earnings[1] $/week	%CH	Wage Price Index All Industries 2011/12=100	%CH	CPI Headline Inflation (BIS Shrapnel forecasts) 2011/12=100	%CH	Official Headline CPI [2] 2011/12=100	%CH
2000	757.7		64.6		69.1		69.1	
2001	794.3	4.8	66.8	3.3	72.8	5.3	72.8	5.3
2002	837.1	5.4	69.1	3.5	75.4	3.7	75.4	3.7
2003	876.8	4.7	71.5	3.4	77.7	3.1	77.7	3.1
2004	925.1	5.5	74.0	3.6	79.6	2.4	79.6	2.4
2005	959.2	3.7	76.7	3.6	81.5	2.4	81.5	2.4
2006	1 009.5	5.3	79.8	4.1	83.8	2.8	83.8	2.8
2007	1 041.4	3.2	83.0	4.0	86.7	3.4	86.7	3.4
2008	1 095.4	5.2	86.5	4.2	89.1	2.8	89.1	2.8
2009	1 149.4	4.9	90.2	4.2	92.6	3.9	92.6	3.9
2010	1 215.7	5.8	93.1	3.3	94.4	1.9	94.4	1.9
2011	1 268.9	4.4	96.5	3.6	97.2	3.0	97.2	3.0
2012	1 327.0	4.6	100.0	3.7	100.0	2.9	100.0	2.9
2013	1,382.3	4.2	103.5	3.5	102.0	2.0	102.0	2.0
Forecasts								
2014	1,444.2	4.5	106.6	3.0	104.2	2.2	104.1	2.1
2015	1,500.7	3.9	110.2	3.4	106.8	2.5	106.6	2.4
2016	1,567.0	4.4	114.3	3.7	109.7	2.7	109.2	2.4
2017	1,643.2	4.9	118.9	4.1	113.1	3.1	111.9	2.5
Compound Annual Growth Rates [3]								
1990-2000	3.8				2.2		2.2	
2001-2010	4.8		3.7		3.2		3.2	
2009-2013	4.8		3.7		2.7		2.7	
2014-2017	4.4		3.5		2.6		2.3	
2015-2017	4.4		3.7		2.8		2.4	

Source: BIS Shrapnel, ABS

(1) Earnings per person for full-time adults. Data is year ended Feb (available only mid month of quarter).
(2) RBA Forecasts to December 2015. Beyond December 2015, Commonwealth Treasury's forecasts are used.
(3) e.g. CAGR (Compound Annual Growth Rates) for 2015-2017 is CAGR for 2014/15 to 2016/17 inclusive (ie next regulatory period).

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

	Year Average Percent Change									
					Forecast				**Averages**	
Year Ended June	2010	2011	2012	2013	2014	2015	2016	2017	2003-13	2013-17
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%
Collective Agreements	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%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100.0%	100.0%
AWOTE										
Awards Only	0.7	3.5	3.4	2.9	2.6	2.8	3.1	3.5	2.6	3.0
Collective Agreements	4.1	4.0	4.0	3.8	3.6	3.6	3.8	4.0	4.0	3.8
Individual Arrangements (b)	7.2	4.4	4.7	5.4	4.7	4.5	5.0	6.1	5.4	5.1
AWOTE (Persons)(c)	**5.6**	**4.2**	**4.3**	**4.6**	**4.1**	**4.0**	**4.4**	**5.1**	4.6	4.4
Wage Price Index										
Awards Only	0.7	3.5	3.4	2.9	2.6	2.8	3.1	3.5	2.6	3.0
Collective Agreements	4.1	4.0	4.0	3.8	3.6	3.6	3.8	4.0	4.0	3.8
Individual Arrangements (b)	2.6	3.7	3.4	3.0	2.8	3.3	3.9	4.2	3.7	3.5
Wage Price Index (Ord. Time)	**3.1**	**3.8**	**3.6**	**3.3**	**3.1**	**3.4**	**3.8**	**4.1**	3.7	3.6
Compositional Effects + Bonuses,etc	2.5	0.4	0.7	1.3	1.0	0.7	0.6	1.1	0.9	0.8

Source: BIS Shrapnel, ABS, DEEWR

(a) Full-time Adult Persons

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

(c) Full-time Adult Persons, excluding overtime

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

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 ans Technical Services	2.2%	11.5%	86.3%	100.0%
Administrative and Support Services	15.9%	30.1%	54.1%	100.0%
Public Administration and Safety	1.2%	92.5%	6.3%	100.0%
Education and Training	2.9%	88.9%	8.1%	100.0%
Health Care and Social Assistance	12.3%	66.6%	21.1%	100.0%
Arts and Recreation Services	10.4%	40.1%	49.4%	100.0%
Other Services	15.7%	11.0%	73.3%	100.0%
All Industries 2010 Survey	**8.1%**	**41.9%**	**50.0%**	**100.0%**

Source: ABS

3.1.1 Reserve Bank of Australia CPI forecasts

The Reserve Bank and the Federal Treasury provide the 'official' view of CPI forecasts. The RBA's August 2013 'Statement on Monetary Policy' projects the headline CPI rate at 2 per cent in the December quarter 2013, before rising to 2½ in the June 2014 quarter. According to the RBA, headline CPI inflation is then expected to be in the 2 to 3 per cent range through to June quarter 2015 and in the 1¾ to 2¾ range for the year-ended December 2015 quarter (RBA current forecasts only extend to December 2015).

The Federal Treasury in their Pre-Election Economic and Fiscal Outlook 2013 projected CPI inflation at 2½ per cent in 2013/14 and 2 per cent in 2014/15. For the budget forward estimate period (ie 2015/16 and 2016/17), the Federal Treasury forecast CPI inflation at 2.5 per cent.

3.2 Outlook for Australian All Industries Wages

3.2.1 Brief description of BIS Shrapnel's wages model

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

BIS Shrapnel's model of wage determination is based on the analysis of past and future (expected) wage movements in three discrete segments of the workforce, based on the three main methods of setting pay and working conditions (see tables 3.1 and 3.2):

- 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 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

Chart 3.1: Australia – Wages and Prices

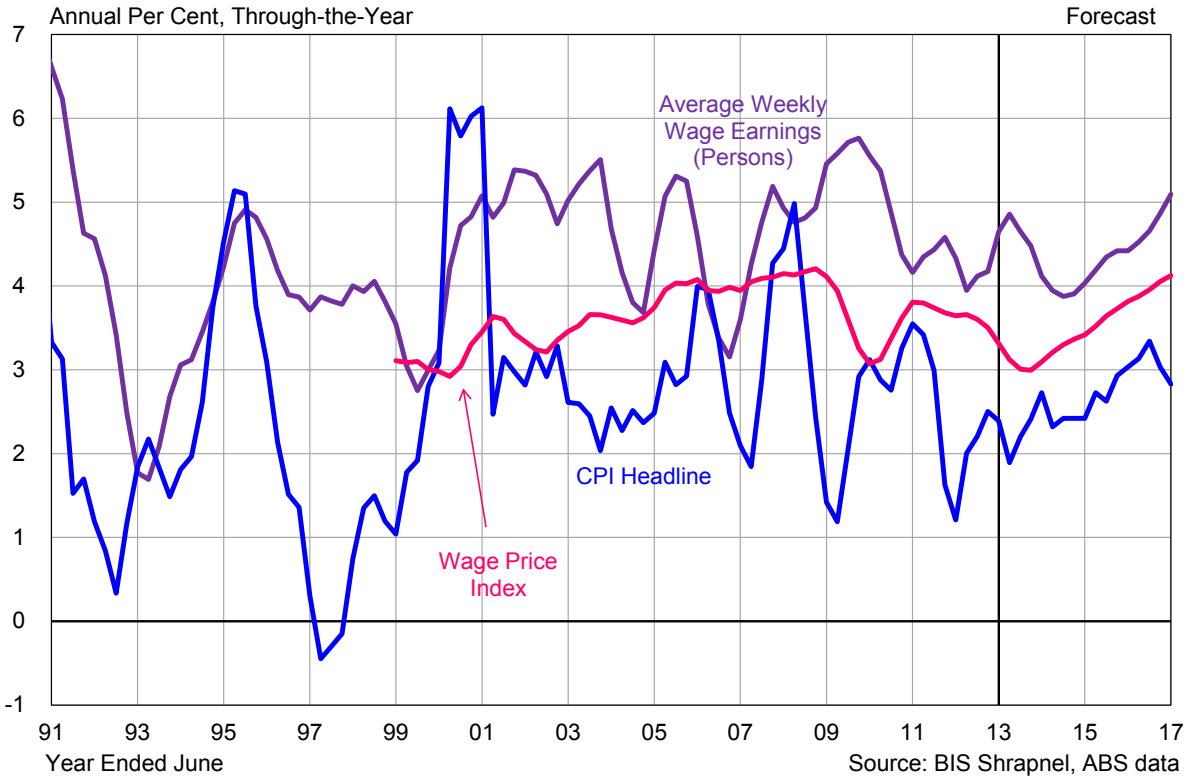
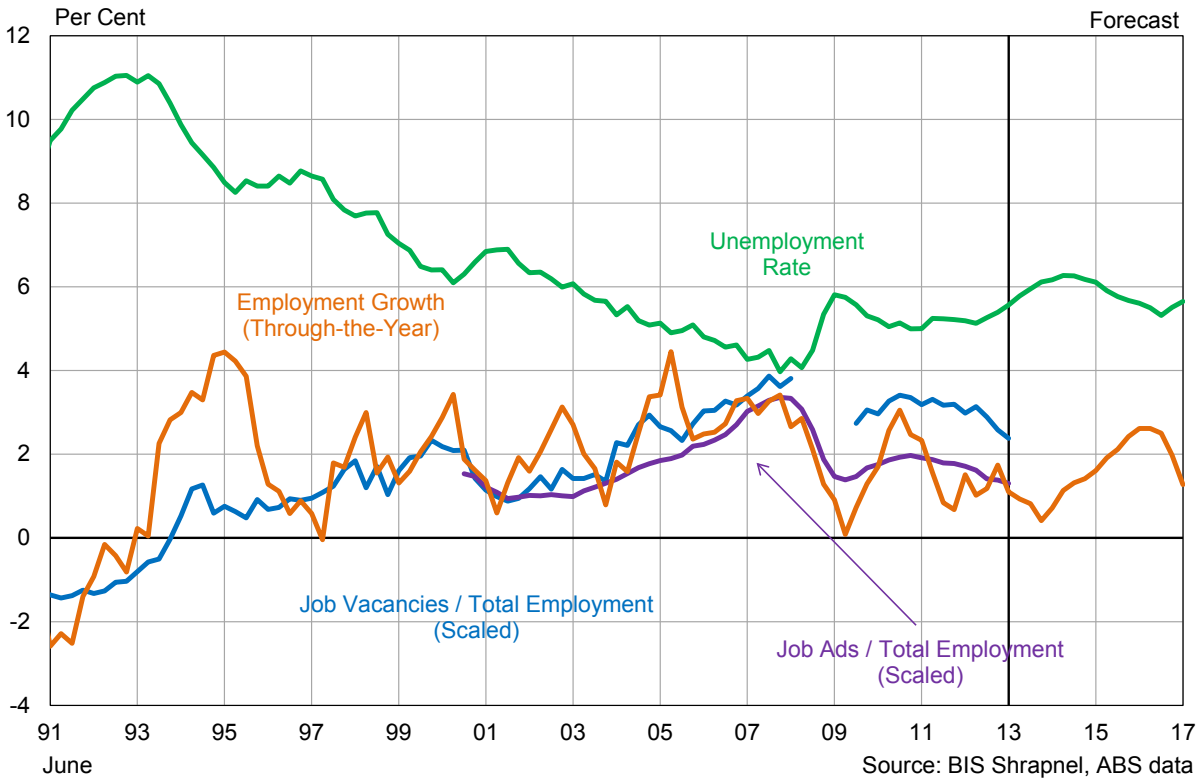


Chart 3.2: Employment and Unemployment



competitiveness and viability, inflation and employment growth. Accordingly, increases in the Federal Minimum Wage (on which a range of mostly lower paid awards are also based) granted by the Fair Work Australia each year are usually set in relation to recent increases in the CPI and with regard to the Fair Work Australia's view of both current and short-term future economic conditions. Fair Work Australia granted a 2.6 per cent ($15.80) increase in minimum wages, effective July 2013. The $15.80 per week increase lifted the Federal Minimum Wage to $622.20per 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.

3.3 Outlook for Australian All Industries Wages

Calendar year 2012 saw moderate growth in wages reflecting subdued labour market conditions, consistent with a soft economy. Wages growth remained modest in the first half of 2013 — rising by 3.3 per cent through the year to June 2013 quarter. This was due to sluggish employment growth owing to a delayed recovery in dwelling and non-mining investment.

We expect a slow build in wage pressures from 2015 as the economy remains soft with the economic recovery only expected to gain traction from late 2015 with a broadening in employment, profits and investment as the next set of economic drivers (ie residential building and non-mining business investment) slowly come through.

WPI/LPI

Previously, we have referred to the total hourly rates of pay, excluding bonuses as the labour price index (LPI). While this series was from the LPI publication, it is in fact a wage price index (WPI) as it excludes employers' other (non-wage) labour costs such as annual and public holiday leave, employer funded superannuation, payroll tax, and workers' compensation.

Note that the change in the name of the series does not represent any change to the underlying series used in the analysis or forecasts presented in this report or other BIS Shrapnel reports.

Meanwhile, lower interest rates should help to stimulate wider economic activity, lifting confidence and spending and encouraging businesses to switch out of cost containment mode.

The acceleration in profits, rising price inflation through 2015 and 2016 and widening skills shortages — with the unemployment rate expected to approach 5.5 per cent by late 2016 — will drive up wages growth during 2015/16. Wages growth (in year average terms) is expected to rise further and peak at 5.1 per cent for AWOTE and 4.1 per cent for Wage Price Index (WPI) in 2016/17.

4. ELECTRICITY NETWORK-RELATED LABOUR COST ESCALATION

4.1 Choice of index measure - WPI is an underlying wage inflation measure, while AWOTE measures changes in actual labour costs

BIS believes the Average Weekly Ordinary Time Earnings (AWOTE) is a better measure of the change in overall costs per employee faced by utility providers on the grounds that AWOTE:

- is a more comprehensive measure of wages than the WPI series preferred by the AER
- takes into account workforce compositional changes over time, and is therefore considered the best measure of capturing the change in total labour costs.

Compositional labour force change is an important issue for service providers. Many enterprises in the utilities (and other industry) sectors(s) regularly include bonuses or incentive payments which are linked to a range of objectives, such as up-skilling, additional training, productivity targets, safety targets, etc. These 'extra' payments — or changes in the quantum of payments — are not included in changes in the WPI, but can make a material difference to an enterprise's overall labour costs.

The wage price index (WPI), on the other hand, is a measure of *underlying* wage inflation in the economy or in a specific industry, as the WPI only measures changes in the *price* of labour, or wage rates, for specific occupations or job classifications, which are then aggregated into a measure of the collective variations in wage *rates* made to the current occupants of the *same* set of specific jobs.

The WPI, therefore, reflects pure price changes, but does not measure variations in the quality or quantity of work performed. The WPI also does not reliably measure the changes in total labour costs which a particular enterprise or organisation incurs, because the WPI does not reflect the changes in the skill levels of employees within an enterprise or industry. As skills are acquired, employees will be promoted to a higher grade or job classification, and with this promotion will move onto a higher base pay. So the change in the cost of labour over, say a year, includes increases in the base pay rates (which the WPI measures) and the higher average base pay level. The AWOTE captures both these elements, while the WPI only captures the first element. Basically, promoting employees to a higher occupation does not necessarily show up in the WPI, but the employer's total wages bill (and average unit labour costs) is higher, as is AWOTE. The AWOTE measure also includes bonuses, incentives, penalty rates and other allowances, which are also part of an enterprises total wage bill (a more detailed description of the wage measures can be found in Appendix A).

However, given AER's previous rejection of AWOTE, we propose that SP AusNet 'reluctantly adopt' the AER's preferred labour escalator and use movements in Victorian wage price index (WPI) for the Electricity, Gas, Water and Waste Services (EGWWs) industry as its internal labour escalator.

In the next part of this section, we will consider the key drivers of the sustained strong growth in underlying wages growth (ie the WPI measure) in the national utilities sector, and draw comparisons with the all industries average and (in section 4.6).

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

Sector	% of Total Employment Aug 2013	Annual Per Cent Change											Five-Year Average
		Jun '06	Jun'07	Jun'08	Jun'09	Jun'10	Jun'11	Jun'12	Sep'12	Dec'12	Mar'13	Jun'13	
Private		4.0	3.9	4.4	3.6	2.7	3.9	3.8	3.8	3.4	3.2	3.0	3.4
Public		4.3	4.2	3.9	4.4	4.0	3.7	3.3	3.4	3.3	3.0	2.8	3.7
Industry													
Mining	2.2%	5.9	5.5	6.7	4.2	3.8	4.1	5.2	5.1	5.1	4.2	3.5	4.2
Manufacturing	8.1%	3.9	4.1	4.6	2.5	2.6	4.1	3.8	3.8	3.3	3.0	2.8	3.2
Electricity, Gas, Water and Waste Services	**1.3%**	**6.4**	**4.0**	**3.5**	**4.7**	**4.7**	**3.7**	**3.7**	**4.4**	**4.2**	**4.4**	**3.9**	**4.1**
Construction	8.6%	5.9	4.2	4.7	4.5	2.9	4.0	4.1	3.6	3.5	3.0	3.2	3.7
Wholesale Trade	3.7%	3.7	3.7	4.6	3.3	1.7	4.8	4.8	5.5	4.6	4.1	3.4	3.6
Retail Trade	10.8%	3.4	3.1	4.5	3.5	2.8	3.3	2.7	2.3	2.5	2.6	2.7	3.0
Accommodation and Food Services	6.9%	3.3	3.0	2.3	3.4	2.0	3.0	3.3	2.9	2.2	2.5	2.6	2.8
Transport, Postal and Warehousing	5.0%	4.2	4.1	3.9	4.4	3.2	4.0	3.8	3.9	3.9	3.3	2.9	3.7
Information Media and Telecommunications	1.9%	2.8	3.6	3.9	3.0	2.0	3.2	3.5	3.0	2.8	2.8	2.9	2.9
Finance and Insurance Services	3.6%	4.0	4.3	3.6	3.2	3.1	4.5	4.1	3.5	3.3	2.9	2.9	3.6
Rental, Hiring and Real Estate services	1.7%	3.9	3.0	4.1	3.6	2.5	3.6	3.5	3.0	2.7	2.4	3.1	3.2
Professional, Scientific and Technical Services	7.9%	4.3	4.3	5.1	5.1	2.9	4.0	4.6	4.3	3.7	3.2	2.9	3.9
Administration and Support Services	3.4%	3.3	3.6	4.9	2.9	2.5	3.7	3.6	3.5	3.6	3.4	2.7	3.1
Public Administration and Safety	6.3%	4.2	4.3	3.9	4.5	3.7	3.4	3.6	4.0	3.6	3.3	2.9	3.6
Education	7.9%	4.4	4.1	4.0	4.5	3.9	3.8	3.6	3.2	3.0	2.7	2.5	3.7
Health Care and Social Assistance	12.1%	4.5	4.3	3.6	3.9	4.0	3.6	2.6	3.2	3.4	3.3	3.3	3.5
Arts and Recreation Services	1.9%	3.0	4.4	3.4	3.9	2.8	3.4	3.5	3.5	2.6	2.8	2.9	3.3
Other Services	4.0%	3.2	4.0	3.3	3.3	2.3	3.6	3.8	3.2	3.3	3.4	3.0	3.2
State/Territory													
New South Wales	31.6%	3.9	3.8	4.0	3.6	3.1	3.7	3.6	3.6	3.3	3.0	2.8	3.4
Victoria	25.0%	3.7	3.6	4.2	3.4	2.7	4.1	3.5	3.5	3.5	3.2	3.0	3.3
Queensland	20.2%	4.7	4.6	3.9	4.1	3.3	3.9	3.8	3.2	3.1	3.0	2.7	3.6
South Australia	7.1%	3.7	4.3	4.6	3.7	2.9	3.3	3.4	3.5	3.1	3.3	3.3	3.3
Western Australia	11.3%	4.6	5.2	5.6	4.6	3.4	3.8	4.8	4.4	4.2	3.7	3.5	4.0
Tasmania	2.0%	4.1	4.5	3.6	4.2	3.6	3.5	3.2	3.3	3.3	3.2	2.9	3.5
Northern Territory	1.1%	3.9	4.3	4.2	3.8	3.4	3.9	3.6	3.7	3.2	3.2	3.2	3.6
Australian Capital Territory (ACT)	1.8%	3.8	4.3	4.0	4.1	3.0	3.5	3.9	4.2	4.3	3.4	2.9	3.5
Total All[2]	100%	4.2	4.0	4.2	3.8	3.1	3.8	3.7	3.7	3.4	3.2	2.9	3.5

Source: BIS Shrapnel, ABS

(1) Measures changes in the price of labour. Ordinary hourly rates of pay (excludes overtime and bonuses)
(2) Excludes Agriculture, Forestry & Fishing

Table 4.2: Australia
AWOTE Growth by Industry Sector

Industry Sector	% of Total Employment Aug 2013	Average Weekly Earnings[1]											
		$ / Week May'13	Annual Percent Change										Five-Year Average
			May '06	May '07	May '08	May'09	May'10	May'11	May'12	Aug'12	Nov'12	Feb'13	May'13	
Mining	2.2%	2 424	4.5	6.5	8.1	7.3	7.2	6.5	6.2	6.9	7.6	6.9	6.8	6.8
Manufacturing	8.1%	1 251	4.4	4.7	4.2	5.3	1.8	2.8	2.3	2.0	1.6	2.3	3.9	3.2
Electricity, gas, water and waste services	**1.3%**	**1 623**	**1.9**	**3.7**	**2.7**	**6.1**	**7.6**	**9.1**	**2.5**	**2.7**	**3.6**	**4.5**	**6.1**	**6.3**
Construction	8.6%	1 436	1.9	4.9	9.2	7.8	7.7	5.0	3.5	2.8	2.4	3.5	4.3	5.6
Wholesale trade	3.7%	1 417	6.3	3.7	3.8	5.9	2.2	3.9	11.3	9.9	8.3	6.2	4.6	5.6
Retail trade	10.8%	1 022	6.9	3.4	5.6	2.7	5.5	0.9	3.2	3.2	3.0	3.5	4.0	3.3
Accommodation and food services	6.9%	1 050	4.9	8.2	3.8	2.5	4.5	3.5	3.7	2.9	2.9	3.7	5.5	3.9
Transport, postal and warehousing	5.0%	1 425	2.3	0.6	0.5	4.5	5.3	8.9	7.0	7.4	7.7	7.1	5.9	6.3
Information media and telecommunications	1.9%	1 671	4.3	6.3	7.7	4.3	5.4	4.6	3.0	2.6	3.5	4.1	4.8	4.4
Finance and insurance	3.6%	1 645	5.0	3.4	3.8	2.8	4.6	6.1	2.0	2.5	4.0	4.3	4.3	4.0
Rental hiring and real estate services	1.7%	1 304	7.3	2.4	8.6	6.5	3.8	-2.1	0.4	1.5	3.1	5.6	6.6	3.0
Professional, scientific and technical services	7.9%	1 707	7.3	2.5	7.8	5.8	5.6	4.5	4.3	4.5	4.6	3.0	3.2	4.7
Administration and support services	3.4%	1 277	6.4	1.6	7.2	7.1	7.4	-0.1	-1.9	0.3	4.1	6.2	7.9	4.1
Public administration and defence	6.3%	1 485	4.2	3.7	3.7	5.4	6.7	5.7	3.2	3.7	4.5	4.7	4.7	5.1
Education and training	7.9%	1 499	3.8	3.7	3.0	4.6	5.6	4.8	4.6	4.7	4.8	4.1	3.8	4.7
Health and social assistance	12.1%	1 354	2.0	3.6	4.4	4.7	6.2	2.5	2.8	1.4	1.0	2.7	5.3	4.3
Arts and recreational services	1.9%	1 316	-0.9	-0.6	6.4	7.2	4.1	5.6	3.5	2.4	1.9	2.5	5.5	5.2
Other services	4.0%	1 105	5.7	2.0	3.3	6.8	3.1	3.6	2.7	3.4	4.4	5.2	4.2	4.1
Total All Industries[2]	100%	1 421	4.6	3.6	4.9	5.5	5.6	4.2	4.3	3.9	4.1	4.1	4.6	4.8

(1) Full Time Adult Ordinary Time earnings for persons
(2) Excludes Agriculture, Forestry and Fishing sector

Source: BIS Shrapnel, ABS

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

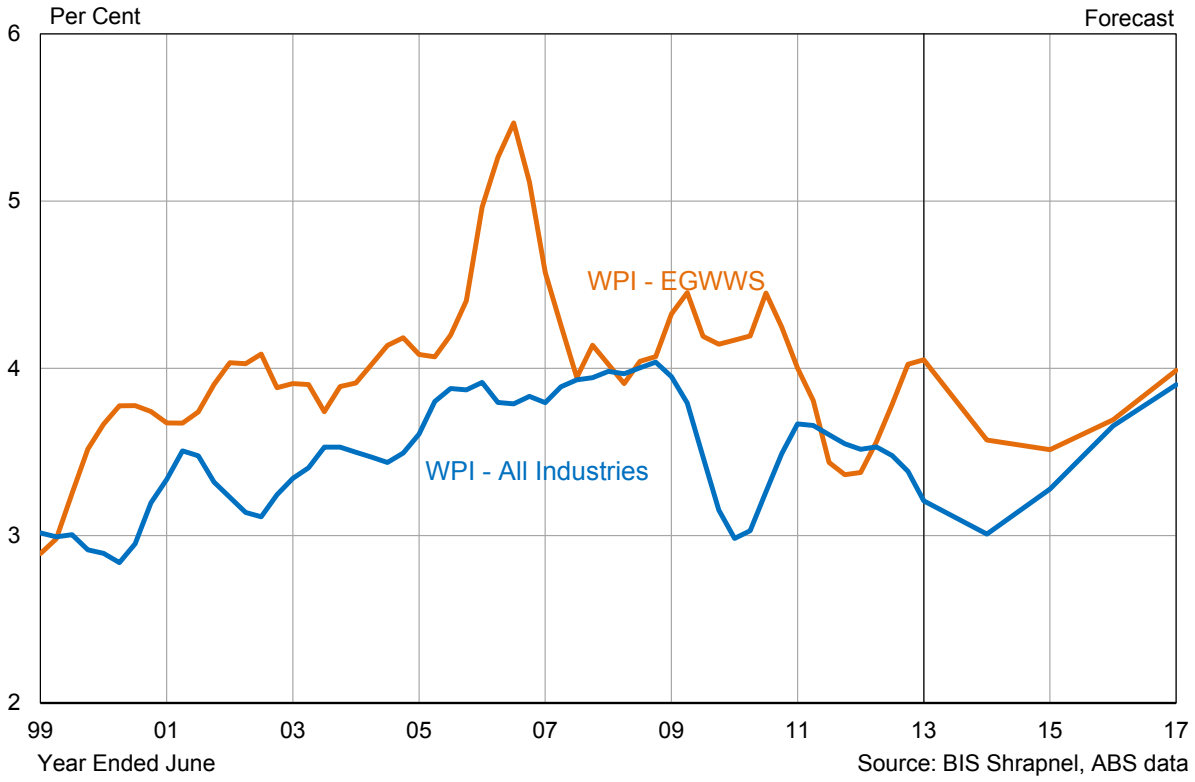


Table 4.3: Federal Wage Agreements – Collective Agreements by Industry
(Average Annualised Wage Increase)

Selected Industry (ANZSIC 2006)	Collective Agreements									
	Average Annualised Wage Increase[1]									Average
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2004-2012
Electricity, Gas, Water and Waste Services	**4.3**	**4.2**	**4.4**	**4.5**	**4.7**	**4.8**	**4.8**	**4.4**	**4.2**	**4.5**
Agriculture, Forestry and Fishing	3.3	3.0	3.0	2.9	3.0	3.7	3.7	3.7	3.8	3.4
Mining	3.3	3.6	3.7	4.0	4.3	4.4	4.3	4.2	4.5	4.0
Manufacturing	4.1	4.1	4.2	4.3	4.2	4.1	3.9	3.9	3.9	4.1
Construction	4.3	4.4	4.9	4.9	4.6	5.3	5.4	4.8	5.2	4.8
Wholesale Trade	3.9	4.0	3.7	3.6	3.8	4.1	4.0	3.7	3.8	3.8
Retail trade	3.2	3.4	3.5	3.5	3.5	3.6	3.5	3.4	3.6	3.4
Accommodation and Food Services	2.8	3.2	3.3	3.4	3.2	3.6	3.9	3.9	3.8	3.4
Transport , Postal and Warehousing	3.6	3.7	3.7	3.9	4.0	4.2	4.2	3.9	3.9	3.9
Information Media and Telecommunications	4.2	4.1	3.6	3.2	3.3	3.8	3.8	3.4	3.4	3.7
Financial and Insurance Services	4.2	4.1	4.1	4.1	3.8	4.0	3.6	3.7	3.5	3.9
Rental, Hiring and Real Estate Services	4.1	4.1	3.8	4.8	4.5	3.5	3.7	3.9	4.7	4.1
Professional, Scientific and Technical Services	4.1	4.1	3.8	4.0	4.0	4.5	4.3	4.0	4.1	4.1
Administrative and Support Services	4.1	4.1	3.8	3.6	3.6	3.8	3.7	3.6	4.2	3.8
Public Administration and Safety	4.4	4.3	4.0	4.1	4.2	4.3	3.9	3.7	3.6	4.1
Health Care and Social Assistance	4.0	4.1	4.0	4.0	4.0	4.1	4.0	4.0	3.6	4.0
Education and Training	4.5	4.7	4.9	4.8	4.9	4.4	4.6	4.6	4.8	4.6
Arts and Recreation Services	3.5	3.8	3.5	3.8	4.0	4.1	3.5	3.5	3.4	3.7
Other Services	4.4	4.0	4.0	4.1	4.0	3.9	3.7	3.6	4.5	4.1
ALL INDUSTRIES	3.9	4.0	4.1	4.1	4.0	4.2	4.1	4.0	4.0	4.0

[1]Current agreements in June of each year.

Source: Department of Education, Employment & Workplace Relations (DEEWR)

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

	Year Average Percent Change									
					Forecast				**Averages**	
Year Ended June	2010	2011	2012	2013	2014	2015	2016	2017	2003-13	2013-17
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%	1.5%	2.7%
Collective Agreements	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	76.2%	67.7%
Individual Arrangements	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	22.3%	29.6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AWOTE										
Awards Only	0.7	3.2	3.4	2.9	2.6	2.8	3.1	3.5	2.5	3.0
Collective Agreements	4.8	4.4	4.2	4.0	4.0	3.9	4.0	4.2	4.4	4.0
Individual Arrangements (b)	14.0	18.7	-0.6	10.1	4.9	4.9	5.1	6.1	5.9	5.2
AWOTE (Persons)(c)	**7.6**	**9.1**	**2.5**	**6.1**	**4.3**	**4.2**	**4.4**	**4.9**	**4.8**	**4.5**
Wage Price Index										
Awards Only	0.7	3.2	3.4	2.9	2.6	2.8	3.1	3.5	2.5	3.0
Collective Agreements	4.8	4.4	4.2	4.0	4.0	3.9	4.0	4.2	4.4	4.0
Individual Arrangements (b)	3.7	3.7	1.9	4.9	3.1	3.1	3.5	4.1	4.3	3.5
Wage Price Index (Ord. Time)	**4.3**	**4.2**	**3.5**	**4.2**	**3.7**	**3.6**	**3.8**	**4.2**	**4.3**	**3.8**
Compositional Effects + Bonuses,etc	3.2	4.9	-1.0	1.9	0.6	0.6	0.6	0.7	0.5	0.6

(a) Full-time Adult Persons. Source: BIS Shrapnel, ABS, DEEWR

(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.

Key Drivers of Sustained Strong Growth in Underlying Wages Growth (Wage Price Index) in the National Utilities Sector

Wages growth in the electricity, gas, water and waste services sector is invariably higher than the total Australian national (all industry) average. The labour price index growth has consistently been above the national average since the index's inception in 1997 and averaged 0.6 per cent higher over the decade to 2013 (see table 4.6). While growth in average weekly ordinary time earnings (AWOTE) of the electricity, gas, water and waste services sector has displayed considerably more volatility over the past two decades (mainly related to compositional effects), AWOTE growth in the sector has also usually been higher than the national average over the past two decades (see tables 4.2 and 4.6).

Utilities wages growth will ease over the next two years before converging to the 'all industries' average

As mentioned, wages growth in the utilities sector since 1997 has outpaced the national 'all industries' average. To a large extent, this has been underpinned by strong capital works program in the utilities sector since the beginning of the last decade (resulting in robust employment growth over the same period), strong competition from the mining and construction workers for similarly skilled labour and the powerful influence of unions in the utilities sector.

The mining investment boom has passed its peak and will drift lower from here. Similarly, we believe utilities engineering construction has reached its peak and will plateau over the next three years. This means that two of the drivers of strong wage increases over the past decade will reverse over the next three years resulting in an easing of wages growth in the utilities sector over the next two years before it converges to the national average.

But still strong demand for skilled labour means wage increases will not drop below the national average . . .

The electricity, gas, water, and waste services sector is a largely capital intensive industry whose employees have higher skill, productivity and commensurately higher wage levels than most other sectors. With many of the particular skills relevant to the electricity, gas and water sector expected to remain in relatively high demand (as evidenced by the 2013 industry survey conducted by Energy Skills Australia), wage increases are expected to remain higher in this industry than the national average over the next two years, although we expect wage increases in the Utilities sector to converge towards the national 'all industries' average in 2015/16.

In addition, 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 (see tables 4.1 and 4.2). These sectors tend to be highly cyclical, with weaker employment suffered during downturns impacting on wages growth in particular. The EGW sector is not impacted in the same way due to its obligation to provide essential services and thus retain skilled labour.

. . . while powerful unions in utilities sector will also keep wages growth elevated

The key elements of the utilities wage forecast are set out in table 4.4. Table 4.4 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 invariably be higher than the all industries average. Table 4.3 shows that the utilities sector has consistently had higher wage increase under collective agreements than the all industries average. Over the past five years, the outcomes from collective agreements have been 0.5 per cent higher, on average, than the all industries average. We expect this trend to continue over the next four years, with the all industries average to also continue to be dragged down by the retail and hospitality industries.

The analysis in table 4.4 also shows that pay outcomes in the individual arrangements segment of the utilities sector is also usually higher than the all industries average, although – as explained in Appendix A – some incentives and compositional effects emanating from the collective agreements may be ending up in the individual arrangements segment calculated in the WPI in table 4.4.

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 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.

Data from the Department of Education, Employment and Workplace Relations quarterly report, *Trends in Federal Enterprise Bargaining,* shows that average outcomes of agreements accelerated through 2008/09, with the year average of the 'formalised' agreements rising to 5 per cent in 2008/09, compared to 4.8 per cent in 2007/08. While growth in formalised agreements slowed to an average of 4.1 per cent in 2010/11, wage increases under collective agreements picked up in the second half of 2011 to average of 4.6 per cent in 2011/12. Over the nine months to March 2013 quarter, formalised agreements averaged 4.3 per cent per annum.

We note that the latest DEEWR report (March quarter 2013) had a 3.5 per cent increase for agreements formalised for the EGWWS sector. This figure does not represent a collapse in wage increases under collective agreements. Historically, one invariably finds one quarter in a

year where agreements formalised in the quarter is significantly lower than the yearly average. Moreover, historically a low outcome is immediately followed by an industry average result as evident in June 2012 quarter (where a 5.1 per cent increase followed a 3.7 per cent increase in the previous quarter), March 2008 quarter (5.1 per cent v a 4.3 per cent increase), June 2007 quarter (5 per cent v 3.5 per cent), December 2006 quarter (4.1 per cent v 3.3 per cent) and June 2004 quarter (3.7 per cent v 2.9 per cent).

We expect wages to pick up during 2012/13 given the tightness in the labour market and particularly given the recent high enterprise agreement outcomes in the construction sector. This will influence negotiations in the EGW sector.

With economic conditions expected to improve from late 2014, we expect some pick up in the pace of formalised agreements over 2015/16 and 2016/17 toward 4.5 per cent per annum.

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 EGW 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 1.5 per cent above the CPI in the forecast period.

Utilities wages growth to strengthen in 2016/17 as demand for skilled labour picks up

Employment growth in the utilities sector over the past decade (2001/02 to 2011/12 inclusive) averaged 6.7 per cent per annum, the second fastest growth among the 18 main industry sectors behind the Mining sector (11.2 per cent per annum), with Construction employment growth third at 3.9 per cent per annum.

This strong growth in utilities employment since 2002 has been associated with a pick-up in infrastructure and maintenance work as well as 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.) has 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 (see table 4.9).

The global financial crisis and the subsequent slowing in the economy over 2008/09 reduced labour demand and wage pressures, but the unemployment rate only rose to a peak of 5.9 per cent in mid 2009.

With the economy expected to grow above trend in about two years, employment growth will outpace population and labour force growth and the unemployment rate (now around 5.8 per cent) is expected to approach 5.5 per cent by late 2016. Hence, we expect to again witness the re-emergence of skilled labour shortages and competition for scarce labour from 2015/16, particularly from the construction sector, which will push up wage demands in the utilities sector.

We expect wages growth in the electricity, gas, water and waster services to again outpace (albeit marginally) the national average from 2016/17, given increased demand for skilled labour in the sector.

Meanwhile, increases in individual agreements will also strengthen from 2015/16

Increases in individual agreements (or non-EBA wages) 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 (which influences bonuses and incentives, etc.), current business conditions and the short-term economic outlook.

With economy expected to grow above trend in about two years, we expect higher wages growth 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 accelerate from 2016/17.

Two other factors which will act to push up 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 next decade, 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), although the ‘base’ movement — the nominal increase in EBA’s — will not reflect this, so this upgrading will end up as compositional increases in the individual arrangements segment.

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

Indeed, the strengthening of non-EBA wages from 2012/13 and the compositional effects from the overall up skilling is expected to result in much stronger growth in individual arrangements over this decade, compared to the last ten years. 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 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 three years from 2014/15

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

Year Ended March	Average Weekly Ordinary Time Earnings [1]				Wage Price Index [2]			
	All Industries		Electricity, Gas, Water and Waste Services [3]		All Industries		Electricity, Gas, Water and Waste Services	
	$	%CH	$	%CH	Index	%CH	Index	%CH
1989	487.3	6.9	506.8	6.7				
1990	521.0	7.2	548.1	8.2				
1991	548.7	7.0	578.5	5.5				
1992	574.1	4.6	611.8	5.8				
1993	588.4	2.5	631.6	3.2				
1994	604.2	2.7	656.6	4.0				
1995	627.2	3.8	665.5	1.4				
1996	657.4	4.8	695.5	4.5				
1997	682.8	3.9	739.9	6.4				
1998	708.7	3.8	781.9	5.7				
1999	735.7	3.8	824.4	5.4	69.1		65.2	
2000	757.7	3.0	852.6	3.4	71.2	3.0	67.5	3.8
2001	794.3	4.8	904.8	6.1	73.5	3.3	70.2	3.8
2002	837.1	5.4	967.1	6.9	76.1	3.5	73.0	4.1
2003	876.8	4.7	992.0	2.6	78.6	3.4	76.0	4.0
2004	925.1	5.5	1,047.4	5.6	81.4	3.6	79.0	4.0
2005	959.2	3.7	1,080.8	3.2	84.3	3.6	82.5	4.4
2006	1 009.5	5.3	1,108.3	2.5	87.8	4.1	86.3	4.6
2007	1 041.4	3.2	1,140.1	2.9	91.3	4.0	90.9	5.4
2008	1 095.4	5.2	1,176.5	3.2	95.2	4.2	94.9	4.3
2009	1 149.4	4.9	1,234.7	4.9	99.2	4.2	98.9	4.1
2010	1 215.7	5.8	1,320.7	7.0	102.4	3.3	103.2	4.4
2011	1 268.9	4.4	1,448.7	9.7	106.1	3.6	107.7	4.4
2012	1 327.0	4.6	1,505.8	3.9	110.0	3.7	111.5	3.5
2013	1 382.3	4.2	1,574.1	4.5	113.9	3.5	116.2	4.2
Forecasts								
2014	1 444.2	4.5	1,652.0	4.9	117.3	3.0	120.5	3.7
2015	1 500.7	3.9	1,722.3	4.3	121.2	3.4	124.8	3.6
2016	1 567.0	4.4	1,797.3	4.4	125.7	3.7	129.5	3.7
2017	1 643.2	4.9	1,883.0	4.8	130.8	4.1	134.9	4.2
Compound Annual Growth Rates								
1991-2000	3.8		4.5					
2001-2010	4.8		4.5		3.7		4.3	
2009-2013	4.8		6.0		3.7		4.1	
2014-2017	4.4		4.6		3.5		3.8	
2015-2017	4.4		4.5		3.7		3.8	

Source: BIS Shrapnel, ABS

(1) Earnings per person for full-time adults. Data is year ended February (available only mid month of quarter).
(2) Total time hours excluding bonuses.

to 2016/17 inclusive, 0.5 per cent higher than the national 'All Industries' AWOTE average of 4.4 per cent per annum over the same three year period (see table 4.5). In terms of *underlying* wages growth in the 'utilities' sector for total Australia — expressed in wage price index (WPI) terms — BIS Shrapnel is forecasting an average of 3.8 per cent per annum (0.1 percentage points higher than the national 'All Industries' WPI average of 3.7 per cent per annum) over the three years from 2014/15 to 2016/17 inclusive (see table 4.5).

4.2 Outlook for utilities wages growth in Victoria

Victoria's utilities WPI growth is forecast to average 3.9 per cent per annum (0.1 percentage points higher than the national utilities average of 3.8 per cent per annum) over the three years from 2014/15 to 2016/17 inclusive (see table 4.6).

The slightly stronger utilities wages growth in Victoria is due to:

- The state's lower exposure to the resources investment boom of the past five years, compared to Queensland, Western Australia and more recently Northern Territory. Hence, Victoria will be less affected by the easing in wage pressures coming from the peak of the mining investment boom.
- We are likely to see still strong levels of electricity-related engineering construction in the state. Electricity-related engineering construction is currently the second biggest contributor to total activity after roads, and we anticipate that it will more or less hold this position over the next decade. Still strong levels of utilities investment will support employment growth and keep upward pressure on wages growth in the utilities sector.
- The comparative weakness of Victoria's overall construction sector over the next three years means there will be less pressure coming from the state's construction sector. However, the projected recovery in overall construction from 2016/17 will see the re-emergence of wage pressures from the construction sector at that time. Section 5 has a detailed discussion of prospects for Victoria's construction sector and wages outlook.

4.3 DAE forecasts are unreliable

DAE utilities industry wage forecasts are based on inaccurate ABS data. The year average wage growth (in WPI terms) for the utilities industry was 3.5 per cent in 2011/12 and 4.2 per cent in 2012/13. The DAE values for the same period are 4.2 per cent and 3.5 per cent respectively. DAE historical data for Victorian utilities industry is also incorrect. According to the ABS, wages increased by 3.9 per cent in 2011/12 and by 4.3 per cent in 2012/13. DAE reports wages growth of 4.3 per cent and 3.9 per cent respectively.

The DAE forecasts therefore should be deemed unreliable as they are based on inaccurate ABS data.

4.4 Competitor industry wages growth

This section analyses and forecasts wages growth in the industries that compete with the utilities sector for similarly skilled labour.

4.4.1 Construction Wages

The forecasts and rationale for Australian and Victorian construction sector wages growth is set out in section 5. The forecasts are also shown in table 5.1.

4.4.2 Mining Wages

The mining investment boom over the second half of the 2000s resulted in rapid employment growth in the mining sector, strong demand for labour — particularly skilled labour — and an escalation in wages growth. Rapidly rising commodity prices and high profits also fuelled stronger growth in mining wages in the lead up to the GFC — averaging 5.7 per cent per annum in Average Weekly Ordinary Time Earnings (AWOTE) terms and 5.3 per cent per annum in Wage Price Index (WPI) terms over the five years to 2008/09.

However, wages growth slowed sharply in 2009/10, falling to 3.6 per cent, as measured by the WPI, in a lagged response to the downturn in resource exports and output in 2008/09, and delays to the commencement of new investment projects, caused by the GFC. However, mining AWOTE growth in 2009/10 remained high (7.2 per cent) due to compositional effects — the cut backs in mining employment impacted disproportionately on lower paid workers, boosting the overall average wage bill.

Employment growth then bounced back in 2010/11, which saw the WPI also pick up, reaching 4.3 per cent in 2010/11. The WPI then crept higher in 2011/12, with the WPI recording growth of 4.4 per cent, as demand for mining employment remained buoyant. Growth continued into 2012/13, edging slightly higher to 4.5 per cent despite employment growth slowing significantly.

AWOTE growth, meanwhile, eased to 6.5 per cent in 2010/11, and softened further in 2011/12 (6.2 per cent) before lifting in 2012/13, likely the result of compositional effects besetting the measure, such as lower paid and lower skilled employees retrenched due to cost containment.

Over the next five years, mining industry wage growth is expected to increase by 4.7 per cent per annum, in AWOTE terms. During this period, however, we expect the AWOTE measure to be beset with further compositional effects, distorting wage outcomes. This includes the loss of lower skilled, lower paid mine workers, and ‘construction mining workers’ falling out of the statistics as major construction projects conclude. Underlying these compositional effects will be generally weaker levels of demand for mining employment lowering wage outcomes.

In WPI terms, wages growth is forecast to increase by 4.4 per cent per annum over the next five years, down slightly on the previous five year period as miners remain in cost containment mode before lifting towards the end of our forecast horizon as production shifts higher again.

Table 4.6: Electricity, Gas, Water and Waste Services – Victoria and Australia
Year Average Growth

	Victoria - Nominal		Australia- Nominal	
Year Ended March	WPI (1)		WPI (1)	
	Index	A% CH	Index	A% CH
2000			67.5	3.8
2001			70.2	3.8
2002			73.0	4.1
2003			76.0	4.0
2004			79.0	4.0
2005			82.5	4.4
2006			86.3	4.6
2007			90.9	5.4
2008			94.9	4.3
2009			98.9	4.1
2010	102.3		103.2	4.4
2011	106.2	3.9	107.7	4.4
2012	110.4	3.9	111.5	3.5
2013	115.1	4.3	116.2	4.2
Forecasts				
2014	119.6	4.0	120.5	3.7
2015	124.0	3.6	124.8	3.6
2016	128.8	3.8	129.5	3.7
2017	134.2	4.3	134.9	4.2
Long Term Averages				
2001-2010			4.3	
2009-2013			4.1	
2013-2017	3.9		3.8	
2015-2017	3.9		3.8	

Source: BIS Shrapnel, ABS

([1]) Total time hours excluding bonuses.

5. CONTRACTOR ESCALATION

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

5.1 Construction Sector Wages Growth in Victoria

Much like the other states and territories, wages growth in the Victorian 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 was extremely strong for most of the previous decade. In fact over the past five years, the overall strength of Victoria's construction sector underpinned the strength of the state economy. New dwelling building activity picked up quickly between 2008/09 and 2010/11 after interest rates tumbled and the first home owner grants (FHOG) scheme boosted demand. In addition, stronger population growth and the ready availability of reasonably priced residential land facilitated a much faster upswing compared to other states, which incidentally has a greater undersupply of dwellings.

In addition, public construction ramped up significantly over 2008/09 to 2010/11, partly because the Victorian government was able to get the Federal stimulus spending underway quickly and partly because the state government was already proceeding with its own major health, rail, harbour and sewerage projects. Private sector engineering construction also made a healthy contribution, thanks to substantial electricity, pipelines, oil and gas activity, and work on the $1.6 billion Wonthaggi desalination plant.

The strength of the construction sector fuelled strong growth in Victorian construction wages in the second half of the last decade (see table 5.1).

Looking ahead, we expect Victorian dwelling building to decline over the next two years at least, as Victoria now finds itself with an excess of dwellings. Engineering construction activity activity in is forecast to decline in aggregate over the next two years, owing to lower activity in roads (due to the completion of Peninsula Link), sewerage (Eastern Treatment upgrade completion), railways, water and mining and heavy industry (upon completion of offshore oil and gas works). However, we expect a broader upswing in Victoria in the second half of the decade as attention once again turns to urban development projects around Melbourne (such as the East West Link), the ramping of work on stages of the Regional Rail Link, and another strong phase of electricity investment. Hence, a recovery in overall construction is projected from 2015/16 (see chart 5.1).

However, developments in construction wages at the national level means that wage inflation in Victoria, while easing, will not collapse. Wage increases contained in Enterprise Bargaining Agreements (EBA) expiring in 2015 calendar year average 5 per cent per annum. In an environment of still strong levels of construction activity, we expect wage outcomes negotiated in new EBAs during this period to remain high putting upward pressure on overall industry wages growth. As a result, we expect construction wages at the national level to pick up to

3.7 per cent in 2015/16 before strengthening to 4.2 per cent in 2016/17. Accordingly, construction wages growth in Victoria (which employs nearly a quarter of the nation's construction workforce) is expected to move in line with the national average over SP AusNet's next regulatory period. That is, over the three years to 2016/17, we expect construction wages in Victoria to average 3.8 per cent per annum, similar to the national average.

5.2 BIS Shrapnel's Response to AER's Criticism of Our Construction Industry Wage Forecasts

The AER in its draft determination rejected our Victorian construction industry wage forecasts on the grounds that:

- it inaccurately reflected the ABS data for 2011/12
- our forecasts were inconsistent with the commentary. In particular, the AER asserted that the strengthening in wages over the next regulatory control period especially for 2013/14 did not reconcile with the easing in the Victorian construction activity.

We reject the AER's criticisms.

Our historical construction wages data matches the ABS data exactly. According to the ABS, wages increased by 3.8 per cent in 2011/12, exactly what we had presented in our initial report. Hence, the DAE figure of 3.1 per cent is 'out-of-step' with the ABS data. It is understated by a very significant 0.7 percentage points. The DAE wages growth for 2012/13 also inaccurately reflects the ABS data. Wages grew by 3.1 per cent in 2012/13 where as DAE has reported a figure of 2.8 per cent. **We can only conclude that the AER falsely assumed that the DAE historical data was consistent with the ABS data.**

In addition, construction activity is not the sole driver of our forecasts. In deriving our state industry wage forecasts we also consider several other factors including recent wage increases at the state level, wages growth at the national level along with wage outcomes contained in EBAs expiring over the short-to-medium term.

At the time of writing our initial report (in November 2012), we expected some easing in wages growth for 2012/13 (given low quarterly outcome for September 2012 quarter) followed by a strong pick up in 2013/14. The latter reflecting a catch up in wages given activity was still strong over year-ended June 2013.

In fact our forecast for the 2013/14 financial year may yet prove to be conservative.

The most recent (June 2013 quarter) ABS data shows that construction wages in Victoria grew by 2.7 per cent, reflecting a catch-up following lower wage outcomes in the first half of 2012. Allowing for a very conservative growth of 0.2 per cent in each of the three remaining quarters of the 2013/14 financial year, we end up with an annual growth of 4.1 per cent for 2013/14, precisely what we forecast in our initial report produced nearly a year ago. The 0.2 per cent quarterly growth assumed is on the extreme low side as the average quarterly outcome for Victoria since the series began in December 2008 quarter is 1.1 per cent. Even the national average of 0.9 per cent over the same period is much higher then what we have allowed for over the remaining three quarters.

Moreover, our wage forecasts for 2013/14 and 2015/16 were influenced by our national industry forecasts.

When writing our initial report, we expected construction activity at the national level to increase further and peak in 2014/15 putting upward pressure on wages. In addition, wage outcomes

achieved in EBAs expiring over 2015 calendar year had averaged 5.5 per cent per annum. In an environment of increasing activity, our expectation was that the new agreements negotiated over this period would have relatively high wage outcomes, pushing overall wage increases in the sector higher.

Victoria is the second largest state economy and employs nearly a quarter of the nation's construction workforce. Hence, one would expect Victorian wages to move in line with national wage increases. Accordingly, we had Victorian construction wages picking up in 2014/15 (but remaining below national average due to relative weakness in construction activity) before stabilising in 2015/16 as activity started to trend higher again.

In summary, we consider several variables in deriving out state construction industry wage forecasts. Construction activity is one of the variables. On occasions other factors may be weighted more heavily which can result in a divergence between activity and wages growth.

Meanwhile, DAE in June 2013 has forecast a growth rate of 2.8 per cent for the Victorian construction industry in 2013/14. This forecast cannot be reconciled with recent observed data. This, combined with using inaccurate historical ABS data makes the DAE forecasts unreliable.

Accordingly, we would argue that the AER should apply the same criteria that it applied to reject out construction industry forecasts to **now reject the DAE wage forecasts for the construction industry outright**. DAE forecasts are based on incorrect ABS data which makes them less reliable and should be resisted. Put simply, the DAE forecasts cannot be considered as representing realistic expectation of cost inputs required by SP AusNet to achieve the opex and capex objectives over its next regulatory control period.

.

Chart 5.1: Total Construction – Victoria
Value of Work Done, Constant 2009/10 Prices

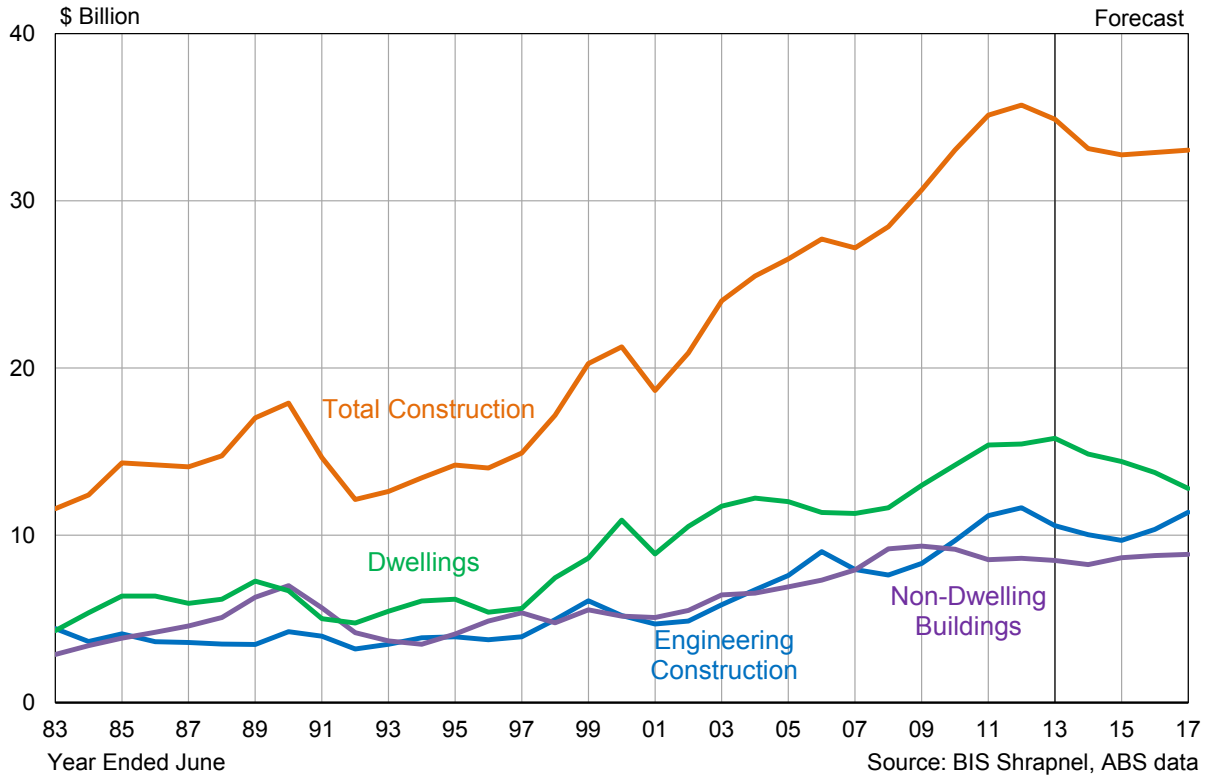


Table 5.1: Construction Wages Growth – Victoria and Australia
Year Average Growth

	Victoria - Nominal		Australia- Nominal	
Year Ended March	WPI (1)		WPI (1)	
	Index	A% CH	Index	A% CH
2000			67.9	2.7
2001			70.6	4.0
2002			73.1	3.6
2003			75.5	3.2
2004			78.0	3.4
2005			82.3	5.4
2006			86.1	4.7
2007			90.7	5.3
2008			94.5	4.2
2009			98.9	4.7
2010	104.4		102.5	3.6
2011	109.2	4.6	106.3	3.7
2012	113.4	3.8	110.5	4.0
2013	116.9	3.1	114.5	3.6
Forecasts				
2014	121.7	4.1	118.2	3.2
2015	125.7	3.3	122.2	3.4
2016	130.4	3.7	126.8	3.7
2017	136.1	4.3	132.1	4.2
Long Term Averages				
2001-2010			4.2	
2009-2013			3.9	
2014-2017	3.9		3.7	
2015-2017	3.8		3.8	

Source: BIS Shrapnel, ABS

([1]) Total time hours excluding bonuses.

APPENDIX A: A NOTE ON DIFFERENT WAGE MEASURES AND BIS SHRAPNEL'S WAGE MODEL

Several different measures of wages growth are referred to in this report, 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) — earnings gained from working the standard number of hours per week. 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 used in this report refer to full-time adult AWOTE, and are sourced from the Australian Bureau of Statistics (ABS) catalogue number 6302.0, with BIS Shrapnel forecasts.
- 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 used in this report excludes bonuses. The WPI also excludes the effect of changes in the quality or quantity of work performed and most importantly, the compositional effects of shifts within the labour market, such as shifts between sectors and within firms. The WPI figures quoted in this report are sourced from ABS catalogue number 6345.0, with BIS Shrapnel forecasts.

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 (i.e. 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.

For this reason, BIS Shrapnel prefers using AWOTE as the measure that best reflects the increase in wage cost changes (or unit labour costs, net of productivity increases) for business and the public sector across the economy. On the other hand, wage price index can be used as a measure of *underlying* wage inflation in the economy.

Description of BIS Shrapnel's wage model

BIS Shrapnel's wage model (for both AWOTE and WPI) is based on the analysis of past and future (expected) wage movements in three discrete segments of the workforce, based on the three main methods of setting pay and working conditions (see tables 3.1 and 3.2):

- 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 3.1, wage increases under 'individual arrangements' are calculated by deduction. Data from DEEWR (Department of Education, Employment and Workforce Relations) 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 LPI, 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 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 and our expertise and knowledge of key influences.

APPENDIX B: TERMS OF REFERENCE

To be inserted by SP AusNet.

APPENDIX C: STATEMENT OF COMPLIANCE WITH EXPERT WITNESS GUIDELINES

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

APPENDIX D: CURRICULUM VITAES OF KEY PERSONNEL

Richard Robinson, B.Comm (Hons),
Senior Economist
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

Kishti works across both the Economics and Infrastructure and Mining units at BIS Shrapnel. 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 is a contributing author for BIS Shrapnel's subscriptions services including Economic Outlook, Long Term Forecasts and Engineering Construction in Australia.

Kishti also provides clients with detailed projections of wages, prices as well as material costs at the national, state and regional level. 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 has also been involved in the design and implementation of econometric methodologies for private economic research projects.

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.

Husam El-Tarifi, B.Ec (Hons)
Research Assistant

Husam joined BIS Shrapnel in 2013 after obtaining his Bachelors Degree in Economics with Honours. He works across both the Infrastructure and Mining and the Economics units where he contributes to a number of reports and private client studies.

