



APPENDIX F

Labour Cost Escalation Forecasts to 2016/17 – Australia and Queensland January 2012



Labour Cost Escalation Forecasts to 2016/17 – Australia and Queensland

Prepared by BIS Shrapnel for Powerlink Queensland
FINAL REPORT



JANUARY 2012

ECONOMICS

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

© BIS Shrapnel Pty Limited January 2012

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

All rights reserved.

Job no: E5368

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

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

Contents

SUMMARY	I
1. INTRODUCTION, OUTLINE OF REPORT & DATA SOURCES	1
2. MACROECONOMIC OVERVIEW — AUSTRALIA AND QUEENSLAND	3
2.1 Key Points	3
2.2 The Australian economy	3
2.2.1 Current State of Play	3
2.2.2 Outlook for the Australian economy	5
2.3 The Queensland Economy	8
3. OUTLOOK FOR AUSTRALIAN INFLATION AND ALL INDUSTRIES WAGES	11
3.1 Outlook for Australian All Industries Wages	14
3.2 Outlook for Consumer Price Inflation	15
3.2.1 Reserve Bank of Australia CPI forecasts	20
4. POWERLINK’S INTERNAL LABOUR COST ESCALATION	21
4.1 Key points	21
4.2 Key Drivers of Sustained Strong Growth in Underlying Wages Growth (Labour Price Index) in the National Utilities Sector	21
4.3 Overall Growth in Labour Costs (AWOTE Growth)	34
4.4 Outlook for utilities wages growth in Queensland	35
4.5 Productivity Adjustments	39
4.5.1 Deloitte Access Economics’ productivity growth forecasts are too optimistic	39
4.5.2 Deloitte Access Economics underestimates workforce composition productivity	41
4.5.3 Deloitte Access Economics application of long-term averages to generate productivity forecasts has previously been rejected by the AER	41
5. CONTRACTOR ESCALATION	45
5.1 Construction Sector Wages Growth in Queensland	45
6. REVIEW OF DELOITTE ACCESS ECONOMICS PAST FORECASTING RECORD	49
APPENDIX A: A NOTE ON DIFFERENT WAGE MEASURES AND BIS SHRAPNEL’S WAGE MODEL	A-1
Description of BIS Shrapnel’s wage model	A-2
Some Deficiencies in Econometric Models of Wage Determination for the EGW Sector	A-3
APPENDIX B: ELECTRICITY, GAS AND WATER SUPPLY (EGW) VERSUS ELECTRICITY, GAS, WATER AND WASTE SERVICES (EGWWS)	A-5
Potential Impact of the Recent Change to ABS Industry Classification ie Adding Waste Services to EGW	A-5

APPENDIX C: TERMS OF REFERENCE.....A-6

**APPENDIX D: STATEMENT OF COMPLIANCE WITH EXPERT WITNESS
GUIDELINES.....A-7**

APPENDIX E: CURRICULUM VITAE OF KEY PERSONNELA-8

APPENDIX F: LIST OF ABS & OTHER DATA SOURCESA-9

Tables

Table 1:	Summary – Labour Cost Escalation Forecasts	iv
Table 2.1:	Australia – Key Economic Indicators, Financial Years	5
Table 3.1:	Wages Growth, All Industries, Australia, (by Workforce Segmented by Pay Setting Method)	11
Table 3.2:	Methods of Setting Pay, Industry, May 2010 Proportion of Employees (%).....	12
Table 3.3:	Wages and Prices – Australia Year Average Growth	16
Table 4.1:	Labour Price Index Growth by Industry Sector and by State.....	22
Table 4.2:	Australia AWOTE Growth by Industry Sector	22
Table 4.3:	Federal Wage Agreements – Collective Agreements by Industry (Average Annualised Wage Increase).....	24
Table 4.4:	Electricity, Gas & Water Supply Wage Forecasts – Australia	26
Table 4.5:	Average Weekly Ordinary Time Earnings and Labour Price Index Total Australia and Electricity, Gas & Water (Year Average Growth).....	30
Table 4.6:	AWOTE Persons by State - Electricity, Gas and Water Supply (Year Average Growth)....	31
Table 4.7:	Electricity, Gas and Water – Queensland and Australia Nominal Wages	38
Table 4.8:	Electricity, Gas, Water and Waste Services Output, Employment and Productivity: Australia and Queensland.....	43
Table 5.1:	Construction Wages Growth – Australia and Queensland Nominal Wages.....	47
Table 6.1	Comparison of DAE and BIS Shrapnel Forecasts	54
Table B–1:	EGW V. EGWWS	A–5

Charts

Chart 3.1:	Australia – Wages and Prices.....	13
Chart 3.2:	Employment and Unemployment.....	13
Chart 4.1:	AWOTE & LPI Total Australia (All Industries) and Electricity, Gas and Water.....	24
Chart 4.2:	Total Engineering Construction Australia & Queensland.....	32
Chart 4.3:	Utilities Engineering Construction Australia & Queensland.....	32
Chart 4.4:	Queensland – Utilities Employment, Output and Investment.....	33
Chart 4.5:	Australia – Utilities Employment, Output and Investment.....	33
Chart 4.6:	Mining and Heavy Industry Engineering Construction Australia and Queensland.....	37
Chart 5.1:	Total Construction – Queensland Value of Work Done, Constant 2008/09 Prices.....	46
Chart 6.1:	Access Economics LPI Forecasts – November 2006.....	50
Chart 6.2:	Access Economics LPI Forecasts – April 2007.....	50
Chart 6.3:	Access Economics LPI Forecasts – September 2009.....	50
Chart 6.4:	Access Economics LPI Forecasts – March 2010.....	50
Chart 6.5:	Access Economics LPI Forecasts – September 2010.....	50
Chart 6.6:	Access Economics LPI Forecasts – April 2011.....	50
Chart 6.7:	Access Economics LPI Forecasts.....	52
Chart 6.8:	BIS Shrapnel LPI Forecasts – March 2007.....	53
Chart 6.9:	BIS Shrapnel LPI Forecasts – April 2007.....	53
Chart 6.10:	BIS Shrapnel LPI Forecasts – October 2007.....	53
Chart 6.11:	BIS Shrapnel LPI Forecasts – April 2009.....	53
Chart 6.12:	BIS Shrapnel LPI Forecasts – December 2009.....	53
Chart 6.13:	BIS Shrapnel LPI Forecasts – November 2010.....	53

SUMMARY

- BIS Shrapnel was engaged by Powerlink Queensland to provide an expert opinion regarding the outlook for a range of labour cost escalators relevant to electricity networks (in both the operational and capital enhancement aspects) in Queensland over the five year period from 2012/13 to 2016/17 inclusive. Table 1 presents a summary of the annual escalation (in year average terms) for the relevant escalators in both nominal and real terms. The latter is adjusted for the RBA's/Commonwealth Treasury forecasts of CPI inflation which is projected to average 2.6 per cent over the five years to 2016/17.
- The report provides both AWOTE and LPI escalators for network-related labour (electricity, gas and water (EGW)) – which include a range of skilled labour involved in construction, maintenance, design and operation of the electricity networks. As around 80 per cent of employees in the EGW sector receive their pay increases via collective agreements, which run for around three years, the industrial relations strength of unions in the sector and recent inflation outcomes and inflationary expectations are key influences for wages. EGW wages are forecast to strengthen over the three years to 2013/14 as the demand for labour in the EGW sector, construction, mining and manufacturing sectors (the latter three sectors compete with EGW for similarly skilled labour) all pick-up as the economy and investment recover solidly.
- BIS Shrapnel considers the labour price index (LPI) to be a measure of *underlying wage* inflation in the economy or in a specific industry, as the LPI only measures changes in the *price* of labour, or wage rates, for specific occupations or job classifications, which are then aggregated into a measure of the collective variations in wage *rates* made to the current occupants of the *same* set of specific jobs. The LPI, therefore, reflects pure price changes, but does not measure variations in the quality or quantity of work performed. The LPI also does not reliably measure the changes in total labour costs which a particular enterprise or organisation incurs, because the LPI does not reflect the changes in the skill levels of employees within an enterprise or industry. As skills are acquired, employees will be promoted to a higher grade or job classification, and with this promotion will move onto a higher base pay. So the change in the cost of labour over, say a year, includes increases in the base pay rates (which the LPI measures) and the higher average base pay level. The AWOTE captures both these elements, while the LPI only captures the first element. Basically, promoting employees to a higher occupation does not necessarily show up in the LPI, but the employer's total wages bill (and average unit labour costs) is higher, as is AWOTE.
- AWOTE is a better measure of the change in overall costs per employee, because it takes into account movements of employees to higher grades, changes in compositional effects from entry/exits of higher skilled/lower skilled (ie higher paid/lower paid) workers in an enterprise or industry, and also the payments *above* base rates of pay, such as bonuses, incentives, penalty rates and other allowances that are a *normal* part of an employees earnings over the quarter or year. With regard to the latter, many enterprises in the utilities (and other industry) sectors(s) regularly include bonuses or incentive payments which are linked to a range of objectives, such as up skilling, additional training, productivity targets, safety targets, etc. These 'extra' payments — or changes in the quantum of payments — are not included in changes in the LPI, but can make a material difference to an enterprise's overall labour costs.
- Despite the limitations of the LPI, the Australian Energy Regulator has previously indicated a preference for the LPI, largely because of the volatility of AWOTE caused by 'significant' compositional problems with AWOTE. BIS Shrapnel believes AWOTE is a better measure

of the change in overall costs per employee, because it takes into account movements in employees to higher grades changes in compositional effects from entry/exits of higher skilled/lower skilled (ie higher paid/lower paid) workers in an enterprise or industry. In addition, as mentioned, AWOTE also includes payments *above* base rates of pay, such as bonuses, incentives, penalty rates and other allowances that are a *normal* part of an employees earnings over the quarter or year. In this report we provide (for comparison purposes) forecasts of both the LPI and AWOTE.

- Overall, BIS Shrapnel expects growth in total labour costs in the electricity, gas and water ('utilities') sector for total Australia — expressed in AWOTE terms — will average 5.7 per cent per annum (0.6 percentage points higher than the national 'All Industries' average of 5.1 per cent per annum) over the five years from 2012/13 to 2016/17 inclusive. Underlying wages growth in the utilities sector — expressed in LPI terms — is forecast to average 4.8 per cent per annum over the five years to 2016/17, 0.6 per cent higher than the national all industries LPI average of 4.2 per cent per annum. The faster wages growth expected in the electricity, gas and water sector over the next six years is in line with historical movements in AWOTE and the LPI over the past decade.
- In line with the AER's Draft Decision on Powerlink's revenue proposal for the 2012/13 – 2016/17 regulatory period, the escalator which BIS Shrapnel used for Powerlink's internal labour is wages growth in the Electricity, Gas and Water Supply (EGW or 'Utilities') sector for Queensland.
- Utilities wages growth in Queensland is forecast to average 5.8 per cent per annum (in AWOTE terms) over the five years from 2012/13 to 2016/17, slightly faster than the national average of 5.7 per cent per annum. The faster wage growth in the Queensland utilities sector is due to Queensland's larger exposure to the resources investment boom and overall stronger construction sector, with substantial investments in LNG plants and gas-related infrastructure adding to greater demand for specialist gas-related skills, and, accordingly adding to wage pressures in the state's utilities sector.
- As most contractor labour is assumed to undertake construction or maintenance related projects, they would be classified to the construction sector. Accordingly, the escalator which BIS Shrapnel used for Powerlink's external 'construction-related' labour is Construction sector wages growth. Our research has shown that construction activity (ie work done in the sector) normally has a strong influence on construction wages. BIS Shrapnel's forecasts of construction activity by state (which includes residential and non-residential building, plus engineering construction) were used to derive the wages forecasts.
- The Queensland reconstruction (reported widely to cost well over \$5 billion) following the floods and Cyclone Yasi will drive very strong growth in construction activity in 2011/12 and into 2012/13. In addition, recent announcements of major LNG and coal-related projects will boost resources investment over the near to short-term. Non-dwelling building will also begin increasing from 2012/13 as strong private sector investment overtakes weak public building activity, although this recovery will be partially offset by weaker dwelling building over 2014/15. Overall, total construction activity will increase strongly in 2011/12 and 2012/13, before growth eases over the following three years (see chart 6.1).
- The recovery in construction activity will lead to increasing wages growth, with growth in the QLD construction LPI predicted to peak in 2013/14 at 5.9 per cent, in line with the peak in construction activity growth, before weakening over 2014/15 and 2015/16. Despite this weakening, LPI growth beyond 2012/13 will be close to the national average. Construction

AWOTE growth will track the improvement in 'underlying wage inflation' (ie the LPI), and peak at 6.5 per cent in 2013/14, before easing.

- The AER in its recent revenue determinations adjusted the LPI (its preferred choice of labour escalator) for productivity growth. According to the AER, the LPI adjusted for productivity provides a better measure of labour cost increases as productivity improvements do not increase labour costs.
- We have not incorporated labour productivity forecasts into our AWOTE and LPI forecasts as Powerlink has advised that all reasonably foreseeable labour efficiencies over the 2013-17 period have been incorporated in the opex and capex forecasts in its Revised Revenue Proposal. On this basis, any labour productivity estimates derived for the utility sector will have very little relevance to Powerlink's circumstances and electricity network businesses in general, because of the diverse nature of the EGW sector and the difficulty in satisfactorily measuring EGW output. For these reasons, it is not appropriate to make any adjustment to the labour cost forecasts to account for expected labour productivity.
- Notwithstanding the above, we believe that DAE's productivity forecasts (which the AER used to calculate the productivity adjusted wage escalators in its Draft decision on Powerlink revenue proposal) are too optimistic.
- We consider that productivity growth in the Utilities sector will remain weak over the next six years. Going forward, we believe demand and output growth will be constrained in this sector for three key reasons: (1) Higher utilities prices (including the imposition of a carbon tax) will keep demand muted, (2) population growth will be slower over the next five years and (3) with the government introducing a price of carbon, we do not expect a significant jump in energy intensive projects, such as aluminium smelters. This will further contain demand for energy in the future. In addition, we assume moderate and fairly stable growth in employment in the utilities sector in Australia and the states over the next six years. The combination of muted output and moderate employment growth means productivity growth will remain weak for the utilities sector at the national as well as the state level over most of the current decade.

Table 1: Summary – Labour Cost Escalation Forecasts
(per cent change, year average, year ended June)

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	5 yr Avg (e)
	Actuals		Forecasts						
NOMINAL PRICE CHANGES									
1. Internal Network-related Labour									
EGW AWOTE - Queensland (a)	4.6	11.0	6.5	5.3	6.1	6.0	5.8	5.8	5.8
EGW LPI - Queensland (a)	5.4	4.6	4.4	5.3	5.5	5.2	4.9	5.1	5.2
EGW AWOTE - Australia (b)	7.4	9.7	4.9	5.7	5.8	5.8	5.6	5.7	5.7
EGW LPI - Australia (b)	4.4	4.3	4.4	5.0	5.2	4.9	4.7	5.0	5.0
2. External Construction-related Labour									
Construction AWOTE - Queensland (c)	8.7	10.4	4.3	6.3	7.4	6.5	5.1	8.6	6.8
Construction LPI - Queensland (c)	2.9	3.6	5.0	5.7	5.9	4.9	4.4	4.8	5.1
Construction AWOTE - Australia (b)	7.7	5.0	5.1	6.0	7.0	6.2	4.8	5.8	6.0
Construction LPI - Australia (b)	3.3	4.0	4.5	5.4	5.6	4.7	4.4	5.0	5.0
Consumer Price Index (headline) (d)	2.3	3.1	2.7	3.1	2.5	2.5	2.5	2.5	2.6
REAL PRICE CHANGES (f)									
1. Internal Network-related Labour									
EGW AWOTE - Queensland (a)	2.3	7.9	3.8	2.2	3.6	3.5	3.3	3.3	3.2
EGW LPI - Queensland (a)	3.1	1.5	1.7	2.2	3.0	2.7	2.4	2.6	2.6
EGW AWOTE - Australia (b)	5.0	6.6	2.2	2.6	3.3	3.3	3.1	3.2	3.1
EGW LPI - Australia (b)	2.0	1.2	1.7	1.9	2.7	2.4	2.2	2.5	2.3
2. External Construction-related Labour									
Construction AWOTE - Queensland (c)	6.4	7.3	1.6	3.2	4.9	4.0	2.6	6.1	4.1
Construction LPI - Queensland (c)	0.5	0.5	2.3	2.6	3.4	2.4	1.9	2.3	2.5
Construction AWOTE - Australia (b)	5.3	1.9	2.4	2.9	4.5	3.7	2.3	3.3	3.3
Construction LPI - Australia (b)	0.9	0.9	1.8	2.3	3.1	2.2	1.9	2.5	2.4

(a) Electricity, Gas & Water (EGW) Average Weekly Ordinary Time Earnings (AWOTE) and Labour Price Index (LPI) for Queensland.

Note Queensland LPI for 2009/10 and 2010/11 is estimated.

(b) Australian sector wage forecasts provided for comparison.

(c) Construction Sector AWOTE and LPI for Queensland.

(d) Headline CPI forecasts based on Reserve Bank of Australia forecasts to 2012/13 and then Commonwealth Treasury medium term projections.

(e) Average Annual Growth Rate for 2012/13 to 2016/17 inclusive ie for next regulatory period.

(f) Real price changes are calculated by deducting the inflation rate from nominal price changes. The difference between some real price changes in the summary table and those in the report is due to rounding errors.

1. INTRODUCTION, OUTLINE OF REPORT & DATA SOURCES

In 2010, BIS Shrapnel was engaged by Powerlink Queensland (hereinafter referred to as Powerlink) to provide an expert opinion regarding the outlook for a range of labour cost escalators relevant to operating and capital expenditure of electricity networks in Queensland over the seven year period from 2010/11 to 2016/17. The labour escalator forecasts and reports were used by Powerlink in the preparation of cost estimates for operating and capital expenditure to be included in Powerlink's regulatory submission to the Australian Energy Regulator (AER) in May 2011.

In November 2011, I, Richard Robinson, Associate Director (Economics) of BIS Shrapnel was engaged to update the initial report to Powerlink, in line with the specific request as per the Terms of Reference (see Appendix C), to "please review and revise the forecasts of labour escalation factors set out in your November 2010 report *"Labour Cost Escalation Forecasts to 2016/17."* 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 D. I have been assisted in the preparation of this report by Kishti Sen, an Economist at BIS Shrapnel and Felix Leung Research Assistant at BIS Shrapnel. Curriculum vitas of all relevant personnel are attached in Appendix E. 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. A full list of the ABS data and other information sources used in the preparation of this document and the forecasts contained within can be found in Appendix F.

The Australian Bureau of Statistics (ABS) is the primary data source for the consumer price index, wages, employment, real gross value added (GVA) and investment (including engineering construction) data, and for a range of other economic variables shown in Table 2.1. The September quarter, 2011 was the latest available data for wages, industry employment, national industry GVA and indeed most of the economic variables in Table 2.1. The detailed engineering construction data (by state and by category) have data only up to June quarter 2011. The latest data for Gross State Product (GSP) and real gross value added for state industry sectors was 2010/11 (annual data only is available). Other inflation and interest rates data were sourced from the Reserve Bank of Australia. Other data and information concerning enterprise agreements and skills shortages was obtained from the Department of Education, Employment and Workplace Relations (DEEWR).

Forecasts of the economic variables in this report were mostly sourced from BIS Shrapnel reports, including *Economic Outlook, Long Term Forecasts: 2011 – 2026, Engineering Construction: 2010/11 to 2024/25 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, including a brief commentary of the logic and key drivers, plus forecasts of key economic variables.
- **Section 3** briefly discusses BIS Shrapnel's model of wage determination and provides forecasts for national ('all industries') wages and CPI inflation. The Reserve Bank of Australia and Treasury medium-term projections of CPI inflation are also provided in this section. This is used to deflate the nominal escalators provided in the report.

- **Section 4** provides an outlook of wages growth for 'Powerlink's internal labour'. In line with the AER's Draft Decision on Powerlink's revenue proposal for the 2012/13 – 2016/17 regulatory period, the escalator which BIS Shrapnel used for all internal Powerlink labour is wages growth in the Electricity, Gas and Water Supply (EGW) sector for Queensland.
- **Section 5** provides an outlook for Powerlink's 'external construction-related labour' wages. Wages growth in the construction sector was used as the escalator.
- **Section 6** provides an analysis of the forecasting record of the utilities wage model of the AER's preferred consultant for utilities wage forecasts, Deloitte Access Economics, with regard to their previous forecasts versus the actual outcomes.
- **Appendices** which include a note on different wage measures and a description of BIS Shrapnel's wage model.

2. MACROECONOMIC OVERVIEW — AUSTRALIA AND QUEENSLAND

2.1 Key Points

- Against the backdrop of negative international news, the Australian economy continues to recover from the weakness earlier in the year 2011. We believe there is no danger of recession in Australia. The worst outcome would be that the Australian economy would stay soft for another 6 to 12 months
- Queensland's SFD (state final demand) in year-average terms increased by 3.2 per cent in 2010/11, which, although affected by cyclones and floods, represents an improvement on the -1.1 per cent decline in 2009/10 and virtually zero growth in 2008/09. Gross State Product (GSP), however, only grew by 0.2 per cent in 2010/11, as the recovery in household spending, business investment and construction failed to mitigate the large declines experienced in exports (predominately coal) as a result of the wide spread flooding over December 2010-to-January 2011 and Cyclone Yasi early in the year.
- Strong growth is forecast for Queensland's SFD and GSP over 2011/12 and 2012/13. Reconstruction-related activity (including replacement, refurbishment and repair costing well above \$5 billion) will add a significant boost to activity over these two years. Exports will rebound as flood affected mines ramp back to full production over 2011/12 and railways and roads are repaired, allowing transport volumes to return to their previous capacity. In addition, new mining supply will come on stream over the next two years (and beyond) from recent and current high levels of mining investment, and this will add to state output and exports.
- After the reconstruction boost in 2011/12—with road and rail works prominent—public investment in Queensland is set to decline over the following two to three years. However, we are forecasting significant increases in private investment taking over as the key driver of growth in the state. In particular, mining investment will drive business investment and overall investment higher, and indeed the overall Queensland economy over the medium term, as it has over most of the past decade.

2.2 The Australian economy

2.2.1 Current State of Play

The economy hit a soft patch in late 2010 just as the Reserve Bank raised interest rates. This was compounded by the interruptions to production and investment as a result of the summer floods and cyclone. The result was a -0.7 per cent contraction in real gross domestic product (GDP) in the March quarter. Production and investment rebounded in the June quarter but year average growth in GDP in 2010/11 was a relatively modest 1.9 per cent.

Markets spooked by overseas problems, delaying a pick-up in growth

Over recent months, local and overseas share markets have experienced sharp falls as US and European debt and equity markets finally reacted to the combination of European sovereign debt difficulties, the politics of expanding the ability of the US to take on debt, the downgrade of US government securities, and weak US and European growth.

- These problems are serious - for the countries in debt and the banks that financed them. But Australia has little direct exposure. A large part of the problem for Europe is the inflexibility of fixed exchange rates in the Euro zone.

- For the US and much of Europe, this will be a long hard haul. Still absorbing excess capacity created during the boom, they won't have strong investment to drive growth. We think it will take a decade to claw back the unemployment rate.

But this is nothing like the situation which led to the GFC. This is just the next stage in the unwinding of the pre-GFC boom. And market gyrations will gradually settle down, learning to live with what we expect will remain largely unresolved problems.

Australia has been caught in the financial market contagion, with a sharp fall in the share market and the threat of higher spreads on our overseas borrowings. Equity markets are experiencing enormous volatility. Many think that this will be GFC phase 2 and are again battering down for an anticipated recession. Confidence is again taking a hammering, delaying the next phase of recovery from the current soft patch in the economy.

Don't confuse what's happening overseas with what's happening in Australia

Australia doesn't have these problems. Australia didn't have a financial crisis. The major banks are strong. Australia didn't overinvest in the boom which preceded the GFC, but is under-investing now so that we are not far from running into capacity constraints.

Meanwhile, resource companies have just committed to a second major phase of investment projects, sufficient to underwrite solid growth over the next five years. As long as China remains strong, we'll be supplying the resources to help them grow.

Nevertheless, the Australian economy remains soft

The economy has been soft since the beginning of 2011. Precautionary savings by households and businesses is constraining demand and hence growth. Confidence is weak. And that is spreading to private investment. Households are delaying long-term commitments such as investment in housing. And, apart from the resources sector, business investment remains weak.

Consumers are keeping their powder dry, still increasing savings. Nevertheless, private consumption expenditure remains solid. But much of that expenditure is leaking into imports. Retailers are crying poor because of low growth in retail sales. But margins remain high. We shouldn't expect sales growth in order of magnitude of last decade when the banks effectively transformed traditional mortgages into lines of credit, thereby stimulating a spending binge financed by debt. We've now learnt to live with readily available credit and are erring on the side of caution. The growth in savings is a strength not a weakness. But we will only gradually loosen the purse strings.

Residential property and housing construction have been a casualty of the combination of uncertainty and higher interest rates. All the talk of 'overvalued housing markets' compared with overseas has spooked owner-occupiers and housing investors alike. Without the prospect of capital gain, let alone facing the spectre of capital loss, they are keeping their powder dry. In some states, particularly NSW, the shortage of housing has become critical. The next stage is an upswing in both property and construction markets but, as we speak, they remain weak, and indeed are drifting downwards.

And, apart from Resources, private investment remains flat, below the level required to underwrite even moderate growth, setting the scene for future capacity constraints. Business remains in cost containment mode rather than going for growth.

The latest 'market crisis' hasn't helped. It will delay the improvement in confidence that will drive a pick-up in growth.

There is no danger of recession. The worst outcome would be that the Australian economy would stay soft for another 6 to 12 months.

Table 2.1: Australia – Key Economic Indicators, Financial Years

Year Ended June						Forecasts					
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Selected Expenditure Categories											
Private Investment											
– Dwellings	-0.2	1.9	-1.5	1.2	0.9	0.0	4.3	5.7	-4.8	2.1	10.4
– New Non-Dwelling Construction (+)	13.0	6.3	12.5	-9.5	9.1	26.2	9.0	10.1	-2.2	-1.8	4.3
– New Non-Dwelling Building (+)	10.5	11.6	-4.4	-14.3	-4.1	9.8	8.9	8.2	0.0	1.1	12.6
– New Engineering Construction (+)	15.5	1.3	30.3	-5.9	17.9	35.1	9.0	10.9	-3.1	-3.1	0.4
Total New Private Investment (+)	5.2	9.0	1.2	-3.0	3.2	13.3	9.8	8.9	-2.0	4.7	10.5
New Public Investment (+)	4.7	10.4	2.8	29.0	5.8	-4.0	-5.0	-3.3	2.9	7.3	9.3
Gross National Expenditure (GNE)	4.9	6.0	0.3	2.4	3.9	5.0	4.5	4.2	1.1	4.5	6.0
GDP	3.8	3.8	1.4	2.3	1.9	3.3	3.5	3.7	2.2	4.1	4.4
Inflation and Wages											
CPI (Yr Avg)- RBA/Treasury forecasts (*)	2.9	3.4	3.1	2.3	3.1	2.7	3.1	2.5	2.5	2.5	2.5
Labour Price Index (Jun on Jun)	4.0	4.2	3.8	3.1	3.8	4.0	4.5	4.4	3.7	4.3	4.5
Labour Price Index (Yr Avg)	3.9	4.1	4.1	3.1	3.8	3.7	4.3	4.6	4.0	3.9	4.4
Average Weekly Earnings (Yr Avg)	3.6	4.9	5.5	5.6	4.2	4.9	4.9	5.6	5.1	4.5	5.2
Employment											
– Employment Growth (Yr Avg)	3.1	3.0	1.6	1.4	2.9	1.2	2.4	2.9	1.0	1.6	2.8
– Employment Growth (May on May) (%)	3.3	2.7	0.9	2.2	2.3	1.5	2.6	2.7	0.3	2.6	2.6
– Unemployment Rate (May) (%)	4.3	4.3	5.8	5.2	5.0	5.1	4.5	4.1	5.2	4.6	4.1
Labour Productivity Growth											
– Total	0.5	0.8	-0.2	0.9	-1.0	1.4	1.1	0.8	1.2	2.5	1.6
– Non-farm	1.0	0.7	-0.5	0.9	-1.4	2.1	1.6	0.9	1.4	2.4	1.6
Exchange Rates											
– US\$ per A\$ (Yr Avg)	0.79	0.90	0.75	0.88	0.99	1.02	1.04	1.06	0.94	0.87	0.99

Source: BIS Shrapnel, ABS and RBA

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

*Forecasts to 2013 from RBA, followed by Treasury long-term forecasts

2.2.2 Outlook for the Australian economy

Beyond 2011, the medium term outlook is positive overall. Private investment will recover gradually and build momentum three to four years from now. Business investment in particular is expected to rise sharply over the next five years and be a key driver of growth. Although consumers remain risk averse and budget conscious, due to uncertainty over a range of political and economic issues, they have built up a significant savings buffer which provides households with latent spending power. Eventually, confidence will return and households will lift spending and make a larger contribution to growth, including a moderate recovery in dwelling investment. Meanwhile, weak advanced world growth and European sovereign debt problems will have little impact on external demand – Australia is an Asian economy now. We forecast real GDP to grow by an average of 3.5 per cent per annum over the three years to 2013/14. We expect rising interest rates to cause a mild downturn in 2014/15 before the economy rebounds quickly and builds momentum thereafter.

Investment in the resources sector has already picked up strongly. There is more to come. Meanwhile, commodity prices remain at historically high levels (despite weakening in the

second half of 2011), supported by China's strong demand for steel making raw materials (ie iron-ore and coking coal). This has locked-in another round of mining-related projects over the next five years.

The current round of mining investment is expected to peak in 2014/15, with the main impetus to growth seen over 2011/12 to 2013/14. We are not expecting a major setback to commodity prices – demand is expected to remain solid with a recovery in developed world demand over the medium to long term taking up the baton from a moderation in the super hot growth experienced by the developing world, particularly China. However, we are seeing a significant world supply response to current prices and this will see future prices below their current levels by mid-decade.

The economic outlook among Australia's major export markets, however, has considerable differences. While economic growth in US and Western Europe is expected to remain weak in the short-to-medium term, China, India, Korea and Thailand are expected to record solid growth rates over the next two years and beyond. As the majority of Australia's exports now go to Asian markets, the strong performance of the Chinese and Indian economies as well as Japan's reconstruction following the earthquake will support Australia's external demand well into the medium term.

But it won't all be plain sailing. The high dollar is eroding the competitiveness of the export and import-competing sectors, with imports taking a larger share of the domestic market at the expense of local manufacturers and tradeable services (such as tourism and education) while non-commodity exporters continue to suffer lower revenues and profits. Ultimately, investment will be affected on trade-exposed sectors, while some operations will close down and/or relocate overseas, in many cases meaning a permanent loss of industry. This process has already begun.

Partly offsetting growth in private demand will be declining public investment — as the post-GFC schools, housing and hospitals building programs wind down — and slower growth in government recurrent spending and employment. The desire to return the budget to surplus also means that broadly-based income tax cuts are off the agenda until mid-decade (notwithstanding the recent announcement of tax cuts to compensate households for the proposed Carbon Tax). The lack of tax cuts will help restrain consumer spending.

The extent to which consumers choose to loosen their purse strings will determine the speed at which wage and price pressures build over the next 18 months. Consumers have built up a considerable savings buffer, but they will be constrained in their ability to run up debt levels by the watchfulness of the RBA to any signs of excessive demand on the part of households. The RBA knows there is a major phase of mining investment gathering momentum, which is insensitive to interest rates, and will be accompanied both by strong growth in mining incomes and strong resources investment underpinned by record high commodity prices. With the unemployment rate already hovering around 5 per cent, the economy does not have sufficient capacity to accommodate a strong pick-up in demand from households and the additional demand on labour, materials and capital that would generate. The RBA position is to use interest rates to make room for the minerals boom. Housing activity and non-mining domestically produced tradeables will be the collateral damage.

With underlying inflation now appearing to have troughed we expect the RBA to start lifting the cash rate once we're through the current soft patch. However, with the current market turmoil, debt and other problems overseas, and budget conscious households adopting a cautious approach to spending, the next rate rise is not expected until the fourth quarter of 2012. Nonetheless, as the economic upswing gains momentum and moves towards full

employment over the next two years, we expect the RBA will get on the front-foot and move official rates to more restrictive settings.

An aggressive series of interest rate rises through 2013/14 will dampen consumer spending and send housing activity into a controlled downturn through 2014. Generalised business investment will also moderate at the same time, with the overall slowdown in domestic spending and easing of inflationary pressures expected to see interest rates fall back. However, the impact on employment and demand will be modest, with the unemployment rate expected to peak at around 5 per cent in 2015.

The economy is expected to regain momentum from 2015/16, with a strong growth phase in both residential and non-residential building expected to drive growth. By mid-decade, these two markets will typically be characterized by tight supply and a considerable degree of pent-up demand, given building in both sectors will be constrained over the next few years by high interest rates and lingering finance constraints as the economy makes room for the mining investment boom. With growth in overall mining investment expected to ease over the second half of this decade (from its mid-decade highs), investment will switch to residential and non-residential building. Another major round of private infrastructure and public investment is also expected, given restrained investment in these areas over the next few years will lead to a worsening of capacity constraints and bottlenecks in essential infrastructure.

Main Risk to Economy is Another Credit Crisis

The main risk to growth in the Australian economy over the short-to-medium term is a major credit crisis, most likely resulting from a worsening of the current European sovereign debt situation. The threat of a default in Greece and some other European countries (such as Spain, Portugal, Ireland and even Italy) has led to heightened nervousness among European and other global banks about which banks have large exposures to the debts of the most indebted countries (known as PIIGS). As in the first global financial crisis in 2008 (GFC phase 1), the banks are again displaying a reluctance to lend to each other and this is limiting the availability of credit and forcing up the price of borrowing.

Should Greece or another one (or more) of the PIIGS default, the danger is a full-blown crisis of confidence in the European banking system which would then possibly cause a recession in Europe, via the drying up of credit and the collapse of confidence and spending. The risk then is the extent to which another significant weakening in the European economies spreads to the US, China and Asia, via the impact on their exports to Europe. If Europe's woes result in a significant weakening in Asia's — and particularly China's — economic growth, it would have a knock-on effect to Australia, via lower commodity prices and export volumes, and secondly via its effect on the next round of mining investment — but mining investment would not fall in the short-term because of the large amount of projects now underway and committed (as in 2008/09 when mining investment actually increased).

While we would assess that there is still some risk of a default in Europe and serious problems there, we believe that growth in China and Asia, although moderately affected, would still remain solid and not significantly derail growth in Australia. In addition, Australia's economic fundamentals are still quite sound and policy makers here have scope to boost the domestic economy — the RBA can significantly cut rates (with the resulting fall in the exchange rate also boosting the tradeables sectors), while the government (with its low debt and relatively small budget deficit) can lift spending or cut taxes. These actions would prevent a recession in Australia.

However, any increased difficulties in accessing overseas credit could delay a broader pick-up in business investment (beyond the resources sector), because Australia still needs to borrow from overseas banks to finance internal investment and finance the Current Account Deficit.

2.3 The Queensland Economy

A surge in business investment and modest growth in household consumption and dwelling investment saw the Queensland economy rebound strongly in the June 2011 quarter.¹ Business investment was driven by resources-led surge in engineering construction which rose 29.1 per cent in the June quarter.² Resources projects, in particular the commencement of the two major LNG projects in Gladstone and the strong A\$, in turn, drove a 16.5 rise in machinery and equipment investment.³ Meanwhile, non-residential construction which has been on a slow recovery post-GFC rose 7.6 per cent in the June quarter.⁴ Overall, State Final Demand (SFD) — which is the addition of spending on consumption and investment by the private and public sectors — in Queensland jumped 3.5 per cent in the June 2011 quarter to be higher 5.7 per cent through the year (June quarter 2011 compared to June quarter 2010), its fastest growth since the September quarter 2008.⁵

In year-average terms, SFD increased 3.2 per cent in 2010/11, which, although affected by cyclones and floods, represents an improvement on the -1.1 per cent decline in 2009/10 and virtually zero growth in 2008/09 (see table 2.2). GSP, however, only grew by 0.2 per cent in 2010/11,⁶ as the recovery in household spending, business investment and construction failed to mitigate the large declines experienced in exports (predominately coal) as a result of the wide spread flooding over December 2010-to-January 2011 and Cyclone Yasi early in the year.

Strong growth is forecast for both SFD and GSP over 2011/12 and 2012/13. Reconstruction-related activity (including replacement, refurbishment and repair costing well above \$5 billion) will add a significant boost to activity over these two years. Exports will rebound as flood affected mines ramp back to full production over 2011/12 and railways and roads are repaired, allowing transport volumes to return to their previous capacity. In addition, new mining supply will come on stream over the next two years (and beyond) from recent and current high levels of mining investment, and this will add to state output and exports.

Rural production and export volumes are also set for a significant rebound from early 2012 when next season's crops are harvested, after the December-January floods and Cyclone Yasi destroyed a significant proportion of the 2010/11 grain, cotton, sugar and banana crops (and some of the transport infrastructure). Beef export volumes will also increase on the back of continued good seasonal conditions and improving export demand. While the anticipated rebound in agricultural production will provide a boost to rural and regional economies over 2011/12 and 2012/13, the expected declines in global (US\$) prices coupled with a sustained high Australian dollar will negatively impact on rural returns. The high Australian dollar—expected to remain over US\$1.00 over the next two-to-three years—will also continue to impact negatively on the tourism sector, in terms of both international and interstate visitors, with education exports and the non-commodity manufacturing sector also continuing to suffer.

After the reconstruction boost in 2011/12—with road and rail works prominent—public investment is set to decline over the following two to three years. However, we are forecasting significant increases in private investment taking over as the key driver of growth. In particular,

¹ ABS, National Accounts 5206.0, June quarter 2011

² ABS, National Accounts 5206.0, June quarter 2011

³ ABS, National Accounts 5206.0, June quarter 2011

⁴ ABS, National Accounts 5206.0, June quarter 2011

⁵ ABS, National Accounts 5206.0, June quarter 2011

⁶ ABS, Australian National Accounts: State Accounts, 2010-11

mining investment will drive business investment and overall investment higher, and indeed the overall Queensland economy over the medium term, as it has over most of the past decade. The continued need to fuel ongoing industrialisation in China as well as Queensland's favourable proximity to countries in the region with high dependency on energy resource imports (Japan, Korea & China) will continue to underpin resource investment decisions across the state for a number of years.

In particular, coal, the dominant mining subsector, and coal related (rail & port) construction will continue to experience solid growth over our forecast horizon. Not to be out done, oil & gas activity is tipped to surge with works already underway on two massive coal seam methane LNG plants to be built in Gladstone, worth around \$15 billion each (including associated gas field development and pipelines). Coupled with further increases to bauxite & alumina and other minerals investment, mining related engineering construction is predicted to almost treble over the next three years to a peak of just under \$20 billion (in 2008/09 prices) in 2013/14, before easing back to around \$15 billion in 2015/16.

Dwelling construction levels in Queensland are still well below underlying demand following four years of declines in dwelling investment. We expect the increasing deficiency of housing stock (ie undersupply to worsen) to drive a solid rebound in dwelling investment over 2012/13 and 2013/14, before declining in 2014/15 following the imposition of high interest rates in 2013/14. On the other hand, commercial and industrial building will remain weak for another year, before a moderate recover proceeds from 2012/13 following the absorption of excess capacity across some sectors and improved availability of finance. Plant and equipment investment will initially be driven by the mining sector, but as dwelling building rebounds and confidence in the state outlook returns, general business investment will also strengthen from 2012.

The surge in investment over the next three years will fuel strong growth in employment, with employment projected to increase 1.6 per cent, 4.1 per cent and 3.7 per cent in 2011/12, 2012/13 and 2013/14 respectively, the latter two years well above the national average. This will also underpin higher growth in household incomes and consumer spending. This is in sharp contrast to the past two years when Queensland lagged national employment and consumer spending growth, while the state unemployment rate jumped from below to above the national rate.

Indeed, the biggest problem facing the state in the next few years will be an adequate labour supply to cater for the reconstruction and large LNG and coal investments, plus the acceleration in housing construction and household spending. There is also a risk that the projected strong growth in dwelling construction will be constrained if not enough residential lots become available or simply if high interest rates choke the upswing. However, given the extra labour needed will lead to higher levels of both interstate and international migration into the state, the demand pressures for more housing should support the upswing.

Growth in SFD and GSP is expected to slow (but still be reasonably strong) in 2013/14 and 2014/15 as, firstly, high interest rates impact on consumer spending and dwelling investment, and then business investment growth slows sharply as a number of major projects wind down to completion. Thereafter, an easing in interest rates, a lower dollar and solid business and infrastructure investment will lead to stronger growth from 2015–16 onwards.

Longer term, Queensland's key economic drivers of higher population growth and continuing infrastructure and resources investment will sustain strong GSP and employment growth.

Table 2.2: Queensland – Key Economic Indicators, Financial Years

Year Ended June	Annual Percentage Change										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
QLD											
Total Construction Activity ^(a)	14.1	10.5	8.0	-4.1	6.3	18.7	14.2	5.3	-4.5	-0.1	4.5
State Final Demand	7.9	7.5	0.0	-0.5	3.2	8.8	7.2	5.5	1.2	4.4	6.6
Gross State Product (GSP)	5.7	4.8	0.6	1.7	0.2	5.1	5.5	4.3	2.2	4.4	5.0
Employment Growth	4.7	3.1	2.9	0.6	2.1	1.8	4.0	3.7	0.8	1.8	3.1
AUST											
Total Construction Activity ^(a)	5.7	6.5	9.0	3.2	5.6	11.8	4.4	6.6	-2.3	0.4	6.8
Australian Domestic Demand	4.5	5.8	0.9	2.3	3.2	5.0	4.5	4.3	1.2	4.2	6.0
Gross Domestic Product (GDP)	3.8	3.8	1.4	2.3	1.9	3.3	3.5	3.7	2.2	4.1	4.4
Employment Growth	3.1	3.0	1.6	1.4	2.9	1.2	2.4	2.9	1.0	1.6	2.8

Source: BIS Shrapnel and ABS

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

3. OUTLOOK FOR AUSTRALIAN INFLATION AND ALL INDUSTRIES WAGES

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 also 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 most recent increase was given as a proportional increase. At the all industries level, 15.2 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 and water sector, only 0.9 per cent of workers have their pay set by this method.
- Collective agreements negotiated under enterprise bargaining account for 43.4 per cent of all employees, but over 80 per cent of electricity, gas and water employees' wage increases are determined by this method (note the new ANZSIC2006 classification added 'waste services' to the previous ANZSIC1993 electricity, gas and water supply classification. We have excluded the waste services component from our analysis in section 4).
- The remaining 41.4 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 and water is currently estimated to be around 17 per cent.

Table 3.1: Wages Growth, All Industries, Australia, (by Workforce Segmented by Pay Setting Method)

Year Ended June	Year Average Percent Change													Averages	
	2006	2007	2008	2009	2010	2011	Forecast						2001-11		
Proportion of Workforce by Pay setting Method															
Awards Only	19.0%	17.8%	16.5%	15.8%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	18.3%	15.2%
Collective Agreements	41.1%	40.5%	39.8%	41.6%	43.4%	43.4%	43.4%	43.4%	43.4%	43.4%	43.4%	43.4%	43.4%	40.6%	43.4%
Individual Arrangements	39.9%	41.8%	43.7%	42.6%	41.4%	41.4%	41.4%	41.4%	41.4%	41.4%	41.4%	41.4%	41.4%	41.1%	41.4%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100.0%
AWOTE															
Awards Only (a)	1.7	2.0	1.4	1.7	0.5	2.1	1.5	1.4	1.8	1.5	1.8	1.8	1.7	1.6	
Collective Agreements	4.1	4.1	4.0	4.2	4.1	4.0	4.0	4.2	4.5	4.3	4.1	4.3	4.0	4.2	
Individual Arrangements (b)	6.5	3.8	7.1	8.1	8.9	5.1	7.1	6.9	8.2	7.2	6.5	7.5	7.0	7.2	
AWOTE (Persons)(c)	4.6	3.6	4.9	5.5	5.6	4.2	4.9	4.9	5.6	5.1	4.5	5.2	4.8	5.0	
Labour Price Index															
Awards Only (a)	1.7	2.0	1.4	1.7	0.5	2.1	1.5	1.4	1.8	1.5	1.8	1.8	1.7	1.6	
Collective Agreements	4.1	4.1	4.0	4.2	4.1	4.0	4.0	4.2	4.5	4.3	4.1	4.3	4.0	4.2	
Individual Arrangements (b)	5.2	4.6	5.3	4.9	3.0	4.2	4.2	5.4	5.8	4.6	4.6	5.3	4.3	5.0	
Labour Price Index (Ord. Time)	4.1	3.9	4.1	4.1	3.1	3.8	3.7	4.3	4.6	4.0	3.9	4.4	3.7	4.1	
Compositional Effects + Bonuses, etc	0.5	-0.3	0.8	1.3	2.5	0.4	1.2	0.6	1.0	1.1	0.6	0.8	1.1	0.9	

Source: BIS Shrapnel, ABS, DEEWR

(a) Contribution of nominal award wage increases to total wages growth, rather than percent change in award wages

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

(c) Full-time Adult Persons, excluding overtime

**Table 3.2: Methods of Setting Pay, Industry, May 2010
Proportion of Employees (%)**

Industry (ANZSIC 2006)	Award Only	Collective Agreements	Individual Arrangements	All Methods of Pay Setting
Mining	1.9%	41.4%	56.7%	100.0%
Manufacturing	14.6%	26.4%	59.1%	100.0%
Electricity, Gas, Water & Waste Water Services	3.1%	66.9%	30.0%	100.0%
Construction	10.0%	23.1%	66.9%	100.0%
Wholesale trade	10.9%	12.3%	76.8%	100.0%
Retail trade	22.3%	41.0%	36.7%	100.0%
Accommodation and Food Services	45.2%	30.1%	24.7%	100.0%
Transport, Postal and Warehousing	8.0%	52.2%	39.8%	100.0%
Information Media and Telecommunications	5.7%	31.3%	63.0%	100.0%
Finance and Insurance Services	2.1%	42.6%	55.4%	100.0%
Rental, Hiring and Real Estate Services	22.8%	9.5%	67.7%	100.0%
Professional, Scientific and Technical Services	4.2%	11.9%	83.9%	100.0%
Administrative and Support Services	31.4%	27.2%	41.5%	100.0%
Public Administration and Safety	1.9%	92.3%	5.8%	100.0%
Education and Training	5.1%	84.1%	10.8%	100.0%
Health Care and Social Assistance	17.1%	64.1%	18.8%	100.0%
Arts and Recreation Services	15.1%	46.0%	38.9%	100.0%
Other Services	27.2%	9.8%	63.1%	100.0%
All Industries 2010 Survey	15.2%	43.4%	41.4%	100.0%
Electricity, Gas and Water (2006)¹	0.9%	84.4%	14.7%	100.0%
Electricity, Gas and Water (2010)²	0.9%	80.0%	19.1%	100.0%

Source: Australian Bureau of Statistics, *Employees Earnings and Hours*, cat. No. 6306, Table 15

(1) Previous ANZSIC 1993 industry classification, which was used for May 2006 survey (and all previous surveys). August 2008 was the first survey using new ANZSIC 2006 categories. Updated survey May 2010.

(2) EGW proportions for 2010 are estimated from the new ANZSIC 2006 data.

In terms of the key influences on the different wage determination mechanisms of each discrete segment:

- Increases in the Federal Minimum Wage (on which a range of mostly lower paid awards are also based) granted by the 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 Fair Work Australia's view of both current and short-term future economic conditions. Fair Work Australia granted a 3.4 per cent (\$19.40) increase in minimum wages, effective July 2011. The \$19.40 per week increase lifted the Federal Minimum Wage to \$589.30/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.

Chart 3.1: Australia – Wages and Prices

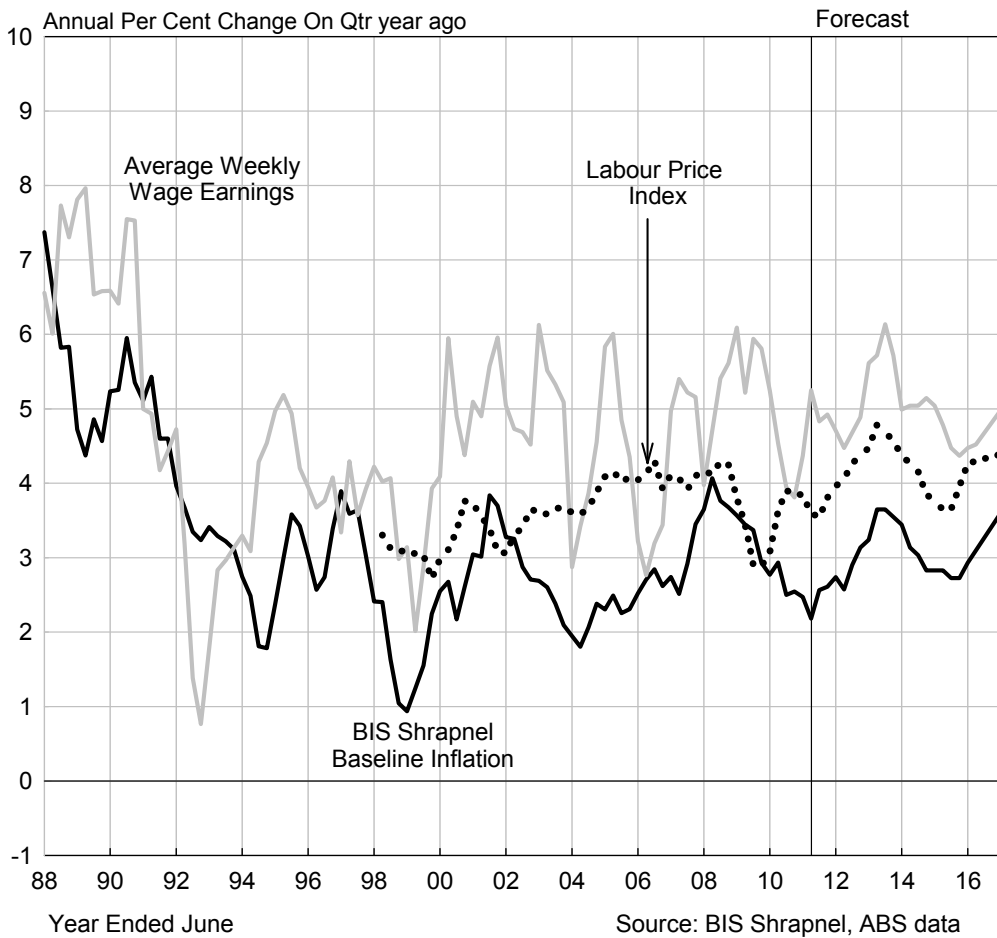
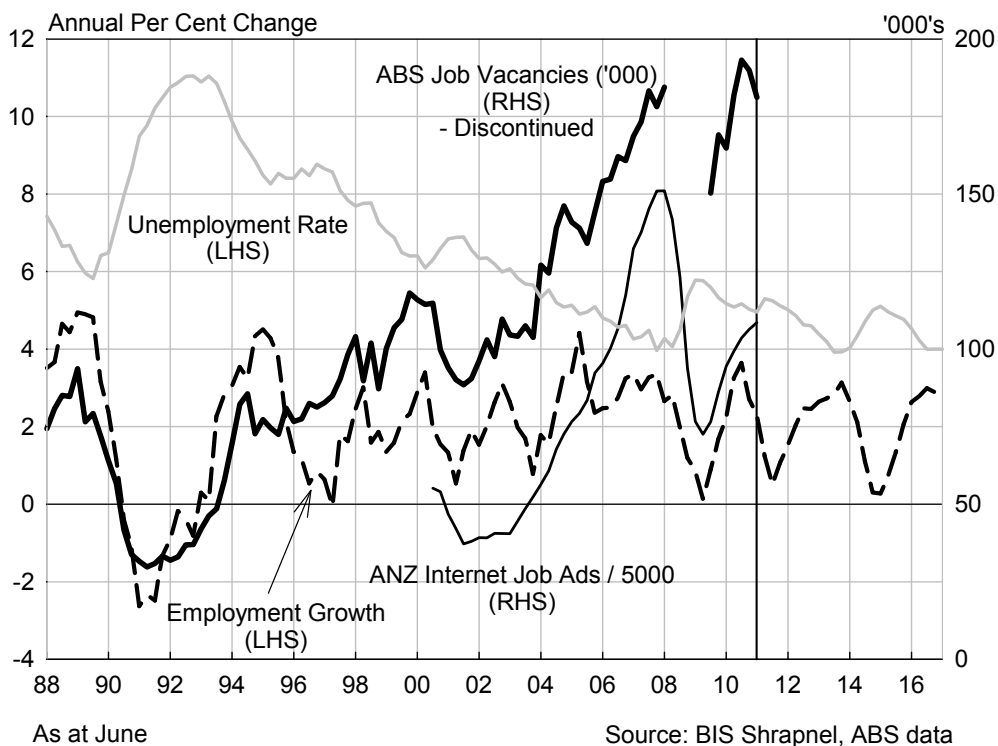


Chart 3.2: Employment and Unemployment



3.1 Outlook for Australian All Industries Wages

Wage pressures normalised in 2010/11 – slow build in 2012 to precede strong growth

BIS Shrapnel believes that wage inflation over the next 18 months will be shaped by a moderation in wages growth for award-reliant workers, moderate growth in wages for those on enterprise bargaining and solid growth in wages for those on individual agreements, particularly skilled workers.

Increases in the Federal Minimum Wage (on which a range of mostly lower paid awards are also based) granted by the Fair Work Australia (the successor to the Fair Pay Commission) 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. After receiving no increase in entitlement in 2009 — with the Fair Pay Commission citing as its reasons, the deterioration of economic conditions and the spurious link between minimum wage increases and higher unemployment — the 'normalisation' of trading conditions and the strength of competition for skilled workers saw Fair Work Australia grant a \$26 increase in all modern award minimum weekly wages in 2010. Following the catch-up in 2010 and the 2010/11 Annual Wage Review, Fair Work Australia granted a 3.4 per cent (\$19.40) increase in minimum wages, effective July 2011. The \$19.40 per week increase is expected to contribute 1.5 per cent to the all industries AWOTE in 2011/12.

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' (i.e. an agreement has been 'struck') over recent quarters. Thereafter, collective agreements are based on BIS Shrapnel's macroeconomic forecasts.

Recent collective agreements data from the Department of Education, Employment and Workplace Relations (DEEWR) shows that average annualised wage increases (AAWIs) regained momentum in late 2009.⁷ Growth recovered to 3.9 per cent in the December quarter 2009 and strengthened to 4.2 per cent in the September 2010 quarter before easing to 3.8 per cent in the December 2010 quarter. The September quarter result was boosted in part by the catch-up in the minimum wage. According to the DEEWR, around 37 per cent of current Federal enterprise collective agreements covering 24 per cent of all employees under Federal enterprise agreements are linked in some way to annual wage review outcomes. However, the divergent outlook for industry sectors will dampen growth in all industry AAWIs for agreements reached in 2011, but the higher agreements in 2010 will offset the lower approved AAWIs in 2009 and overall growth in 2011/12 is expected to be slightly higher than 2010/11.

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. Our expectation is that this segment will see growth strengthen through 2011/12, but the extent of the recovery will vary considerably between industries. Skilled labour shortages are re-emerging in the sectors which drove strong increases in individual agreements prior to the global financial crisis and this will feed into overall wages growth in this segment. However, trading conditions are currently sluggish for many businesses and we don't expect to see much of an improvement until the second half of 2012.

⁷ DEEWR, 'Trends in Federal Enterprise Bargaining, December quarter, 2010

The upshot is that after easing slightly through 2011, wages growth is forecast to pick up through 2012 as economic and employment growth strengthen, and the unemployment rate gradually declines below 5% by late 2012. The LPI is expected to ease to 3.7 per cent in 2011/12, before rising to 4.3 percent in 2012/13. Meanwhile, AWOTE is expected to rise from 4.2 per cent in 2010/11 to average 4.9 per cent in 2011/12, and remain at that level in 2012/13.

Medium to longer term outlook – wages growth higher as pressures persist

A broadening in employment, profits and investment is expected from mid-to-late 2012 as increased mining investment and incomes and lower interest rates 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 2012/13 and widening skills shortages – with the unemployment rate pushing toward 4.0% by late 2013/early 2014 – will drive up wages growth during 2012/13 and 2013/14. Wages growth (in year average terms) is expected to rise further and peak at 5.6 per cent for AWOTE and 4.6 per cent for LPI in 2013/14.

This will see the RBA act to constrain economic growth and inflationary pressures during 2013 and 2014 by raising interest rates. As wage and price pressures build, the approach by the RBA will become increasingly aggressive and this will eventually undermine domestic demand. The mining investment boom will be largely unaffected and strong competition for workers will continue to underpin strong employment and wages growth in investment related sectors, but this will be offset by weakening profits and demand for labour elsewhere in the economy by 2014.

The higher interest rates are expected to cause a slowdown in economic and employment growth during 2014, and this will eventually feed through to wages growth in 2015, with wages growth in the individual arrangements and award segments slowing first. But with only a small rise expected in the unemployment rate (to between 5-5.5%) because of the deceleration in 'working population' and labour force growth, the ongoing tight labour market is expected to see wage pressures rise again in the second half of the decade, once the subsequent recovery resumes.

Indeed, by the middle of this decade, both skilled and general labour shortages will begin to emerge due to demographic factors, i.e. retirements. Australia will continue to experience sustained labour shortages in the decade to 2022 (and beyond), and these shortages will become more significant as the workforce ages. As Australia's 'baby boomers' generation move into the 65+ age group, the growth of the 15-64 year old component of Australia's working age population (the overwhelming majority of Australia's workforce) will begin to slow.

With more people retiring, the supply of labour is expected to increase at a slower rate through the coming decade. This will lead not only to skilled labour shortages, but total labour shortages. Meanwhile, the demand for labour will continue to rise — particularly in periods of strong investment and economic growth. These sustained labour shortages will result in a long term upward bias in wage inflationary pressures.

3.2 Outlook for Consumer Price Inflation

Extreme weather events in Australia and high oil prices saw consumer prices shift higher in the first half of 2011. The CPI inflation rose 0.9 per cent in the June 2011 quarter to be 3.6 per cent higher through the year. Meanwhile, annual underlying inflation, which has been on a slow downward drift since the global financial crisis, increased only marginally to 2.4 per cent in the March quarter before rising to 2.8 per cent in June 2011.

**Table 3.3: Wages and Prices – Australia
Year Average Growth**

Year Ended June	Average Weekly Ordinary Time Earnings ⁽¹⁾		Labour Price Index All Industries 2011/12=100		CPI Headline Inflation (BIS Shrapnel forecasts) 2011/12=100 %CH		Official Headline CPI ⁽²⁾ 2011/12=100 %CH	
	\$/week	%CH						
2000	765.4		64.6		69.0		69.2	
2001	804.2	5.1	66.8	3.5	73.2	6.0	73.3	6.0
2002	847.4	5.4	69.1	3.3	75.3	2.9	75.4	2.9
2003	890.0	5.0	71.5	3.5	77.6	3.1	77.7	3.1
2004	931.6	4.7	74.1	3.6	79.4	2.4	79.6	2.4
2005	972.9	4.4	76.8	3.7	81.3	2.4	81.5	2.4
2006	1 017.5	4.6	80.0	4.1	83.9	3.2	84.1	3.2
2007	1 054.1	3.6	83.1	3.9	86.4	2.9	86.6	2.9
2008	1 106.1	4.9	86.6	4.1	89.3	3.4	89.5	3.4
2009	1 166.5	5.5	90.1	4.1	92.1	3.1	92.3	3.1
2010	1 231.3	5.6	92.9	3.1	94.3	2.3	94.4	2.3
2011	1 282.5	4.2	96.4	3.8	97.2	3.1	97.4	3.1
Forecasts								
2012	1 345.4	4.9	100.0	3.7	100.0	2.9	100.0	2.7
2013	1 411.4	4.9	104.3	4.3	103.3	3.3	103.1	3.1
2014	1 490.4	5.6	109.1	4.6	107.2	3.7	105.7	2.5
2015	1 566.1	5.1	113.4	4.0	110.4	3.0	108.3	2.5
2016	1 636.8	4.5	117.9	3.9	113.5	2.8	111.0	2.5
2017	1 721.5	5.2	123.0	4.4	117.1	3.2	113.8	2.5
Compound Annual Growth Rates ⁽³⁾								
1990-2000	3.8				2.2		2.2	
2000-2010	4.9		3.7		3.2		3.2	
2006-2011	4.7		3.8		3.0		3.0	
2012-2017	5.1		4.2		3.2		2.6	

Source: BIS Shrapnel, ABS

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

(2) RBA Forecasts to December 2013. Beyond 2013, Commonwealth Treasury's forecasts are used.

(3) e.g. CAGR (Compound Annual Growth Rates) for 2012-2017 is CAGR for 2012/13 to 2016/17 inclusive (ie next regulatory period).

However, the main measures of CPI inflation all eased in the September quarter, with the easing in inflationary pressures reflecting both the lagged effects of the weakening in the economy — particularly consumer spending — and the rising dollar over the past year (notwithstanding the falls in the dollar in August and September). In addition, the underlying inflation rate was only 0.3 per cent for the September 2011 quarter, easing back to 2.5 per cent through-the-year from 2.8 per cent in the June 2011 quarter.

Headline inflation to ease further over next nine months, but underlying CPI to remain around current levels of 2.5 per cent

Headline CPI was lifted over 3 per cent over 2011 by the high outcomes in the March and June quarters of 2011, when the extreme weather events and high oil prices pushed up fruit and vegetable prices and fuel prices. However, as these large one-off spikes drop out, the headline CPI is forecast to ease back to 2.6 per cent by the June quarter 2012. Meanwhile, we expect the underlying CPI inflation measure to stabilize at around current levels, before rising from the second half of 2012. At that time, the headline CPI rate will again jump back above 3 per cent as the carbon tax kicks in from July 2012 and pushes up energy and some other prices.

Soft economic conditions and upstream price and cost price pressures will mute prices

The relative stability of the underlying CPI measures over 2011/12 is expected to be the outcome of several opposing forces. Factors acting to mute prices in the near-term include:

- Upstream costs such as input costs, producer prices and wages growth have softened recently and are likely to remain fairly benign into 2012.
- Modest growth in the domestic economy (ie domestic demand) is likely to persist through the remainder of 2011/12, with households and businesses only gradually loosening the purse strings. The economy is unlikely to jump back into a boom, even with the stimulus provided by the November and December interest rate cuts by the Reserve Bank. The relative weakness in large sections of the economy means less demand inflationary pressures. It also means employment growth will remain weak, and although we expect a pick-up in employment growth in the first half of next year, the unemployment rate will remain above 5 per cent, with the relatively weak labour market muting wage pressures.
- A cyclical rise in productivity (as GDP growth outpaces employment growth) will help reduce unit labour costs.
- The strength of the Australian dollar will continue to mute import and tradeables prices.
- Continuing weakness in consumer spending volumes and the strength of the dollar is also likely to elicit further discounting by retailers and some household service providers in the near term.
- Food price growth is expected to remain constrained due to recent declines in some global agricultural prices and favourable rural conditions in Australia (boosting local supply).

But utilities, rents, housing costs, health, education and fuel will add to price pressures

There are, however, some areas of the economy where supply constraints or other institutional factors will conspire to keep certain prices elevated over 2011/12 and beyond:

- Utilities prices jumped 7.2 per cent on average in the September quarter, to be 10.1 per cent higher than the September quarter 2010. Recently, large increases in utilities charges (comprising electricity, gas & other household fuels and water & sewerage costs) have had a significant impact on overall inflation. A move towards cost-based pricing, the need to replace and expand infrastructure to meet demand, and rising input costs has seen utilities inflation move to a higher plane. We believe utilities prices will continue to grow strongly in the

near-term as a significant 'catch-up' still exists for the below-average price increases and under-investment in infrastructure during much of the 1990s. In fact, regulators in most states have already approved significant price increases for electricity which have been implemented from 1 July 2011. These include: Queensland 5.8 per cent, New South Wales 9.6 per cent to 13.1 per cent, Tasmania 8.5 per cent and South Australia over 12 per cent, while further double-digit increases are expected in Western Australia.

Further incremental rises through 2011/12 are expected to push overall price growth to June 2012 closer to 11 per cent. The imposition of the carbon tax in July 2012/13 will then lift utilities growth over 17 per cent through 2012/13 (over 20 per cent for electricity).

- Health, education and insurance are expected to maintain their high price growth.
- Fuel prices are expected to rise through 2011/12 and accelerate through 2012/13, following the 1.4 per cent decline in the September quarter due to tumbling international oil prices. Oil prices (in West Texas Intermediate terms) rose through October after falling below US\$80/barrel in September, and are expected to rise further through 2011/12 and 2012/13 on the back of a stronger demand from China, Asia and the US.
- Rents and new dwelling purchase costs (the latter related to the cost of building and purchasing new dwellings by owner-occupiers, excluding land costs) are expected to rise through 2011/12 and especially 2012/13.

Rents have been increasing due to a significant deficiency of residential stock, with vacancy rates at near the lowest levels in over a decade across Australia. Dwelling construction in most major capital cities has now fallen to a level where not enough is being built to satisfy underlying demand for dwellings.⁸ We believe annual rental inflation will remain elevated over the next two years due to the persistent deficiency of residential stock.

Implementation of a price on carbon to provide one-off boost to electricity prices . . . but overall CPI impact likely to be muted

The Federal Government recently passed legislation to introduce a carbon price (tax) in an effort to reduce carbon pollution and contribute towards the global initiatives to mitigate climate change caused by greenhouse gas emissions. By imposing a carbon price the government also hopes to facilitate the transition to a low-(carbon) emissions economy, ie generate investment in low emission technologies such as renewable technologies. The initial price of \$23 per tonne of CO₂-e emissions will commence on 1 July 2012.

The imposition of the initial (fixed) carbon price will lead to a 'one-off' lift in some of the expenditure classes of the CPI. The Commonwealth Treasury projects that under a \$23 carbon price, electricity prices will increase by 10 per cent in 2012/13, gas prices by 9 per cent while food prices are expected to rise by less than 0.5 per cent. Overall, the CPI impact in 2012/13 is estimated at 0.7 per cent, significantly lower than the introduction of GST which increased CPI by around 2.5 per cent through-the-year to June quarter 2001.⁹

In dollar terms, the Treasury projects that household expenditure, on average, is expected to increase by \$3.30 per week due to higher electricity prices and by \$1.50 per week due to higher gas prices. Most items in consumer budgets will increase by less than 1 per cent such as food where households are expected on average to spend only an additional \$0.80 per week.

⁸ BIS Shrapnel internal research

⁹ Based on Commonwealth Treasury estimates and BIS Shrapnel research

Some second-round impacts of the carbon price could also occur, if these higher relative prices cause consumers and businesses to reassess their beliefs on underlying aggregate inflationary pressure, and therefore change their wage and price setting behaviours. This change in behaviour would have consequences for the medium-term trend of inflation. However, the CPI impact of the carbon tax is likely to be quarantined, and offset in wage formation.

Inflation containment to remain a policy challenge well into the medium term

Over most of the past decade, the steady rise in the Australian dollar has been a key factor in keeping overall inflation mostly within the Reserve Bank's target band of 2-3 per cent – except over 2008/09, when the exchange rate fell from an average of US\$0.94 in June quarter 2008 to US\$0.66 in the March quarter 2009, before again resuming its upward path. An appreciating currency limits the rise in import prices, which is then partially passed on by retailers to help hold down 'tradeables' inflation. Tradeables inflation constitutes around 42 per cent of the CPI, but includes the volatile automotive fuel and fruit and vegetable sub-categories.¹⁰

The Australian dollar is influenced by two key factors: interest rates in Australia compared to overseas (particularly US interest rates) and commodity prices. Sustained high commodity prices and rising domestic interest rates will continue to support the A\$ over the next two to three years. However, we don't expect to see a further significant appreciation. A considerable overhang in capacity is keeping inflationary pressures at bay in the US, but firming demand should see the Federal Reserve start to lift interest rates by mid 2013. Rising US interest rates will narrow the interest rates differential between Australia and the US which will also weigh down on the attractiveness of the A\$. In addition, some commodity prices (particularly some metals) appear overvalued on fundamentals at present, while the current and near-term record prices for coal, iron ore and some agricultural commodities are unlikely to be sustained, and will ease as supply comes back on stream. Overall, BIS Shrapnel is forecasting the exchange rate to average US\$1.02 in 2011/12, before rising to US\$1.04 in 2012/13 and US\$1.06 in 2013/14. We then expect the exchange rate to depreciate to below US\$1.00 by the end of 2014 – although the currency will continue to be volatile in a US\$0.95 to US\$1.10 band over the next three years.

These modest rises forecast for the currency will only partially offset rising inflation overseas over 2012/13 and 2013/14, with the end result that underlying tradeables inflation (ie excluding fuel, fruit and vegetables) will increase over the next three years at a faster rate than the six years to June 2008 and over 2009/10 and 2010/11, although still mostly below an annual rate of 2 per cent per annum. Lower fuel, fruit and vegetable prices will help keep overall tradeables inflation muted over 2011/12, as the flood and cyclone inspired price spikes reverse and as global oil prices decline back below US\$100/barrel – assuming the unrest in the Middle East subsides. However, fruit and vegetable prices are likely to return to their year-to-year volatility over subsequent years, while global oil prices are expected to increase over the medium term as global demand increases in line with economic recovery overseas, but new supply is constrained - pushing up local petrol prices.

Aggregate CPI inflation will also be pushed up by rising non-tradeables inflation, largely as a result of faster growth in wages and the persistence of high rates of inflation in rents, utilities, health, education, child care services and other housing costs. From the second half of this year, employment growth will follow the recovery (albeit sluggish) in demand and output, with accelerating growth in employment over 2012 producing a decline in the unemployment rate, falling below 5 per cent in the second half of 2012. The strengthening in employment growth and the economy generally will result in rising incomes and demand, which, combined with the shrinking of spare capacity, will add to demand inflationary pressures during 2012. Wages

¹⁰ ABS, CPI 6401.0

growth is also expected to pick up over these two years, with continuing weak productivity growth also adding to the rise in unit labour costs and non-tradeables inflation.

By late 2013/early 2014, the economy is expected to approach full capacity constraints, with the unemployment rate predicted to fall towards (and possibly below) 4 per cent. Inflationary pressures therefore will be broad-based, but labour shortages will be the key constraint on the economy and the RBA will take an increasingly aggressive approach to reducing demand pressures through 2013. The efforts of the RBA are expected to successfully rein in growth in domestic demand from the second half of 2013, but wage and price pressure will be sticky downward, because both wages and, to a lesser extent, price inflation tend to lag the strength of growth in demand and output.

We believe inflation containment will remain a policy challenge well into the medium term. Tight labour markets will emerge once again in the medium term to become a chronic problem for inflation. The large pool of unemployed that was a feature of the 1990s has gone. Moreover, skilled labour shortages will remain a problem for the foreseeable future, particularly given anecdotal evidence of a re-emergence of skilled labour shortages so early into the post-GFC recovery. Inflation will act as the main 'safety valve' on Australia's constrained economy. While ever the unemployment rate starts to track below 5 per cent there will be the potential for a demand-driven rise in wages growth and inflation. Pressures may moderate from time to time, but it would take another full-blown recession and a sharp fall in employment to really see inflationary pressures be significantly subdued.

3.2.1 Reserve Bank of Australia CPI forecasts

The Reserve Bank and the Federal Treasury provide the 'official' view of CPI forecasts. The RBA's August 'Statement on Monetary Policy' projects the headline CPI rate at 3.25 per cent in the December quarter 2011, before falling to 2 per cent in the June quarter 2012.¹¹ According to the RBA, CPI inflation (excluding carbon price) is then expected to rise to 3.25 per cent by December 2012 and remain at this level in June 2013. The RBA expects CPI inflation to be within 2.5 to 3 per cent band by December 2013 (RBA current forecasts only extend to December 2013).

The Federal Treasury in the 2011/12 Budget Papers (released in May 2011) projected CPI inflation at 2.75 per cent in 2011/12 and 3 per cent in 2012/13. For the budget forward estimate period ie 2013/14 and 2014/15 financial years, the Federal Treasury forecast CPI inflation at 2.5 per cent. Over the longer term, we have used the mid-point of the RBA's target range of 2 to 3 per cent over the cycle.

¹¹ Reserve Bank of Australia, Statement on Monetary Policy, November 2011.

4. POWERLINK'S INTERNAL LABOUR COST ESCALATION

4.1 Key points

- Electricity network related labour includes a range of skilled labour who work directly and indirectly on the construction, maintenance, design and operation of the electricity network, in both the operational (opex) and capital enhancement (capex) aspects. The workers work both in the field and in the offices. In line with the AER's Draft Decision on Powerlink's revenue proposal for the 2012/13 – 2016/17 regulatory period, the escalator which BIS Shrapnel proposes to use for Powerlink's internal labour is wages growth in the Electricity, Gas and Water Supply (EGW or 'Utilities') sector for Queensland.
- Overall, BIS Shrapnel expects growth in total labour costs in the electricity, gas and water ('utilities') sector for total Australia — expressed in AWOTE terms — will average 5.7 per cent per annum (0.6 percentage points higher than the national 'All Industries' average of 5.1 per cent per annum) over the five years from 2012/13 to 2016/17 inclusive. Underlying wages growth in the utilities sector — expressed in LPI terms — is forecast to average 4.8 per cent per annum over the five years to 2016/17, 0.6 per cent higher than the national all industries LPI average of 4.2 per cent per annum. The faster wages growth expected in the electricity, gas and water sector over the next six years is in line with historical movements in AWOTE and the LPI over the past decade (see Table 4.5).
- The continued stronger wages growth in the Australian and Queensland utilities' sectors is due to:
 - Sustained strong demand for skilled labour in the utilities sector, due to continued high levels of capital and maintenance expenditure in the utilities sector, related to major network upgrades and refurbishment and the need for new capacity in the electricity, gas and water sectors to cater for population and economic growth over the long term.
 - Heightened competition from the Mining, Construction and (to a lesser extent) Manufacturing sectors for similar skilled labour as those sought in the utilities sector, driven in particular by the resources investment boom, which is expected to ramp up substantially over the next four years and remain at high levels over the following five to ten years.
 - Relatively stronger unions continuing to win above average enterprise bargaining agreements in what is an essential services sector. Collective agreements dominate the pay setting in the utilities sector (covering around 80 per cent of employees in the Electricity, Gas and Water sector).
- Utilities wages growth in Queensland is forecast to average 5.8 per cent per annum (in AWOTE terms) over the five years from 2012/13 to 2016/17, slightly faster than the national average of 5.7 per cent per annum. (see Table 4.8). The faster wage growth in the Queensland utilities sector is due to Queensland's larger exposure to the resources investment boom and overall stronger construction sector, with substantial investments in LNG plants and gas-related infrastructure adding to greater demand for specialist gas-related skills, and, accordingly adding to wage pressures in the state's utilities sector.

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

Wages growth in the electricity, gas and water sector is invariably higher than the total Australian national (all industry) average. The labour price index growth has consistently been above the national average since the index's inception in 1997 (although it was the same as the

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

Sector	% of Total Employment Aug 2011										Five-Year Average
		Jun '06	Jun'07	Jun'08	Jun'09	Jun'10	Dec'10	Mar'11	Jun'11	Sep'11	
Private		4.0	3.9	4.4	3.6	2.7	3.9	4.0	3.9	3.7	3.8
Public		4.3	4.2	3.9	4.4	4.0	4.0	3.6	3.7	3.3	4.0
Industry											
Mining	2.0%	5.9	5.5	6.7	4.2	3.8	4.5	4.6	4.1	4.1	4.7
Manufacturing	8.3%	3.9	4.1	4.6	2.5	2.6	3.7	3.9	4.1	3.6	3.6
Electricity, Gas, Water and Waste Services	1.3%	6.4	4.0	3.5	4.7	4.7	4.8	3.7	3.7	3.6	4.1
Construction	9.2%	5.9	4.2	4.7	4.5	2.9	3.9	4.4	4.0	3.9	4.2
Wholesale Trade	3.6%	3.7	3.7	4.6	3.3	1.7	3.5	4.4	4.8	4.4	3.6
Retail Trade	10.9%	3.4	3.1	4.5	3.5	2.8	3.3	3.3	3.3	3.0	3.5
Accommodation and Food Services	6.9%	3.3	3.0	2.3	3.4	2.0	3.5	3.3	3.0	3.1	3.1
Transport, Postal and Warehousing	5.1%	4.2	4.1	3.9	4.4	3.2	2.8	3.6	4.0	3.7	3.9
Information Media and Telecommunications	1.8%	2.8	3.6	3.9	3.0	2.0	3.0	3.5	3.2	3.8	3.2
Finance and Insurance Services	3.8%	4.0	4.3	3.6	3.2	3.1	4.4	4.3	4.5	3.8	3.8
Rental, Hiring and Real Estate services	1.7%	3.9	3.0	4.1	3.6	2.5	2.9	3.0	3.6	3.6	3.4
Professional, Scientific and Technical Services	7.7%	4.3	4.3	5.1	5.1	2.9	4.6	4.7	4.0	4.2	4.2
Administration and Support Services	3.6%	3.3	3.6	4.9	2.9	2.5	4.0	3.8	3.7	3.2	3.7
Public Administration and Safety	6.5%	4.2	4.3	3.9	4.5	3.7	4.0	3.6	3.4	2.8	3.9
Education	7.5%	4.4	4.1	4.0	4.5	3.9	4.4	3.9	3.8	3.9	4.1
Health Care and Social Assistance	11.6%	4.5	4.3	3.6	3.9	4.0	3.6	3.3	3.6	3.2	3.8
Arts and Recreation Services	1.9%	3.0	4.4	3.4	3.9	2.8	3.1	3.1	3.4	3.3	3.6
Other Services	4.0%	3.2	4.0	3.3	3.3	2.3	3.1	3.0	3.6	4.6	3.6
State/Territory											
New South Wales	31.5	3.9	3.8	4.0	3.6	3.1	3.8	3.8	3.7	3.6	3.7
Victoria	25.2	3.7	3.6	4.2	3.4	2.7	3.7	3.9	4.1	3.5	3.6
Queensland	20.4	4.7	4.6	3.9	4.1	3.3	4.2	3.9	3.9	3.8	4.0
South Australia	7.2	3.7	4.3	4.6	3.7	2.9	3.9	3.6	3.3	3.4	3.8
Western Australia	10.8	4.6	5.2	5.6	4.6	3.4	4.0	4.1	3.8	4.0	4.5
Tasmania	2.1	4.1	4.5	3.6	4.2	3.6	3.4	3.5	3.5	3.9	3.9
Northern Territory	1.1	3.9	4.3	4.2	3.8	3.4	3.8	4.1	3.9	3.9	3.8
Australian Capital Territory (ACT)	1.8	3.8	4.3	4.0	4.1	3.0	3.7	3.7	3.5	3.0	3.7
Total All⁽²⁾	100	4.2	4.0	4.2	3.8	3.1	3.9	3.9	3.8	3.6	3.8

Source: BIS Shrapnel, ABS

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

(2) Excludes Agriculture, Forestry & Fishing

Table 4.2: Australia
AWOTE Growth by Industry Sector

Industry Sector	% of Total Employment Aug 2011	Average Weekly Earnings ⁽¹⁾										Five-Year Average
		\$ / Week Aug'11	Annual Percent Change									
			May '07	May '08	May'09	May'10	Aug'10	Nov'10	Feb'11	May'11	Aug'11	
Mining	2.0%	2 161	5.8	9.5	6.4	6.4	8.2	6.8	5.9	5.2	4.5	7.0
Manufacturing	8.3%	1 181	4.5	4.1	4.5	1.5	2.2	1.7	3.2	4.1	2.8	3.6
Electricity, gas, water and waste services	1.3%	1 490	4.2	2.2	7.0	9.5	10.7	9.1	9.5	7.2	3.8	5.5
Construction	9.2%	1 356	8.0	7.1	9.0	6.8	6.4	4.4	5.6	3.8	5.4	6.9
Wholesale trade	3.6%	1 313	5.9	3.9	4.8	0.8	2.9	2.5	0.9	9.3	11.9	5.2
Retail trade	10.9%	960	4.0	2.5	4.8	6.3	2.9	1.4	0.7	-1.2	3.1	3.9
Accommodation and food services	6.9%	959	8.9	0.1	3.5	4.5	3.9	3.4	3.5	3.3	5.0	4.6
Transport, postal and warehousing	5.1%	1 270	-0.5	1.8	3.4	7.5	11.5	10.3	7.3	6.6	6.1	4.6
Information media and telecommunications	1.8%	1 555	10.8	4.2	5.2	5.6	5.5	4.2	4.2	4.5	4.9	5.8
Finance and insurance	3.8%	1 554	3.7	4.9	1.4	7.5	7.5	8.8	5.3	2.9	2.3	4.0
Rental hiring and real estate services	1.7%	1 220	3.9	7.7	6.4	1.8	-3.7	-2.6	-0.1	-1.9	-0.1	3.6
Professional, scientific and technical services	7.7%	1 573	5.0	6.5	5.6	7.1	6.4	5.8	2.9	3.0	2.8	5.3
Administration and support services	3.6%	1 156	4.5	7.7	6.4	7.3	2.9	1.3	-0.9	-3.5	-2.8	3.9
Public administration and defence	6.5%	1 573	3.5	3.8	6.0	7.2	8.5	5.8	4.6	3.9	2.5	4.8
Education and training	7.5%	1 156	4.4	2.3	5.3	5.6	5.6	5.2	4.2	4.4	4.3	4.4
Health and social assistance	11.6%	1 386	6.5	2.5	7.0	2.9	-0.1	2.2	2.2	5.8	6.9	4.8
Arts and recreational services	1.9%	1 397	6.9	2.3	5.3	2.2	6.3	4.5	5.7	5.9	5.5	5.9
Other services	4.0%	1 259	1.9	2.5	7.0	0.5	2.0	4.9	6.4	1.3	1.9	3.8
Total All Industries⁽²⁾	100%	1 325	5.0	3.7	10.5	5.2	4.5	3.9	3.8	4.4	5.3	5.0

1) Full Time Adult Ordinary Time earnings for persons

Source: BIS Shrapnel, ABS

2) Excludes Agriculture, Forestry and Fishing sector

national average in 2007/08) and averaged 0.6 per cent higher over the decade to 2009/10 (see Table 4.5). While growth in average weekly ordinary time earnings (AWOTE) of the electricity, gas and water sector has displayed considerably more volatility (mainly related to compositional effects) over the past two decades, AWOTE growth in the sector has also usually been higher than the national average over the past two decades (see Tables 4.2 and 4.5).

LPI is an underlying wage inflation measure, while AWOTE measures changes in average labour costs

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

Another problem with the use of the LPI is that it is only available from the ABS for two states — NSW and Victoria — which is a problem in using it as a labour cost escalator for Queensland (and other states not covered). Despite the problems with the LPI, the AER has previously indicated a preference for the LPI, largely because of the volatility of AWOTE caused by perceived 'significant' compositional problems with AWOTE, although we would argue the bonuses, incentives, etc also add markedly to volatility.

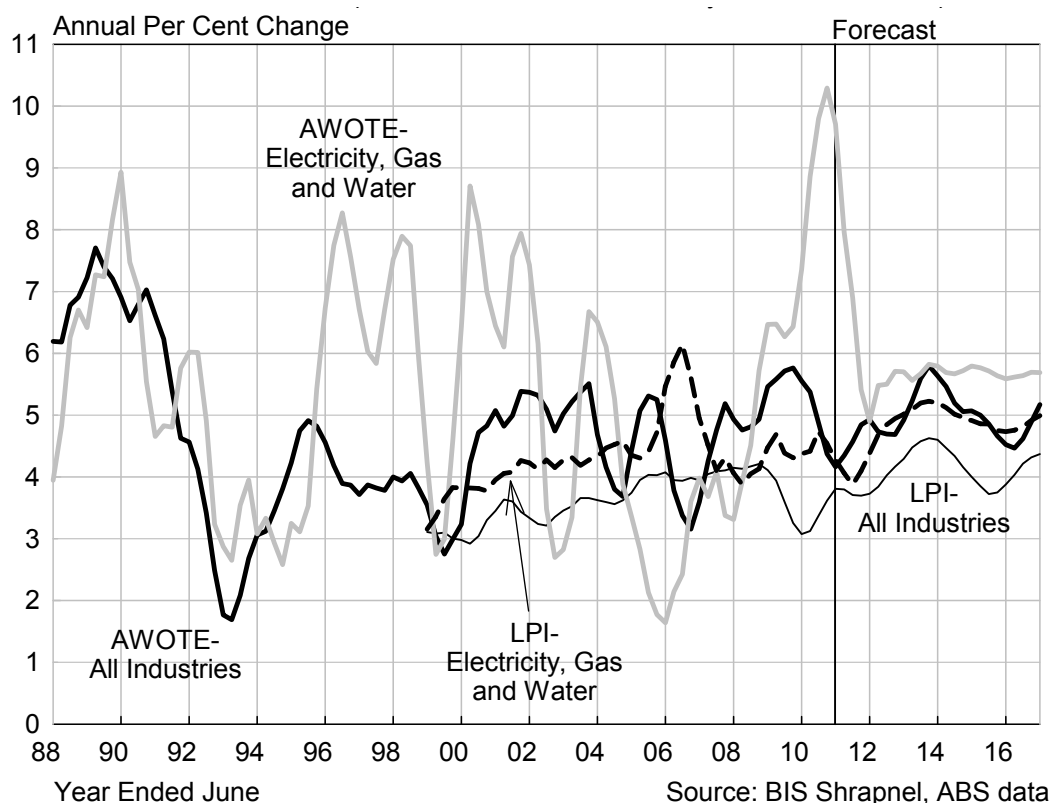
The AER has preferentially used the LPI as the escalator for labour costs in recent decisions. While BIS Shrapnel considers that AWOTE is a superior measure for labour costs in the circumstances, LPI forecasts are also provided for electricity network related-labour, general labour and outsourced construction contractor labour.

In the next part of this section, we will consider the key drivers of the sustained strong growth in underlying wages growth (ie the LPI measure) in the national utilities sector, and draw comparisons with the all industries average. We will also consider the quantum of the combined up skilling effects, compositional effects, bonuses, incentives, etc over the cycle separately in section 4.3.

Utilities wages growth will remain well above 'all industries' average

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. With many of the particular skills relevant to the electricity, gas and water sector expected to remain in relatively high demand, wage increases are expected to remain higher in this industry than the national average over the next six years.

**Chart 4.1: AWOTE & LPI
Total Australia (All Industries) and Electricity, Gas and Water**



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

Selected Industry	Collective Agreements									Average 2002-2010
	Average Annualised Wage Increase ⁽¹⁾									
	2002	2003	2004	2005	2006 ⁽²⁾	2007	2008	2009	2010	
Electricity, Gas, Water and Waste Services	3.9	4.2	4.3	4.2	4.4	4.5	4.7	4.8	4.8	4.4
Agriculture, Forestry and Fishing	3.3	3.4	3.3	3.0	3.0	2.9	3.0	3.7	3.7	3.3
Mining	3.4	3.2	3.3	3.6	3.7	4.0	4.3	4.4	4.3	3.8
Manufacturing	4.1	4.1	4.1	4.1	4.2	4.3	4.2	4.1	3.9	4.1
Construction	4.7	4.1	4.3	4.4	4.9	4.9	4.6	5.3	5.4	4.7
Wholesale Trade	3.7	3.8	3.9	4.0	3.7	3.6	3.8	4.1	4.0	3.8
Retail trade	3.2	3.2	3.2	3.4	3.5	3.5	3.5	3.6	3.5	3.4
Accommodation and Food Services	2.8	2.8	2.8	3.2	3.3	3.4	3.2	3.6	3.9	3.2
Transport, Postal and Warehousing	3.5	3.6	3.6	3.7	3.7	3.9	4.0	4.2	4.2	3.8
Information Media and Telecommunications	3.8	4.0	4.2	4.1	3.6	3.2	3.3	3.7	3.8	3.7
Financial and Insurance Services	4.1	4.1	4.2	4.1	4.1	4.1	3.8	4.0	3.6	4.0
Rental, Hiring and Real Estate Services	3.6	3.8	4.1	4.1	3.8	4.8	4.5	3.4	3.7	4.0
Administrative and Support Services	3.6	3.8	4.1	4.1	3.8	3.6	3.6	3.8	3.7	3.8
Professional, Scientific and Technical Services	3.6	3.8	4.1	4.1	3.8	4.0	4.0	4.5	4.3	4.0
Public Administration and Safety	3.9	4.4	4.4	4.3	4.0	4.1	4.2	4.3	3.9	4.2
Health Care and Social Assistance	4.0	3.9	4.0	4.1	4.0	4.0	4.0	4.1	4.0	4.0
Education and Training	3.9	3.9	4.5	4.7	4.9	4.8	4.9	4.4	4.6	4.5
Arts and Recreation Services	3.3	3.7	3.5	3.8	3.5	3.8	4.0	4.1	3.5	3.7
Other Services	4.2	4.5	4.4	4.0	4.0	4.1	4.0	3.9	3.7	4.1
ALL INDUSTRIES	3.8	3.8	3.9	4.0	4.1	4.1	4.0	4.2	4.1	4.0

¹⁾Current agreements in June of each year.

²⁾New ANZSIC codes begin in 2006

Source: Department of Employment & Workplace Relations (DEWR)

In addition, the overall national average tends to be dragged down by the lower wage and lower skilled sectors such as the Retail Trade, Wholesale Trade, Accommodation, Cafés and Restaurants, and, in some periods, also Manufacturing and Construction (see tables 4.1 and 4.2). These sectors tend to be highly cyclical, with weaker employment suffered during downturns impacting on wages growth in particular. The EGW sector is not impacted in the same way due to its obligation to provide essential services and hence retain skilled labour.

Demand for skilled labour — and therefore wages growth — to remain strong within the utilities sector, due to sustained high levels of utilities investment

Employment growth in the utilities sector over the past decade (2001/02 to 2010/11 inclusive) averaged 6.5 per cent per annum, the second fastest growth among the 18 main industry sectors behind the Mining sector (10.1 per cent per annum), with Construction employment growth third at 4.4 per cent per annum (see table 4.7).

This strong growth in utilities employment since 2002 has been associated with a pick-up in infrastructure and maintenance work as well as an ongoing reversal in the sharp losses in employment seen through the 1990s. Privatisation and rationalisation were the drivers of the job cuts in the 1990s, but in some cases the desire to be streamlined left only a 'skeleton' crew in-house for routine operations and emergency disruptions, while capital and maintenance works (both minor and major) tended to be contracted out. Capital expenditure in the utilities sector during the 1990s was also relatively low, and this may also have contributed to weaker employment (see chart 4.5).

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 growth 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 (see table 2.1). This saw skilled labour shortages worsen and employers in these sectors bid up wages.

The GFC and associated slowing in the economy over 2008/09 subsequently reduced labour market and wage pressures, but the unemployment rate only rose to a peak of 5.9 per cent in mid 2009 and has now fallen back to around 5 per cent. With the next phase of the resources investment boom now ramping up and utilities across Australia in the midst of a major investment phase itself, skilled labour shortages are already emerging. Job vacancies in the Utilities, Mining and Construction sectors have risen sharply since 2009 back towards (or above) the tight 2007/08 levels.

With the economy recovering, employment growth outpacing population and labour force growth and the unemployment rate now around 5 per cent and expected to fall below 4 per cent within two years, we expect to again witness the re-emergence of skilled labour shortages and

Table 4.4: Electricity, Gas & Water Supply Wage Forecasts – Australia

Year Ended June	Year Average Percent Change												Averages							
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2001-11	2012-17	
Proportion of Workforce by Pay setting Method																				
Awards Only	1.2%	1.1%	1.4%	1.7%	1.3%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	1.1%	0.9%
Collective Agreements	77.3%	78.1%	79.0%	79.9%	82.2%	84.4%	82.2%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.3%	80.0%
Individual Arrangements	21.5%	20.9%	19.6%	18.4%	16.6%	14.7%	16.9%	19.1%	19.1%	19.1%	19.1%	19.1%	19.1%	19.1%	19.1%	19.1%	19.1%	19.1%	18.6%	19.1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AWOTE																				
Awards Only (a)	1.6	1.3	1.7	1.6	1.6	1.4	1.7	1.2	1.4	0.4	1.8	1.2	1.1	1.4	1.2	1.0	1.1	1.4	1.2	1.2
Collective Agreements	3.8	3.9	4.2	4.3	4.2	4.6	4.5	4.7	4.8	4.9	4.6	4.6	4.8	5.0	4.9	4.7	4.8	4.4	4.8	4.8
Individual Arrangements (b)	16.2	21.0	-2.6	16.5	-0.7	-15.3	1.6	-2.4	13.7	18.0	31.5	6.4	9.7	9.3	9.8	9.6	9.7	8.9	9.1	9.1
AWOTE (Persons)(c)	6.4	7.4	2.8	6.5	3.4	1.6	4.0	3.3	6.5	7.4	9.7	4.9	5.7	5.8	5.8	5.6	5.7	5.4	5.6	5.6
Labour Price Index																				
Awards Only (a)	1.6	1.3	1.7	1.6	1.6	1.4	1.7	1.2	1.4	0.4	1.8	1.2	1.1	1.4	1.2	1.0	1.1	1.4	1.2	1.2
Collective Agreements	3.8	3.9	4.2	4.3	4.2	4.6	4.5	4.7	4.8	4.9	4.6	4.6	4.8	5.0	4.9	4.7	4.8	4.4	4.8	4.8
Individual Arrangements (b)	4.6	5.6	4.7	4.7	5.3	10.7	7.3	1.6	3.2	2.3	3.1	3.7	6.0	6.2	5.1	5.1	5.9	4.8	5.3	5.3
Labour Price Index (Ord. Time)	3.9	4.2	4.3	4.3	4.4	5.5	5.0	4.1	4.5	4.4	4.3	4.4	5.0	5.2	4.9	4.7	5.0	4.4	4.9	4.9
Compositional Effects + Bonuses, etc	2.5	3.2	-1.4	2.2	-1.0	-3.8	-1.0	-0.8	2.0	3.0	5.4	0.5	0.7	0.6	0.9	0.9	0.7	0.9	0.9	0.7

Source: BIS Shrapnel, ABS, DEEWR

(a) Contribution of nominal award wage increases to total wages growth, rather than percent change in award wages

(b) Because of relatively small workforce (and therefore small sample size) in EGW, Individ Agreements picks up all the standard errors of LPI and AWOTE estimates by ABS

(c) Full-time Adult Persons, excluding overtime

competition for scarce labour from 2011/12, particularly from the construction and the mining sectors, which will push up wage demands in the utilities sector.¹²

We expect wages growth in the electricity, gas and water sector to remain above the national average over the medium term, given the relatively high levels of job vacancies in the sector and the current levels of skills shortages being reported. Increased demand for labour will continue in the sector over the next six years at least.

We believe investment in the sector, particularly engineering construction, has been the key driver of employment growth in the sector over the past decade. Charts 4.4 and 4.5 illustrate this relationship, and shows employment has a stronger relationship with utilities engineering construction rather than utilities output. We expect employment growth to remain elevated for the utilities sector. Our forecast is for utilities investment to be higher (relative to history) over the next six years (see Chart 4.3).

Electricity, gas and water utilities in virtually every state across Australia have embarked on major network refurbishment, extension and augmentation programs. This is due to the need to replace ageing infrastructure to maintain supply capability and to ensure reliability of the network, especially during peak periods. The latter is typically more maintenance type of work and is generally more labour intensive. Given the recent trend towards consolidating work in-house (rather than out-sourcing), we expect the need for regular maintenance work will continue to boost overall employment in the Utilities sector.

Added to this is our expectation that a number of peak, intermediate and base load power stations will be built over the next decade (with gas fuelled generation expected to dominate), along with new renewable generation facilities, while local reticulation construction will continue to be driven by new housing and industrial and commercial demand.

We expect further growth in electricity, gas and water employment over the next six to seven years, although the rate of growth is forecast to be slower than in recent years. Partly underpinning this outlook for further employment growth is the relatively higher levels of utilities-related infrastructure construction expected to occur over the next few years. Submissions to the Australian Energy Regulator (AER) and to other state based equivalents (such as the Victorian Essential Services Commission) from a number of utilities in each state have consistently reported that they expect to increase employment over the next five to six years.¹³

More importantly, electricity, gas and water supplies are essential services where reliability of supply is paramount. Accordingly, this requires adequate skilled labour to maintain reliability of supply, which points to the need to offer high wages to attract and retain skilled labour in this sector.

Above average EBA outcomes in utilities sector will also keep wages growth elevated

The key elements of the utilities wage forecast are set out in Table 4.4. Table 4.4 shows that collective bargaining dominates the pay setting arrangements in the utilities sector, while the relative absence of workers relying on (often) low-increase awards (set in the National Wage Case) means the overall average for total utilities wages will invariably be higher than the all industries average. Table 4.3 shows that the utilities sector has consistently had higher wage increase under collective agreements than the all industries average. Over the past 5 years, the

¹² This is recognised by the utilities sector. See *Powerlink Queensland Revenue Proposal 2013 – 2017* submitted to the AER, May 2010, pages 9 and 10.

¹³ See *Powerlink Queensland Revenue Proposal 2013 – 2017* submitted to the AER, May 2010, p.90. Ergon Energy Regulatory Proposal 2011 – 2015 submitted to the AER, July 2009, p.49 and SP AusNet, Electricity Transmission Revised Revenue Proposal 2009 –2014 submitted to the AER, October 2007 p.138.

outcomes from collective agreements have been 0.5 per cent higher, on average, than the all industries average. We expect this trend to continue over the next decade, with the all industries average to also continue to be dragged down by the retail and hospitality industries.

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

With regard to the proportions of employees now under collective agreements, we now estimate that the proportion of employees under collective bargaining in the electricity, gas and water supply sector has fallen from 84.4 per cent in 2006 (the last survey conducted under the ANZSIC1993 industry classification) to around 80 per cent now. The August 2008 survey saw the industries classified under the new ANZSIC2006 classifications, with a further small drift to individual arrangements apparent in the most recent survey in May 2010. Under the new industry groupings, 'Waste Services' has been added to electricity, gas and water supply services, plus a miniscule part of the old construction sector. Our analysis of the new proportions and relevant employment numbers for these separate sectors suggests some movement from collective bargaining to individual arrangement in the 'pure' utilities sector ie electricity, gas and water sector (assuming no change in employees dependent on award increases).

A comparison of wage movements in the 'old' electricity, gas and water supply (EGW) sector compared to the 'new' electricity, gas and water supply and waste services (EGWWS) sector shows the addition of waste services drags down measured LPI wages growth by 0.1 per cent per annum on average in the combined EGWWS compared to EGW over 1998/99 to 2008/09, with AWOTE growth in EGWWS 0.6 per cent lower on average compared to EGW over the same 11 year period. This result is not surprising given lower skill level and lower demand for workers in the waste services sector.¹⁴ A comparison of EGW and EGWWS wages and employment growth is provided in Appendix B.

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

Data from the Department of Education, Employment and Workplace Relations quarterly report, *Trends in Federal Enterprise Bargaining*, shows that average outcomes of agreements accelerated through 2008/09, with the year average of the 'formalised' agreements rising to 5.0 per cent in 2008/09, compared to 4.7 per cent in 2007/08.¹⁵ Growth in formalised agreements slowed to an average of 4.3 per cent in 2009/10, with the latest DEEWR report (December 2010) suggesting a pickup in December 2010 from June 2010 and September 2010 levels. We expect a further pick up during 2011 given the tightness in the labour market and the high enterprise agreement outcomes in the construction sector in 2010 which will influence negotiations in the EGW sector.

¹⁴ Given the objective of this section of the report is to provide forecasts of the change in gas pipeline related labour costs and that EGW is more representative of their skill levels and labour demand than EGWWS, we have deliberately excluded the waste services component from our forecasts and back data.

¹⁵ Australian Government 2011, Trends in Federal Enterprise Bargaining, March Quarter 2011, Department of Education, Employment and Workplace Relations, Table 4.

Furthermore, given the average duration of enterprise agreements in the utilities sector is close to 3 years, these high outcomes in 2008/09 will influence the overall EBA average over 2009/10 and 2010/11 (ie it will tend to push up the overall average), with the average for 'current operating' agreements to remain around current levels over the next year.

With economic conditions continuing to improve, we expect some pick up in the pace of formalised agreements over the next three years toward and above 5 per cent per annum, before easing over 2014/15 and 2015/16 following the slowing in economic growth.

Note that the latest collective agreements data for EGW from the DEEWR is now classified under the ANZSIC2006 category which includes Waste Services. The DEEWR has also back cast their data under the new classifications to the September quarter 2006. Although this is only a short time frame for comparison, it shows that AAWIs under the 'old' EGW classification were on average 0.1 per cent to 0.2 per cent higher per annum on average compared to the newly combined EGWWS sector.

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 relatively powerful utilities unions such as the Communications, Electrical and Plumbing Union (CEPU) and Australian Services Union (ASU), which have a history of achieving higher wage outcomes for the sector, compared to the national average – although as already noted, the all industries average is dragged down by weak EBA outcomes in the retail and hospitality sectors (see Table 4.3). Other unions active in the sector include the Australian Workers Union (AWU).

BIS Shrapnel analysis shows collective agreements in the EGW sector have been on average around 1.5 per cent higher than CPI inflation over the decade to 2010 (excluding the effects of GST introduction in 2000/01). In the five years to 2010 when the labour market was very tight, collective agreements were on average 1.7 per cent above the CPI. Given the strength of unions in the sector and a tighter labour market over the next decade than for most of the 2000s, collective agreements are forecast to remain around 1.6 per cent above the CPI in the forecast period.

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

Although the recent downturn saw some easing in overall skilled labour shortages for some professions relevant to the utilities sector, the DEWR "Skills in Demand Lists" and Clarius Index still revealed ongoing shortages of key professionals and tradepersons in the utilities sector (see section 4.4). These shortages are expected to continue over the next 6 years and probably longer given the large capital works and maintenance programs planned in most states' utilities.

With economic conditions improving and skilled labour demand recovering, we expect higher wages growth in the segment to come through, as employers bid up wages for skilled labour in scarce supply. Businesses will find they must 'meet the market' on remuneration in order to attract and retain staff and we expect wages under individual arrangements to accelerate rapidly from 2012/13.

Two other factors which will act to push up wages growth attributable to the individual arrangements segment — that is the compositional effects — include the upskilling of the workforce and, later in the period, the ageing of the workforce. Apprentices, trainees and

**Table 4.5: Average Weekly Ordinary Time Earnings and Labour Price Index
Total Australia and Electricity, Gas & Water
(Year Average Growth)**

Year Ended June	Average Weekly Ordinary Time Earnings ⁽¹⁾				Labour Price Index ⁽²⁾			
	All Industries		Electricity, Gas and Water		All Industries		Electricity, Gas and Water	
	\$	%CH	\$	%CH	Index	%CH	Index	%CH
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	679.3	3.2				
1996	663.8	4.6	725.0	6.7				
1997	688.5	3.7	773.6	6.7				
1998	716.0	4.0	831.8	7.5	67.5		79.2	
1999	741.4	3.5	867.1	4.2	69.6	3.1	81.7	3.2
2000	765.4	3.2	922.8	6.4	71.7	3.0	68.2	3.8
2001	804.2	5.1	982.3	6.4	74.2	3.5	70.8	3.9
2002	847.4	5.4	1,055.3	7.4	76.7	3.3	73.8	4.2
2003	890.0	5.0	1,085.1	2.8	79.3	3.5	76.8	4.3
2004	931.6	4.7	1,155.7	6.5	82.2	3.6	79.9	4.3
2005	972.9	4.4	1,194.5	3.4	85.3	3.7	83.3	4.4
2006	1 017.5	4.6	1,214.1	1.6	88.7	4.1	87.6	5.5
2007	1 054.1	3.6	1,262.4	4.0	92.2	3.9	91.8	5.0
2008	1 106.1	4.9	1,304.2	3.3	96.1	4.1	95.7	4.1
2009	1 166.5	5.5	1,388.6	6.5	100.0	4.1	100.0	4.5
2010	1 231.3	5.6	1,490.7	7.4	103.1	3.1	104.4	4.4
2011	1 282.5	4.2	1,635.5	9.7	107.0	3.8	108.8	4.3
Forecasts								
2012	1 345.4	4.9	1,715.8	4.9	111.0	3.7	113.5	4.4
2013	1 411.4	4.9	1,813.7	5.7	115.7	4.3	118.5	5.0
2014	1 490.4	5.6	1,918.7	5.8	121.0	4.6	124.4	5.2
2015	1 566.1	5.1	2,030.0	5.8	125.9	4.0	130.5	4.9
2016	1 636.8	4.5	2,143.7	5.6	130.8	3.9	136.7	4.7
2017	1 721.5	5.2	2,266.0	5.7	136.5	4.4	143.2	5.0
Compound Annual Growth Rates ⁽³⁾								
1990-2000	3.9		5.1					
2000-2010	4.9		4.9		3.7		4.3	
2006-2011	4.7		6.1		3.8		4.4	
2012-2017	5.1		5.7		4.2		4.8	

Source: BIS Shrapnel, ABS

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

(2) Ordinary time hours excluding bonuses.

(3) e.g. CAGR (Compound Annual Growth Rates) for 2012-2017 is CAGR for 2012/13 to 2016/17 inclusive (ie next regulatory period).

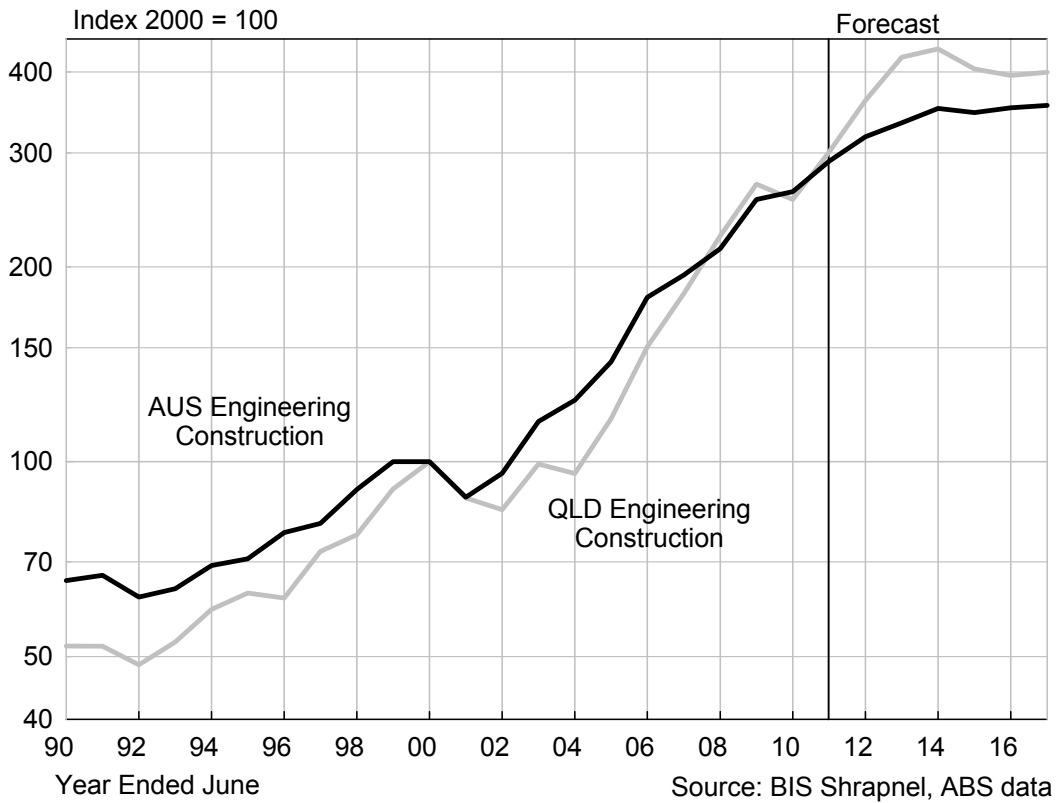
**Table 4.6: AWOTE Persons by State - Electricity, Gas and Water Supply
(Year Average Growth)**

Year Ended May	NSW		VIC		QLD		SA		WA		TAS		NT		ACT		AUSTRALIA		
	Year Avg \$	A%Ch	Year Avg \$	A%Ch	Year Avg \$	A%Ch	Year Avg \$	A%Ch	Year Avg \$	A%Ch	Year Avg \$	A%Ch	Year Avg \$	A%Ch	Year Avg \$	A%Ch	Year Avg \$	A%Ch	
1985	423.1	3.4	420.5	4.3	429.0	4.6	393.1	3.7	404.1	5.5	400.2	4.9	455.5	6.4	394.2	10.1	417.9	3.9	
1986	437.4	7.6	438.4	6.8	479.9	7.0	433.4	6.4	441.5	3.5	438.5	4.4	513.1	5.9	434.0	0.0	464.1	6.9	
1987	470.6	2.9	492.3	5.2	491.1	2.3	460.2	6.2	460.6	4.3	461.7	5.3	507.2	-1.1	440.2	1.4	482.4	3.9	
1988	484.3	6.8	516.0	4.8	536.6	9.2	483.6	5.1	500.4	8.6	495.1	7.2	513.1	1.2	498.5	13.3	513.4	6.4	
1989	517.5	5.7	597.5	15.8	551.7	2.8	517.1	6.9	546.9	9.3	506.0	2.2	613.1	19.5	549.3	10.2	559.2	8.9	
1990	547.0	5.3	623.1	4.3	565.3	2.5	558.1	7.9	565.3	3.4	550.8	8.9	614.6	0.2	558.2	1.6	585.2	4.7	
1991	575.9	8.1	657.8	5.6	584.8	3.4	577.9	3.5	598.9	6.0	565.5	2.7	641.1	4.3	604.6	8.3	620.5	6.0	
1992	622.3	1.4	696.3	6.2	597.6	2.2	584.5	1.1	613.0	2.3	604.8	6.9	664.1	3.6	599.3	-0.9	638.3	2.9	
1993	630.8	4.2	711.2	1.9	619.0	3.6	616.5	5.5	624.3	1.9	661.4	9.4	666.5	0.4	612.2	2.1	657.9	3.1	
1994	657.1	2.4	722.7	1.6	651.3	5.2	644.0	4.5	673.2	7.8	695.2	5.1	699.8	5.0	636.8	4.0	679.3	3.2	
1995	672.8	9.9	751.1	3.9	694.1	6.6	654.1	1.6	725.6	7.8	714.1	2.7	701.2	0.2	711.8	11.8	725.0	6.7	
1996	739.5	6.5	803.5	7.0	746.4	7.5	720.6	10.2	777.5	7.2	724.1	1.4	731.4	4.3	758.2	6.5	773.6	6.7	
1997	787.3	8.1	873.7	8.7	777.9	4.2	793.1	10.1	836.5	7.6	790.3	9.1	771.5	5.5	812.3	7.1	831.8	7.5	
1998	851.1	3.8	892.0	2.1	820.0	5.4	816.9	3.0	880.7	5.3	889.5	12.5	803.9	4.2	884.0	8.8	867.1	4.2	
1999	883.1	6.2	975.5	9.4	883.0	7.7	862.7	5.6	932.8	5.9	890.3	-1.0	1054.0	31.1	931.4	5.4	922.8	6.4	
2000	938.3	6.1	1048.1	7.4	925.8	4.8	905.5	5.0	992.7	6.4	979.2	11.2	968.4	-8.1	989.6	6.2	962.3	6.4	
2001	995.3	10.0	1112.9	6.2	978.3	5.7	956.1	5.6	1065.3	7.3	1042.0	6.4	1004.1	3.7	1048.7	6.0	1055.3	7.4	
2002	1099.8	0.4	1150.4	3.4	1018.0	4.1	1030.2	7.7	1121.5	5.3	1074.9	3.2	997.9	-0.6	1081.8	3.2	1085.1	2.8	
2003	1196.8	8.8	1140.2	-0.9	1151.4	13.1	1071.5	4.0	1163.6	3.8	1137.4	5.8	1003.5	0.6	1174.2	8.5	1155.7	6.5	
2004	1197.5	0.1	1180.2	3.5	1268.1	10.1	1070.3	-0.1	1194.4	2.6	1182.4	4.0	1069.7	6.6	1221.1	4.0	1194.5	3.4	
2005	1224.4	2.2	1200.2	1.7	1218.3	-3.9	1090.9	1.9	1300.9	8.9	1263.6	6.9	1175.3	9.9	1157.1	-5.2	1214.1	1.6	
2006	1269.8	5.3	1238.5	3.2	1226.9	0.7	1160.2	6.3	1389.4	6.8	1285.8	1.8	1286.4	9.5	1244.9	7.6	1262.4	4.0	
2007	1336.5	3.6	1245.5	0.6	1259.8	2.7	1211.2	4.4	1478.5	6.4	1290.1	0.3	1339.8	4.1	1374.5	10.4	1304.2	3.3	
2008	1396.3	4.5	1329.9	6.8	1346.7	6.9	1230.1	1.6	1617.9	9.4	1367.9	6.0	1392.1	3.9	1422.6	3.5	1388.6	6.5	
2009	1269.6	-9.1	1517.1	14.1	1409.0	4.6	1289.3	4.8	1717.9	6.2	1364.5	-0.3	n.p.	n.p.	n.p.	n.p.	1495.0	7.7	
2010	1458.9	14.9	1797.1	18.5	1564.0	11.0	1382.6	7.2	1871.9	9.0	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	1640.2	9.7	
2011																			
Forecast																			
2012																			
2013																			
2014																			
2015																			
2016																			
2017																			
Compound Annual Average Growth Rates																			
1985-2010	4.5		5.3		4.9		4.9		6.0		5.0		4.8		5.5		5.2		5.2
1990-2000	5.5		5.0		5.3		5.3		5.5		5.7		5.6		5.4		5.1		5.1
2000-2010	3.1		4.5		4.1		4.1		6.3		4.5		3.1		4.8		4.9		4.9
2006-2011	3.6		8.4		4.9		4.9		7.5		n.a.		n.a.		n.a.		6.2		6.2
2012-2017					5.8		5.8										5.7		5.7

n.p.: AWOTE data not published after November 2009. Compound annual growth rates for NT and ACT are therefore 1985-2009, 2000-2009, and 2005-2009.
n.a.: Not available.

Source: BIS Shrapnel, ABS

**Chart 4.2: Total Engineering Construction
Australia & Queensland**



**Chart 4.3: Utilities Engineering Construction
Australia & Queensland**

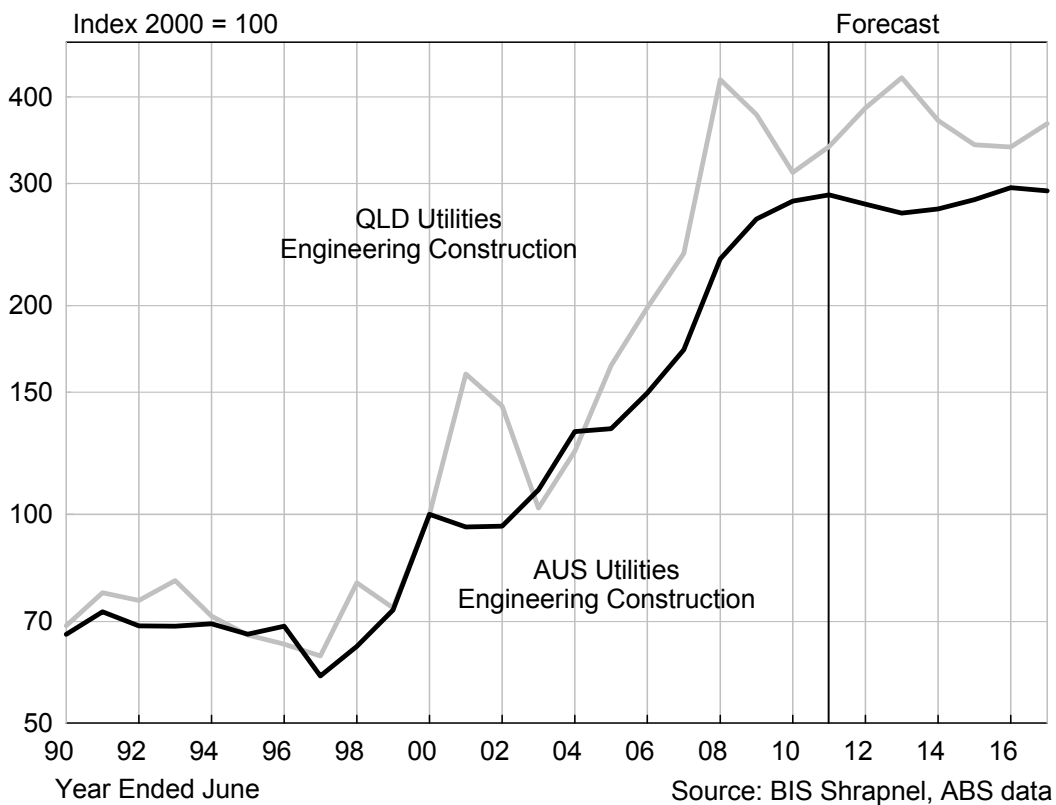


Chart 4.4: Queensland – Utilities Employment, Output and Investment

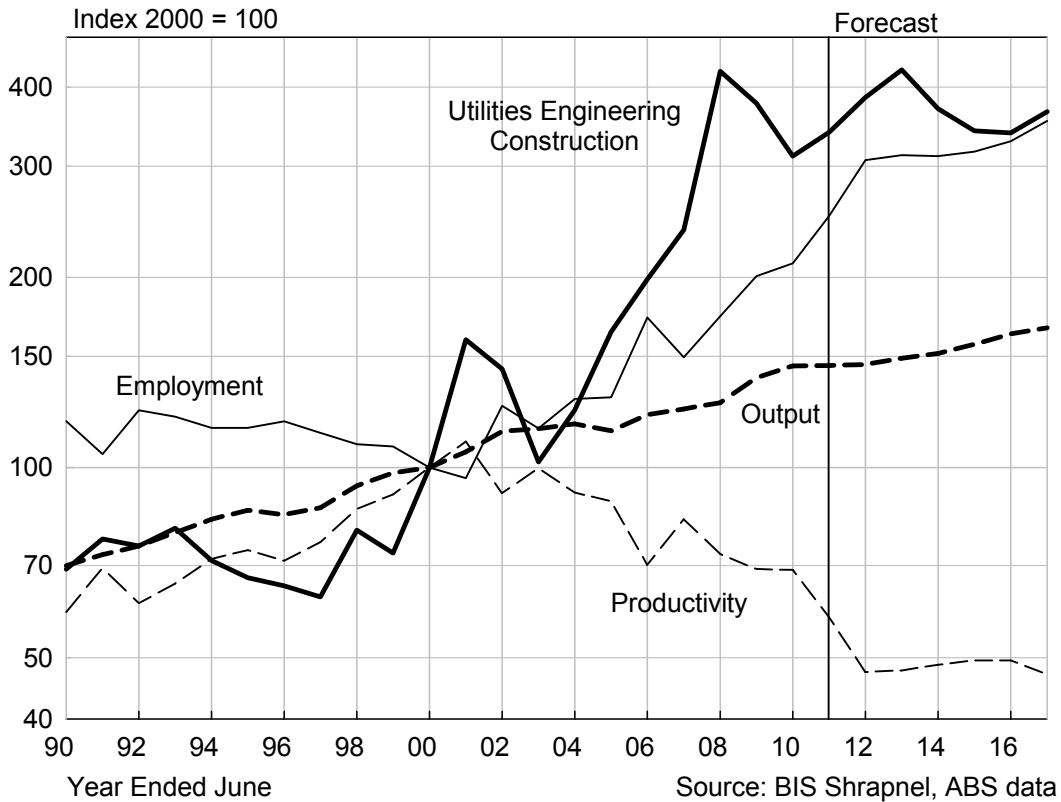
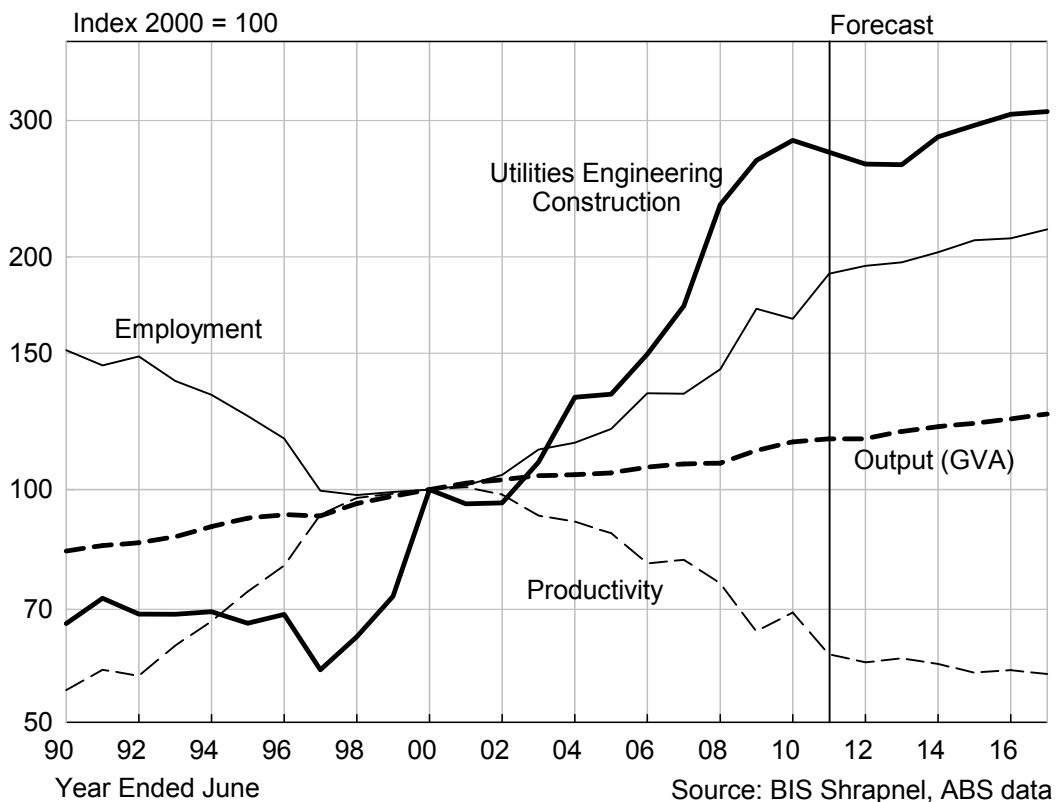


Chart 4.5: Australia – Utilities Employment, Output and Investment



numbers of new staff have increased markedly over recent years, across the electricity, gas and water sector generally.¹⁶ Given slower growth in utilities employment over the next decade, it is likely that there will be overall upskilling of the existing workforce, which will see a commensurate movement by much of the workforce into higher grades (ie on higher pay), although the 'base' movement — the nominal increase in EBA's — will not reflect this, so this upgrading will end up as compositional increases in the individual arrangements segment. A related aspect is ageing profile, which will particularly affect the 'professionals' on non-EBA's, who tend to be older and more experienced.

Indeed, the strengthening of non-EBA wages from 2012/13 and the compositional effects from the overall upskilling is expected to result in much stronger growth in individual arrangements over the next decade, compared to the last ten years. All the compositional effects from the upskilling 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 LPI and AWOTE estimates by the ABS.

Increased competition from Mining and Construction for similarly skilled workers to push up utilities wages

After pausing briefly post GFC in 2009/10, mining-related investment increased significantly in 2010/11 and this next phase is now ramping up and will see a substantial increase over the next four years before easing over the second half of this decade, but remaining at very high levels. Mining sector investment is dominated by investment in 'buildings and structures', with new capital expenditure in this category (for total Australia) measuring \$37.2 billion in 2010/11 compared to almost \$10 billion for 'equipment, plant and machinery'.¹⁷ Mining investment in buildings and structures is, in turn, dominated by engineering construction and BIS Shrapnel's forecasts of 'Mining and Heavy Industry' engineering construction for total Australia are predicting a near doubling of M & HI engineering construction by 2014/15 from 2009/10 levels. Similar increases are also predicted for associated infrastructure, including railways, harbours, other transport infrastructure, energy (electricity and gas, including pipelines) and water.

This huge increase in engineering construction activity is expected to be undertaken by both internal Mining sector labour and by outsourced contracts to the construction sector. Employment of skilled labour in these two sectors will need to increase significantly, with the increased demand for skilled labour — where there are already shortages emerging — expected to push up wages in these sectors as they compete for a limited supply of skilled workers.

The Utilities sector will need to also push up utilities wages growth in order to retain (and increase) workers, whose skills will be in strong demand from the Mining and Construction sectors. This is particularly pertinent to the gas sub-sector, with a number of large LNG production 'trains' to be constructed over the next 4 to 5 years in particular (already committed or under construction) and more proposed for the following 5 to 10 years.¹⁸ The development and construction of associated gas fields and pipelines to feed these huge LNG plants will also add markedly to demand for labour with specialist gas-related skills.

4.3 Overall Growth in Labour Costs (AWOTE Growth)

While BIS Shrapnel believes the labour price index reflects movements in the *underlying price* of labour, the LPI does not fully capture movements in total labour costs per employee. As we pointed out in section 4.2, average weekly ordinary time earnings (AWOTE) is a better measure

¹⁶ In fact in recent years, some utilities such as ActewAGL Distribution have significantly increased their apprentice intake in response to the skills shortage to ensure that it can deliver on its proposed capital and operating expenditure. See ActewAGL Distribution's 2009 – 2014 Determination submitted to the AER in June 2008, p.57.

¹⁷ ABS 'New Capital Expenditure', cat. No. 5625.0

¹⁸ See BIS Shrapnel, Engineering Construction in Australia: 2010/11 to 2024/25

of the change in overall costs per employee, because it takes into account movements of employees to higher grades, changes in compositional effects from entry/exits of higher skilled/lower skilled (ie higher paid/lower paid) workers in an enterprise or industry, and also the payments *above* base rates of pay, such as bonuses, incentives, penalty rates and other allowances that are a *normal* part of an employees earnings over the quarter or year.

With regard to the latter, many enterprises in the utilities (and other industry) sectors(s) regularly include bonuses or incentive payments which are linked to a range of objectives, such as upskilling, additional training, productivity targets, safety targets, etc. These 'extra' payments — or changes in the quantum of payments — are not included in changes in the LPI, but can make a material difference to an enterprise's overall labour costs.

In Table 4.4, the bottom line shows the calculation for the collective upskilling effects, compositional effects, bonuses, incentives, other allowances, etc – which is simply growth in AWOTE minus the growth in the LPI. Given its volatility over the past decade, it makes more sense to take a longer term view of changes and use a period average (or an average 'over an entire economic cycle') to assess the overall upskilling and compositional effects, bonuses, incentives and other allowances. Over the past decade, these effects have added 0.9 per cent on average in total labour costs growth (AWOTE) compared to LPI growth over the period.

Over the forecast period, we expect compositional effects (including bonuses and incentives) to add 0.7 per cent on average to the AWOTE wage measure (compared to LPI growth) over the six years to 2016/17, with those effects appearing to boost wages growth numbers in the individual arrangements segment.

We have included year-to-year movements for AWOTE in the electricity, gas and water sector over the six years to 2016/17, which are presented in Table 4.4. We have made an *indicative* allowance in AWOTE movements for compositional changes of employment within the sector through the cycle. A detailed analysis of the future structure of occupations within the sector would be required to accurately model compositional effects each year, but detailed information on the employment plans of *all* the utilities in Australia would be required. Such an analysis is outside the scope of this study. However, given our forecasts of Australian employment in the utilities sector is for relatively stable employment growth over the period from 2012/13 to 2016/17 (see table 4.8), we do not expect any large positive or negative compositional effects in any one year.

4.4 Outlook for utilities wages growth in Queensland

Despite relatively weaker growth in the Queensland economy over the past few years, the emerging mining boom, ramping up in construction and rising utilities infrastructure activity has already seen skilled shortages being reported. The 'Skills in Demand' lists released in June 2011 by the Department of Education, Employment and Workplace Relations shows that all states are currently experiencing shortages of skilled labour for engineers, other professionals and tradespeople who are in high demand by the electricity, gas and water sector — and who are also keenly sought in the mining, construction and manufacturing sectors. In Queensland, the DEEWR report shows relevant shortages are being reported for:

- engineering managers
- electrical engineers and electrical engineering draftspersons and technicians
- civil engineers and civil engineering draftspersons and technicians
- mechanical engineers, and mechanical engineering draftspersons and technicians
- surveyors and quantity surveyors

- construction estimators and building associates
- gas fitters and welders
- plumbers, electricians and electrical lineworkers.

Other surveys also indicate that skills shortages are already beginning to emerge in a number of professions. The 'Clarius Skills Index' — a quarterly index compiled by the Clarius Group (an employment services provider) and KPMG Econtech — reported in its December quarter 2010 report that the strong labour market demand over the last quarter has resulted in ongoing skill shortages in a number of occupational categories.¹⁹ Eleven of the 20 categories measured have an index over 100, representing shortages of labour. Building and Engineering professions are among these eleven categories with shortages of skilled labour, with three occupations relevant to the utilities sector included among the ten listed occupations with the 'highest levels of skills shortages':

- building and engineering professionals
- construction tradespersons
- metal related tradespersons.

Utilities AWOTE growth in Queensland averaged 4.8 per cent per annum over the decade to 2009/10, slightly weaker than the national utilities AWOTE average of 4.9 per cent per annum (see table 4.8). Over the five years to 2016/17, Queensland utilities AWOTE growth is forecast to average 5.8 per cent per annum, slightly faster than the national utilities average of 5.7 per cent per annum. The forecast is based on movements in the underlying wage growth plus an addition for up skilling, compositional effects, bonuses, incentives, etc. See Section 4.3 for a discussion of these effects. A discussion of the underlying drivers is undertaken below.

The ABS does not provide LPI data for the Utilities sector in Queensland, providing their state utilities LPI data only for NSW (since September quarter 2008) and Victoria. These two states collectively account for almost 54 per cent of total Australian utilities employment, with Queensland accounting for just over 22 per cent, then Western Australia and South Australia 11.4 per cent and 7.4 per cent respectively.²⁰ Given Queensland's dominance of the 'rest of Australia', it is fair to assume it would be close to the average of the 'unknown residual' for the utilities LPI.

LPI growth in both NSW and Victoria was below the national average in 2009/10 and 2010/11, with the rest of Australia (ROA) residual estimated to have increased 5.4 per cent in 2009/10 and 4.6 per cent in 2010/11 – we have assumed the Queensland Utilities LPI to be the same as the ROA residual.

Utilities LPI growth in Queensland is forecast to be around the national utilities LPI in 2011/12 but then we are forecasting faster growth in Queensland utilities LPI from 2012/13 and over most of the outlook period. As the accompanying charts show, overall engineering construction and mining investment (as proxied by 'Mining and Heavy Industry Engineering Construction') are forecast to accelerate from 2011/12 and outpace their Australian equivalents. At the same time, utilities-related engineering construction (water supply, sewerage and drainage, electricity supply and pipelines) in Queensland is also set to jump to high levels and be sustained at historically high levels for the next decade.

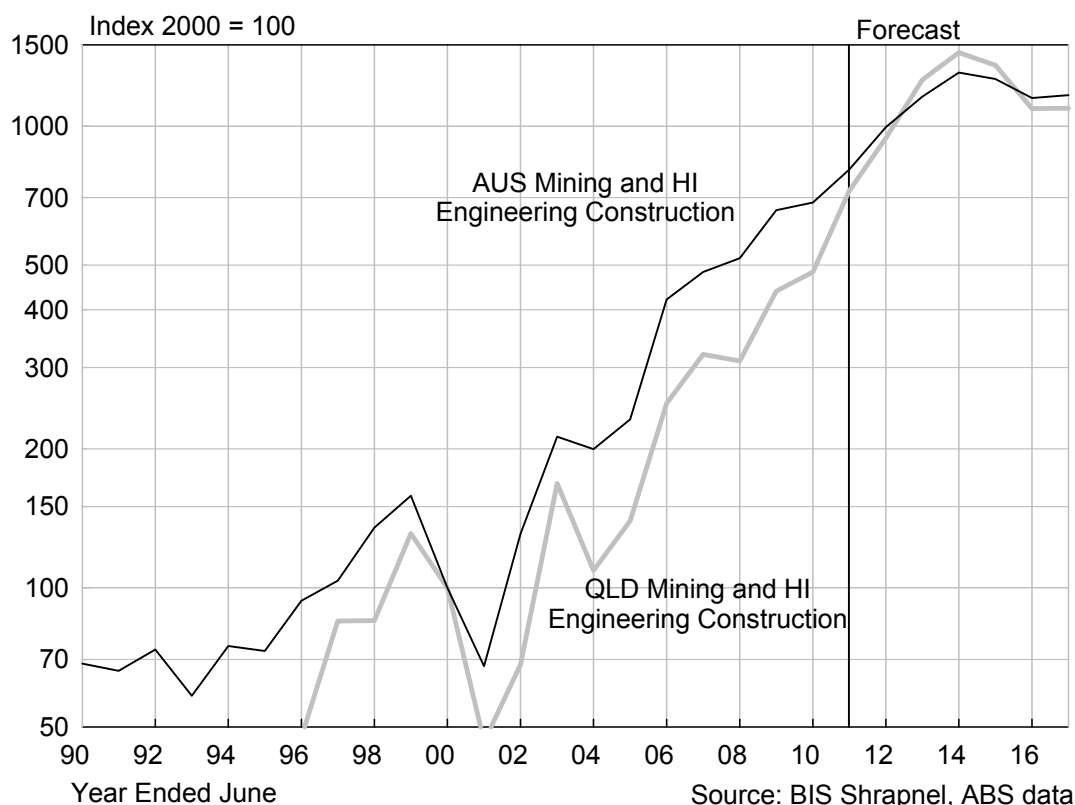
¹⁹ Clarius Skills Index, December 2010

²⁰ ABS, Labour Force, 6202.0

This means there will be stronger demand for utilities, mining and construction labour, leading to more intense pressures for skilled labour and pushing wages growth above the national utilities average for most of the next decade (see table 4.7).

The demand for gas related skills will be particularly intense. The two mega-LNG plants now committed — with more proposed — are based on coal seam gas fields through central and southern Queensland.²¹ The extraction of the gas requires the development of thousands of gas wells, plus thousands of kilometres of gas pipes from these wells to central hubs and then piped onto Gladstone. The initial two LNG plants are due to be completed around mid-decade, but it is highly probable more LNG plants (for export) in Queensland will be committed, with development staggered into the next decade. Meanwhile, other gas fields will be developed to supply growing domestic demand for gas (mainly Queensland), including supplying new gas-fired electricity generation capacity. All this adds up to higher wages growth in the Queensland utilities sector.

**Chart 4.6: Mining and Heavy Industry Engineering Construction
Australia and Queensland**



Overall, utilities LPI wages growth in Queensland is forecast to average 5.2 per cent per annum over the five years from 2011/12 to 2016/17 – above the national average of 5.0 per cent per annum over the same period (see Table 4.7).

²¹ See BIS Shrapnel, Engineering Construction in Australia, 2010/11 to 2024/25

**Table 4.7: Electricity, Gas and Water – Queensland and Australia
Nominal Wages**

Year Ended June	Queensland- Nominal				Australia- Nominal			
	AWOTE (1)		LPI (2)		AWOTE (1)		LPI (2)	
	\$	A% CH	Index	A% CH	\$	A% CH	Index	A% CH
2000	883.0				922.8		59.5	
2001	925.8	4.8			982.3	6.4	61.8	3.9
2002	978.3	5.7			1,055.3	7.4	64.4	4.2
2003	1,018.0	4.1			1,085.1	2.8	67.2	4.3
2004	1,151.4	13.1			1,155.7	6.5	70.1	4.3
2005	1,268.1	10.1			1,194.5	3.4	73.1	4.4
2006	1,218.3	-3.9			1,214.1	1.6	77.1	5.5
2007	1,226.9	0.7			1,262.4	4.0	81.0	5.0
2008	1,259.8	2.7			1,304.2	3.3	84.3	4.1
2009	1,346.7	6.9	86.9		1,388.6	6.5	88.0	4.5
2010	1,409.0	4.6	91.6	5.4	1,490.7	7.4	91.9	4.4
2011	1,564.0	11.0	95.8	4.6	1,635.4	9.7	95.8	4.3
Forecasts								
2012	1,666.1	6.5	100.0	4.4	1,715.5	4.9	100.0	4.4
2013	1,754.7	5.3	105.3	5.3	1,813.3	5.7	105.0	5.0
2014	1,862.4	6.1	111.2	5.5	1,918.3	5.8	110.5	5.2
2015	1,974.0	6.0	116.9	5.2	2,029.5	5.8	115.9	4.9
2016	2,088.3	5.8	122.7	4.9	2,142.9	5.6	121.4	4.7
2017	2,209.2	5.8	129.0	5.1	2,264.8	5.7	127.4	5.0
Long Term Averages								
2000-2010	4.8				4.9		4.4	
2006-2011	5.1				6.1		4.4	
2012-2017	5.8		5.2		5.7		5.0	

(1) Earnings of persons. Data is year ended May.

Source: BIS Shrapnel, ABS

(2) Queensland LPI for 2009 to 2011 is estimated, as ABS data is not available. Ordinary time hours excluding bonuses.

4.5 Productivity Adjustments

In its recent revenue determinations, the AER adjusted the LPI (its preferred choice of labour escalator) for productivity growth.²² According to the AER, the LPI adjusted for productivity provides a better measure of labour cost increases as productivity improvements do not increase labour costs.

We believe productivity adjustments cannot be applied to the LPI. As discussed previously, the LPI is an underlying measure of wage inflation and does not incorporate effects of changes to skill levels (ie compositional effects), while the AWOTE measure does. Accordingly, changes to skill levels should be reflected in productivity changes per worker. The LPI does not incorporate any changes for skill levels and improved productivity. Hence, productivity cannot be omitted from this wage measure to give a productivity adjusted wage measure. As such, the AER is effectively twice adjusting for productivity. This, in turn, is producing a downward biased measure of labour costs to the firm.

However, we have not incorporated any labour productivity forecasts in our AWOTE and LPI forecasts as Powerlink has advised that all reasonably foreseeable labour efficiencies over the 2013-17 period have been incorporated in the opex and capex forecasts in its Revised Revenue Proposal. Consequently, to include any expected labour efficiencies in the real labour cost escalators would also involve double counting. On this basis, we believe that any labour productivity estimates derived for the utility sector have very little relevance to Powerlink's circumstances and electricity network businesses in general, because of the diverse nature of the EGW sector and the difficulty in satisfactorily measuring EGW output. For these reasons, it is not appropriate to make any adjustment to the labour cost forecasts to account for expected labour productivity.

Notwithstanding the above, we believe that DAE's labour productivity forecasts (which the AER used to calculate the productivity adjusted wage escalators in its Draft Decision on Powerlink's Revenue Proposal) are too optimistic. We note also that the methodology (ie the application of long-term averages to generate forecasts) has previously been rejected by the AER. The above, combined with the upward bias in DAE's productivity forecasts, provide a compelling case for the DAE's productivity forecasts to be rejected by the AER.

4.5.1 Deloitte Access Economics' productivity growth forecasts are too optimistic

Not only do we reject the application of a labour productivity adjustment to the utilities LPI (as discussed above), we also believe that the quantum of the Deloitte Access Economics (DAE) productivity growth over the forecast period is grossly exaggerated. DAE did not provide specific forecasts of output, employment or productivity in its August 2011 report for the AER, so we have calculated their productivity forecasts as the difference between the productivity-adjusted wages growth and unadjusted wages growth. We are surprised DAE does not provide their output and employment forecasts which underpin productivity forecasts and assumptions, which are key assumptions to their unit labour cost forecasts.

Deloitte Access Economics numerical forecasts of labour productivity growth, as presented to the AER, show that future productivity growth will be strong in the utilities sector at the Australian and state (Queensland) level. This is in contrast to the observed productivity growth for the industry over the previous decade. Over the five years from 2012/13 to 2016/17 inclusive, Deloitte Access Economics expects the average productivity growth in the national utilities industry to be 1.6 per cent per annum. For Queensland, DAE predicts average productivity growth of 1.8 per cent. This compares with an average productivity growth of -3.6 per cent and -3.7 per cent per annum for Australia and Queensland, respectively over the previous decade (see table 4.8).

²² For example, AER Draft Decision, *Powerlink Revenue Proposal 2012/13 to 2016/17*, p. 51.

Even discounting for the observed volatility in the utilities labour productivity growth, we view Deloitte Access Economics' forecasts of productivity growth as too optimistic.

According to DAE, the sanguine productivity outlook is based on easing of drought conditions on the east coast as well as an unwinding of factors which they believe weighed down the productivity performance of the utilities sector over the previous decade. Deloitte Access Economics lists the negative factors for the industry as follows:^{23 24}

- *Capital investment – the downswing in employment in the sector had arguably gone too far, requiring a degree of catch up (meaning that, in effect, relative productivity in the period 1997 to 2002 may have been unsustainably high). Spending on maintenance has lifted, and so too has spending on some new infrastructure (albeit with the latter still falling short of future requirements). That increased spending has added to employment without adding to output, hence weighing on measured productivity.*
- *A compositional switch in the sector away from water to electricity and gas has also worked to lower measured average productivity in the sector.*
- *Within the water sector, a series of droughts in a number of States also ate into measured productivity levels.*
- *Industry sources suggest that a reduction in outsourcing in recent years may also have raised employment without raising output.*
- *The reform momentum of earlier years faltered.*

However, DAE provides little discussion or evidence to support the claims that most of the negative factors from the last decade will actually reverse over the next six years. With reference to the first point above, DAE basically agrees with our assessment (and that of most of the utilities in their submissions to the AER over recent years) that spending on new infrastructure is still well short of future requirements, and that high levels of infrastructure spending will continue over the next few years. This suggests that these higher levels will continue to “add to employment without adding to output”...and hence continue to “weigh down on measured productivity”. It should also be noted that a significant portion of the recent and future infrastructure spending is related to network enhancement and maintenance for reliability, rather than for increasing capacity (ie future output).

With reference to the second point above, there is no evidence or discussion provided that a compositional switch back to water will occur over the next few years, let alone act to raise measured productivity in the overall sector. The output of the water sector may increase over the medium term compared to the drought-affected 2000s (given the construction of desalination plants around Australia), but given sharp rises in water prices and slower population growth, growth in water (and sewerage-related) demand and output is unlikely to be rapid, and significantly outpace the electricity and gas sub-sectors.

With reference to the fourth point above, no evidence or discussion has been provided to suggest there will be a reversal of the trend away from outsourcing, and therefore performing more work in-house.²⁵ Indeed, our discussions with several utilities suggest that the major reason for the increase in employment in the sector over the past decade was to have less reliance on outsourced services, particularly maintenance and regular system enhancement capital programs. Having invested heavily in hiring and training these increased

²³ Deloitte Access Economics, 'Forecast Growth in Labour Costs: Queensland and South Australia, December 2010, p.48.

²⁴ Deloitte Access Economics, 'Forecast Growth in Labour Costs: Queensland and Tasmania, August 2011, p.52.

²⁵ In fact in recent years, some utilities such as ActewAGL Distribution have significantly increased their apprentice intake in response to the skills shortage to ensure that it can deliver on its proposed capital and operating expenditure. See ActewAGL Distribution's 2009 – 2014 Determination submitted to the AER in June 2008, p.57.

numbers of employees, the utilities are unlikely to shed labour and increase outsourcing over the next few years.

With reference to the last DAE point above, most of the easy reforms in terms of manning practices and enterprise bargained productivity enhancements occurred in the deregulation period of the 1990s – in effect, “all the low hanging fruit has been plucked”. There are few reforms left which will significantly lift productivity in the utilities sector, and so we are unlikely to see a pick up in “reform momentum” over the next few years.

Overall, there is not a compelling case to believe there will be strong growth in labour productivity in the utilities sector over the next few years.

4.5.2 Deloitte Access Economics underestimates workforce composition productivity

DAE in their November 2011 report advised the AER to adjust the LPI for productivity growth in order to arrive at a measure of unit labour cost growth.²⁶ However, despite acknowledging that the LPI does not capture the workforce composition productivity effects and the need to find a ‘matching’ productivity measure (ie one that excludes the workforce composition productivity) to adjust the LPI, DAE chose not to make any adjustments for workforce composition productivity. In other words, DAE effectively assumed a zero value for workforce compositional productivity.

However, we believe workforce composition productivity to be between 0.5 to 1.0 per cent on average over the medium term, based on the observed difference between the rate of growth in AWOTE and the LPI. Assuming difference between AWOTE and LPI is largely due to workforce compositional effects, then one can assume workforce compositional effects is roughly equal to this difference. Over the decade to 2011, this difference averaged 0.9 per cent per annum at the national utilities level (see table 4.4), suggesting the average workforce composition productivity was 0.9 per cent per annum for the national utilities sector.²⁷

Over the next six years, our expectation is that workforce compositional productivity will remain positive and significant. Our forecast is for workforce composition productivity (proxied by the difference between growth in AWOTE and LPI) to average 0.7 per cent per annum at the national utilities industry and 0.6 per cent per annum for the Queensland utilities sector (see table 4.7). As previously discussed in section 4.4, the upskilling and movements of workers into higher grades will drive this positive compositional effect on both wages (i.e. AWOTE less LPI) and productivity. Hence, by applying the DAE productivity forecasts, the AER is over-correcting for productivity because DAE has underestimated the workforce composition productivity component. On our forecasts of AWOTE less LPI, DAE is overcorrecting by 0.6 per cent per annum for Queensland utilities sector.

Furthermore, as argued in section 4.6.1 and 4.6.4, we believe DAE utilities productivity is grossly overstated because it implicitly assumes a marked decline in employment in the Queensland utilities sector over the next 6 years – which is highly unlikely given continuing (and rising) levels of both capital investment and major network refurbishment.

4.5.3 Deloitte Access Economics application of long-term averages to generate productivity forecasts has previously been rejected by the AER

In their August 2011 report to the AER, Deloitte Access Economics argued that “*because so many factors can influence productivity, it is often best measured over an entire economic cycle.*”²⁸ Given that no further information is provided by DAE on its underlying methodology, one can assume that DAE has applied an economic cycle methodology as opposed to an

²⁶ Deloitte Access Economics, ‘Productivity measures to adjust LPI and AWOTE’, November 2011.

²⁷ Data for Queensland is not available due to a lack of data.

²⁸ Deloitte Access Economics, ‘Forecast growth in labour costs: Queensland and Tasmania, 15 August 2011.

annual methodology to generate their productivity forecasts — a methodology that the AER rejected for application to AWOTE.

The AER in their Final decision on Envestra's Access Arrangement for South Australian gas distribution network, stated that

Real cost escalation forecasts require detailed estimates of annual input cost changes. Averaging the forecasts necessarily deviates from the expected costs at any point in time, and therefore reduces the efficiency of the forecast.

For this reason, the AER considers the application of six year average rates produces forecasts that are neither made on a reasonable basis, nor the best forecasts possible in the circumstances.²⁹

The AER should be consistent in the application of long-term averages to generate forecasts. Given the AER's acceptance of DAE's over-the-cycle methodology (which is tantamount to long-term average rates), we believe the AER should also allow the application of average 'over-the-cycle' rates to AWOTE.

We agree with use of over the cycle methodology, as highlighted in section 4.3. The utilities sector is a small sector and is therefore prone to sampling variability in labour force and wages samples by the ABS. To smooth the volatility in the utilities data, we support the consistent use of long term averages or over the cycle methodology.

4.5.4 BIS Shrapnel's View of Productivity

BIS Shrapnel considers that labour productivity growth in the Utilities sector – as measured by output/employment - will remain weak over the next six years. Going forward, we believe demand and output growth will be constrained in this sector for three key reasons:

- Higher utilities prices (including the imposition of a carbon tax from 1 July 2012) will keep demand muted.
- Population growth will be slower over next five years, compared to the last five years. Population and growth in households are key drivers of energy and water use in the utilities sector, so even if per capita growth remained at similar levels to the past five years, aggregate demand (ie including population) would be slower.
- Moreover, with the government introducing a price of carbon, we do not expect a significant jump in energy intensive projects such as aluminium smelters. This will further contain demand for energy in the future.

We expect moderate and fairly stable growth in employment in the utilities sector in Australia and the states beyond 2011. This is based on continuing high levels of utilities capital expenditure and particularly engineering construction. The combination of muted output and moderate employment growth means productivity growth will remain weak for the utilities sector at the national as well as state level over most of this decade (see table 4.8). At the Australian level, productivity growth in the utilities sector is expected to decline by an average of -0.7 per cent per annum over the five years from 2012/13 to 2016/17 inclusive. A similar pattern occurs in Queensland, with the average growth over the five years to 2016/17 forecast at -0.2 per cent per annum (see table 4.8).

²⁹ AER, Final decision, June 2011, p. 230.

**Table 4.8: Electricity, Gas, Water and Waste Services
Output, Employment and Productivity: Australia and Queensland**

Year Ended June	Australia						Queensland					
	Gross Value Added (1)		Employment		Productivity		Gross Value Added (1)		Employment		Productivity	
	\$m	%CH	'000	%CH	\$/employee ('000)	%CH	\$m	%CH	'000	%CH	\$/employee ('000)	%CH
1990	20678	4.8	120.4		171.7		2789	3.8	16.0		173.9	
1991	21009	1.6	115.1	-4.4	182.5	6.3	2903	4.1	14.2	-11.3	204.1	17.4
1992	21189	0.9	118.3	2.8	179.2	-1.9	2996	3.2	16.7	17.4	179.5	-12.1
1993	21560	1.8	109.9	-7.1	196.2	9.5	3145	5.0	16.3	-2.3	192.9	7.5
1994	22243	3.2	105.5	-4.1	210.9	7.5	3303	5.0	15.7	-4.0	211.0	9.4
1995	22808	2.5	99.0	-6.1	230.4	9.2	3413	3.3	15.7	0.0	218.0	3.3
1996	23038	1.0	92.5	-6.5	249.0	8.1	3359	-1.6	16.0	2.4	209.6	-3.9
1997	22954	-0.4	79.2	-14.4	289.6	16.3	3446	2.6	15.4	-4.1	224.3	7.0
1998	23817	3.8	78.2	-1.3	304.5	5.1	3733	8.3	14.7	-4.1	253.2	12.9
1999	24336	2.2	78.9	0.9	308.3	1.2	3908	4.7	14.6	-0.7	267.0	5.4
2000	24841	2.1	79.5	0.8	312.3	1.3	3989	2.1	13.5	-7.5	294.5	10.3
2001	25309	1.9	80.5	1.2	314.4	0.7	4221	5.8	13.0	-3.8	323.8	9.9
2002	25550	1.0	83.1	3.2	307.5	-2.2	4552	7.8	17.0	30.2	268.2	-17.2
2003	25871	1.3	89.6	7.8	288.9	-6.1	4592	0.9	15.6	-7.9	293.7	9.5
2004	25956	0.3	91.5	2.1	283.8	-1.8	4676	1.8	17.4	11.3	268.7	-8.5
2005	26096	0.5	95.2	4.1	274.0	-3.5	4558	-2.5	17.5	0.6	260.4	-3.1
2006	26546	1.7	106.0	11.2	250.5	-8.6	4833	6.0	23.4	33.7	206.5	-20.7
2007	26798	0.9	105.8	-0.1	253.3	1.1	4938	2.2	20.2	-13.5	243.9	18.1
2008	26866	0.3	113.8	7.5	236.1	-6.8	5051	2.3	23.5	16.2	214.8	-12.0
2009	27894	3.8	136.3	19.8	204.7	-13.3	5535	9.6	27.2	15.7	203.3	-5.3
2010	28623	2.6	132.2	-3.0	216.5	5.8	5776	4.4	28.5	4.7	202.6	-0.4
2011	28893	0.9	151.3	14.4	191.0	-11.8	5785	0.2	33.9	18.8	170.8	-15.7
Forecasts												
2012	28893	0.0	154.9	2.4	186.5	-2.3	5807	0.4	41.6	22.7	139.8	-18.2
2013	29529	2.2	156.4	1.0	188.8	1.2	5943	2.3	42.3	1.8	140.5	0.5
2014	29942	1.4	161.3	3.1	185.6	-1.6	6046	1.7	42.1	-0.4	143.5	2.1
2015	30241	1.0	167.1	3.6	181.0	-2.5	6250	3.4	42.8	1.7	145.9	1.6
2016	30635	1.3	168.1	0.6	182.2	0.7	6490	3.8	44.5	3.9	145.8	-0.1
2017	31094	1.5	172.6	2.7	180.1	-1.2	6637	2.3	47.9	7.6	138.6	-5.0
	Compound Annual Growth Rates (2)						Compound Annual Growth Rates (2)					
1990-2000	1.9		-4.1		6.2		3.6		-1.7		5.4	
2000-2010	1.4		5.2		-3.6		3.8		7.7		-3.7	
2006-2011	1.7		7.4		-5.3		3.7		7.7		-3.7	
2012-2017	1.5		2.2		-0.7		2.7		2.9		-0.2	

Source: BIS Shrapnel, ABS

(1) Gross Value Added (GVA) in constant 2008/09 prices is the output measure.

(2) e.g. CAGR for 2012-2017 is CAGR for 2012/13 to 2015/17 inclusive.

5. CONTRACTOR ESCALATION

This section provides forecasts of Powerlink's external 'construction-related' labour escalation, which is predominately related to the costs of construction related labour, covering outsourced contractor labour.

As contractor labour is assumed to undertake construction or maintenance related projects, they would be classified to the construction sector. Accordingly, the escalator used for contractor labour is Construction sector wages growth ie both LPI and AWOTE.

Our research has shown that construction activity (ie work done in the sector) normally has a strong influence on construction wages. BIS Shrapnel's forecasts of construction activity by state (which includes residential and non-residential building, plus engineering construction) were used to derive the wages forecasts.

5.1 Construction Sector Wages Growth in Queensland

Construction sector wages growth in Queensland tracks – or lags by around one or two years – the growth in total construction activity. Construction activity was extremely strong through most of the 2000s as the minerals investment boom and strong population growth (from both interstate and international migration) fuelled increased demand across all construction categories.

However, since the onset of the global financial crisis and the subsequent weakening of the minerals boom, construction activity has been sustained mainly by significant public infrastructure investment. Total Queensland construction activity (measured in real 'work done' terms) fell in 2009/10 as heavy declines in dwelling construction overshadowed marginal growth in non-dwelling construction. This fall in activity saw Queensland construction wages growth in LPI terms slow to 2.9 per cent in 2009/10 (after 5.7 per cent growth in 2008/09), although AWOTE growth is estimated to have picked up to 8.7 per cent from 7.1 per cent in 2008/09. Beyond 2009/10, an easing in credit availability saw non-dwelling construction activity increase, albeit marginally, but significant declines across the other construction sectors, particularly dwelling construction, will see overall construction decline again in 2010/11 (see chart 5.1).

Despite the weakening in construction activity, Queensland construction AWOTE growth rose strongly to 10.4 per cent in 2010/11. Similarly, LPI growth rose to 3.6 per cent in 2010/11, partly due to a 'catch-up' from the wage pause in 2009/10.

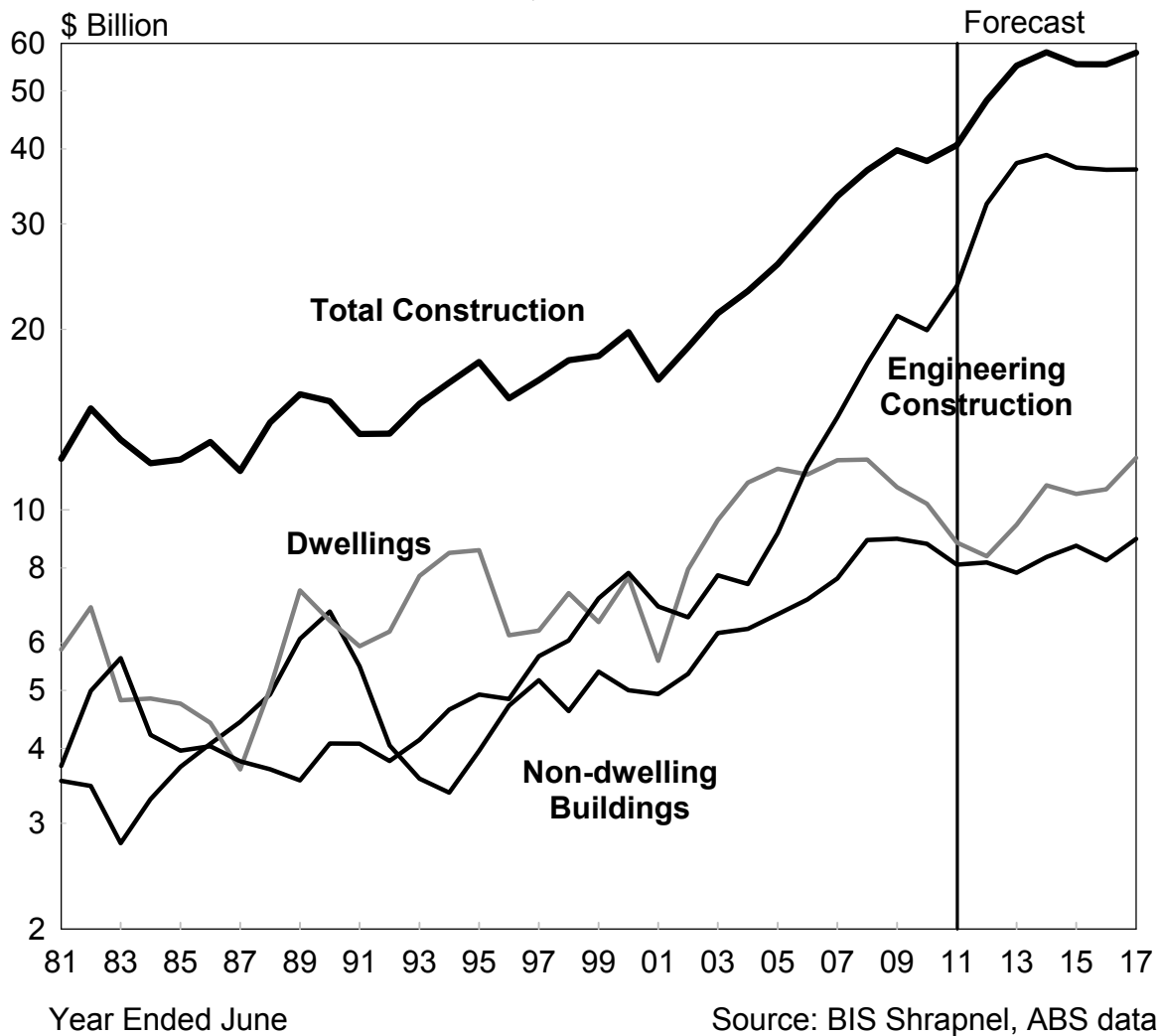
Reconstruction-related activity (reported widely to cost well over \$5 billion) following the floods and Cyclone Yasi will drive very strong growth in construction activity in 2011/12 and into 2012/13. In addition, recent announcements of major LNG and coal-related projects will boost resources investment over the near to short-term. Non-dwelling building will also begin increasing from 2012/13 as strong private sector investment overtakes weak public building activity, although this recovery will be partially offset by weaker dwelling building over 2014/15. Overall, total construction activity will increase strongly in 2011/12 and 2012/13, before growth eases over the following three years (see chart 5.1).

The recovery in construction activity will lead to increasing wages growth, with growth in the QLD construction LPI predicted to peak in 2013/14 at 5.9 per cent, in line with the peak in construction activity growth, before weakening over 2014/15 and 2015/16. Despite this weakening, LPI growth beyond 2012/13 will be close to the national average. Construction AWOTE growth will track the improvement in 'underlying wage inflation' (ie the LPI), and peak at 6.5 per cent in 2013/14, before easing.

Historically, annual productivity changes in the construction industry (at the Australian level) have been quite volatile although – on average – remained in the positive territory over the 1990s and in the previous decade. More recently (ie since 2007/08), productivity growth in the construction industry has been negative due to faster pace growth in employment relative to output.

Going forward, at the Australian level, productivity growth in the construction sector is expected to increase by an average of 0.2 per cent per annum over the next six years from 2012/13 to 2016/17 inclusive. In contrast, productivity growth in the Queensland construction sector is expected to decline by an average of 0.6 per cent per year over the five years to 2016/17 due to stronger employment growth in the state.

**Chart 5.1: Total Construction – Queensland
Value of Work Done, Constant 2008/09 Prices**



**Table 5.1: Construction Wages Growth – Australia and Queensland
Nominal Wages**

Year Ended June	Queensland - Nominal				Australia - Nominal			
	AWOTE (1)		LPI (2)		AWOTE (1)		LPI (2)	
	\$	A% CH	Index	A% CH	\$	A% CH	Index	A% CH
2000	637.3				722.1		61.0	
2001	640.6	0.5			730.5	1.2	63.5	4.1
2002	708.6	10.6			769.6	5.3	65.6	3.3
2003	795.9	12.3			832.3	8.2	67.8	3.3
2004	852.1	7.1			875.2	5.1	70.3	3.7
2005	898.2	5.4			924.6	5.7	73.9	5.2
2006	906.0	0.9			941.8	1.9	77.6	4.9
2007	975.4	7.7			987.8	4.9	81.3	4.9
2008	1,060.1	8.7			1,078.2	9.2	85.2	4.7
2009	1,137.2	7.3	89.3		1,162.0	7.8	89.1	4.7
2010	1,236.2	8.7	91.9	2.9	1,250.9	7.7	92.0	3.3
2011	1,365.0	10.4	95.2	3.6	1,313.7	5.0	95.7	4.0
Forecasts								
2012	1,424.9	4.3	100.0	5.0	1,380.8	5.1	100.0	4.5
2013	1,514.6	6.3	105.7	5.7	1,463.5	6.0	105.4	5.4
2014	1,627.0	7.4	111.9	5.9	1,565.8	7.0	111.3	5.6
2015	1,732.4	6.5	117.4	4.9	1,662.6	6.2	116.5	4.7
2016	1,820.8	5.1	122.5	4.4	1,742.1	4.8	121.6	4.4
2017	1,977.4	8.6	128.4	4.8	1,843.4	5.8	127.7	5.0
Long Term Averages								
2000-2010	6.8				5.6		4.2	
2006-2011	8.5				6.9		4.3	
2012-2017	6.8		5.1		5.9		5.0	

(1) Earnings of persons. Data is year ended May.

Source: BIS Shrapnel, ABS

(2) Ordinary time hours excluding bonuses.

6. REVIEW OF DELOITTE ACCESS ECONOMICS PAST FORECASTING RECORD

The AER in its recent Draft decision on Powerlink Revenue Proposal stated that *“in light of the underlying macroeconomic outlook” . . . “the AER considers the labour cost forecasts prepared by Deloitte Access Economics reasonably reflect a realistic expectation of labour costs over the next regulatory period.”*

In this section we review the forecasting record of the utilities wage model of the AER’s consultant for utilities wage forecasts, Deloitte Access Economics (DAE, previously known as Access Economics’).³⁰ The main conclusions we can draw from our analysis is:

- Over the medium-to-long term (ie beyond the first two years of the forecast period), DAE has consistently forecast — in each of its successive projections provided to the AER — that utilities wages growth will ease back and its growth will fall below the ‘All Industries’ average. This easing has not been borne out in actual growth as utilities wages growth has consistently remained above (or equal to) the ‘All Industries’ average.
- DAEs utilities wages forecasts are too pessimistic, particularly in relation to the All Industries average.

Review of DAE individual sets of forecasts

In 2006, DAE expected utilities wages growth to remain above ‘All Industries’ wages growth over the short-term (next two years i.e. over 2006/07 to 2008/09) before collapsing to well below the ‘All Industries’ average in 2009/10 (see chart 6.1). Utilities wages growth was then expected to remain below the ‘All Industries’ average for the rest of the forecast period. Overall, wages growth in the utilities sector was forecast to average 0.8 percentage points lower (per annum) than ‘All Industries’ wages growth over the seven years to 2015/16.

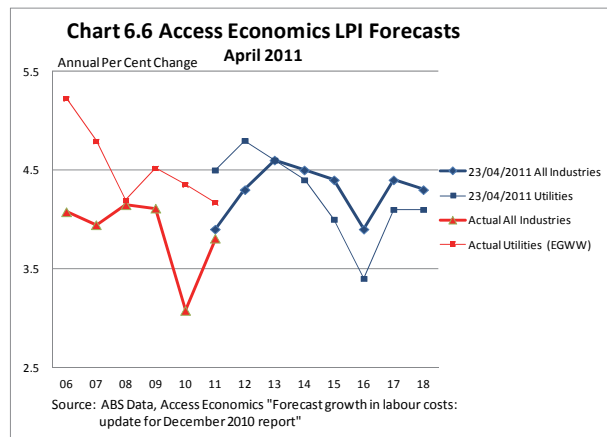
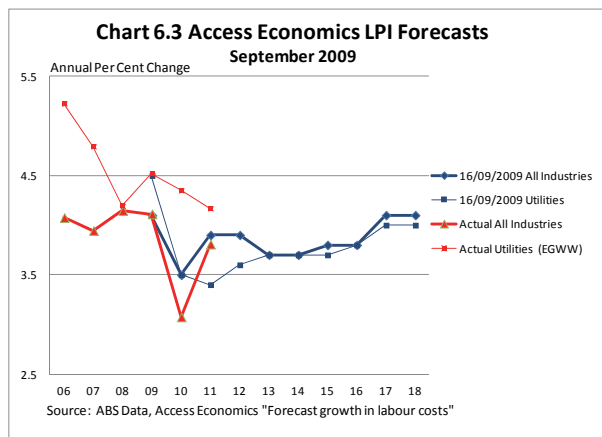
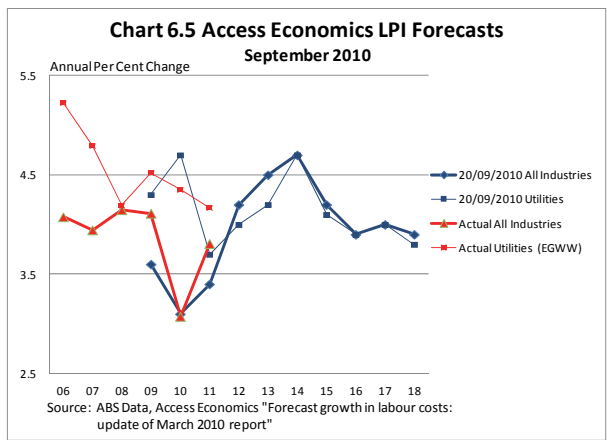
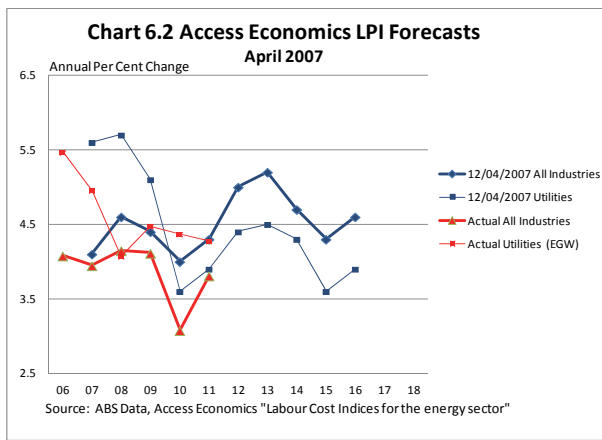
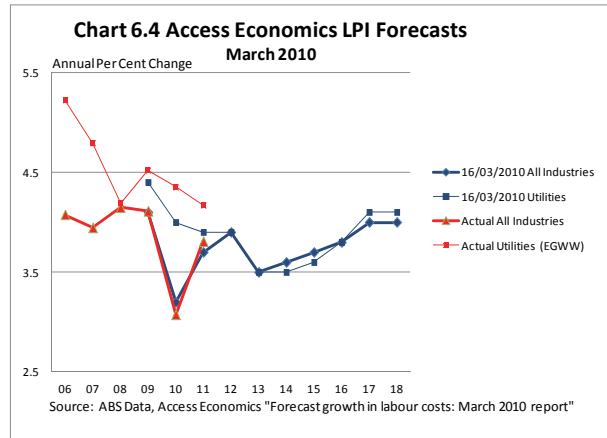
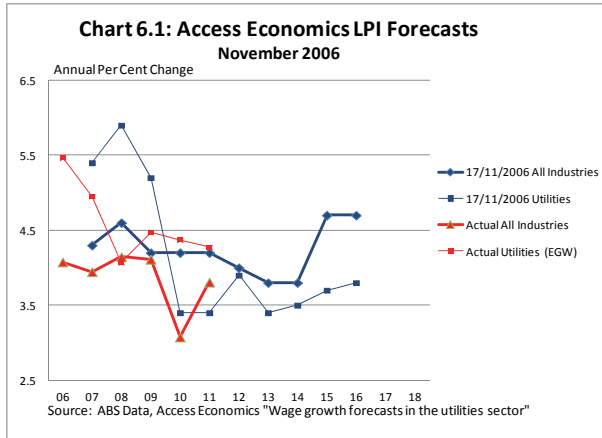
DAE projected collapse in utilities wages growth in 2009/10 as well its forecast for the subsequent year failed to materialise as utilities wages growth has remained above the ‘All Industries’ average over 2009/10 and 2010/11 (see chart 6.1).

DAE updated their wage forecasts in April 2007. While the shape of the forecast curves changed in April 2007, the underlying story remained unchanged (see chart 6.2). DAE once again expected utilities wage inflation to remain higher than the Australia ‘All Industries’ average over the short-term but fall below the national average for the rest of the forecast horizon. In addition, DAE projected a bigger difference between ‘All Industries’ and the utilities sector wages growth.

Once again, as can be seen in chart 6.2, DAE easing and ‘drop off’ in utilities wages growth was not borne out as utilities wages growth remained above the ‘All Industries’ average.

The AER then used forecasts provided by Econtech, before reverting back to DAE in 2009. DAE September 2009 wage forecasts (covering the 2008/09 to 2017/18 period) tell a similar story to their 2006 and 2007 projections, but the orders of magnitude were a little different, see chart 9.3. DAE expected utilities wages growth to fall to the ‘All Industries’ level in 2009/10 and then, dip below the national average over the next two years before converging to the ‘All Industries’ average in 2012/13. Beyond 2012/13, DAE expected utilities wages growth to be close to but lower than the ‘All Industries’ average for the rest of the forecast period i.e. through to 2017/18. DAE more recent forecasts tell a similar story, see charts 6.4 to 6.6.

³⁰ To the best of our knowledge, DAE first set of utilities wage forecasts used by the AER were dated November 2006. Accordingly, we trace DAE utilities wage forecasts since November 2006 and compare them with actual outcomes.



To date utilities sector wages growth (measured by the LPI) has been above or equal to the national average since the index began in 1997. DAE, however, has consistently viewed higher utilities wage escalation (i.e. relative to the 'All Industries' average) as not sustainable. As a result, DAE has consistently projected utilities wage inflation to fall below the national 'All Industries' average within two years (on average) and remain lower than the national average for the rest of the forecast period i.e. over the medium-to-long-term. This is the consistent theme in all of DAE forecasts. However, whenever it becomes apparent that this expected 'drop-off' in utilities wages would fail to materialise (given stronger utilities wage inflation relative to the 'All Industries' average), the 'drop-off' in utilities wages growth were simply delayed.

For example, over the current sample, the first year in which utilities wages growth was forecast to be lower than 'All Industries' wages growth was 2009/10. When this did not eventuate, the 'drop-off' was delayed to 2010/11. DAE predicted another delay in utilities wages 'drop-off' in September 2010 when utilities wages growth was expected to fall below the national 'All Industries' average in 2011/12. Seven months later (in April 2011) the 'drop-off' was delayed once again to the 2013/14 financial year. The sequential shifting of utilities wages slow-down can be seen in Chart 6.7. The timing of the expected drop in wages growth is pushed further along as it becomes increasingly evident that such a weakening in the sector is unlikely.

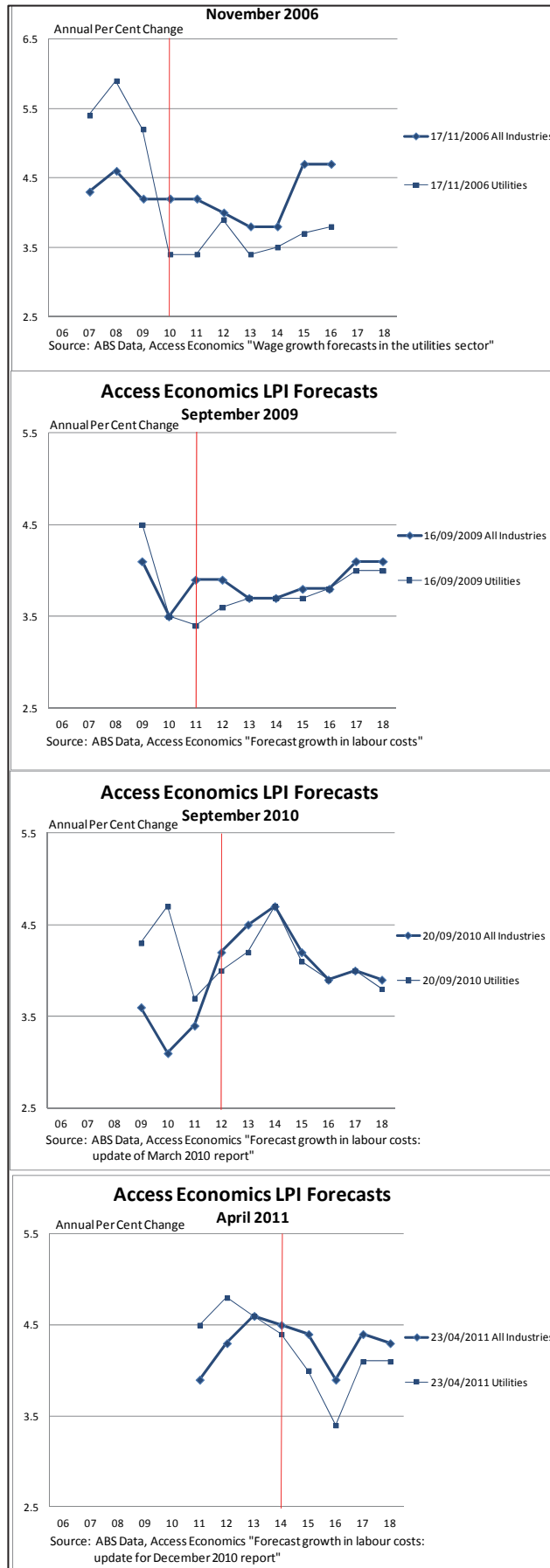
Overall, we believe that DAE is too pessimistic on wages growth in the utilities sector, and that DAE does not appear to have had regard to evidence that their pessimism is unfounded. Deloitte Access Economics argument as to why utilities wages will eventually fall below the national average revolves around the eventual easing of wage growth in competing industries (such as mining and construction). According to DAE, this will limit the necessity for the utilities sector to increase wage growth to attract skilled labour, and make it difficult for utilities wage growth to exceed 'All Industries' wage growth over the medium-to-long-term. We believe the opposite of their argument as more likely.

As per the discussion in Section 4.7, BIS Shrapnel believes that strong demand for skilled labour in the mining, construction, and parts of the manufacturing sector, combined with a tight general labour market, will result in strong wages growth across all of these industries. The utilities sector will be forced to follow suit, in order to attract the necessary quantity of skilled labour. A deeper discussion of the outlook for utilities sector wages can be found in Section 4.

A comparison of the forecasting records of BIS Shrapnel and DAE indicates that BIS Shrapnel's record is superior to DAEs, although both forecasters over-estimated the utilities' LPI for 2006/07 and 2007/08 in their March/April 2007 reports for the regulator and relevant utility at the time. Excluding this early same mistake by both forecasters, Table 6.1 shows that:

- a) BIS Shrapnel has correctly forecast that the utilities LPI has stayed above the All Industries LPI over the relevant forecasting periods, while DAE has incorrectly (and repeatedly) forecast that utilities LPI growth would fall below the All Industries LPI beyond the first year or two of the forecast period;
- b) BIS Shrapnel has been closer than DAE with its utilities LPI forecast to the actual for the relevant forecast periods, particularly over recent years;
- c) DAE has consistently underestimated utilities LPI growth, particularly in the later years of the relevant forecast period.

Chart 6.7: Access Economics LPI Forecasts



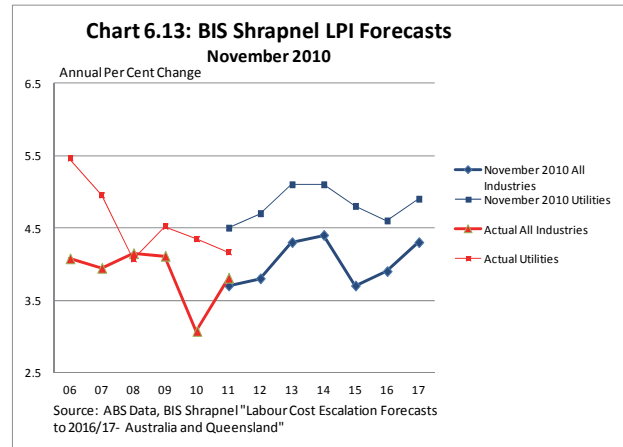
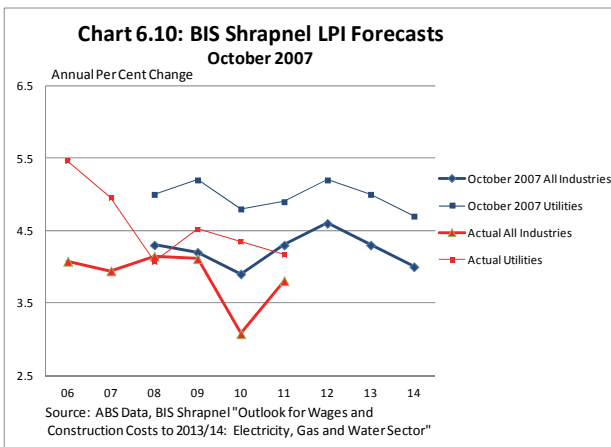
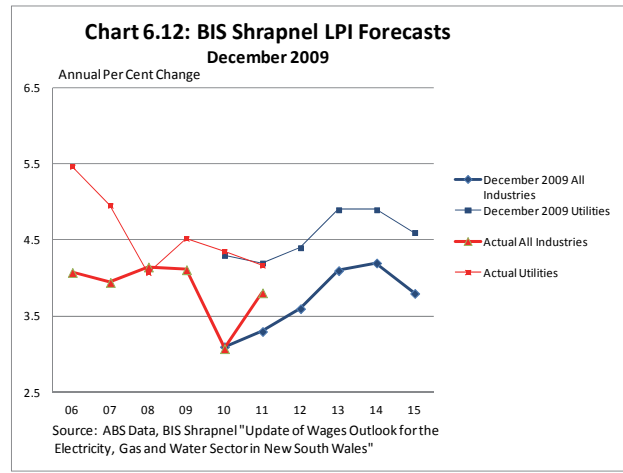
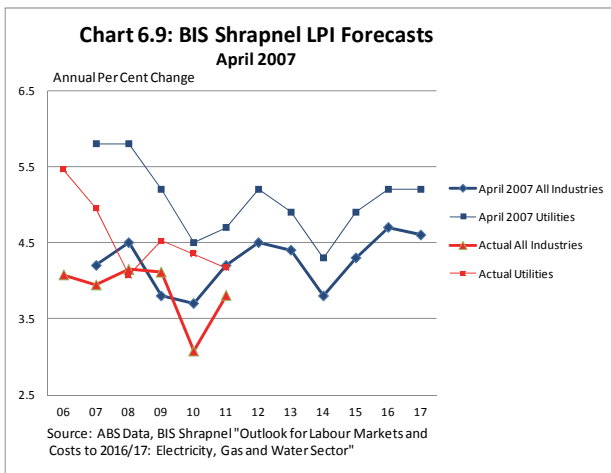
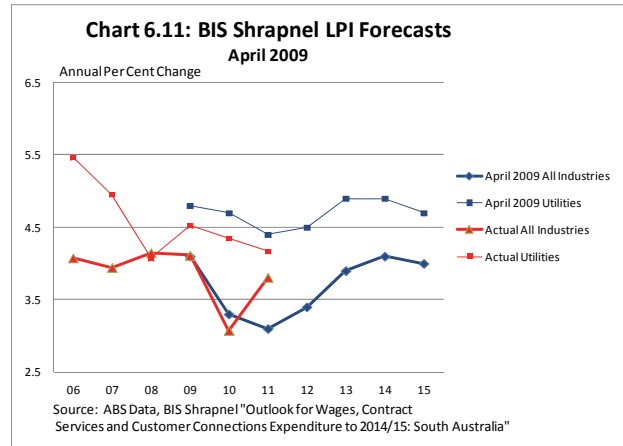
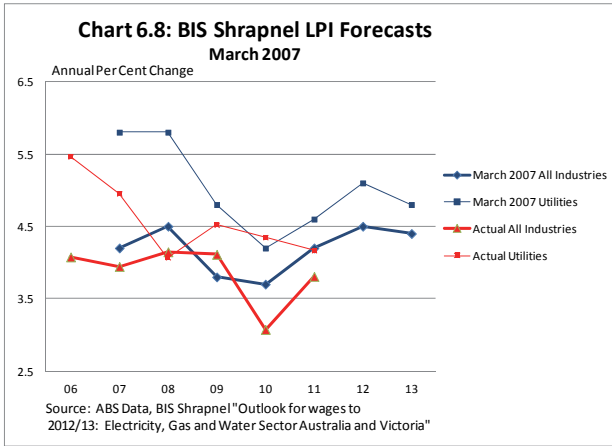


Table 6.1 Comparison of DAE and BIS Shrapnel Forecasts

Labour Price Index for Australia			2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Annual Average Difference
March 2007	BIS Forecasts	Utilities		5.8	5.8	5.2	4.5	4.7	
		All Industries		4.2	4.5	3.8	3.7	4.2	
	Actual	Utilities		5.0	4.1	4.5	4.3	4.2	
		All Industries		3.9	4.1	4.1	3.1	3.8	
	Difference	Utilities		0.8	1.7	0.7	0.2	0.5	0.8
		All Industries		0.3	0.4	-0.3	0.6	0.4	0.3
October 2007	BIS Forecasts	Utilities			5.0	5.2	4.8	4.9	
		All Industries			4.3	4.2	3.9	4.3	
	Actual	Utilities			4.1	4.5	4.3	4.2	
		All Industries			4.1	4.1	3.1	3.8	
	Difference	Utilities			0.9	0.7	0.5	0.7	0.7
		All Industries			0.2	0.1	0.8	0.5	0.4
April 2009	BIS Forecasts	Utilities				4.8	4.7	4.4	
		All Industries				4.1	3.3	3.1	
	Actual	Utilities				4.5	4.3	4.2	
		All Industries				4.1	3.1	3.8	
	Difference	Utilities				0.3	0.4	0.2	0.3
		All Industries				0.0	0.2	-0.7	-0.2
December 2009	BIS Forecasts	Utilities					4.3	4.2	
		All Industries					3.1	3.3	
	Actual	Utilities					4.3	4.2	
		All Industries					3.1	3.8	
	Difference	Utilities					0.0	0.0	0.0
		All Industries					0.0	-0.5	-0.2
November 2006	Access Economics Forecasts	Utilities		5.4	5.9	5.2	3.4	3.4	
		All Industries		4.3	4.6	4.2	4.2	4.2	
	Actual	Utilities		5.0	4.1	4.5	4.3	4.2	
		All Industries		3.9	4.1	4.1	3.1	3.8	
	Difference	Utilities		0.4	1.8	0.7	-0.9	-0.8	0.2
		All Industries		0.4	0.5	0.1	1.1	0.4	0.5
April 2007	Access Economics Forecasts	Utilities		5.6	5.7	5.1	3.6	3.9	
		All Industries		4.1	4.6	4.4	4.0	4.3	
	Actual	Utilities		5.0	4.1	4.5	4.3	4.2	
		All Industries		3.9	4.1	4.1	3.1	3.8	
	Difference	Utilities		0.6	1.6	0.6	-0.7	-0.3	0.4
		All Industries		0.2	0.5	0.3	0.9	0.5	0.5
September 2009	Access Economics Forecasts	Utilities				4.5	3.5	3.4	
		All Industries				4.1	3.5	3.9	
	Actual	Utilities				4.5	4.3	4.2	
		All Industries				4.1	3.1	3.8	
	Difference	Utilities				0.0	-0.8	-0.8	-0.5
		All Industries				0.0	0.4	0.1	0.2
March 2010	Access Economics Forecasts	Utilities					4.0	3.9	
		All Industries					3.2	3.7	
	Actual	Utilities					4.3	4.2	
		All Industries					3.1	3.8	
	Difference	Utilities					-0.3	-0.3	-0.3
		All Industries					0.1	-0.1	0.0
September 2010	Access Economics Forecasts	Utilities					4.7	3.7	
		All Industries					3.1	3.4	
	Actual	Utilities					4.3	4.2	
		All Industries					3.1	3.8	
	Difference	Utilities					0.4	-0.5	-0.1
		All Industries					0.0	-0.4	-0.2

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 Labour Price Index (LPI) — a CPI-style measure of changes in wage and salary costs based on a weighted combination of a surveyed 'basket' of jobs. The LPI used in this report excludes bonuses. The LPI 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 LPI 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 labour 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 labour 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 LPI 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 LPI 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 labour 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 labour 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, labour 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 LPI) 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 (i.e. dollar value) increases, rather than as a proportional increase. At the all industries level, 15.2% of all employees (data excludes those in agriculture, forestry and fishing) have their pay rises determined by this method. In the electricity, gas and water sector, only 0.9% of workers have their pay set by this method.
- Collective agreements negotiated under enterprise bargaining account for 43.4% of all employees, but 84.4% of electricity, gas and water employees' wage increases are determined by this method.
- The remaining 41.4% 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 and water is 14.7%.

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 DEWR (Department of Employment and Workforce Relations) are used for wage increases under collective agreements. Award increases are calculated by applying the flat \$ increase provided in each annual National pay decision to the relevant AWOTE \$ value to give the percentage increase.

For example, the \$17 per week increase granted in mid-2005 was equal to a 1.8 per cent contribution to the all industries AWOTE in 2005–06. Using the proportions of the workforce under each pay setting method (and with total AWOTE measured at 4.6 per cent) then the individual arrangements is calculated (as a residual) at 6.5 per cent in 2005/06. The same methodology was used to calculate individual arrangements using the labour price index.

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 and water supply).

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

We believe that BIS Shrapnel's institution-based wage model for the EGW 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 EGW 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: ELECTRICITY, GAS AND WATER SUPPLY (EGW) VERSUS ELECTRICITY, GAS, WATER AND WASTE SERVICES (EGWWS)

Potential Impact of the Recent Change to ABS Industry Classification ie Adding Waste Services to EGW

The reclassification of the industry sectors by the ABS which has been underway for more than a year has seen 'waste services' added to the EGW sector. Wages data classified under the new ANZSIC 2006 industry classification first became available in November 2009 — providing August 2009 for AWOTE and September quarter 2009 for LPI. Up to the June quarter 2009, industry wages data was still classified under the previous ANZSIC 1993 industry classification. Industry employment data has been classified under the new ANZSIC 2006 code since February 2009, while output (Gross Value Added) was reclassified from the September quarter 2009 (released early December 2009). All historical data (for wages, GVA, etc) was also reclassified.

The inclusion of the waste services sub-sector has led to lower wage growth outcomes for the combined EGW and Waste Services sector. Hence, it is not an accurate indicator for the mostly higher skilled (and more highly demanded) occupations in the EGW sector. Using a comparison of the historical wages and employment data of EGW versus EGW and Waste Services at the national (Australian) level, annual growth in the combined EGWWS sector is 0.1% less on average than the EGW sector over the period from 1998/99 to 2008/09, and 0.6% less on average over the same period for AWOTE. The overall wages growth average has also been dragged down by the fact that employment growth in the lower paid waste services sub-sector has outstripped growth in the higher paid EGW sector over the eleven years to November 2008 — 4.8% p.a. for waste services compared to 3.8% p.a. for EGW.

The problem for Powerlink and indeed all the electricity and gas utilities dealing with the Australian Energy Regulator (AER), is that the inclusion of waste services understates the growth in labour costs, both historically and going forward. The AER is supposed to deliver a ruling on labour and other cost escalators pertinent to the electricity and gas utilities, hence should use the wages escalator for EGW services rather than the labour costs growth for the EGWWS industry.

Table B-1: EGW V. EGWWS

Year Ended	AWOTE					LPI					EMPLOYMENT				
	EGW		EGWWS		Difference	EGW		EGWWS		Difference	EGW		EGWWS		Difference
June	\$/week	%CH	\$/week	%CH	%CH	2004=100	%CH	2009=100	%CH	%CH	'000	%CH	'000	%CH	%CH
1998	832	7.5	796	6.3	1.2	79		64			64.5	-2.9	78.4	-2.5	-0.5
1999	867	4.2	827	3.9	0.3	82	3.2	66	3.0	0.2	64.8	0.6	78.9	0.6	-0.1
2000	923	6.4	867	4.8	1.6	85	3.8	68	3.8	0.0	64.2	-0.9	79.5	0.8	-1.7
2001	982	6.4	918	6.0	0.5	88	3.9	71	3.8	0.2	65.4	1.9	80.5	1.2	0.7
2002	1 055	7.4	981	6.8	0.6	92	4.2	74	4.2	0.0	67.5	3.1	83.1	3.2	-0.1
2003	1 085	2.8	1 001	2.1	0.8	96	4.3	77	4.1	0.1	72.8	7.9	89.6	7.8	0.1
2004	1 156	6.5	1 057	5.5	1.0	100	4.3	80	4.0	0.3	75.3	3.4	91.5	2.1	1.3
2005	1 195	3.4	1 091	3.2	0.2	104	4.4	83	4.3	0.1	76.7	1.9	95.2	4.1	-2.3
2006	1 214	1.6	1 111	1.9	-0.2	110	5.5	88	5.3	0.2	87.4	14.0	106.0	11.2	2.7
2007	1 262	4.0	1 152	3.7	0.3	115	5.0	92	4.8	0.1	85.1	-2.6	105.7	-0.3	-2.3
2008	1 304	3.3	1 183	2.7	0.6	120	4.1	96	4.1	-0.1	89.9	5.6	113.1	7.0	-1.4
2009	1 389	6.5	1 255	6.1	0.3	126	4.5	100	4.4	0.1	na	na	134.8	19.2	na
Average Growth Rates															
1998-09		4.8		4.2	0.6		4.3		4.2	0.1		3.8		4.6	-0.3

Source: BIS Shrapnel, ABS data

APPENDIX C: TERMS OF REFERENCE

Powerlink is in the process of developing a Revised Revenue Proposal for the Australian Energy Regulator (AER) for the 2012/13 – 2016/17 regulatory period.

Powerlink requests BIS Shrapnel to review and revise the forecast labour cost escalation factors consistent with the methodology in the original report, adopting the latest available source data.

In addition, Powerlink requests BIS Shrapnel address and respond to concerns raised by the AER in their Powerlink transmission determination 2012-13 to 2016-17 - draft decision in respect of labour cost escalation forecasts. In particular, the AER preference for a single internal labour cost escalator, and the application of the labour productivity adjustment should be addressed.

It is fundamental that the AER can rely on the BIS Shrapnel reports. Please ensure disclaimers or statements of limitation do not preclude the use of the information by the AER ensuring the report can be relied upon by the AER or their representatives. The BIS Shrapnel Labour Cost Escalation report will be submitted to the AER and will be published on the AER website. Please advise Powerlink of confidential elements in the BIS Shrapnel revised report.

Powerlink requests that the following be included in the revised report:

- The actual labour cost escalations for the 2010/2011 year and forecast escalations for the period 2011/12 to 2016/17;
- A statement declaring any pre-existing relationship with Powerlink;
- CV / expert qualifications of author(s);
- References to material used in developing the report and also provide copies of reference material that is not readily available in the public domain; and
- A statement of the scope of work requested by Powerlink.

The revised report is to be structured as a self contained document, including information that directly supports the forecasts.

APPENDIX D: 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 E: CURRICULUM VITAE 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. Economist

Kishti joined BIS Shrapnel in 2007, where he works across both the Economics and Infrastructure and Mining units. Since joining the company, Kishti has worked on a number of projects, including contributing the analysis of inflation, wages, interest rates and the world economic outlook to BIS Shrapnel's annual *Long Term Forecasts* publication and analysis and forecasts to *Engineering Construction in Australia* and *Maintenance in Australia* reports.

In terms of private client projects, Kishti has undertaken analysis of inflation and wage trends at the state level for reports required in state wage cases, and provided a discussion of state economic trends. 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. Prior to joining BIS Shrapnel, Kishti was Senior Economist (Policy & Research) at the Reserve Bank of Fiji.

Felix Leung, B.Ec (Hons), M.IDEC Research Assistant

Felix joined BIS Shrapnel in 2011, having recently obtained his degree, and works across both the Economics and Infrastructure and Mining units. Within the Infrastructure and Mining unit, Felix worked on the gold, silver, lead and zinc chapters for the recently completed *Mining in Australia* report. Felix is also a contributor to the monthly *Economic Outlook* publication of the Economics unit.

Felix achieved an Honours degree in Economics at the University of New South Wales and a Masters degree from the Australian National University.

APPENDIX F: LIST OF ABS & OTHER DATA SOURCES

The ABS data and other information sources used in the preparation of this document and the forecasts contained within are listed below. Separate files containing this information will be attached.

ABS Data

Australian Industry 81550_2009-10.pdf
AWE 63020_Aug 2011.pdf
BA 87520_Jun 2011.pdf
CAPEX 56250_June 2011.pdf
CPI 64010_Sep 2011.pdf
ECA 87620_June 2011.pdf
EEAH 63060_May 2010.pdf
Labour Force 62020_aug 2011.pdf
LPI 63450_Sep 2011.pdf
National Accounts 52060_June 2011.pdf
State National Accounts 52200_2010-11.pdf

AER Documents

ActewAGL's Regulatory Proposal.pdf
Envestra Draft Decision –Qld.pdf
Ergon Energy's Regulatory Proposal 2010-15.pdf
Powerlink Revenue Proposal.pdf
SP AusNet Revised Proposal (12 October).pdf

BIS Shrapnel Documents – Confidential

BIA – Report – 2011.pdf
ECA – Report – 2011.pdf
EO Bulletin October 2011.pdf
EO Buletin November 2011.pdf
LTF Report – 2011.pdf

Other Documents

Clarius Skills Index December 2010 Quarter.pdf
DEEWR Skills Shortage List_Australia June 2011.pdf
DEEWR Skills Shortage List_Queensland June 2011.pdf
DEEWR TrendsD10.pdf
DEEWR TrendsM11.pdf
RBA November 2011 Statement on Monetary Policy.pdf