Real Labour Cost Escalation Forecasts to 2018/19

Real Labour Cost Escalation Forecasts to 2018/19

– Australia & New South Wales

> DECEMBER 2014

Report prepared for:

TRANSGRID

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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.

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SUMMARY

- In September 2013, BIS Shrapnel was engaged by TransGrid to provide an expert opinion regarding the outlook for labour cost escalators and labour market issues relevant to electricity networks in New South Wales over a six year period from 2013/14 to 2018/19 inclusive (ie from 1 July 2013 to 30 June 2019). The labour cost escalators were used by TransGrid to calculate the efficient level of operating and capital expenditure required to fulfil the opex and capex objectives (as set out under the Rules) over their next regulatory period. In October 2014 BIS Shrapnel, was again engaged by TransGrid to update the initial report prepared in November 2013. The report presents our updated real labour cost escalators.

- BIS Shrapnel now 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 4.3 per cent per annum over the five years to 2018/19, 0.1 per cent higher than the national 'All Industries' AWOTE average of 4.2 per cent per annum over the same five year period (see table 4.5). In terms of *underlying* wages growth in the 'utilities' sector for total Australia — expressed in wage price index (WPI) terms — BIS Shrapnel is forecasting an average of 3.6 per cent per annum (0.4 percentage points higher than the national 'All Industries' WPI average of 3.2 per cent per annum) over the five years to 2018/19.

- New South Wales utilities WPI growth is forecast to average 3.9 per cent per annum (0.2 percentage points higher than the national utilities average of 3.7 per cent per annum) over the four years from 2015/16 to 2018/19 inclusive (ie over TransGrid's next full regulatory period, see table 4.6).

- The slightly stronger utilities wages growth in New South Wales in the second half of this decade is due to still strong demand for labour from the state's utilities sector as well as increased competition from the construction sector. The latter driven by an upswing in residential construction. NSW utilities engineering construction is projected to fall in 2014/15 but it is still expected to remain comfortably above historically high levels.

- Utilities construction work done is expected to be elevated in the second half of the decade as the surplus in generation capacity is slowly eroded through continued population growth and industrial activity, placing greater demands on electricity supply. Utilities investment is a key influence on employment growth in the utilities sector (even though some capital projects are outsourced to the construction sector). The combination of relatively high levels of utilities engineering construction and overall construction in the state means increased wage pressures in the NSW utilities sector (relative to other states) over the four years to 2018/19.

- NSW construction wages over the next five years, on average, is expected to be stronger than the national average. After underperforming the Australian average for most of the last decade, construction activity in NSW is expected to grow substantially over the three years to 2016/17. Private dwelling construction will be the initial driver, followed by a new round of public sector infrastructure projects. The latter will be driven by a need to make up for underinvestment over much of the past decade as well as increased ability to finance it through asset recycling.

- NSW construction wages will follow the recovery in dwelling construction and the improvement in total construction. Construction wages (in WPI terms) is expected to peak at 4.2 per cent in 2017/18 before easing slightly as construction activity flat lines.

Table 1: Summary – Labour Cost Escalation Forecasts

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

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	4 yr Avg (g)
	Actuals				Forecasts	Next full regulatory period				
NOMINAL WAGE PRICE CHANGES										
1. Internal Labour										
EGWWS AWOTE - New South Wales (a,b)	4.4	1.5	5.1	1.7	3.1	3.4	4.7	5.1	5.0	4.6
EGWWS WPI - New South Wales (a)	**3.5**	**3.2**	**3.7**	**3.0**	**3.5**	**3.4**	**3.6**	**4.1**	**4.4**	**3.9**
EGWWS AWOTE - Australia (c)	9.1	2.5	6.1	2.0	3.4	3.8	4.4	4.9	5.1	4.6
EGWWS WPI - Australia (c)	4.2	3.5	4.2	3.3	3.2	3.3	3.6	3.9	4.1	3.7
2. External Labour										
Construction AWOTE - New South Wales (d,b)	-4.6	4.3	4.5	2.3	3.4	3.9	4.5	4.5	4.3	4.3
Construction WPI - New South Wales (d)	**4.1**	**3.2**	**3.3**	**2.9**	**3.2**	**3.6**	**3.9**	**4.2**	**4.1**	**4.0**
Construction AWOTE - Australia (c)	5.0	3.5	4.3	2.1	3.2	3.7	4.3	4.1	4.5	4.1
Construction WPI - Australia (c)	4.0	4.1	3.3	3.0	2.9	3.4	3.8	3.8	4.0	3.8
3. Australian Wages										
All Industries - AWOTE (e)	4.2	4.3	4.6	3.0	3.3	3.9	4.5	4.9	4.3	4.4
All Industries - WPI (e)	3.8	3.6	3.3	2.6	2.6	2.9	3.4	3.7	3.4	3.4
Consumer Price Index (headline) (f)	3.1	2.3	2.3	2.7	2.0	2.6	2.5	2.5	2.5	2.5
REAL WAGE PRICE CHANGES (h)										
1. Internal Labour										
EGWWS AWOTE - New South Wales (a)	1.3	-0.8	2.8	-1.0	1.0	0.8	2.2	2.5	2.5	2.0
EGWWS WPI - New South Wales (a)	**0.4**	**0.9**	**1.4**	**0.3**	**1.4**	**0.8**	**1.1**	**1.6**	**1.9**	**1.3**
EGWWS AWOTE - Australia (b)	5.8	0.1	3.8	-0.7	1.3	1.2	1.9	2.3	2.6	2.0
EGWWS WPI - Australia (b)	1.0	1.2	1.9	0.5	1.1	0.7	1.1	1.4	1.6	1.2
2. External Labour										
Construction AWOTE - New South Wales (c)	-7.5	2.0	2.2	-0.4	1.4	1.2	1.9	1.9	1.8	1.7
Construction WPI - New South Wales (c)	**1.0**	**0.9**	**1.0**	**0.2**	**1.1**	**0.9**	**1.4**	**1.7**	**1.6**	**1.4**
Construction AWOTE - Australia (b)	1.9	1.2	2.0	-0.6	1.2	1.0	1.7	1.5	2.0	1.6
Construction WPI - Australia (b)	0.9	1.7	1.0	0.3	0.8	0.8	1.3	1.3	1.5	1.2
3. Australian Wages										
All Industries - AWOTE (e)	1.0	2.0	2.3	0.3	1.3	1.2	1.9	2.3	1.7	1.8
All Industries - WPI (e)	0.7	1.3	1.0	-0.1	0.6	0.3	0.9	1.2	0.9	0.8

Source: BIS Shrapnel, ABS data

(a) Electricity, Gas, Water and Waste Services (EGWWS) Average Weekly Ordinary Time Earnings (AWOTE) Wage Price Index (WPI) for New South Wales.
(b) The ABS stopped producing AWOTE at the state industry level from February 2012. Hence, the increase in AWOTE for 2012/13 at the state industry level is estimated from historical data, changes in the relevant Australian industry AWOTE forecasts as well as known movements in state industry WPI. Similarly, our forecasts for AWOTE are based on our Australian industry wage forecasts and state industry WPI forecasts.
(c) Australian sector wage forecasts provided for comparison.
(d) Construction Sector AWOTE and WPI for New South Wales.
(e) Australian All Industries AWOTE and WPI provided for comparison.
(f) Headline CPI forecasts based on Reserve Bank of Australia forecasts to December 2016 quarter and then Commonwealth Treasury medium term projections.
(g) Average Annual Growth Rate for the next regulatory period ie 1 July 2015 to 30 June 2019 (or 2015/16 to 2018/19 inclusive).
(h) Real price changes are calculated by applying the exact Fisher equation.

1. INTRODUCTION, OUTLINE OF REPORT & DATA SOURCES

In September 2013, BIS Shrapnel was engaged by TransGrid to provide an expert opinion regarding the outlook for labour cost escalators and labour market issues relevant to electricity networks in New South Wales over a six year period from 2013/14 to 2018/19 inclusive (ie from 1 July 2013 to 30 June 2019). The labour cost escalators were used by TransGrid to calculate the efficient level of operating and capital expenditure required to fulfil the opex and capex objectives (as set out under the Rules) over their next regulatory period.

In October 2014, I Richard Robinson, Associate Director (Economics) at BIS Shrapnel, was again engaged by TransGrid to update the initial report prepared in November 2013. 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 Associate at BIS Shrapnel. Curriculum vitas of all relevant personnel are attached in Appendix D. Notwithstanding the assistance from the other two economists, the opinions in this report are my own and I take full responsibility for them. A brief description of the material upon which I have relied for the preparation of this report follows.

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

Forecasts of the economic variables in this report were mostly sourced from BIS Shrapnel reports, including *Economic Outlook, Long Term Forecasts: 2014 – 2029* report*, Engineering Construction: 2013/14 to 2027/28 and Long Term Building Work Done Forecasts*, plus other unpublished forecasts and from BIS Shrapnel internal research.

The structure of this report is as follows:

- The **Summary** section presents an overview of the outlook for the labour cost escalators and a summary table.
- **Section 2** provides an overview of the macroeconomic outlook for Australia and New South Wales, 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 TransGrid'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 New South Wales.

- **Section 5** provides forecasts of TransGrid's external or 'out-sourced' labour cost escalation. As most out-sourced labour is provided by firms in the construction industry, TransGrid's external cost labour escalation is based on forecasts of wages growth in the New South Wales 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 NEW SOUTH WALES

2.1 Overview of the Australian economy

The Mining Investment Boom has peaked and will decline from now

Australia's solid economic performance over the last decade was largely 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. However, the surge 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.

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 agriculture, manufacturing, tourism, education, finance and business services. This was part of the structural change brought about by the escalation in the resources investment, "making room" for the mining investment boom. Ultimately, higher commodity prices and the associated mining investment boom as well as the rise in the Australia dollar delivered Australia strong but uneven composition of growth last decade and early this decade.

The mining investment boom peaked in 2013/14. As a result, resources investment will now make negative contributions to investment and real GDP growth. That said, we anticipate a soft landing in the resources construction market. In other words, we don't expect activity to collapse completely.

Commodity prices, while retreating, remain high from a long run historical perspective and will support the investment decisions for a number of projects expected to commence over the short-to-medium term. This, in turn, will keep minerals investment at healthy levels over the next four years. Further, a strong pipeline of work driven by oil and gas construction, with several large LNG (liquefied natural gas) projects now ramping up off the North West Coast and a range of projects around Gladstone, Queensland will place a floor under the level of work. And, eventually, further (smaller) mining investment cycles will play out in response to global demand, prices and movements in the Australian dollar.

We wait for recovery in non-mining business investment and structural change associated with a lower dollar to underpin solid growth in the second half of the decade.

The peak in the mining boom puts Australia's economy in a transition phase. We are looking for the next growth drivers to come through and take over from the mining sector. But this 'handover' is unlikely to be as successful as those in the last decade when growth switched basically 'on cue' from housing construction, to minerals investment, later (around mid-decade and following the GFC) to public sector, then to mining investment subsequently. We think the next set of drivers will be slow to come through. The rebalancing, the reversing of high commodity prices, and hence reversing of high Australian dollar-induced structural change to more broadly based growth will take time. The Australian dollar remains still 'too high' from a competitiveness perspective.

Meanwhile, the Australian economy is operating below capacity. Nonetheless, the ingredients of positive (albeit below long-run average) growth remain in place.

Real GDP growth in the interim will be driven by net exports. We expect the world economy to continue to gather momentum and won't pull the rug from under us. Countries important to us, especially China, are expected to continue to grow at a solid pace. Meanwhile, imports will be soft in the near term consistent with the peak of mining investment boom as well as weak domestic demand. We anticipate net exports will add at least 1 per cent to growth over each of the next four years.

Further, the long-awaited recovery in dwelling investment is now entrenched. Having been delayed due to weak housing market sentiment and excessive caution by investors, the expectation of low interest rates for an extended period combined with a substantial deficiency of residential stock is driving a solid increase in dwellings construction. This will build momentum from here. But this recovery will not be uniform between regions, with sizeable stock deficiencies set to drive the markets in parts of Queensland and New South Wales in particular. Private non-dwelling building should also post, albeit moderate, growth over the next few years with major projects in retail, warehouses and accommodation sectors offset by declines after the current boom in hospital building.

The key to the broadening of growth will be the recovery in non-mining business investment. However, that is still 18 months to two years away. Ever since the GFC hit, most non-mining business enterprises have been facing weak demand, weak profits and weak confidence. Even the stronger ones have been cutting costs, preserving cash and deferring investment. It will be tightening capacity and improved confidence that drives a recovery in non-mining business investment.

Table 2.1: Australia – Key Economic Indicators, Financial Years

Year Ended June							Forecasts				
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Selected Expenditure Categories											
Private Investment											
– Dwellings	-1.4	1.2	3.8	-2.9	-3.8	5.1	6.5	2.4	-2.1	-5.6	1.8
– New Non-Dwelling Construction (+)	12.1	-10.2	18.5	35.7	10.7	-2.0	-7.5	-7.8	-8.5	-5.8	2.9
– New Non-Dwelling Building (+)	-3.9	-14.4	9.0	4.2	11.2	5.1	6.0	4.6	-0.1	-8.4	-1.7
– New Engineering Construction (+)	29.2	-7.0	25.1	54.8	10.6	-4.8	-13.4	-14.4	-14.1	-3.7	6.2
Total New Private Investment (+)	**1.2**	**-2.2**	**5.8**	**15.1**	**3.2**	**-2.0**	**-0.9**	**-0.5**	**-1.0**	**-2.9**	**4.5**
New Public Investment (+)	**8.1**	**22.5**	**-3.0**	**-3.6**	**-4.1**	**-1.8**	**-6.4**	**3.5**	**9.9**	**6.9**	**6.7**
Gross National Expenditure (GNE)	**0.6**	**2.2**	**4.2**	**5.0**	**1.4**	**0.7**	**1.4**	**2.5**	**2.5**	**1.5**	**3.7**
GDP	**1.7**	**2.0**	**2.3**	**3.7**	**2.5**	**2.5**	**2.3**	**2.9**	**3.2**	**3.0**	**3.5**
Inflation and Wages											
CPI (Yr Avg)- RBA/Treasury forecasts (+)	3.1	2.3	3.1	2.3	2.3	2.7	2.0	2.6	2.5	2.5	2.5
Wage Price Index (Jun on Jun)(**)	3.8	3.1	3.8	3.7	2.9	2.6	2.7	3.1	3.5	3.6	3.4
Wage Price Index (Yr Avg)(**)	4.1	3.1	3.8	3.6	3.3	2.6	2.6	2.9	3.4	3.7	3.4
Average Weekly Earnings (Yr Avg)	5.5	5.6	4.2	4.3	4.6	3.0	3.3	3.9	4.5	4.9	4.3
Employment											
– Employment Growth (Yr Avg)	1.7	0.9	2.4	1.2	1.2	0.8	1.2	1.7	2.1	0.8	1.3
– Employment Growth (May on May) (%)	0.9	1.6	2.2	1.7	0.9	0.9	1.4	1.9	1.9	0.5	1.8
– Unemployment Rate (May) (%)	5.8	5.2	5.0	5.2	5.6	5.8	6.2	5.9	5.5	5.9	5.6
Labour Productivity Growth											
– Total	0.0	1.0	-0.1	2.5	1.3	1.6	1.1	1.2	1.1	2.2	2.2
– Non-farm	-0.4	1.1	-0.1	2.6	1.3	1.6	1.2	1.2	1.2	2.1	2.2
Exchange Rates											
– US$ per A$ (Yr Avg)	0.75	0.88	0.99	1.03	1.03	0.92	0.86	0.84	0.83	0.76	0.79

Source: BIS Shrapnel, ABS and RBA

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

* Reserve Bank of Australia forecasts to June 2016 quarter and then Commonwealth Treasury medium term projections.

** Based on Ordinary Time Hourly Rates of Pay.

The other major change will be a structural change back towards the trade-exposed industries as and when the Australian dollar falls. While in some cases the loss of industry will be irreversible, the lower dollar will improve the competitiveness of agriculture, trade-exposed manufacturing, mining, tourism, education, finance and business services.

While growth will look good, boosted by minerals production, the labour market will remain weak in the near-term. Loss of jobs associated with mining investment will keep employment growth subdued. Hence we expect interest rates to remain at current low levels over 2014/15.

Our forecast is for growth of 2.3 per cent in 2014/15. It's only when non-mining business investment and structural change chime in that we'll see an acceleration taking us close to potential. And, as growth broadens beyond mining, employment will pick up underwriting a strong final third of this decade. Only then will the Reserve Bank raise rates to dampen demand.

The upshot is that we are a long way from stable, balanced growth or what feels like a healthy economy. The mining boom brought with it a negative structural shift in the non-mining-related part of the economy. And that will reverse. Certainly, continuation of strong cycles in investment will continue to drive cyclical shifts in the economy. But most importantly, a lower dollar will allow Australia to build its industrial and services base with a resumption of non-mining investment underwriting a stronger economy in the medium-term.

The value of the Australian dollar is generally driven by two key factors:

- **Commodity prices**. As mineral and agricultural commodities make up over 70 per cent of Australia's exports, they have a direct impact on the demand for the Australian dollar through exporters converting foreign currency returns. In addition, high commodity prices have encouraged record mineral investment in recent years, which is boosting Australian growth above the rest of the developed world, further lifting the currency.
- **Interest rate differentials.** A larger interest rate differential with the rest of the world, particularly the US, will boost the value of the Australian dollar. This is due to the 'carry trade' market, where participants borrow money in low interest rate currencies and invest elsewhere at higher interest rates, such as in Australia.

The record strength of the Australian dollar over the three years to 2012/13 is unlikely to be seen again over the forecast period. The Australian dollar has shed over 15 per cent since April 2013, when it was last at parity with the US dollar, to sit at around $US0.83 at the time of writing. We believe the dollar will average around $US0.85 over the next two years.

We believe the dollar will not regain parity with the US dollar. In other words, we expect the dollar will now trend around a level supported by its fundamentals, rather than being overvalued due to excessive investor confidence, as prevailed over the three years to April 2013.

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. In short, bad news on the Chinese economy usually pushes the A$ down (and vice versa), while bad news on the US economy usually pushed the A$ up, because investors view that as a negative for US interest rates.

Further price declines in commodities such as coal and iron ore, will contribute to further declines in the exchange rate, however this will be offset to some degree by price rises in non-ferrous metals and agricultural prices until 2016/17. Additionally, we expect US interest rates to begin to rise through calendar year 2015. As overseas economies recover, their interest rates will also rise faster in comparison to Australian rates, putting further downward pressure on the Australian dollar.

During 2017/18, we are forecasting a larger fall in the dollar, to around US$0.76. This will be driven by further declines in key commodity prices, as world economic growth rates slow. Although mineral demand is likely to remain elevated due to solid growth in the Asia region, in particular China, growth in world supply is expected to outstrip this demand. Consequently, this will apply downward pressure on commodity prices, and hence the currency. Additionally, forecast RBA interest rate cuts will contribute to a larger interest rate differential favouring the rest of the world for higher returns, especially the United States.

There remains a high probability of the currency 'overshooting' on the way down below prevailing trade and interest rate fundamentals over the short-to-medium term, particularly if the currency drops quickly and gathers strong downward momentum. However, should it overshoot, the currency is expected to gradually return toward its fundamental value, on which our forecasts are based. Eventually, the dollar will attain around US$0.80 during 2018/19, before rising further to US$0.87 in 2019/20, supported by further growth in commodity prices, as well as a return to relatively high interest rates in Australia compared to overseas.

Australian Economic Outlook

Having gone through a structural change with the mining boom shifting activity and labour towards servicing high levels of mining investment, that investment has now peaked and will enter a period of sustained, albeit orderly, decline. That means dismantling the capacity to service high levels of resources investment and redeploying resources to the non-mining sectors. It means a structural shift back towards balanced growth.

The driving force of the structural change — away from domestic trade-exposed industries towards the mining-related sectors — was the currency. The high dollar impacted on competitiveness creating enormous pressure on other trade-exposed industries including agriculture, manufacturing, tourism, education, finance and business services. As a result, investment outside the mining sector has been bumping around the bottom of the cycle since the post-GFC collapse. The next stage is for a recovery in non-mining spending, especially non-mining business investment. However, the Australian dollar is still too high from a competitiveness point of view. This, combined with low capacity utilisation suggest that a generalised pick up in non-mining business investment is still 12 to 18 months away. As a result, the Australian economy sits in a soft patch and is likely to remain weak for another 12 months at least. But there is little chance of a collapse with growth to be underwritten by resources exports due to increased production capacity, a legacy of the recent mining investment boom.

Meanwhile, there are cyclical forces at play.

- Residential investment is usually the first sector to recover after a downturn, and it has finally picked up strongly.
- Government investment has been falling, and continues to fall, as governments focus on budgets. We expect another year of declining activity before the next round of projects boosts activity.
- The next stage is a more solid recovery in growth and employment underwritten by recovery in non-mining business investment. However, given still low capacity utilisation, this appears to be 12 to 18 months away.

That means that the Australian economy will remain soft, and employment growth softer, until the structural shift and cyclical upswings underwrite stronger growth in the second half of the decade. The next 12 to 18 months will be characterised by:

- Continued tight business conditions - cutting costs and deferring investment.

- Tight government expenditure
- Further rises in unemployment
- Subdued wage pressures and further labour productivity increases, offsetting the inflationary impact of falls in the dollar
- A sustained period of low interest rates until growth picks up.

We expect the economy to build momentum from late 2015 with growth returning to trend over 2015/16 and 2016/17. Growth could ease in 2017/18 as interest rates rise, but quickly return to trend reflecting more broadly based balanced growth in the final third of the decade.

The difficult period is now – waiting for a lower dollar and structural change to come through and waiting for non-mining business investment to recover.

Consumer expenditure to grow in line with incomes

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

Over the past three years, households have stayed cautious, keeping savings high and only very slightly loosening the purse strings. Through this period growth in consumption expenditure has been in line with growth in household disposable income.

We expect that to continue over the next few years. Households have built up a considerable savings buffer after several years of high savings ratios. While household income growth is now softening, improved financial security will see expenditure continue to pick up. With the Australian dollar now lower, the ongoing growth in household consumption expenditure is expected to translate into increased retail turnover and activity in Australia over the next few years.

We expect interest rates to remain around current relatively low levels until strength in the broader economy causes the Reserve Bank to begin to increase interest rates from the second half of calendar year 2016 and through 2017 back towards neutral levels. This would dampen consumer spending from 2017/18. Overall, household consumption expenditure is forecast to average growth of 2.9 per cent per annum over the five years to 2018/19.

Over the longer term, population growth is expected to be the primary driver of household expenditure. As such, slowing population growth will see household consumption expenditure growth moderate slightly over the following decade, averaging 2.8 per cent per annum between 2019 and 2029. Although the economy is expected to remain healthy through this period, we do not expect a return to the debt-driven increases in consumption that occurred through the late 1990's and early 2000's when growth rates often approached and exceeded 5 per cent.

Offsetting cycles will keep investment subdued

Private investment will be characterised by offsetting cycles. The mining investment boom which underwrote the strength in Australia's GDP growth last decade peaked last year and will detract from investment growth over the next four years. We estimate that mining and heavy industry construction will decline by 41 per cent over the next four years. It is important to note

that we expect an orderly decline, rather than activity falling off the cliff. Projects already under construction, and their outstanding activity, will place a floor under the level of work, ensuring investment remains around historically strong levels.

On the bright side, the long-awaited recovery in dwellings investment is now entrenched. This upswing has been delayed due to weak housing market sentiment and excessive caution by investors. However, with the expectation of low interest rates for an extended period, and a growing deficiency of stock, a solid increase in dwellings building is now well under way and will build momentum from here. But this recovery will not be uniform between regions, with sizeable stock deficiencies set to drive the markets in parts of Queensland and New South Wales in particular.

Private non-dwelling building is also likely to experience solid growth over the next few years, although the outlook varies across states. Strong growth in retail building in line with improving economic conditions will see this sector momentarily usurp offices as the largest sector. Activity will also be supported by significant projects in the accommodation, warehouses, and aged care sub-sectors. The longer term outlook is positive, as improving demand across non-mining industries will see capacity constraints emerge and prompt the next round of investment in commercial and industrial buildings.

The maturing of the mining investment boom will see further declines in private plant and equipment investment in the near-term. However, the downturn will be softened somewhat as service industries equipment investment picks up from the bottom of the cycle. Broad-based growth in equipment investment will return when capacity constraints emerge as demand picks up. That we think is another 18 months to 2 years away. The net result is a soft period for total private investment over the next five years.

Government spending affected by fiscal consolidation

The completion of the last of the post GFC stimulus in particular health projects and belt tightening to control budget deficits and debt will be a drag on investment in the short-term. However, we expect a recovery in the second half of the decade. This will be underwritten by the next round of infrastructure projects as governments at all levels embrace the process of ‘asset recycling’ where mature assets are taken off the balance sheet to finance new ones.

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

Strong external demand will underwrite Australia’s GDP growth

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

China’s economic growth is expected to remain solid, supported by near-term targeted stimulus measures and ongoing medium-term economic reforms aimed at reorienting growth toward domestic consumption and away from investment and exports. Overall, we expect economic growth in China to remain between 7 and 7½ per cent over the next three years.

The level of infrastructure in China however remains well below that in developed countries. This suggests that infrastructure investment encompassing municipal infrastructure, utilities, transportation and social infrastructure such as schools and hospitals is likely to remain strong well into the next decade and possibly beyond. As infrastructure investment is intensive in its use of steel which in turn requires iron ore and coking coal as inputs, the prospects of Australia’s bulk commodity exports remains bright.

Meanwhile, the expected improvement in world economic growth rates over the next two years coupled with the lower exchange rate, will facilitate a recovery in export volumes of non-commodity manufactures. Even though the Australian dollar has fallen over 10 per cent from above parity since April 2013, improvements in manufacturing exports will still depend on future world economic conditions. We expect manufacturing year average export growth rates to reach 2.8 per cent in 2014/15, picking up even further in 2015/16. This recovery will gain more speed over the medium term as world economies return to trend economic growth rates, and the dollar falls toward (and below) US$0.80.

Overall, total exports of goods and services are forecast to increase at a robust annual compound growth rate of 5.7 per cent over the next five years, compared to 4.6 per cent growth over the past five years.

Labour shortages to re-emerge in the second half of 2016

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

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

The (subdued) pace of employment growth of 1.1 per cent over the past three years has not kept pace with the growth in the labour force (the number of people working or available and actually looking for work) — which has been around 1.5 per cent annually. This has resulted in the unemployment rate rising from 5.0 per cent in May 2011 to 6.3 per cent in November 2014.

Employment growth will remain weak over the next 12 months as trade-exposed businesses continue to focus on cost-cutting to deal with problems of competitiveness associated with the high Australian dollar. Other businesses' demand for labour will also be weak due to slower growth in output. With the labour force expected to continue to outpace employment growth, the unemployment rate is forecast to remain above 6 per cent until mid 2016.

However, employment growth should pick up from the second half of 2016 and average over 2 per cent in 2016/17. This will see the unemployment rate drop to 5.6 per cent by mid-2017, before again rising to a peak of 6.1 per cent by early 2018 when the economy slows.

Overall, we expect employment growth to average 1.5 per cent per annum over the next five years. However, the labour force will grow more slowly with lower immigration and an aging population restricting labour supply and constraining employment and GDP growth.

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

Main risks to outlook

There is a risk that we could have a bigger collapse in mining investment. Our assumption is for an orderly decline in resources investment but a drastic deterioration in the prospects of mining projects could trigger a bigger fall in mining investment and a recession in Australia. However, we see this as a low probability (tail) event as the Federal Government has scope to loosen fiscal policy to support growth in Australia if needed.

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

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

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

2.1.1 Medium Term Issues

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

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

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

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

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

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

That structural change process is ongoing as the impact of the still too high Australian dollar continues to work its way through the system.

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

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

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

The boost to government investment associated with the stimulus package is still being wound back aggressively.

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

And now a phase of residential investment has begun, with activity strengthening through the middle of the decade.

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

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

The next structural shift

In any case, the next structural shift will come as the dollar falls further. That will again be a painful process involving substantial change at the industry and regional levels, with declining minerals investment offset by strong growth in minerals production and 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 lost ground — unless new highly capital intensive technologies change the game. Services are likely to be the major beneficiaries.

2.2 The New South Wales Economy: Past Growth, Current Conditions and Short-to-Medium Term Outlook

In 2013/14, New South Wales posted 3.0 per cent growth in State Final Demand (SFD), second only to the LNG-driven Northern Territory and well above the national average of 1.2 per cent. Gross State Product (GSP) is also estimated to have seen an improvement on the previous year's growth, assisted by a rise in net exports.

The New South Wales economy struggled over much of the 2000s and into the early-2010s, tending to trail rival Victoria and the national average. While Victoria implemented a well-planned development strategy (by releasing affordable land in central and well-connected locations, supporting the burgeoning office market, and providing incentives for business investment), New South Wales suffered under the lack of land available for development and excessive government-imposed infrastructure charges. These reduced the financial feasibility of business and property investment in the state (and particularly Sydney) over this period.

Consequently, over the decade to 2013/14, total construction contribution to New South Wales' GSP (including dwelling and non-dwelling building and engineering construction) averaged just 0.5 per cent per annum. This compared with construction contributing an average of 2.2 per cent per annum to Australia's GDP over the same period (although it should be noted that this included construction related to the mining boom). However, between 2014/15 and 2016/17, we expect a turnaround in this trend, with New South Wales' construction contribution forecast to exceed 1.5 per cent while construction is likely to detract from Australia's GDP growth, largely due to steep declines in mining-related engineering construction.

Indeed, construction in New South Wales has already begun to recover, led by the upswing in residential investment. Growth in total dwelling investment in 2013/14 exceeded 6 per cent. Other dwellings were the biggest contributor, posting double-digit growth while houses saw

slower, but still positive, growth. Alterations and additions recorded their first year of positive growth since 2010/11, albeit more modest growth than new dwellings.

The momentum in the residential sector will only continue to build. We believe that there currently exists a stock deficiency in excess of 50,000 dwellings – well over a year's worth of dwelling completions at the current rate. Consequently, we expect activity to escalate over the next three years, peaking in 2016/17 and supported by low interest rates. Strong growth is forecast across houses, other dwellings and alterations and additions.

Non-residential building expanded considerably during 2013/14, driven by double-digit growth in both the commercial and industrial and the social and institutional sectors. Retail and wholesale trade, factories, and offices are benefitting from higher levels of economic activity while a pipeline of publicly-funded projects are supporting growth in education and health facilities investment. The Barangaroo development will continue to underpin activity, while construction on the new Sydney Convention and Entertainment Centre (to commence this year) and the new Northern Beaches Hospital (scheduled commencement in 2015/16) should ensure that we see another few years of positive growth in non-residential investment before it turns around in the final third of the decade.

In addition, New South Wales will be the first cab off the rank with regard to the next round of infrastructure spending. A lot of this spending will be funded by asset sales; specifically, the privatisation of Port Botany and Port Kembla, the long-term lease of Port of Newcastle, and the prospective long-term lease of 49 per cent of the state's electricity network.

The $8.3 billion North West Rail Line, the multi-stage WestConnex, the $3 billion NorthConnex, and the Anzac Parade Light Rail development are just some of the major projects that will be ramping up over the next three years. Although New South Wales will face some exposure to the decline in mining investment over the coming years via its coal sector, the negative impact will be minor compared with mining-intensive Queensland and Western Australia. Falling electricity-related construction, following a period of elevated investment in the sector, will also dent engineering activity, particularly in 2014/15. Overall, we expect a second consecutive year of falling engineering construction before a sustained recovery begins in 2015/16, driven mainly by the public sector.

The current period of construction-driven economic growth has had positive spill-over effects into other industries, meaning that New South Wales' unemployment rate is among the lowest in the country at around 6.0 per cent (s.a.) as at November 2014. On the downside, employment in property and business services (i.e. rental, hiring, and real estate services, professional, scientific, and technical services, and administration and support services) fell considerably through 2012/13 and has seen very little recovery since then. This is where Melbourne has a competitive edge over Sydney. Although we expect employment in these industries to improve from mid-decade on the back of the impending recovery in non-mining business investment, Victoria will likely continue to outpace New South Wales in the long run.

The relatively solid labour market, along with higher confidence and low interest rates, aided an acceleration in private consumption expenditure (PCE) growth to 2.8 per cent over 2013/14. Retail turnover saw a 4.9 per cent rise over the same period; the state's strongest result in almost a decade.

In the near-term, the New South Wales economy will continue to be driven by construction. This should soon be bolstered by the beginning of a recovery in non-mining business investment. Accordingly, we are forecasting New South Wales to continue to outpace most other states and territories over the next few years, with SFD growth of almost 4 per cent expected around 2015/16 and 2016/17.

Table 2.2: New South Wales – Key Economic Indicators, Financial Years

	Annual Per Cent Change										
Year Ended June	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
NSW											
Total Construction Activity[(a)]	7.1	6.5	6.0	0.5	7.3	-3.7	4.3	5.7	3.7	-0.5	3.1
State Final Demand	0.0	3.3	3.0	1.5	1.5	2.6	4.0	4.1	3.7	1.8	3.3
Gross State Product (GSP)	**1.1**	**1.8**	**2.4**	**2.5**	**1.8**	**2.1**	**3.2**	**3.8**	**3.4**	**2.6**	**3.5**
Employment Growth	0.6	0.6	2.8	0.6	1.5	0.5	2.0	2.2	2.7	1.0	1.4
AUST											
Total Construction Activity[(a)]	9.2	4.0	7.2	14.6	3.6	-0.4	-3.8	-4.9	-4.6	-2.7	4.0
Australian Domestic Demand	1.3	2.2	3.7	5.2	1.6	1.0	1.2	2.3	2.7	1.6	3.5
Gross Domestic Product (GDP)	**1.7**	**2.0**	**2.3**	**3.7**	**2.5**	**2.5**	**2.3**	**2.9**	**3.1**	**2.6**	**3.6**
Employment Growth	1.7	0.9	2.4	1.2	1.2	0.8	1.2	1.5	1.9	1.0	1.2

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.

3. INFLATION AND WAGES

3.1 Outlook for Australian Inflation

Inflation eased in the September quarter in line with weak demand inflationary pressures. With the economy expected to remain weak over the next 12 months at least, we expect inflation to remain within the Reserve Bank's 2-3 per cent target band. Hence, interest rates are forecast to remain at current low levels till middle of next year. Interest rates will eventually shift to neutral but the rate of increase back to neutral will be dependant on the strength of the recovery in non-mining business investment.

Annual inflation declined in the September quarter

The headline rate for the Consumer Price Index (CPI) rose 0.5 per cent in the September quarter, with the through-the-year increase easing to 2.3 per cent (September quarter 2014 compared to September quarter 2013), which represented a sharp deceleration from the 3.0 per cent reported in the June quarter, 2014. Meanwhile, the Reserve Bank's measure of underlying inflation also rose 0.5 per cent in the September quarter, with the annual rate easing to 2.6 per cent in the September quarter from 2.7 per cent in the June quarter.

The overall outcome was the result of a number of one-off and offsetting factors. The main positive contributors to the CPI included a 14.7 per cent rise in fruit prices, a 1.1 per cent rise in the cost of purchasing a new dwelling by owner-occupiers (reflecting a strong housing construction market), a 6.3 per cent rise in property rates (with this category having a seasonal increase on 1st July each year, and then stable for the remainder of the year) and a 2.3 per cent increase in tobacco due to the large rise in Commonwealth excise on 1st September. There will still be some positive residual effects of this excise rise in the December quarter.

Offsetting these increases was the 5.1 per cent fall in electricity prices, due to the removal of the carbon price, and there is likely to be still some residual negative effects still coming through in the December quarter CPI. The 2.5 per cent decline in petrol prices was also a key offset, due to the 6 per cent fall in global oil prices (and little change in the A$ from the June to September quarters). Oil prices have fallen another 18 per cent compared to the September quarter average, and although the A$ has depreciated by 5 per cent as well, petrol prices could fall at least another 9 per cent in the December quarter if current global prices and the A$ are maintained. This would slice over 0.3 percentage points off the December quarter CPI.

Weak wages growth and rising productivity constraining non-tradeables inflation

The WPI (wage price index) improved in the September 2014 quarter (+0.8%) but eased through-the-year to 2.5 per cent from 2.6 per cent in the June quarter. In real terms, overall wages growth (in WPI basis) is only marginally positive, after being negative in the past three quarters.

Low wages growth and rising productivity is constraining unit labour costs, which in turn, is keeping a lid on labour intensive non-tradeables or domestic services inflation. Over the September quarter, non-tradeables inflation rose by 0.5 per cent resulting in through-the-year inflation easing to 2.4 per cent, the slowest pace since September 2009 quarter or the GFC period.

Stable exchange rate and lower world price inflation mutes tradeables inflation

There was little change in the A$ from the June to September quarter (both quarters averaged around US$0.93). This meant little upward pressure from import prices. In fact, imports of consumer goods fell 0.4 per cent in the September quarter due to a 0.7 per cent decline in world price of consumer goods. Total implicit world prices (based on weighted average of

merchandise imports into Australia) fell 1.1 per cent in the quarter. Altogether, it helped hold down price rises in clothing, in particular, and a range of other tradeable goods. Overall, tradeables inflation rose by a mild 0.3 per cent in the quarter bringing the through-the-year rate to 2.0 per cent.

However, with the dollar falling around 3 to 5 per cent (on a trade weighted basis) over the past 6 weeks, and the exchange rate likely to stick around the current US$0.88, there will be renewed inflationary pressures on tradeables goods and services coming through in the December quarter. There will also be some secondary pass through of higher import prices from the initial depreciation in the Australian dollar starting in late April 2013.

Inflation to remain within 2 to 3 per cent target band in the near-term

Our view is that inflation will remain contained over the next 12 months (with prices rises fluctuating between 0.5 to 0.8 per cent per quarter) due predominantly to weak growth in unit labour costs (ie price of labour such as WPI inflation adjusted for productivity). Putting upward pressure on prices will be the secondary pass through of initial depreciation of the Australian dollar in early 2013 and higher import prices from the recent fall in the dollar to tradeables goods and services. Notwithstanding, there will be several factors pushing prices up or down for individual markets or specific items. For example:

- Housing cycle – housing inflation has picked up in recent quarters and is driven by cost of new dwellings, which, in turn, is influenced by the residential building cycle. Typically, during an upturn phase the cost of new dwellings rises as it provides scope for builders to increase margins. Also, the cost of labour and materials rise due to increased demand. The cost of new dwelling is almost 4 per cent higher than a year and is well above the average for the past 10 years. With recovery in dwellings building now entrenched, we expect residential building to pick up momentum over the next two years putting upward pressure on cost of new houses and housing inflation overall. Naturally, furniture & furnishings and other household goods such as appliances required to furnish a new home will also see increased price pressures.

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

- Repeal of carbon tax – the abolishing of a carbon tax directly impacted on utility prices in the September quarter. We expect the savings to businesses from lower cost of energy to be passed to consumers over subsequent quarters. Accordingly, the repeal of carbon tax will continue to weigh on inflation.

- Weaker upstream inflation – as the dollar is expected to remain around current levels for another two years, the cost of goods sourced from overseas is likely to be constrained. Meanwhile, prices of domestically sourced goods — proxied by PPI for output of the manufacturing industry — is likely to be restrained in light of competitive pressures. Efficiency gains in wholesalers and retailers distribution supply chains along with lower growth in labour costs will put downward pressure on prices of consumer goods.

However, we expect that underlying inflation will rise over calendar year 2016 and be pushed above 3 per cent in the second half of 2016 and over 2017. The gradual rise in underlying inflation from 2016 will be driven by rising tradeables inflation, as depreciation of the Australian dollar feeds in to higher import prices and rising domestic services inflation, largely as a result of persistence of high rates of inflation in rents, utilities, child care services and other housing costs.

As the economic recovery gathers momentum through 2016, we believe retailers will rebuild margins and pass on some of the higher import costs of tradeable goods, to consumers. Reduction in spare labour capacity will also add to inflation from late 2016, via rising wages.

In year-average terms, BIS Shrapnel is forecasting CPI inflation to ease to 2.1 per cent in 2014/15 before rising to 2.7 per cent and 3.3 per cent over 2015/16 and 2016/17 respectively. We expect CPI inflation to fall back within the Reserve Bank's 2 to 3 per cent target range towards the end of the decade although inflation containment will remain a policy challenge beyond the medium term.

Table 3.1: Wages and Prices – Australia
Year Average Growth

Year Ended June	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	765.4		64.7		69.4		69.4	
2001	804.2	5.1	66.9	3.5	73.6	6.0	73.6	6.0
2002	847.4	5.4	69.1	3.3	75.7	2.9	75.7	2.9
2003	890.0	5.0	71.5	3.5	78.0	3.0	78.0	3.0
2004	931.6	4.7	74.1	3.6	79.9	2.4	79.9	2.4
2005	972.9	4.4	76.9	3.7	81.8	2.4	81.8	2.4
2006	1 017.5	4.6	80.0	4.1	84.4	3.2	84.4	3.2
2007	1 054.1	3.6	83.2	3.9	86.9	3.0	86.9	3.0
2008	1 106.1	4.9	86.6	4.1	89.8	3.4	89.8	3.4
2009	1 166.5	5.5	90.2	4.1	92.6	3.1	92.6	3.1
2010	1 231.3	5.6	92.9	3.1	94.8	2.3	94.8	2.3
2011	1 282.5	4.2	96.5	3.8	97.7	3.1	97.7	3.1
2012	1 338.1	4.3	100.0	3.6	100.0	2.3	100.0	2.3
2013	1,400.3	4.6	103.3	3.3	102.3	2.3	102.3	2.3
2014	1,442.2	3.0	106.0	2.6	105.1	2.7	105.1	2.7
Forecasts								
2015	1,489.8	3.3	108.8	2.6	107.3	2.1	107.2	2.0
2016	1,547.2	3.9	111.9	2.9	110.2	2.7	109.9	2.6
2017	1,616.7	4.5	115.7	3.4	113.8	3.3	112.7	2.5
2018	1,695.9	4.9	120.0	3.7	117.3	3.0	115.5	2.5
2019	1,768.6	4.3	124.2	3.4	120.2	2.5	118.4	2.5
Compound Annual Growth Rates (3)								
1990-2000	3.8				2.2		2.2	
2001-2010	4.9		3.7		3.2		3.2	
2010-2014	4.3		3.3		2.5		2.5	
2015-2019	4.2		3.2		2.7		2.4	
2016-2019	4.4		3.4		2.9		2.5	

Source: BIS Shrapnel, ABS

(1) Earnings per person for full-time adults. Data is year ended May (available only mid month of quarter).
(2) Reserve Bank of Australia forecasts to December 2016 quarter and then Commonwealth Treasury medium term projections.
(3) CAGR (Compound Annual Growth Rates) for 2016-2019 is CAGR for 2015/16 to 2018/19 inclusive (ie next regulatory period).

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

	Year Average Per Cent Change											
						Forecast					Averages	
Year Ended June	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2002-14	2015-19
Proportion of Workforce by Pay setting Method (a)												
Awards Only	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%
Collective Agreements	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%
Individual Arrangements	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Total	100%	100%	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	3.0	2.3	2.9	3.3	2.9	2.6	2.9
Collective Agreements	4.1	4.0	4.0	3.7	3.5	3.4	3.4	3.6	3.8	3.8	3.9	3.6
Individual Arrangements (b)	7.2	4.4	4.7	5.5	2.6	3.2	4.4	5.4	5.8	4.8	5.4	4.7
AWOTE (Persons)(c)	**5.6**	**4.2**	**4.3**	**4.6**	**3.0**	**3.3**	**3.9**	**4.5**	**4.9**	**4.3**	**4.6**	**4.2**
Wage Price Index												
Awards Only	0.7	3.5	3.4	2.9	2.6	3.0	2.3	2.9	3.3	2.9	2.6	2.9
Collective Agreements	4.1	4.0	4.0	3.7	3.5	3.4	3.4	3.6	3.8	3.8	3.9	3.6
Individual Arrangements (b)	2.6	3.7	3.4	3.0	1.9	1.8	2.6	3.3	3.7	3.2	3.5	2.9
Wage Price Index (Ord. Time)	**3.1**	**3.8**	**3.6**	**3.3**	**2.6**	**2.6**	**2.9**	**3.4**	**3.7**	**3.4**	**3.6**	**3.2**
Compositional Effects + Bonuses,etc	2.5	0.4	0.7	1.3	0.4	0.7	1.0	1.1	1.1	0.9	1.0	1.0

Source: BIS Shrapnel, ABS, DEEWR

(a) Full-time adult persons
(b) Indiv Agreements picks up all the compositional effects and bonuses, incentives,etc plus all the standard errors of WPI and AWOTE estimates by 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 November 2014 'Statement on Monetary Policy' projects the headline CPI rate at 1¾ per cent in the December quarter 2014, before rising to 2 per cent (mid-point of 1½ to 2½ per cent range) in the June 2015 quarter. According to the RBA, headline CPI inflation is then expected to be in the 2½ to 3½ per cent range through to December quarter 2016 (RBA current forecasts only extend to December 2016).

The Federal Treasury in their Budget 2014/15 projected CPI inflation at 2¼ per cent in 201/15 and 2½ per cent in 2015/16. For the budget forward estimate period (ie 2016/17 and 2017/18), the Federal Treasury forecast CPI inflation at 2.5 per cent.

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

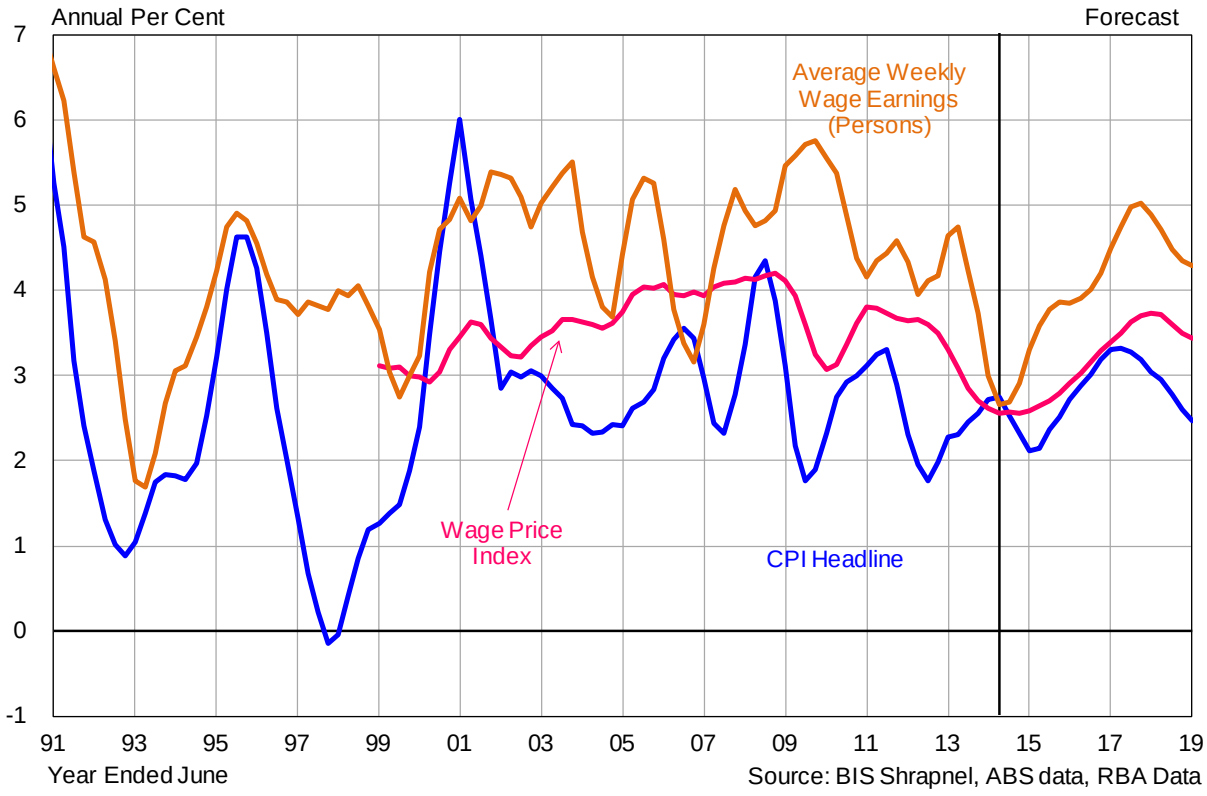
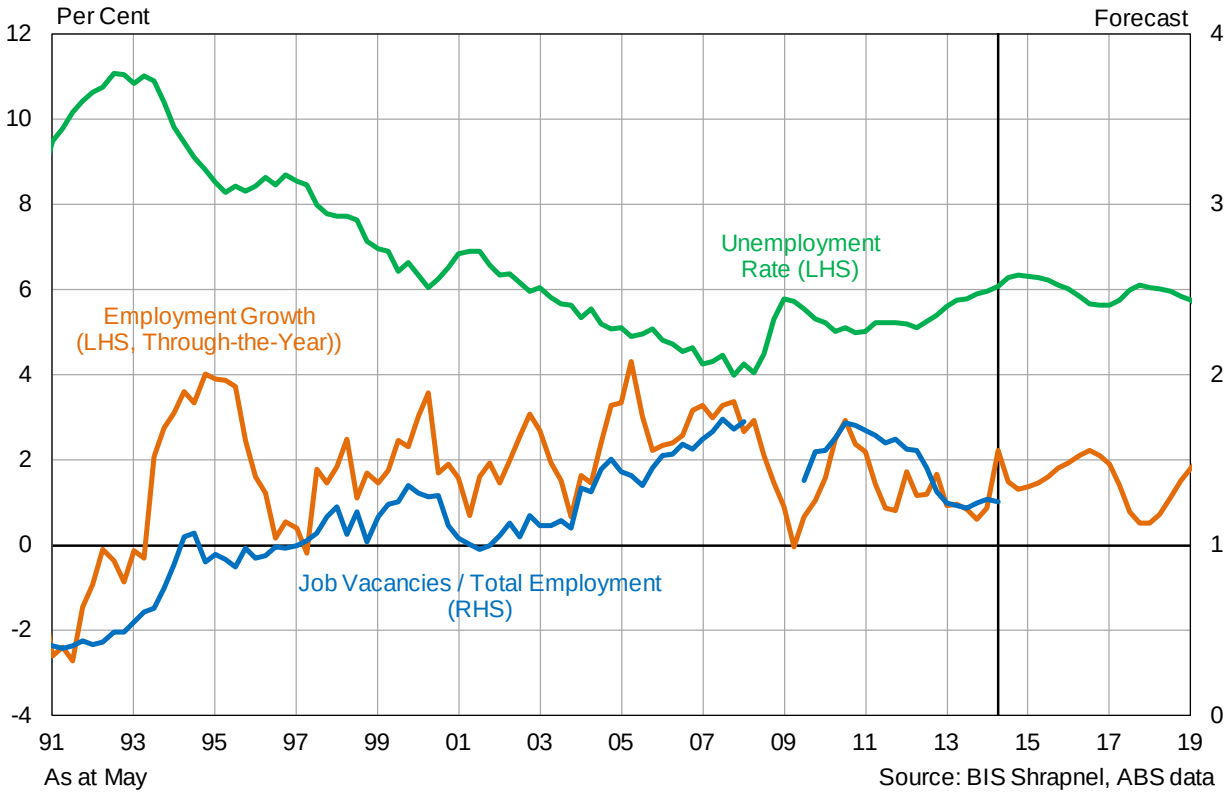


Chart 3.2: Employment and Unemployment



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 3.0 per cent ($18.70) increase in minimum wages, effective July 2014. The $18.70 per week increase lifted the Federal Minimum Wage to $640.90 per week.

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

- Increases in individual agreements are primarily influenced by the strength of the labour market (especially the demand-supply balance of skilled labour), inflationary expectations, the recent profitability of relevant enterprises, current business conditions and the short-term economic outlook.

3.3 Outlook for Australian All Industries Wages

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

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

The marked slowing in wages growth over the past 18 months is largely due to spare capacity in the labour market, reflecting weak domestic demand due to soft non-mining business investment, and cost cutting by businesses. This has resulted in much lower wage increases awarded to 50 per cent of workers who have their pay set by 'individual arrangements'. We estimate that wage increases for employees in this segment eased from 3.5 per cent in September 2012 quarter to 1.7 per cent in the September 2014 quarter. In year-average terms, wages growth as measured by WPI now stands at 2.6 per cent, the lowest level since the late 1990s when the ABS first published the data.

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

Year average growth in 2014/15 is expected to be only 2.6 per cent for the WPI and 3.3 per cent for AWOTE (average weekly ordinary time earnings). Meanwhile, productivity has picked

over recent quarters with the mining sector driving the recovery. This is largely due to the sector transiting from labour intensive investment phase to les labour-intensive production phase. Notwithstanding, productivity in a broad range of other sectors including wholesale and retail trade, and finance & insurance shifted higher over 2013/14.

The subdued wage pressures and continued productivity improvements will help contain unit labour costs — the average cost of labour per unit of output — and put downward pressure on domestic goods and services inflation over the short-term. This means that wages growth poses no threat to our low inflation outlook over the next two years, at least.

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

The acceleration in profits, rising price inflation through 2016 and 2017 and emerging skills shortages — with the unemployment rate approaching 5.5 per cent by late 2016 — will push up wages growth during 2016 and 2017. There is usually a lag of at least a year for wages to respond upward to a strengthening in employment and falls in unemployment (and conversely downward wage pressure responding to weaker economic conditions). Wages growth (in year average terms) is expected to rise further and peak at 3.7 per cent for WPI (4.9 per cent for AWOTE) in 2017/18 – which would be the strongest result in WPI terms in nearly a decade. While the RBA will not be too alarmed at wage inflation of around 3.7 per cent (which, with long term productivity of around 1.5 per cent puts unit labour costs around 2.2 per cent – below the mid-point of its target band), it will nevertheless raise rates through 2016 and 2017 to prevent any serious inflationary pressures emerging.

The higher interest rates are expected to cause a slowdown in economic and employment growth during 2018, and this will eventually feed through to wages growth, with wages growth in the individual arrangements segment slowing first. Wages growth is forecast to ease to 3.4 per cent in WPI terms in 2018/19, while AWOTE growth eases to 4.3 per cent at the same time. But with only a small rise expected in the average unemployment rate to 5.9 per cent in 2018 — because of the deceleration in the ‘working population’ and slower labour force growth — the ongoing tight labour market is expected to see wage pressures re-emerge again towards the end of the decade once the subsequent recovery resumes from the second half of 2019.

4. INTERNAL LABOUR COST ESCALATION FORECASTS

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

At the national level, wages growth in the EGWWS sector is invariably higher than the total Australian national (all industry) average. The wage 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 2014 (see tables 4.1 and 4.5). 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 decade (mainly related to compositional effects), AWOTE growth in the sector has also usually been higher than the national average over the past decade (see tables 4.2 and 4.5).

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.

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

Utilities wages growth will ease over the next two years

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

That said, with many of the specialised skills relevant to the electricity, gas and water sector expected to remain in relatively high demand (as reinforced by the 2013 industry survey conducted by Energy Skills Australia and Victorian Skills and Training Needs study of the Electricity, Gas and Water sector), wage increases are still expected to remain higher in this industry than the national average over the next two years. Our overall outlook for total utilities sector wages over the next five years — discussed below — is a function of individual drivers of the different pay setting methods (ie awards, collective agreements and individual agreements).

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

The key elements of the utilities wage forecast are set out in table 4.4. This shows that collective bargaining dominates the pay setting arrangements in the utilities sector, while the relative absence of workers relying on (often) low-increase awards (set in the National Wage Case) means the overall average for total utilities wages will generally be higher than the all

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

Sector	% of Total Employment Aug '14	Wage Price Index [1] Annual Per Cent Change Jun'08	Jun'09	Jun'10	Jun'11	Jun'12	Jun'13	Jun'14	Sep'14	Five-Year Average
Private		4.4	3.6	2.7	3.9	3.8	3.0	2.5	2.5	3.2
Public		3.9	4.4	4.0	3.7	3.3	2.8	2.8	2.7	3.3
Industry										
Mining	2.0	6.7	4.2	3.8	4.1	5.2	3.5	2.5	2.5	3.8
Manufacturing	7.9	4.6	2.5	2.6	4.1	3.8	2.8	2.8	2.7	3.2
Electricity, Gas, Water and Waste Services	**1.2**	**3.5**	**4.7**	**4.7**	**3.7**	**3.7**	**3.9**	**3.0**	**3.2**	**3.8**
Construction	9.0	4.7	4.5	2.9	4.0	4.1	3.2	2.9	2.5	3.4
Wholesale Trade	3.5	4.6	3.3	1.7	4.8	4.8	3.4	2.0	2.1	3.3
Retail Trade	10.8	4.5	3.5	2.8	3.3	2.7	2.7	2.4	2.2	2.8
Accommodation and Food Services	6.7	2.3	3.4	2.0	3.0	3.3	2.6	2.2	2.5	2.6
Transport, Postal and Warehousing	5.2	3.9	4.4	3.2	4.0	3.8	2.9	2.4	2.5	3.3
Information Media and Telecommunications	1.9	3.9	3.0	2.0	3.2	3.5	2.9	2.4	2.5	2.8
Finance and Insurance Services	3.6	3.6	3.2	3.1	4.5	4.1	2.9	2.6	2.7	3.4
Rental, Hiring and Real Estate services	1.8	4.1	3.6	2.5	3.6	3.5	3.1	2.3	2.4	3.0
Professional, Scientific and Technical Services	8.0	5.1	5.1	2.9	4.0	4.6	2.9	2.0	2.1	3.3
Administration and Support Services	3.2	4.9	2.9	2.5	3.7	3.6	2.7	2.5	2.1	3.0
Public Administration and Safety	6.1	3.9	4.5	3.7	3.4	3.6	2.9	2.8	2.2	3.3
Education	8.0	4.0	4.5	3.9	3.8	3.6	2.5	3.2	3.2	3.4
Health Care and Social Assistance	12.2	3.6	3.9	4.0	3.6	2.6	3.3	2.9	2.9	3.3
Arts and Recreation Services	1.8	3.4	3.9	2.8	3.4	3.5	2.9	3.0	3.6	3.1
Other Services	4.2	3.3	3.3	2.3	3.6	3.8	3.0	2.3	2.0	3.0
State/Territory										
New South Wales	31.1	4.0	3.6	3.1	3.7	3.6	2.8	2.5	2.6	3.1
Victoria	24.8	4.2	3.4	2.7	4.1	3.5	3.0	2.7	2.7	3.2
Queensland	20.3	3.9	4.1	3.3	3.9	3.8	2.7	2.6	2.5	3.2
South Australia	7.0	4.6	3.7	2.9	3.3	3.4	3.3	3.1	2.7	3.2
Western Australia	11.8	5.6	4.6	3.4	3.8	4.8	3.5	2.4	2.2	3.6
Tasmania	2.0	3.6	4.2	3.6	3.5	3.2	2.9	2.3	2.5	3.1
Northern Territory	1.1	4.2	3.8	3.4	3.9	3.6	3.2	2.8	2.9	3.4
Australian Capital Territory (ACT)	1.8	4.0	4.1	3.0	3.5	3.9	2.9	2.3	1.7	3.1
Total All[2]	100	4.2	3.8	3.1	3.8	3.7	2.9	2.6	2.5	3.2

(1) Measures changes in the price of labour. Ordinary hourly rates of pay (excludes overtime and bonuses) Source: BIS Shrapnel, ABS data
(2) Excludes Agriculture, Forestry and Fishing sector

Table 4.2: Australia
AWOTE Growth by Industry Sector

Industry Sector	% of Total Employment May '14	Average Weekly Earnings[1] $ / Week May'14	Annual Per Cent Change May'09	May'10	May'11	May'12	May'13	May'14	Five-Year Average
Mining	2.3	2 493	7.3	7.2	6.5	6.2	6.8	4.2	6.2
Manufacturing	8.0	1 294	5.3	1.8	2.8	2.3	3.9	4.8	3.1
Electricity, gas, water and waste services	1.3	1 659	6.1	7.6	9.1	2.5	6.1	2.0	5.5
Construction	8.9	1 449	7.8	7.7	5.0	3.5	4.3	2.1	4.5
Wholesale trade	3.3	1 463	5.9	2.2	3.9	11.3	4.6	0.5	4.5
Retail trade	10.7	1 040	2.7	5.5	0.9	3.2	4.0	2.5	3.2
Accommodation and food services	6.6	1 048	2.5	4.5	3.5	3.7	5.5	3.9	4.2
Transport, postal and warehousing	5.1	1 443	4.5	5.3	8.9	7.0	5.9	1.8	5.8
Information media and telecommunications	1.7	1 665	4.3	5.4	4.6	3.0	4.8	1.7	3.9
Finance and insurance	3.5	1 665	2.8	4.6	6.1	2.0	4.3	1.1	3.6
Rental hiring and real estate services	2.0	1 269	6.5	3.8	-2.1	0.4	6.6	-1.1	1.5
Professional, scientific and technical services	8.1	1 716	5.8	5.6	4.5	4.3	3.2	3.8	4.3
Administration and support services	3.4	1 287	7.1	7.4	-0.1	-1.9	7.9	1.7	3.0
Public administration and defence	6.3	1 531	5.4	6.7	5.7	3.2	4.7	3.5	4.8
Education and training	7.8	1 552	4.6	5.6	4.8	4.6	3.8	3.3	4.4
Health and social assistance	12.1	1 373	4.7	6.2	2.5	2.8	5.3	3.9	4.1
Arts and recreational services	1.6	1 305	7.2	4.1	5.6	3.5	5.5	4.6	4.7
Other services	4.4	1 088	6.8	3.1	3.6	2.7	4.2	-0.4	2.6
Total All Industries[2]	100%	1 454	5.5	5.6	4.2	4.3	4.6	3.0	4.3

1) Full Time Adult Ordinary Time earnings for persons Source: BIS Shrapnel, ABS data
2) Excludes Agriculture, Forestry and Fishing sector

industries average. Over the past decade, the outcomes from collective agreements have been 0.4 per cent higher, on average, than the all industries average, at 4.4 per cent compared to 4.0 per cent. We expect this trend to continue over the outlook period, with collective agreements achieving average increases of 3.9 per cent for the utilities sector, compared to 3.6 per cent for all industries.

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

BIS Shrapnel analysis shows collective agreements in the EGWWS sector have been on average around 1.5 per cent higher than CPI inflation over the decade to 2010 (excluding the effects of GST introduction in 2000/01). In the five years to 2010 when the labour market was very tight, collective agreements were on average 1.7 per cent above the CPI. Given the strength of unions in the sector and a still strong demand for skilled labour over the next four years (and possibly beyond) than for most of the 2000s, collective agreements are forecast to remain around 1.2 per cent above the CPI in the forecast period.

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

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

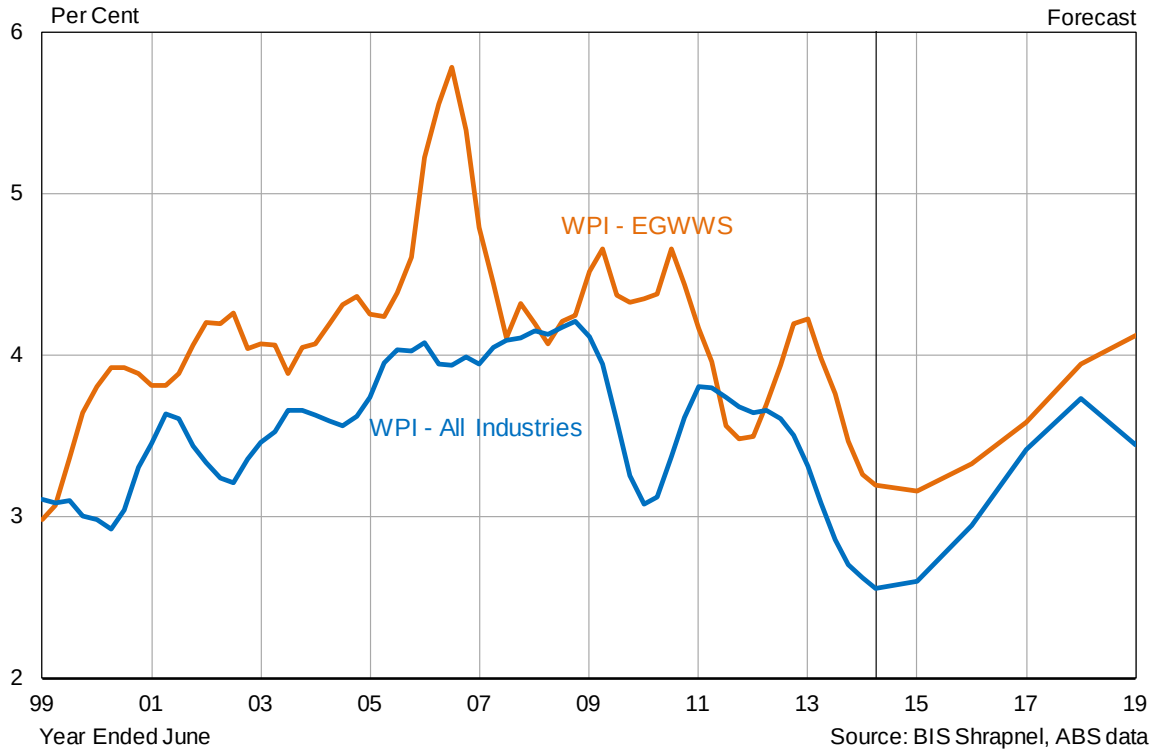


Table 4.3: Federal Wage Agreements – Collective Agreements by Industry (Average Annualised Wage Increase)

Selected Industry (ANZSIC 2006)	Collective Agreements											
	Average Annualised Wage Increase[1]											Average
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2004-2014
Electricity, Gas, Water and Waste Services	**4.3**	**4.2**	**4.4**	**4.5**	**4.7**	**4.8**	**4.8**	**4.4**	**4.2**	**4.1**	**3.6**	**4.4**
Agriculture, Forestry and Fishing	3.3	3.0	3.0	2.9	3.0	3.7	3.7	3.7	3.8	3.7	3.4	3.4
Mining	3.3	3.6	3.7	4.0	4.3	4.4	4.3	4.2	4.5	4.6	4.1	4.1
Manufacturing	4.1	4.1	4.2	4.3	4.2	4.1	3.9	3.9	3.9	3.8	3.5	4.0
Construction	4.3	4.4	4.9	4.9	4.6	5.3	5.4	4.8	5.1	5.3	4.9	4.9
Wholesale Trade	3.9	4.0	3.7	3.6	3.8	4.1	4.0	3.7	3.8	3.8	3.4	3.8
Retail trade	3.2	3.4	3.5	3.5	3.5	3.6	3.5	3.4	3.6	3.3	3.1	3.4
Accommodation and Food Services	2.8	3.2	3.3	3.4	3.2	3.6	3.9	3.9	3.8	3.7	3.0	3.4
Transport , Postal and Warehousing	3.6	3.7	3.7	3.9	4.0	4.2	4.2	4.0	3.9	3.9	3.6	3.9
Information Media and Telecommunications	4.2	4.1	3.6	3.2	3.3	3.8	3.8	3.4	3.4	3.5	3.3	3.6
Financial and Insurance Services	4.2	4.1	4.1	4.1	3.8	4.0	3.6	3.7	3.5	3.3	3.0	3.8
Rental, Hiring and Real Estate Services	4.1	4.1	3.8	4.8	4.5	3.5	3.7	3.9	4.7	4.4	4.2	4.2
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	4.0	4.1
Administrative and Support Services	4.1	4.1	3.8	3.6	3.6	3.8	3.7	3.6	4.2	4.3	4.0	3.9
Public Administration and Safety	4.4	4.3	4.0	4.1	4.2	4.3	3.9	3.7	3.7	3.7	3.5	4.0
Health Care and Social Assistance	4.0	4.1	4.0	4.0	4.0	4.1	4.0	4.0	3.6	3.3	3.1	3.8
Education and Training	4.5	4.7	4.9	4.8	4.9	4.4	4.6	4.6	4.7	3.9	3.6	4.5
Arts and Recreation Services	3.5	3.8	3.5	3.8	4.0	4.1	3.5	3.5	3.4	3.3	3.2	3.6
Other Services	4.4	4.0	4.0	4.1	4.0	3.9	3.7	3.6	4.5	4.4	3.7	4.0
ALL INDUSTRIES	3.9	4.0	4.1	4.1	4.0	4.2	4.1	4.0	4.0	3.7	3.5	4.0

[1]Current agreements in June of each year.

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

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

	Year Average Per Cent Change											
						Forecast					**Averages**	
Year Ended June	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2002-14	2015-19
Proportion of Workforce by Pay setting Method (a)												
Awards Only	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Collective Agreements	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%
Individual Arrangements	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100.0%	100.0%
AWOTE												
Awards Only	0.7	3.2	3.4	2.9	2.6	3.0	2.3	2.9	3.3	2.9	2.4	2.9
Collective Agreements	4.8	4.4	4.2	4.1	3.6	3.4	3.8	3.9	4.0	4.1	4.3	3.9
Individual Arrangements (b)	14.0	18.7	-0.6	10.0	-0.7	3.4	4.6	5.9	6.4	6.9	4.5	5.4
AWOTE (Persons)(c)	**7.6**	**9.1**	**2.5**	**6.1**	**2.0**	**3.4**	**3.8**	**4.4**	**4.9**	**5.1**	**4.6**	**4.3**
Wage Price Index												
Awards Only	0.7	3.2	3.4	2.9	2.6	3.0	2.3	2.9	3.3	2.9	2.4	2.9
Collective Agreements	4.8	4.4	4.2	4.1	3.6	3.4	3.8	3.9	4.0	4.1	4.3	3.9
Individual Arrangements (b)	3.7	3.7	1.9	4.6	2.5	2.7	3.2	3.6	3.9	4.2	4.5	3.5
Wage Price Index (Ord. Time)	**4.3**	**4.2**	**3.5**	**4.2**	**3.3**	**3.2**	**3.3**	**3.6**	**3.9**	**4.1**	**4.2**	**3.6**
Compositional Effects + Bonuses,etc	3.2	4.9	-1.0	1.9	-1.2	0.2	0.5	0.8	0.9	1.0	0.3	0.7

(a) Full-time Adult Persons

Source: BIS Shrapnel, ABS, Department of Employment

(b) Because of relatively small workforce (and therefore small sample size) in EGWWS, Indiv Agreements picks up all the standard errors of Wage Price Index

(c) Full-time Adult Persons, excluding overtime

We expect EBA outcomes to ease over the next two years but remain above inflation and the 'all industries' average given that the skilled labour market remains tight and particularly given the recent high enterprise agreement outcomes in the construction sector. This will influence negotiations in the EGWWS sector, as some skills can be transferable. A mild recovery in EBA outcomes will occur over subsequent years as the labour market begins to tighten, unemployment falls and business profitability improves. However, forecast growth in wage agreements of 3.9 per cent per annum remains below that experienced over much of the past decade.

Demand for skilled labour also a key driver of utilities wages

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

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

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

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

The global financial crisis and the subsequent slowing in the economy over 2008/09 reduced labour demand and wage pressures, and this has weighed down on the labour market through to the present, with the unemployment rate reaching a peak of 6.3 per cent in November 2014.

However, with the economy expected to grow close to trend in about two years, employment growth will outpace population and labour force growth and the unemployment rate is expected to dip below 6.0 per cent by late 2016. Hence, we expect to again witness the re-emergence of skilled labour shortages and competition for scarce labour through 2017, particularly from the construction sector, which will push up wage demands in the utilities sector towards the end of the decade.

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

Year Ended June	Average Weekly Ordinary Time Earnings [1]				Wage Price Index [2]			
	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	513.4	6.4				
1990	521.0	6.9	559.2	8.9				
1991	555.4	6.6	585.2	4.7				
1992	580.8	4.6	620.5	6.0				
1993	591.0	1.8	638.3	2.9				
1994	609.1	3.1	657.9	3.1				
1995	634.9	4.2	668.6	1.6				
1996	663.8	4.6	707.6	5.8				
1997	688.5	3.7	748.6	5.8				
1998	716.0	4.0	796.1	6.3				
1999	741.4	3.5	827.1	3.9	69.6		65.7	
2000	765.4	3.2	866.8	4.8	71.7	3.0	68.2	3.8
2001	804.2	5.1	918.5	6.0	74.2	3.5	70.8	3.8
2002	847.4	5.4	981.0	6.8	76.7	3.3	73.8	4.2
2003	890.0	5.0	1,001.3	2.1	79.3	3.5	76.8	4.1
2004	931.6	4.7	1,056.7	5.5	82.2	3.6	79.9	4.1
2005	972.9	4.4	1,090.6	3.2	85.3	3.7	83.3	4.3
2006	1 017.5	4.6	1,110.9	1.9	88.7	4.1	87.6	5.2
2007	1 054.1	3.6	1,151.9	3.7	92.2	3.9	91.8	4.8
2008	1 106.1	4.9	1,182.8	2.7	96.1	4.1	95.7	4.2
2009	1 166.5	5.5	1,255.5	6.1	100.0	4.1	100.0	4.5
2010	1 231.3	5.6	1,350.8	7.6	103.1	3.1	104.4	4.3
2011	1 282.5	4.2	1,473.9	9.1	107.0	3.8	108.7	4.2
2012	1 338.1	4.3	1,510.0	2.5	110.9	3.6	112.5	3.5
2013	1 400.3	4.6	1,602.5	6.1	114.6	3.3	117.3	4.2
2014	1 442.2	3.0	1,635.0	2.0	117.6	2.6	121.1	3.3
Forecasts								
2015	1 489.8	3.3	1,689.8	3.4	120.6	2.6	124.9	3.2
2016	1 547.2	3.9	1,754.4	3.8	124.2	2.9	129.1	3.3
2017	1 616.7	4.5	1,831.7	4.4	128.4	3.4	133.7	3.6
2018	1 695.9	4.9	1,920.7	4.9	133.2	3.7	139.0	3.9
2019	1 768.6	4.3	2,019.1	5.1	137.8	3.4	144.7	4.1
Compound Annual Growth Rates								
1991-2000	3.9		4.5					
2001-2010	4.9		4.5		3.7		4.3	
2010-2014	4.3		5.4		3.3		3.9	
2015-2019	4.2		4.3		3.2		3.6	
2016-2019	4.4		4.6		3.4		3.7	

Source: BIS Shrapnel, ABS

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

Individual agreements will strengthen from their current weakness

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, recent profitability of relevant enterprises (which influences bonuses and incentives, etc.), current business conditions and the short-term economic outlook.

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

Two other factors which will act to push up EGWWS wages growth attributable to the individual arrangements segment — that is the compositional effects — include the up skilling of the workforce and, later in the period, the ageing of the workforce. Apprentices, trainees and numbers of new staff have increased markedly over recent years, across the electricity, gas and water sector generally. Given slower growth in employment numbers over the outlook period, it is likely that there will be overall up skilling of the existing workforce, which will see a commensurate movement by much of the workforce into higher grades (ie on higher pay), 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 an ageing labour profile, which will particularly affect the 'professionals' on non-EBA's, who tend to be older and more experienced.

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

Together with the awards and collective agreements, BIS Shrapnel expects total wage costs for the Australian Electricity, Gas, Water and Waste Services (EGWWS or 'Utilities) sector — expressed in Average Weekly Ordinary Time Earnings (AWOTE) — will average 4.3 per cent per annum over the five years to 2018/19, 0.1 per cent higher than the national 'All Industries' AWOTE average of 4.2 per cent per annum over the same five year period (see table 4.5). In terms of *underlying* wages growth in the 'utilities' sector for total Australia — expressed in wage price index (WPI) terms — BIS Shrapnel is forecasting an average of 3.6 per cent per annum (0.4 percentage points higher than the national 'All Industries' WPI average of 3.2 per cent per annum) over the five years to 2018/19.

4.1 Outlook for utilities wages growth in New South Wales

New South Wales utilities WPI growth is forecast to average 3.9 per cent per annum (0.2 percentage points higher than the national utilities average of 3.7 per cent per annum) over the four years from 2015/16 to 2018/19 inclusive (ie over TransGrid's next full regulatory period, see table 4.6).

The slightly stronger utilities wages growth in New South Wales in the second half of this decade is due to still strong demand for labour from the state's utilities sector as well as increased competition from the construction sector. The latter driven by an upswing in

residential construction. Chart 4.3 shows BIS Shrapnel's engineering construction forecasts for the utilities-related segments. NSW utilities engineering construction is projected to fall in 2014/15 but it is still expected to remain at historically high levels. Construction work done is expected to be elevated in the second half of the decade as the surplus in generation capacity is slowly eroded through continued population growth and industrial activity, placing greater demands on electricity supply. Chart 4.3 also shows that utilities investment is a key influence on employment growth in the utilities sector (even though some capital projects are outsourced to the construction sector). The combination of high levels of utility engineering construction and overall construction in the state means increased wage pressures in the NSW utilities sector (relative to other states) over the four years to 2018/19.

Chart 4.2: New South Wales – Utilities Employment, Output and Investment

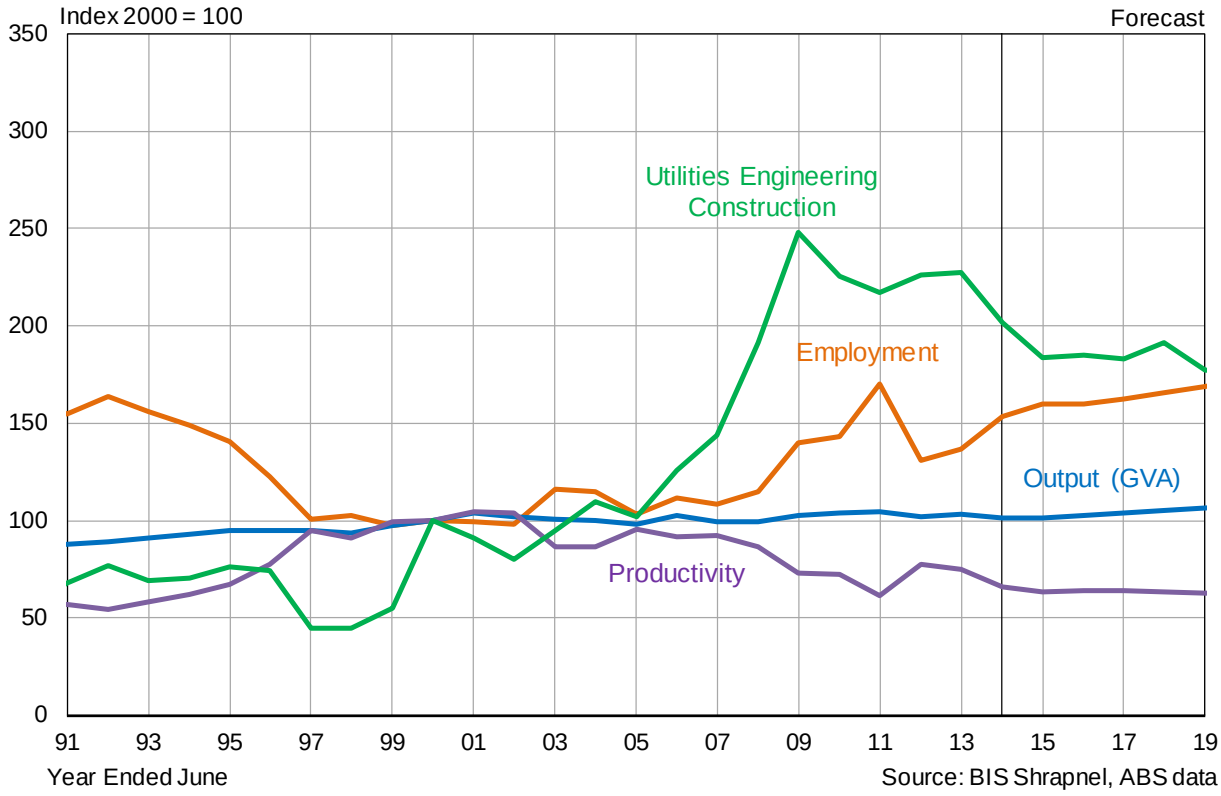


Table 4.6: Electricity, Gas, Water and Waste Services – New South Wales and Australia Year Average Growth

	NSW - Nominal				Australia - Nominal			
Year Ended June	AWOTE		WPI (1)		AWOTE		WPI (1)	
	MAT	A% CH	Index	A% CH	MAT	A% CH	Index	A% CH
2000					866.8	3.6	68.2	3.6
2001					918.5	6.0	70.8	3.8
2002					981.0	6.8	73.8	4.2
2003					1,001.3	2.1	76.8	4.1
2004					1,056.7	5.5	79.9	4.1
2005					1,090.6	3.2	83.3	4.3
2006					1,110.9	1.9	87.6	5.2
2007					1,151.9	3.7	91.8	4.8
2008					1,182.8	2.7	95.7	4.2
2009	1,325.2		100.0		1,255.5	6.1	100.0	4.5
2010	1,397.8	5.5	103.9	3.9	1,350.8	7.6	104.4	4.3
2011	1,459.9	4.4	107.5	3.5	1,473.9	9.1	108.7	4.2
2012	1,481.7	1.5	111.0	3.2	1,510.0	2.5	112.5	3.5
2013	1,557.3	5.1	115.1	3.7	1,602.5	6.1	117.3	4.2
2014	1,584.2	1.7	118.5	3.0	1,635.0	2.0	121.1	3.3
Forecasts								
2015	1,632.6	3.1	122.6	3.5	1,689.8	3.4	124.9	3.2
2016	1,688.5	3.4	126.8	3.4	1,754.4	3.8	129.1	3.3
2017	1,767.9	4.7	131.4	3.6	1,831.7	4.4	133.7	3.6
2018	1,857.4	5.1	136.8	4.1	1,920.7	4.9	139.0	3.9
2019	1,950.7	5.0	142.9	4.4	2,019.1	5.1	144.7	4.1
Long Term Averages								
2001-2010					4.5		4.3	
2010-2014					5.4		3.9	
2015-2019	4.2		3.8		4.3		3.6	
2016-2019	4.6		3.9		4.6		3.7	

Source: BIS Shrapnel, ABS

(1) Total time hours excluding bonuses.

5. EXTERNAL LABOUR COST ESCALATION FORECASTS

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

Much like the other states and territories, wages growth in the New South Wales 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.

NSW construction wages over the next five years, on average, are expected to be stronger than the national average (see table 5.1). After underperforming the Australian average for most of the last decade, construction activity in NSW is expected to grow substantially over the three years to 2016/17. Private dwelling construction will be the initial driver, followed by a new round of public sector infrastructure projects. The latter will be driven by a need to make up for underinvestment over the next few years as well as increased ability to finance it through asset recycling.

However, dwelling investment will underpin the initial growth in construction. The major problem, through last decade, was a significant fall in residential building — the result of over-aggressive infrastructure charges imposed by the government at the beginning of the decade to claw back revenue from developers and landowners. Residential building has a strong multiplier through the economy.

The housing market has picked up already with the start of what will become a strong surge in residential building. Last decade's under-building led to a significant deficiency of residential stock, underpinning the current upswing and pushing overall construction higher. Non-residential building will also be strong the next few years.

NSW construction wages will follow the recovery in dwelling construction and the improvement in total construction. Construction wages (in WPI terms) is expected to peak at 4.2 per cent in 2017/18 before easing slightly as construction activity flattens.

Chart 5.1: Total Construction – New South Wales
Value of Work Done, Constant 2011/12 Prices

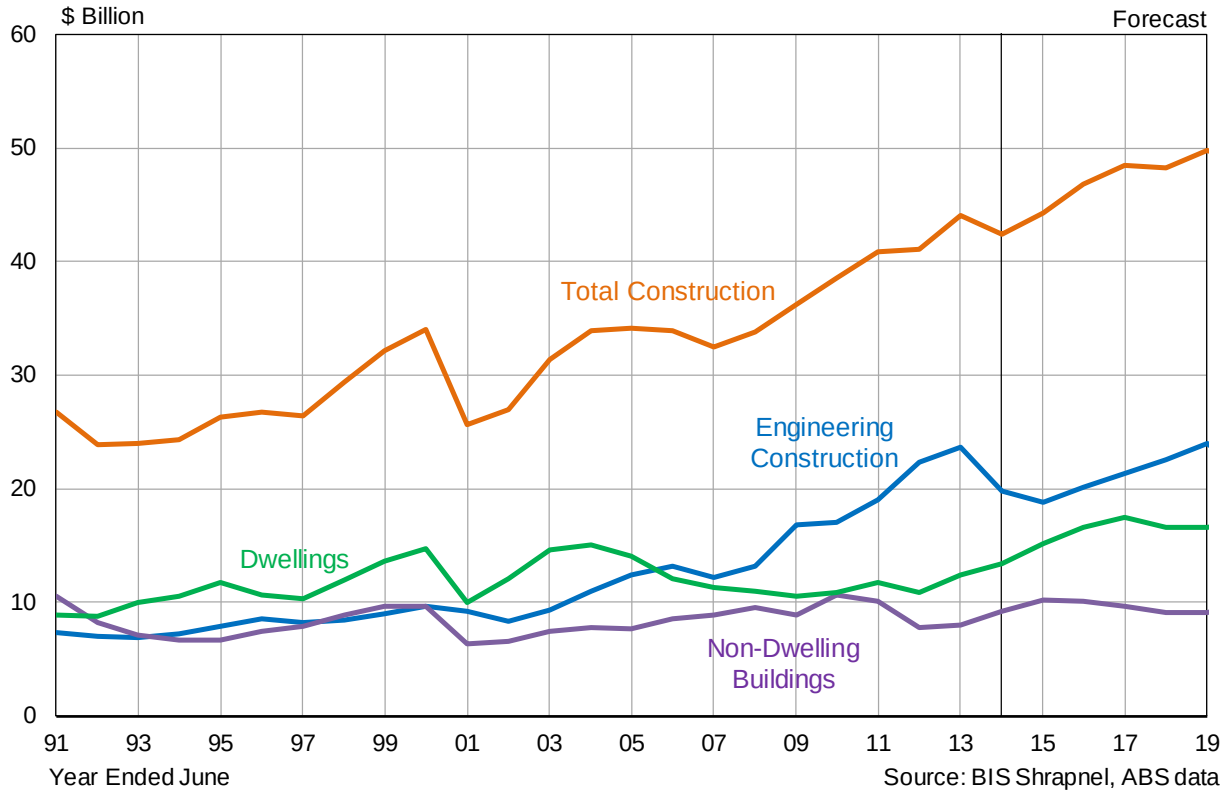


Table 5.1: Construction Wages Growth – New South Wales and Australia
Year Average Growth

	NSW - Nominal				Australia - Nominal			
Year Ended	AWOTE		WPI [1]		AWOTE		WPI [1]	
June	MAT	A% CH	Index	A% CH	MAT	A% CH	Index	A% CH
2000					722.1	-0.4	68.5	2.9
2001					730.5	1.2	71.3	4.1
2002					769.6	5.3	73.6	3.3
2003					832.3	8.2	76.1	3.4
2004					875.2	5.1	78.9	3.6
2005					924.6	5.7	83.0	5.2
2006					941.8	1.9	87.0	4.9
2007					987.8	4.9	91.3	4.9
2008					1,078.2	9.2	95.6	4.7
2009			100.0		1,162.0	7.8	100.0	4.7
2010	1,209.9		102.5	2.5	1,250.9	7.7	103.3	3.3
2011	1,154.2	-4.6	106.7	4.1	1,313.7	5.0	107.4	4.0
2012	1,204.2	4.3	110.2	3.2	1,359.8	3.5	111.7	4.1
2013	1,258.4	4.5	113.8	3.3	1,418.1	4.3	115.5	3.3
2014	1,287.6	2.3	117.2	2.9	1,448.2	2.1	118.9	3.0
Forecasts								
2015	1,331.3	3.4	120.8	3.2	1,494.5	3.2	122.3	2.9
2016	1,382.9	3.9	125.2	3.6	1,549.4	3.7	126.4	3.4
2017	1,444.5	4.5	130.1	3.9	1,615.3	4.3	131.3	3.8
2018	1,509.3	4.5	135.6	4.2	1,681.3	4.1	136.3	3.8
2019	1,574.2	4.3	141.1	4.1	1,757.0	4.5	141.7	4.0
Long Term Averages								
2001-2010					5.6		4.2	
2010-2014					4.5		3.5	
2015-2019	4.1		3.8		3.9		3.6	
2016-2019	4.3		4.0		4.1		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 Department of Employment are used for wage increases under collective agreements.

The limitation of this methodology is that because individual arrangements are calculated as a residual, all of the compositional effects in terms of AWOTE (ie from more or less lower-paid workers being employed in the relevant year) plus all (or most) of the bonuses and incentives from those under award or collective agreements end up in the individual arrangements residual, which distorts the pay increases in this segment. However, the methodology works well for the 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 TransGrid.

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 Associate

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.

