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(Confidential) BIS Shrapnel – Maintenance Cost Escalation Forecasts to 2017 – Draft Report, September 2012

MAINTENANCE COST ESCALATION FORECASTS TO 2017

Prepared by BIS Shrapnel for QR National

Draft Report September 2012

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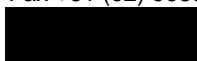or methodology used in this report as well as any suggestions
for future improvement.*

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BIS Shrapnel contact:

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

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SUMMARY

- BIS Shrapnel was engaged by QR National to provide an expert opinion regarding the outlook for its key maintenance cost drivers over the five year period from 2012/13 to 2016/17. Table 1 presents a summary of the annual escalation for the relevant escalators in both level and percentage change form. The key points and a summary rationale of our forecasts of QR National's five key input cost drivers follow.

Labour Cost Escalation

- The significant majority of QR National's workforce are based in central Queensland — a region which is experiencing high levels of mining investment. Meanwhile, reconstruction-related activity (reported widely to cost well over $5 billion) following the floods and Cyclone Yasi last year is driving very strong growth in construction activity now. In addition, a high level of construction activity is expected in Queensland over the next four years and this will place upward pressure on construction sector wages growth.

- As QR National has to compete with the mining and construction sectors for similarly skilled labour, we believe wages growth in Queensland mining and construction sectors will have a significant influence on QR National's wage growth over the next four years. As a result, we recommend that QR National use an average of wages growth in the mining and construction sectors in Queensland as its preferred labour escalator. We believe this average escalator will better reflect QR National's actual labour costs than the Queensland 'All Industries' average wages growth.

- With respect to the choice of escalator (or index measure), 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 Average Weekly Ordinary Time Earnings (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 also includes bonuses, incentives, penalty rates and other allowances, which are also part of an enterprises total wage bill.

- In summary, if a wage series is intended to be an 'actual' or real labour cost escalator then the AWOTE series should be used. While BIS Shrapnel considers that AWOTE is a superior measure for labour costs in the circumstances, LPI forecasts are also provided for QR National's labour cost escalator.

- Construction sector wages growth in Queensland tracks – or lags by around one or two years – the growth in total construction activity.

- Construction-related activity (reported to cost well over $5 billion) following the floods and Cyclone Yasi last year will continue to drive very strong growth in construction activity in 2012/13. In addition, 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 2012/13, before growth eases over the following three years.

- 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 7.1 per cent in 2014/15, before easing.

- The mining investment boom over the second half of the 2000s resulted in rapid employment growth in the mining sector, strong demand for labour — particularly skilled labour — and an escalation in wages growth. Rapidly rising commodity prices and high profits also fuelled the escalation in mining wages. Over the 2007/08 to 2011/12 period, mining sector wages growth in AWOTE terms averaged 7.1 per cent per annum and 4.9 per cent per annum in LPI terms, at the Australian level.

- Beyond 2011/12, both AWOTE and LPI growth is forecast to grow solidly over the next three years before easing — but still exhibiting relatively high growth (compared to 'all industries' Australian average) in the second half of this decade.

- Driving the high wages growth this decade will be strong demand for labour, and particularly skilled labour, as a result of the mining investment boom projected to occur over the forecast period. Projections for continued strong economic growth in China and India — with their long term programs of industrialisation and urbanisation, which are metals and energy intensive — plus ongoing growth throughout other parts of Asia and, by mid-decade, a sustained recovery in the US and European economies, will all combine to underpin healthy demand for minerals and energy. Commodity prices are still at exceptionally high levels and further price rises are forecast over the next two-to-three years. Prices over the next four to five years are expected to be well above historical averages, both in real and nominal terms.

- The strong outlook has locked-in another round of mining related projects in Queensland over the next five years particularly in coal, base metals, gold and more recently in oil and gas. The capital intensive nature of mining means not only that labour costs are usually a low proportion of total costs, but that the mining sector has a requirement for more highly skilled labour. Relatively high prices also mean that the mining sector can afford to offer higher wages.

- Overall, Queensland mining sector wages growth in LPI terms are forecast to average 5.4 per cent per annum over the five years from 2012/13 to 2016/17, 0.1 percentage points higher than the Australian equivalent.

Maintenance Consumables Price Forecasts

- Basic metal product prices are expected to continue trending downwards this year. However, from 2013/14 to 2015/16, strong growth is expected in line with rising coal, iron ore and metal prices. Fabricated metal product prices will fall back in 2013/14 and 2014/15, but 2016/17 is expected to see growth of 6.4 per cent.

- Transport equipment and parts prices are expected to strengthen over the next few years, reflecting the weakening Australian dollar. The resultant higher import prices, as well as a rise in demand as the market strengthens, will see prices increase by an average of 0.7 per cent per annum over the five years to 2016/17.

- Heavy plant and equipment hire rates rose by 1.3 per cent in 2011/12, reflecting strong engineering and total construction activity, and we expect small increases over the next two years. In 2014/15 and 2015/16, hire rates will decline in line with shrinking construction activity as investment in the current round of mining projects peters out. A small increase is expected in 2016/17.

Accommodation Price forecasts for Fitzroy and Mackay

- Accommodation costs in the Fitzroy and Mackay regions are forecast to rise over the next two years, before falling from 2014/15. This reflects expected declines in the occupancy rate due to a fall in mining investment in these regions.

Fuel Price Forecasts for Selected Queensland Regions

- Historically, automotive fuel prices tend to track changes in benchmark oil prices (adjusted for exchange rate differentials) and adjusted for changes in refining and transport margins. Our fuel price model therefore is predominantly driven by world oil prices.

- The benchmark oil price, West Texas Intermediate (WTI), continued to exhibit considerable volatility over the past 12 months, as global economic uncertainty impacted on prices. In particular, a plethora of bad news regarding economic growth and industrial production emanating from China and other overseas economies saw the spot WTI oil price resume its downward trajectory, following a brief rally in the March 2012 quarter, as markets reacted to weaker demand and continued news of slower global economic growth over the past year.

- However, we believe that overall world GDP growth and the WTI oil price have now passed their respective weakest points in this current post-GFC cycle. The WTI oil price has already began to show tentative signs of a stabilisation in price, which is now around US$96/barrel, up from the recent lows of below US$80/barrel in June 2012 quarter. And with our prediction of a rebound in growth from the Chinese economy beginning in the December 2012 quarter, as pro-growth policies (including monetary easing and fiscal stimulus) finally kick in, China will begin to accelerate. Inevitably, Chinese demand will provide the impetus for a pick-up in world growth, boosting other Asian economies, the US (which appears to only be suffering a modest slowdown) and Europe – where signs of stabilisation are appearing after 2 to 3 quarters of negative growth have dominated news over the past six months.

- Stronger world GDP growth will in turn lead to a pick-up in oil demand, which combined with some positive growth news, and speculative funds flowing into oil markets, will fuel further increases in the WTI price from the corresponding December 2012 quarter. As global economic growth becomes entrenched WTI oil prices are predicted to rise steadily over the next few years, rising over US$100/barrel in the first half of 2013 and push towards a cyclical peak of US $115/barrel around mid 2015.

- Given our oil price assumptions described above we expect that year average pump prices will strengthen, but at a decreasing rate, over most of our forecast horizon before eventually easing in 2016/17. Notwithstanding higher transport costs for Gladstone and Emerald, we note that historically there has been little divergence in fuel prices between different regions of Queensland. On the other hand, fuel costs in Brisbane are marginally lower than regional Queensland due to higher levels of competition between retail suppliers in Brisbane.

Table 1: Summary – Forecasts of Key Inputs to Maintenance Cost Index

	Jun-08	Jun-09	Jun-10	Jun-11	Actuals Jun-12	Forecasts Jun-13	Jun-14	Jun-15	Jun-16	Jun-17
Fuel Prices										
AAA Pricing Unleaded Petrol (retail, cents per litre)										
Emerald	134.7	126.3	128.0	136.2	148.1	154.7	159.8	165.0	167.1	165.0
Gladstone	133.2	126.1	129.0	134.7	145.9	152.6	158.7	164.0	166.0	163.7
Mackay	131.3	122.5	125.6	133.0	145.7	152.4	157.1	162.0	164.6	162.2
AIP TGP for Brisbane (wholesale, cents per litre)										
Unleaded Petrol	131.2	122.0	116.9	123.9	134.7	141.3	145.5	150.6	153.2	151.2
Diesel	140.9	131.2	116.0	127.2	137.7	150.4	158.5	163.1	165.7	163.7
Accommodation										
Average room rate for Fitzroy ($)	129.3	123.6	124.2	126.6	128.5	132.1	134.2	130.7	124.1	120.1
Average room rate for Mackay ($)	158.9	151.9	152.6	155.7	158.0	162.4	164.9	160.6	152.5	147.7
Consumables										
Basic Metal Product Price Index	172.9	165.5	156.8	163.6	161.9	156.8	168.2	186.3	195.6	197.1
Fabricated Metal Product Price Index	151.5	169.9	163.8	165.6	172.5	173.9	171.4	169.0	169.5	180.3
Transport Equipment and Parts Price Index	128.0	129.5	130.7	129.7	130.7	131.5	130.4	131.5	132.8	133.7
Hire of Heavy Plant and Equipment Price Index	97.1	100.0	100.0	100.1	101.4	101.8	102.2	102.0	101.5	101.7
Non-Building Construction Cost Index	101.4	103.9	100.0	101.9	102.4	105.1	109.7	114.4	118.4	122.1
Labour										
Labour Price Index (LPI)										
Construction - Queensland	94.6	100.0	102.9	106.6	112.4	118.3	125.3	131.4	137.4	143.1
Mining - Queensland	94.7	100.0	103.8	107.9	111.9	117.1	124.1	131.3	138.1	145.5
Mining and Construction average - Queensland	94.7	100.0	103.3	107.3	112.1	117.7	124.7	131.3	137.8	144.3
Average Weekly Eranings (AWOTE): $										
Construction - Queensland	1060.1	1137.2	1236.2	1365.0	1418.8	1495.8	1596.9	1710.0	1800.9	1907.7
Mining - Queensland	1713.8	1907.3	2112.0	2190.9	2314.3	2458.5	2639.7	2841.1	3044.3	3222.2
Mining and Construction average - Queensland	1387.0	1522.2	1674.1	1777.9	1866.6	1977.1	2118.3	2275.6	2422.6	2564.9

Percent Change - Year Ended June

					Actuals	Forecasts				
Fuel Prices										
AAA Pricing Unleaded Petrol (retail, cents per litre)										
Emerald	10.3	-6.3	1.3	6.4	8.7	4.4	3.3	3.2	1.3	-1.2
Gladstone	10.4	-5.4	2.3	4.4	8.3	4.6	4.0	3.3	1.2	-1.3
Mackay	10.0	-6.8	2.5	5.9	9.6	4.6	3.1	3.1	1.6	-1.4
AIP TGP for Brisbane (wholesale, cents per litre)										
Unleaded Petrol	10.3	-7.0	-4.2	6.0	8.8	4.8	3.0	3.5	1.7	-1.2
Diesel	15.7	-6.9	-11.6	9.7	8.3	9.2	5.4	2.9	1.6	-1.2
Accomodation										
Average room rate for Fitzroy ($)	-2.1	-4.4	0.5	1.9	1.5	2.8	1.6	-2.6	-5.1	-3.2
Average room rate for Mackay ($)	-2.1	-4.4	0.5	2.0	1.5	2.8	1.6	-2.6	-5.1	-3.2
Consumables										
Basic Metal Product Price Index	-8.1	-4.3	-5.3	4.3	-1.0	-3.2	7.3	10.8	5.0	0.7
Fabricated Metal Product Price Index	4.7	12.1	-3.6	1.1	4.1	0.8	-1.4	-1.4	0.3	6.4
Transport Equipment and Parts Price Index	-1.0	1.2	0.9	-0.7	0.8	0.6	-0.8	0.8	1.0	0.7
Hire of Heavy Plant and Equipment Price Index		2.9	0.0	0.2	1.3	0.5	0.4	-0.2	-0.6	0.2
Non-Building Construction Cost Index	6.7	2.4	-3.8	1.9	0.5	2.6	4.4	4.3	3.5	3.1
Labour										
Labour Price Index (LPI)										
Construction - Queensland	4.5	5.7	2.9	3.6	5.4	5.3	5.9	4.9	4.6	4.1
Mining - Queensland	5.8	5.7	3.8	3.9	3.7	4.6	6.0	5.8	5.2	5.3
Mining and Construction average - Queensland	5.2	5.7	3.3	3.8	4.6	5.0	5.9	5.3	4.9	4.7
Average Weekly Eranings (AWOTE): $										
Construction - Queensland	8.7	7.3	8.7	10.4	4.0	5.4	6.8	7.1	5.3	5.9
Mining - Queensland	5.7	11.3	10.7	3.7	5.6	6.2	7.4	7.6	7.2	5.8
Mining and Construction average - Queensland	7.2	9.8	10.0	6.2	5.0	5.9	7.1	7.4	6.5	5.9

Source, BIS Shrapnel, ABS

1.   INTRODUCTION, OUTLINE OF REPORT & DATA SOURCES

In August 2012, BIS Shrapnel was engaged by QR National to provide an expert opinion regarding the outlook for its key maintenance cost drivers over a five year period from 2012/13 to 2016/17. Specifically, QR National requested independent and thoughtfully researched forecasts for the five key cost drivers of its maintenance costs including fuel, accommodation, consumables, labour and other expenses over the 2012/13 to 2016/17 period. Forecasts of these separate input price indices were used by QR National to construct a weighted average MCI (maintenance cost index) for central Queensland. This, in turn, was included in QR National's 2012 Draft Access Undertaking to the Queensland Competition Authority.

The Australian Bureau of Statistics (ABS) is the primary data source for the consumer price index, wages, employment, real gross value added and investment (including engineering construction) data, and for a range of other economic variables shown in table 2.1. The most recent wages data is June quarter 2012 and the latest industry employment data is May 2012. The June quarter, 2012 was the latest available data for real gross value added (at the Australian level only), investment and indeed most of the economic variables in table 2.1. The detailed engineering construction data (by state and by category) have data only up to March quarter 2012. 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). 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 C.

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: 2012 – 2027* report*, Engineering Construction: 2011/12 to 2025/26 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 the Australian and Queensland economies, including a brief commentary of the logic and key drivers, plus forecasts of key economic variables.

- **Section 3** provides an outlook for QR National's maintenance labour cost escalation which is based on forecasts of wages growth for the Mining and Construction sector for Queensland — the sectors that QR National competes with for similarly skilled labour.

- **Section 4** provides price forecasts of QR National's 'maintenance consumables' escalation, which is predominately related to producer prices of basic and fabricated metal products, transport equipment and other machinery as well as hire costs for heavy plant and equipment.

- **Section 5** provides accommodation price forecasts for Fitzroy and Mackay regions.

- **Section 6** provides fuel price forecasts for Brisbane as well as for Emerald, Gladstone and Mackay.

- **Appendices,** which includes a note on different wage measures, a description of BIS Shrapnel's wage model and CVs of key personnel.

2. OUTLOOK FOR THE AUSTRALIAN AND QUEENSLAND ECONOMIES

2.1 The Australian economy

There was always going to be some slowing in the June quarter following the very strong March quarter. The fact that the June quarter still produced growth of 0.6 per cent[1] highlights what a great first half of 2012 the Australian economy had, underpinned by strong mining-related investment and solid growth in household expenditure.

The quarterly growth was reasonably evenly distributed, with dwelling building (-1.7 per cent)[2] the only major expenditure component to detract from domestic demand growth. Household consumption expenditure increased by 0.6 per cent, supported by interest rate reductions and government transfers in the June quarter. Consistent with the retail trade survey, consumption of goods increased 1.4 per cent and household motor vehicle purchases increased by a massive 9.9 per cent. Offsetting this, the services-intensive 'Other' category contracted by 0.6 per cent, reflecting an unusual decline in health-related services, following a large increase in the March quarter. Total household consumption expenditure is still up by 4.0 per cent through-the-year.

Business investment also eked out a small (0.9 per cent, excluding net asset purchases) gain in the quarter, following the extremely large increase in mining-related engineering construction in the March quarter. The June quarter result reflected low, but positive, growth in all of the major business investment components. Public investment increased by an impressive 2.8 per cent as the government brought forward as much investment spending into the 2011/12 fiscal year as it could. Net exports added 0.3 per cent to June quarter GDP growth, with exports increasing by 2.5 per cent and imports increasing by 0.9 per cent.[3]

Overall, the Australian economy grew by 3.4 per cent in 2011/12.

2.1.1 Outlook for the Australian economy

While Australia did not have a financial crisis and avoided a recession, the GFC definitely had an impact on the Australian economy. In the three years immediately following the GFC, GDP growth averaged around 2 per cent, down from just above 3.5 per cent over the preceding seven years. The slower average growth rates reflected declining business and dwelling investment and markedly slower growth in household spending. Providing a significant offset, growth in public sector investment grew very strongly as the Commonwealth Government injected considerable stimulus.

As mentioned, GDP growth for 2011/12 increased to 3.4 per cent, reflecting increased growth in household spending and increased mining-related investment. However, dwelling investment and non-mining business investment has been flat to falling, and public sector investment has fallen sharply as the post-GFC stimulus wound down. Increased demand will gradually induce the next round of dwelling and non-mining business investment, with these industries expected to start advancing in six to twelve months time. Exports will also add to growth over the next few years, driven mainly by increased mining-related exports as the current round of investment projects enter the production phase.

Increased economic activity over 2013 to 2015 will progressively add to inflation pressures, prompting the Reserve Bank to start raising interest rates from late 2013, with interest rates peaking during 2015. This will cause growth in household consumption to slow during 2016, and cause dwelling and business investment to decline.

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[1] ABS National Accounts 5206.0, June Quarter 2012.
[2] ABS National Accounts 5206.0, June Quarter 2012.
[3] ABS National Accounts 5206.0, June Quarter 2012.

Chart 2.1: 2012 Stylistic Cycle

Mining
Investment

Imports

Household
Consumption

Government
Spending

GDP

Exports

Non-mining
Business
Investment

Residential
Investment

Chart 2.2: 2017 Stylistic Cycle

Exports

Mining
Investment

Government
Spending

Household
Consumption

Imports

GDP

Non-mining
Business
Investment

Residential
Investment
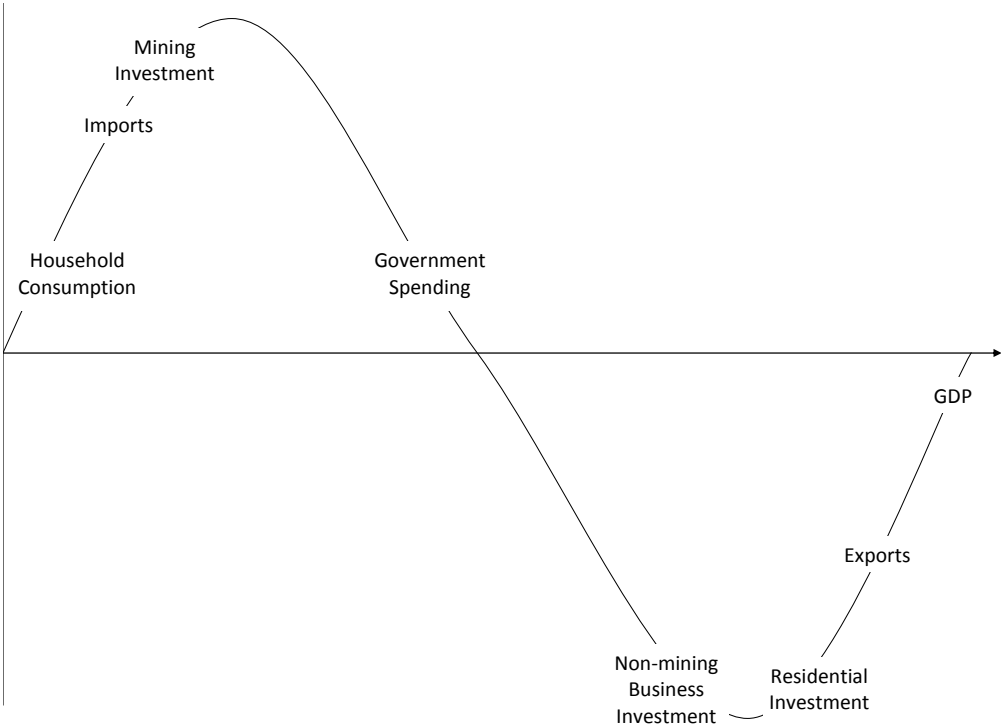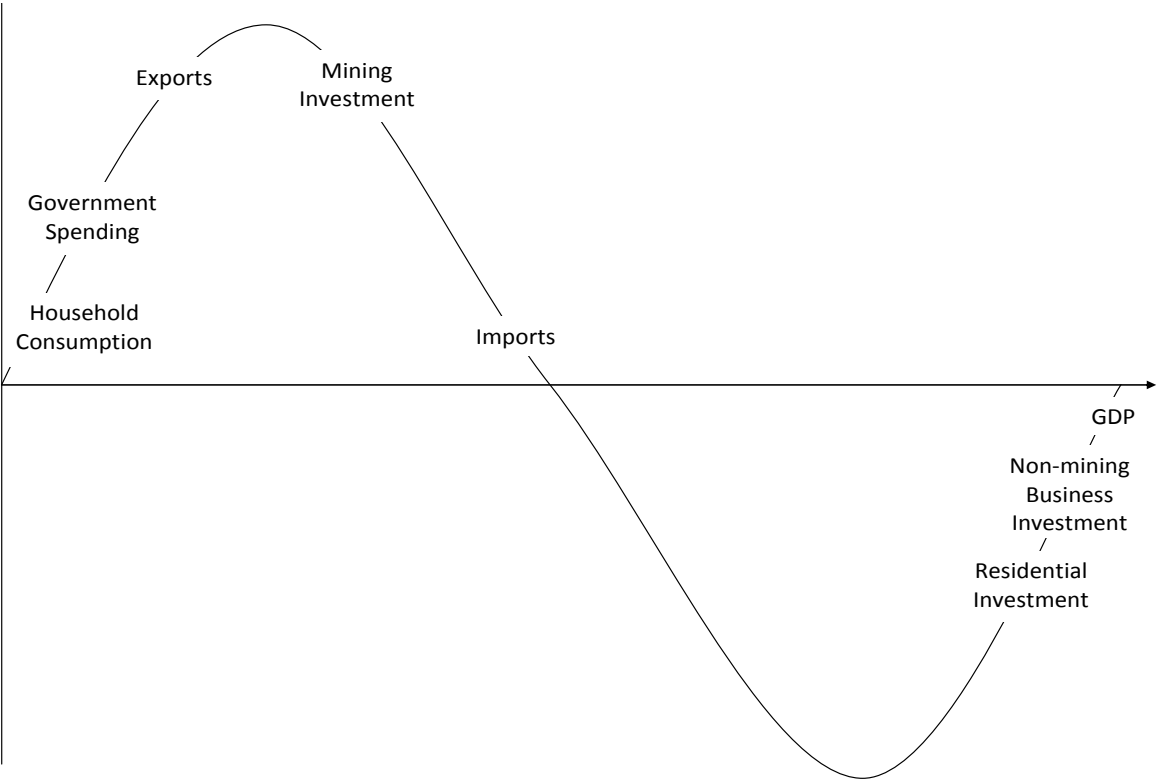
By 2017, mining-related investment will be starting to ease back slightly from extremely high levels, household spending will once again be ticking along at a good clip, export growth will be solid, underpinned by increased mining output and a recovery in non-mining exports. Dwelling, non-mining business investment and Government expenditure will all be recovering after an extended period of underinvestment.

Despite all of the components of expenditure GDP going through cycles over the next five years, aggregate GDP growth is expected to be remarkably stable, not deviating far from its forecast annual average of 3.3 per cent. This reflects that the cycles in the various expenditure components are not expected to be synchronised, but will largely offset each other. Furthermore, imports cycling in line with domestic demand will play an important role in dampening the cycles in GDP.

Household consumption expenditure to grow in line with incomes, supported by population growth

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

Over the past couple of years, households appear to have once again become comfortable with their financial position, such that growth in household consumption expenditure has increased to now be in line with growth in real household disposable income. As a result, the household saving rate has largely tracked sideways at a historically high level. However, a growing proportion of this expenditure on goods is flowing overseas due to the high Australian dollar, so domestic retailers' turnover remains relatively weak. This has meant that activity in Australia has not really benefited much from the increase in household consumption expenditure.

Further growth in household consumption expenditure is expected over the next two years, as increases in disposable incomes are matched by improving consumer confidence. We believe households have built up a considerable savings buffer after several years of high savings ratios, and believe this has created a degree of pent up demand. Improved financial security will see expenditure continue to pick up, and will likely see the saving rate begin a slow retreat from its current high levels. The ongoing growth in household consumption expenditure is expected to translate into increased retail turnover and activity in Australia over the next few years. However, the current high level of the Australian dollar means that there will continue to be further leakage of household spending overseas, such that we expect growth in retail turnover to remain below growth in total household spending for the next few years.

The increased expenditure (and strength in the broader economy) will see the Reserve Bank begin to increase interest rates through 2014/15. This will dampen consumer spending once more, with growth reaching a trough of 2.3 per cent in 2016/17. However, the effect on employment is expected to be mild, and a strong recovery in spending will take place the following year. Overall, household consumption expenditure is forecast to average growth of 3.3 per cent per annum over the five years to 2016/17.

Over the longer term, population growth is expected to be the primary driver of household expenditure. As such, slowing population growth is expected to see household consumption

expenditure growth moderate slightly over the following decade, averaging 3.1 per cent per annum between 2017 and 2022 and slowing further to 2.9 per cent between 2022 and 2027. Although the economy is expected to remain healthy through this period, we do not expect a return to the debt-driven increases in consumption that occurred through the late 1990's and early 2000's.

Existing dwelling shortage and ongoing population growth will support residential investment … once the recovery gets underway

While household consumption expenditure growth has recovered post GFC, households have not been willing to undertake the large outlays required to purchase new houses. As a result, dwelling investment has largely tracked sideways for the past decade. A decade of flat dwelling investment at the same time that population growth has been strong has resulted in the emergence of a significant dwelling shortage. This is especially the case in New South Wales, and increasingly so in Western Australia. The shortage is so severe that we expect it to underpin dwelling investment throughout the next decade or so.

In the near term, dismal confidence, excessive caution by households, and difficult funding conditions for developers is leading to declines in dwelling investment from already low levels. However, we expect these negative factors to dissipate gradually, supported by interest rate reductions over the past year. Therefore, we expect dwelling investment to start recovering from the end of this year. We expect that recovery to continue until late 2015, when higher interest rates stifle activity. However, the dwelling shortage is so severe that we expect dwelling building to bounce back quickly, posting solid average growth throughout the rest of the forecast.

The performance of dwelling investment will be important for the performance of the overall economy, with increased dwelling building activity supporting many other industries. The risk is that the recovery is slower coming than we are forecasting. If this does occur, the recovery, when it does come, will likely be larger and longer.

Business investment will be strong over the next five years and be a key driver of growth

Total business has been strong over the past few years, driven by rapid growth in mining-related investment. At the same time, however, non-mining business investment has fallen.

With commodity prices still exceptionally high and set to recover over the next two-to-three years, we expect mining-related activity to remain strong throughout the forecast period. This is all but assured over the near term, with the current round of projects locked in for the next few years.

Following a brief rally early in 2012, commodity prices resumed their downward trajectories as markets reacted to weaker demand and continued news of slower global economic growth over the past year. However, we believe that overall world GDP growth and commodity prices have reached their weakest point in this current post-GFC cycle. Global economic growth and commodity prices are expected to pick up from the December quarter 2012 and then gradually rise over the next two-to-three years – of course there are marked differences between the different commodities with regard to the magnitude and timing of price rises. Despite our forecast of a price recovery, many of the commodities are not expected to reach the high points they reached in early-to-mid 2011 (let alone the record peaks of 2007/08).

Even with the recent falls, commodity prices are still exceptionally high, and would have to fall at least as much again to seriously threaten a fall in minerals-related investment within the next two years. With many of the projects locked in or already underway, resource-related investment is expected to continue growing over the next two years. Furthermore, we believe

that our forecast for commodity prices is sufficiently high to prevent a sudden and sharp drop in resource-related investment in the second half of this decade.

In terms of non-mining business investment, there are three key factors currently holding it back: lack of confidence, lack of demand, and tight funding conditions. Only when one or more of these factors starts to improve will we see a sustained recovery in non-mining business investment. Our forecast is that this will start to occur late this year, supporting a recovery in investment from next year onwards.

The underinvestment in non-mining industries has persisted for so long that capacity pressures will be reached soon after demand picks up. We are already seeing this in some markets. For example, leasing rates in some commercial areas are starting to pick up. These emerging capacity constraints will drive the recovery in non-mining business investment.

We expect higher interest rates to lead to a decline in business investment in 2016, but then expect business investment growth to recover quickly thereafter.

The risk is that non-mining business investment remains weak for longer than forecast over the next couple of years. However, as with dwelling investment, the longer the recovery is delayed, the larger the subsequent surge is likely to be.

Strong business investment will be critical for boosting labour productivity and securing medium-term economic growth. Investment in building and engineering construction – to the extent that the later is not imported – will also generate significant activity and jobs throughout the rest of the economy.

Commonwealth and state government focus on tightening budget deficits will constrain government expenditure

The Commonwealth Government plans to return their budget to balance in the current financial year, and then progressively reduce net debt as a share of GDP. Whether or not they achieve surplus this year or later, the fiscal contraction will subtract around 1 per cent from GDP growth – particularly impacting on domestically-focused industries that remain under pressure from low private sector demand.

The main reason for the Commonwealth Government's existing deficit is that revenue has fallen sharply as a share of GDP over the past few years, while expenditure has continued to increase. Revenue is expected to increase as a share of GDP over the next few years, reflecting economic recovery and the introduction of the Minerals Resource Rent Tax and the Carbon Tax. However, there are structural changes occurring in both company and the Goods and Services Taxes (GST) that mean Commonwealth Government revenue will not regain its pre-GFC share of the economy.

Across the board spending restraint will be required. One avenue that is being pursued is the scaling back of grants and subsidies to the State Governments. This reflects both lower growth in GST revenue (around a quarter of State Government revenue), and lower growth in other Commonwealth Government grants and subsidies (accounting for another quarter). This is occurring at a time that State Governments' own revenue sources (stamp duties, payroll taxes etc) are already low. The squeeze on State Government revenue is important because State and Local Governments account for around 80 per cent of General Government Investment and two-thirds of General Government spending on goods and services.

The ageing of the population will put added pressure on the fiscal position, particularly from around the turn of the next decade. First, growth in the labour force will gradually drop behind population growth, as a larger share of the population moves into retirement. This will slow growth in the economy and tax receipts unless there are offsetting increases in age-specific

participation rates, population growth, and/or productivity growth. Second, despite some policy changes to try and limit the growth, expenditure on healthcare services and superannuation will continue to outstrip growth in the population and the wider economy. Health expenditure growth will also be underpinned by the long-standing tendency for the demand for health services to increase with incomes and for costs to increase as new technologies are developed. While all levels of Government will try to limit spending growth by restricting wage growth, public sector wage growth will likely keep pace with private sector wage growth over the medium term.

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

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

Australia's close ties to Asia help buffer us against events in Europe

Europe continues to deteriorate. With high unemployment, sustained sovereign debt, competitive disparities, and contracting industry and output – is it possible the Euro Zone is through the worst of it? We expect the third quarter to show further deterioration in the Euro Zone. However, Euro Zone competitiveness, at the aggregate level, has improved since 2008. Meanwhile, the United States is not bad, but not good either. It is performing below potential. With unemployment remaining high and inflation under control, we expect to see additional monetary easing in coming weeks. Asia too is performing below potential, with a general slowing in the region as weak external demand from the United States and Europe takes its toll. In response, we expect China to do whatever it takes to maintain growth in the comfort zone.

For example, with a slew of recent poor data, Chinese government officials have decided to flex a little more muscle. Over the past few weeks, Chinese provinces have announced a total of $1.3 trillion (US dollars) worth of infrastructure spending plans over the next three years to step up growth. In addition, Chinese premier Wen Jiabao has committed to intensify efforts to boost growth during the second half of 2012. China's efforts to improve or stabilise growth may also extend beyond its borders. Efforts to continue purchases of European government debt being or encouraging more Chinese investment abroad are likely to gain traction.

We expect the third quarter of 2012 to be the trough for Asia, and China in particular, with further government stimulus and infrastructure spending to pick up domestic growth beginning in the fourth quarter onward. The increased activity in China will have flow on effects to the rest of Asia, picking up growth across the region in general. Overall, we expect China to finish 2012 with 7.8 per cent GDP.

The upshot is that, over the next eight years, the volumes of exports of goods and services are forecast to increase at an average rate of 6.2 per cent per annum and will be driven by increased capacity from investment coming on-stream, ongoing recovery in the global economy, and robust demand from China and India. Meanwhile, rural exports are likely operating at close to their peak, and will therefore cycle around current levels over the next five years. As world demand picks up over the forecast period, growth of non-commodity manufacturing and services exports (mainly tourism and education) will show moderate growth.

Strengthening consumer and business demand in Australia will see merchandise imports continue to grow, particularly as the Australian dollar remains strong. Overall, import growth is expected to average 5.3 per cent per annum over the next eight years.

Table 2.1: Australia – Key Economic Indicators, Financial Years

Year Ended June	2009	2010	2011	2012	Forecasts				
					2013	2014	2015	2016	2017
Selected Expenditure Categories									
Private Investment									
– Dwellings	-1.5	1.2	3.0	-3.3	0.5	8.4	5.5	-5.1	0.9
– New Non-Dwelling Construction (+)	12.5	-9.5	7.9	39.0	8.2	4.7	1.9	-3.7	0.5
– New Non-Dwelling Building (+)	-4.4	-14.3	-4.9	13.0	-4.2	8.3	9.8	-1.2	0.6
– New Engineering Construction (+)	30.3	-5.9	16.5	53.3	13.2	3.5	-0.9	-4.7	0.5
Total New Private Investment (+)	**1.2**	**-3.0**	**3.4**	**14.2**	**6.5**	**9.3**	**5.6**	**-3.0**	**2.2**
New Public Investment (+)	**2.8**	**29.0**	**5.8**	**-4.9**	**-6.4**	**-4.0**	**5.0**	**7.7**	**9.7**
Gross National Expenditure (GNE)	**0.3**	**2.4**	**3.8**	**5.5**	**3.2**	**4.6**	**3.9**	**1.2**	**3.4**
GDP	**1.4**	**2.3**	**1.9**	**3.4**	**3.1**	**3.8**	**3.6**	**2.9**	**3.7**
Inflation and Wages									
CPI (Yr Avg)- RBA/Treasury forecasts (*)	3.1	2.3	3.1	2.4	2.5	2.5	2.5	2.5	2.5
Labour Price Index (Yr Avg)	4.1	3.1	3.8	3.6	3.7	4.1	4.3	4.1	3.7
Average Weekly Earnings (Yr Avg)	5.5	5.6	4.2	4.3	4.0	4.7	5.3	5.1	4.7
Employment									
– Employment Growth (Yr Avg)	1.6	1.4	2.9	0.7	1.0	2.6	2.8	1.1	1.2
– Unemployment Rate (May) (%)	5.8	5.2	5.0	5.2	5.2	4.7	4.7	5.5	5.3
Labour Productivity Growth									
– Total	-0.3	1.0	-1.0	2.7	2.0	1.2	0.8	1.8	2.5
– Non-farm	-0.6	1.0	-1.0	2.7	2.1	1.2	1.0	1.8	2.6
Exchange Rates									
– US$ per A$ (Yr Avg)	0.75	0.88	0.99	1.03	0.99	1.00	1.01	0.95	0.88

Source: BIS Shrapnel, ABS

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

*Forecasts to December 2014 from RBA, followed by Treasury long-term forecasts

Main Risks to Growth Outlook

The current debate surrounds commodity prices. In particular, where they will go from here and what impact they will have on the Australian economy. Our forecast is that most commodity prices are probably around their trough, and are likely to bounce back later this year as short-term supply and demand imbalances work themselves out. This risk is that industrial production in China and other key markets does not recover to the extent that we are forecasting, resulting in lower commodity prices than we are forecasting. However, we do not see a lot of scope for commodity prices to hold down at current or even lower levels for any meaningful period of time.

Irrespective of what happens to prices over the next few months, we do not see it having a large impact on our forecast for growth in mining-related investment over the next two years – this work is largely locked in. Rather, it would be our forecast for the second half of this decade that would be most at risk.

Events in Europe are the other headline grabber at the moment. We expect to continue to hear a lot more bad news out of Europe over the next few years, and that is reflected in our forecasts. There is a non-trivial risk that the European situation deteriorates such that financial markets freeze up like they did in 2008, confidence falls and commodity prices decline. This would have a significant impact. However, as we saw in 2008, the most severe effects tend to be short lived, with the Australian dollar likely to fall in that situation, along with interest rates, and the Reserve Bank has a large toolkit to keep financial markets operating. Furthermore, the Federal Government has a lot of scope to loosen fiscal policy to support growth here in Australia if needed.

Less severe, there is the risk that our forecast recovery in dwelling building does not take hold late this year. If the leading indicators over the next few months do not support this recovery, then we expect the Reserve Bank to be more aggressive in lowering interest rates, which should further underpin the recovery in dwelling building – albeit a few months later than we are forecasting.

2.2   The Queensland Economy

2.2.1   Current state play for the Queensland Economy

The Queensland economy had largely stalled over the past three years, reflecting the combination of the high Australian dollar hitting the tourism and education industries, a gap between significant rounds of mining investment, and last year's floods. Although the non-mining trade-exposed industries continue to suffer under the weight of the high Australian dollar, the Queensland economy is now accelerating rapidly, driven by the next round of minerals-related investment and the ongoing recovery from last year's floods. Growth is expected to become more widespread, initially through dwelling investment, but increasingly through growth in industries servicing resources investment. As a result, we expect Queensland to significantly out-perform the other eastern seaboard states over the next few years

Coal and mineral exports from Queensland have recovered strongly since the floods at the beginning of last year. Agriculture exports have also recovered a lot of the flood-induced decline. Over the medium term, the significant amount of investment in the mining industry will keep a solid floor under export growth.

In terms of exports of services, the Queensland tourism and education industries remain under considerable pressure from the high Australian dollar, the hangover from the floods and, in the case of education, regulatory changes. Although both industries are expected to remain under pressure, it appears as though activity is now stabilising at a low level—and hence providing less of a drag on growth.

Engineering construction in Queensland has expanded rapidly over the past year, driven by minerals-related investment. Growth in total engineering construction work done is extimated to have increased by 45 per cent in 2011/12, with further growth expected over 2012/13. Machinery and equipment investment is also growing strongly. Although a lot of this spending will be imported—mainly from overseas, but also from other states. The expansion in engineering construction will continue to support activity and employment in Queensland.

Reconstruction-related activity (including replacement, refurbishment and repair costing well above $5 billion) has also boosted activity over the past year. After the reconstruction boost in FY2012—with road and rail works prominent—public investment is set to decline over the next two to three years.

Dwelling and non-dwelling building remain weak, providing some offset to the strength in engineering construction. Slower population growth, low confidence and the prolonged stagnation of the Queensland economy has seen dwelling investment weaken significantly over the past couple of years. Dwelling commencement data suggest this weakness will persist for a bit longer yet.

Retail spending in Queensland has rebounded over the past year, growing by 3.2 per cent in 2011/12, after only 0.7 per cent in 2010/11 and a 2.4 per cent decline in 2009/10. The sharp improvement in retail sales, particularly in the first half of this year, has occurred despite a marked slowdown in employment growth through 2011/12 and an unemployment rate averaging 5.6 per cent—well above the national average of 5.2 per cent.

2.2.2   Outlook for the Queensland Economy

We are forecasting significant increases in private investment taking over as the key driver of growth. 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. 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 and China), will continue to underpin resource investment decisions across the state for a number of years. As this mining investment increasingly comes onstream, the significant boost to exports will boost overall Queensland's gross state product (GSP) over the next decade.

In particular, coal (the dominant mining subsector) and coal related (rail and port) construction will continue to experience solid growth over our forecast horizon. Not to be out-done, oil and gas activity is tipped to surge, with work already underway on three 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 (including associated port and rail infrastructure) is predicted to almost treble over the next three years to a peak of over $24 billion (in 2009/10 prices) in 2013/14, before easing back to around $19 billion in 2015/16. Mining-related investment is subsequently expected to remain at very high levels over the folllowing five years.

Dwelling building is forecast to contribute strongly to growth over the next few years. Queensland population growth—while lower than over the previous decade—has still been running at a solid annual rate of 1.7% and appears to be accelerating. Meanwhile, dwelling construction levels in Queensland are still well below underlying demand following four years of declines in dwelling investment. As a result, a significant dwelling shortage has developed. We expect the increasing deficiency of housing stock to drive a solid rebound in dwelling nvestment from 2012/13 to 2014/15, before declining in 2015/16 following the imposition of high interest rates in 2014/15.

Non-dwelling building is currently contracting, as the Federal Government's Building the Education Revolution program winds down and private sector spending remains low. Commercial and industrial building will remain weak for another year, before a moderate recovery proceeds from calendar 2013 following the absorption of excess capacity across some sectors, improved availability of finance and as growth in the rest of the state economy encourages development. Already Brisbane office vacancy rates have declined following a sharp increase during the global financial crisis. Plant and equipment investment will initially be driven by the mining sector, but as dwelling building rebounds and confidence in the state's outlook returns, general business investment will also strengthen from 2012/13.

The surge in investment over the next three years will fuel strong growth in employment, initially in the mining and construction industries, but eventually through most of the state economy. The increased employment and associated wage inflation along with ongoing population growth will support household incomes, underpinning growth in household spending. This is in sharp contrast to 2009/10 and 2010/11 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. Attracting sufficient staff to meet the increased demand for labour will require higher wages and increased immigration to the state over the medium term. 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.

Overall, strong growth in state final demand (SFD) and gross state product (GSP) is forecast for 2012/13 and 2013/14. Investment and exports will be key drivers of growth—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. Growth in SFD and GSP is expected to slow in 2014/15 and 2015/16 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 2016/17 onwards.

Table 2.2: Queensland – Key Economic Indicators, Financial Years

	Annual Percentage Change									
Year Ended June	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
QLD										
Total Construction Activity[a]	10.6	7.9	-4.1	6.9	22.4	2.9	-0.5	-6.0	-5.9	4.8
State Final Demand	7.5	0.0	-0.5	3.1	9.5	4.4	5.4	3.3	0.8	4.0
Gross State Product (GSP)	**4.8**	**0.6**	**1.7**	**0.2**	**4.3**	**3.9**	**4.4**	**3.3**	**3.1**	**4.5**
Employment Growth	3.1	2.9	0.6	2.1	0.8	2.0	3.7	3.3	1.3	1.8
AUST										
Total Construction Activity[a]	6.5	9.0	3.2	5.8	14.8	4.2	3.4	-1.5	-5.3	2.0
Australian Domestic Demand	5.8	0.9	2.3	3.3	5.3	3.4	4.5	4.1	1.3	3.3
Gross Domestic Product (GDP)	**3.8**	**1.4**	**2.3**	**1.9**	**3.4**	**3.1**	**3.8**	**3.6**	**2.9**	**3.7**
Employment Growth	3.0	1.6	1.4	2.9	0.7	1.0	2.6	2.8	1.1	1.2

Source, BIS Shrapnel, ABS

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

3. MINING AND CONSTRUCTION SECTOR LABOUR COST ESCALATION – AUSTRALIA AND QUEENSLAND

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

- Those dependent on awards rely on pay increases given in the annual National Wage case by Fair Work Australia (formerly by the Fair Pay Commission and Australian Industrial Relations Commission). Most of the wage increases in the National wage case over the past decade have been given as flat, fixed amount (ie dollar value) increases, rather than as a proportional increase although the last two increases were given as a percentage increase.

  At the all industries level, 8.1 per cent of all full-time employees (data excludes those in agriculture, forestry and fishing) have their pay rises determined by this method (see table 3.4).

- Collective agreements negotiated under enterprise bargaining account for 41.9 per cent of all employees.

- The remaining 50 per cent of all industries employees have their pay set by individual arrangements, such as individual contracts or other salary arrangements (including incentive-based schemes).

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

	Year Average Percent Change												
								Forecast					Averages	
Year Ended June	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2002-12	2013-17
Proportion of Workforce by Pay setting Method (a)														
Awards Only	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%
Collective Agreements	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%	41.9%
Individual Arrangements	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100.0%	100.0%
AWOTE														
Awards Only	2.5	3.0	2.0	2.6	0.7	3.5	3.4	2.9	2.9	3.1	3.4	2.8	2.6	3.0
Collective Agreements	4.1	4.1	4.0	4.2	4.1	4.0	4.0	4.0	4.1	4.3	4.2	3.9	4.0	4.1
Individual Arrangements (b)	5.3	3.2	6.1	6.8	7.2	4.4	4.7	4.1	5.4	6.3	6.0	5.5	5.6	5.5
AWOTE (Persons)(c)	**4.6**	**3.6**	**4.9**	**5.5**	**5.6**	**4.2**	**4.3**	**4.0**	**4.7**	**5.3**	**5.1**	**4.7**	**4.7**	**4.8**
Labour Price Index														
Awards Only	2.5	3.0	2.0	2.6	0.7	3.5	3.4	2.9	2.9	3.1	3.4	2.8	2.6	3.0
Collective Agreements	4.1	4.1	4.0	4.2	4.1	4.0	4.0	4.0	4.1	4.3	4.2	3.9	4.0	4.1
Individual Arrangements (b)	4.3	4.0	4.7	4.2	2.6	3.7	3.4	3.6	4.3	4.5	4.1	3.6	3.7	4.0
Labour Price Index (Ord. Time)	**4.1**	**3.9**	**4.1**	**4.1**	**3.1**	**3.8**	**3.6**	**3.7**	**4.1**	**4.3**	**4.1**	**3.7**	**3.7**	**4.0**
Compositional Effects + Bonuses,etc	0.5	-0.3	0.8	1.3	2.5	0.4	0.7	0.3	0.6	1.0	1.0	1.1	1.0	0.8

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

(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: Labour Price Index Growth by Industry Sector and by State

Sector	% of Total Employment May '12	Labour Price Index[1] Annual Per Cent Change									Five-Year Average
		Mar'08	Mar'09	Mar'10	Mar'11	Jun'11	Sep'11	Dec'11	Mar'12	Jun'12	
Private		4.2	4.0	2.6	4.0	3.9	3.7	3.8	3.7	3.8	3.7
Public		4.0	4.4	4.3	3.6	3.7	3.3	3.2	3.1	3.3	3.9
Industry											
Mining	2.4	5.9	5.8	3.4	4.6	4.1	4.1	3.6	4.6	5.2	4.8
Manufacturing	8.3	4.3	3.5	2.2	3.9	4.1	3.6	3.8	3.8	3.8	3.5
Electricity, Gas, Water and Waste Services	1.3	4.7	4.8	4.6	3.7	3.7	3.6	3.2	3.4	3.7	4.1
Construction	8.6	4.5	4.9	2.9	4.4	4.0	3.9	4.0	4.2	4.1	4.1
Wholesale Trade	3.5	3.0	4.2	2.1	4.4	4.8	4.4	4.4	4.0	4.8	3.8
Retail Trade	10.5	4.8	3.8	2.4	3.3	3.3	3.0	3.0	3.0	2.7	3.4
Accommodation and Food Services	6.7	2.4	3.5	1.8	3.3	3.0	3.1	3.8	3.3	3.3	2.8
Transport, Postal and Warehousing	4.8	4.2	4.7	3.4	3.6	4.0	3.7	3.4	3.3	3.8	3.9
Information Media and Telecommunications	2.0	3.9	2.9	2.0	3.5	3.2	3.8	4.2	3.4	3.5	3.1
Finance and Insurance Services	3.7	4.1	4.0	2.9	4.3	4.5	3.8	4.0	4.1	4.1	3.7
Rental, Hiring and Real Estate services	1.9	4.2	3.6	2.2	3.0	3.6	3.6	4.0	4.2	3.5	3.4
Professional, Scientific and Technical Services	8.1	4.5	5.2	3.0	4.7	4.0	4.2	4.7	4.3	4.6	4.3
Administration and Support Services	3.4	4.8	4.0	1.9	3.8	3.7	3.2	3.0	3.3	3.6	3.5
Public Administration and Safety	6.1	4.1	4.4	3.9	3.6	3.4	2.8	2.9	3.0	3.6	3.8
Education	7.8	3.9	4.6	4.3	3.9	3.8	3.9	3.6	3.5	3.6	4.0
Health Care and Social Assistance	11.8	3.4	4.1	3.7	3.3	3.6	3.2	3.0	3.1	2.6	3.5
Arts and Recreation Services	1.9	3.3	3.8	3.0	3.1	3.4	3.3	4.2	3.7	3.5	3.4
Other Services	3.9	3.8	3.3	2.5	3.0	3.6	4.6	4.4	4.0	3.8	3.2
State/Territory											
New South Wales	31.4	3.8	3.8	3.2	3.8	3.7	3.6	3.8	3.5	3.6	3.6
Victoria	25.2	3.9	3.9	2.7	3.9	4.1	3.5	3.5	3.4	3.5	3.6
Queensland	20.3	4.1	4.2	3.2	3.9	3.9	3.8	3.6	3.6	3.8	3.8
South Australia	7.1	4.9	3.9	2.5	3.6	3.3	3.4	3.3	3.4	3.4	3.6
Western Australia	11.2	5.9	5.3	3.0	4.1	3.8	4.0	4.0	4.5	4.8	4.4
Tasmania	2.0	3.5	4.6	3.6	3.5	3.5	3.9	3.6	3.2	3.2	3.6
Northern Territory	1.1	3.7	5.1	3.2	4.1	3.9	3.9	4.3	3.6	3.6	3.8
Australian Capital Territory (ACT)	1.8	4.1	4.0	3.4	3.7	3.5	3.0	3.0	3.3	3.9	3.7
Total All[2]	100	4.1	4.2	2.9	3.9	3.8	3.6	3.7	3.6	3.7	3.7

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

Table 3.3: Australia
AWOTE Growth by Industry Sector

Industry Sector	% of Total Employment May '12	$ / Week May '12	Average Weekly Earnings[1] Annual Per Cent Change								Five-Year Average
			Feb '09	Feb'10	Feb'11	May'11	Aug'11	Nov'11	Feb'12	May'12	
Mining	2.4	2 272	7.1	7.8	5.9	5.2	4.5	5.2	8.0	7.1	6.9
Manufacturing	8.3	1 175	4.0	1.4	3.2	4.1	2.8	4.2	1.9	0.4	2.9
Electricity, gas, water and waste services	1.3	1 509	7.4	8.2	9.5	7.2	3.8	3.2	1.7	1.1	5.4
Construction	8.6	1 362	9.5	8.7	5.6	3.8	5.4	5.3	1.3	2.2	5.7
Wholesale trade	3.5	1 383	6.5	3.8	0.9	9.3	11.9	11.7	12.7	8.9	5.5
Retail trade	10.5	969	1.6	5.7	0.7	-1.2	3.1	3.6	2.9	3.2	3.1
Accommodation and food services	6.7	956	3.2	3.4	3.5	3.3	5.0	3.5	3.7	2.8	2.8
Transport, postal and warehousing	4.8	1 364	3.6	7.8	7.3	6.6	6.1	4.9	7.3	9.7	5.8
Information media and telecommunications	2.0	1 586	4.7	5.6	4.2	4.5	4.9	2.2	2.3	2.5	4.4
Finance and insurance	3.7	1 592	2.5	6.6	5.3	2.9	2.3	-0.1	2.4	3.5	4.0
Rental hiring and real estate services	1.9	1 232	5.6	1.2	-0.1	-1.9	-0.1	0.9	-1.1	1.9	3.1
Professional, scientific and technical services	8.1	1 623	5.9	6.1	2.9	3.0	2.8	2.8	7.5	4.2	5.2
Administration and support services	3.4	1 182	5.6	7.9	-0.9	-3.5	-2.8	-4.8	-1.1	1.3	3.6
Public administration and defence	6.1	1 426	5.6	7.2	4.6	3.9	2.5	2.4	3.6	4.1	5.0
Education and training	7.8	1 451	6.6	5.5	4.2	4.4	4.3	4.2	5.2	4.6	4.4
Health and social assistance	11.8	1 240	5.0	5.8	2.2	5.8	6.9	4.6	1.1	-1.2	3.4
Arts and recreational services	1.9	1 171	6.6	2.7	5.7	5.9	5.5	5.0	3.8	0.0	4.4
Other services	3.9	1 081	6.5	0.5	6.4	1.3	1.9	1.1	1.7	6.2	4.3
Total All Industries[2]	100%	1 349	5.6	5.8	3.8	4.4	5.3	4.3	4.4	3.4	4.6

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

Table 3.4: Methods of Setting Pay, Industry, May 2010
Proportion of Full-Time Employees (%)

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

Source: ABS

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

- Fair Work Australia (the body responsible for setting minimum wages in Australia) is responsible for establishing and maintaining a safety net of fair minimum wages for employees' dependant on Awards. This requires maintenance of employees' cost of living. Hence, in setting minimum wages, Fair Work Australia takes into account the performance and competitiveness of the national economy, including productivity, business competitiveness and viability, inflation and employment growth. Accordingly, increases in the Federal Minimum Wage (on which a range of mostly lower paid awards are also based) granted by the Fair Work Australia each year are usually set in relation to recent increases in the CPI and with regard to the Fair Work Australia's view of both current and short-term future economic conditions. Fair Work Australia granted a 2.9 per cent ($17.10) increase in minimum wages, effective July 2012. The $17.10 per week increase lifted the Federal Minimum Wage to $606.40 per week.

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

- Increases in individual agreements are primarily influenced by the strength of the labour market (especially the demand-supply balance of skilled labour), inflationary expectations, the recent profitability of relevant enterprises, current business conditions and the short-term economic outlook.
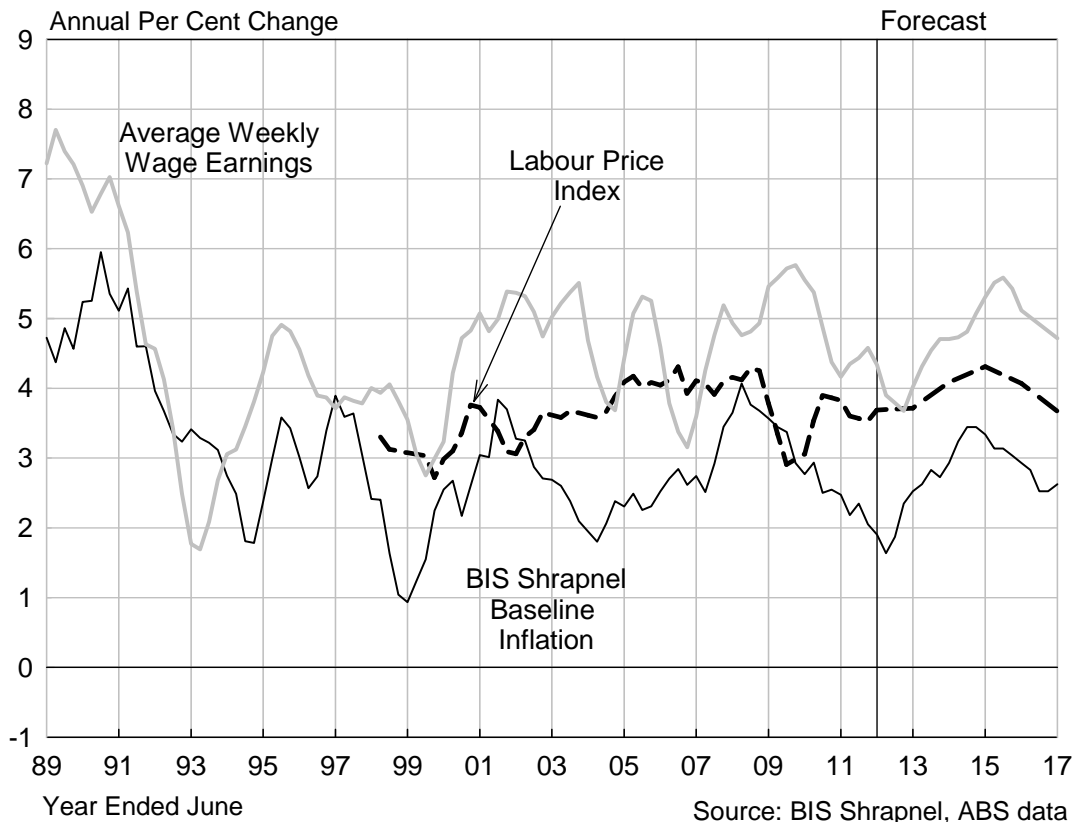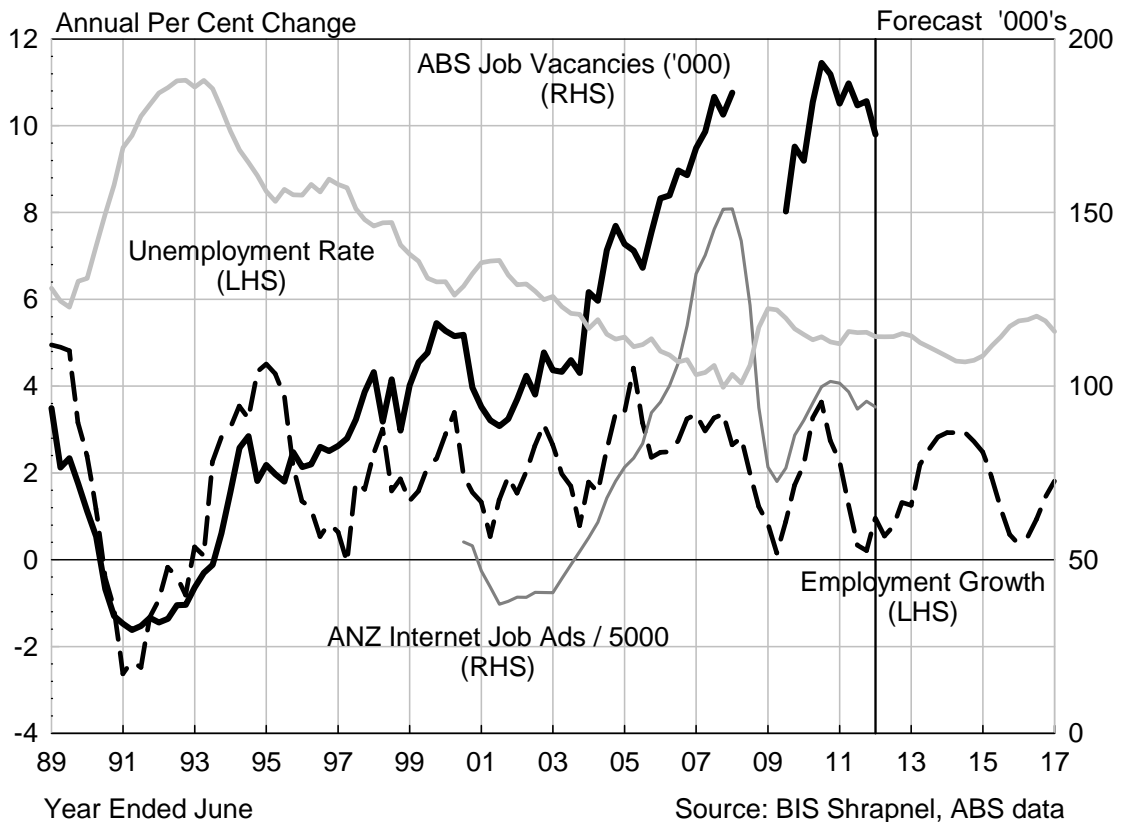
Chart 3.1: Australia – Wages and Prices

Source: BIS Shrapnel, ABS data

Chart 3.2: Employment and Unemployment

Source: BIS Shrapnel, ABS data

With the unemployment rate holding steady between 5 and 5¼ per cent for the past year, annual wage inflation was also steady in 2011/12 (see tables 3.2 and 3.3). The LPI eased marginally to 3.6 per cent in 2011/12 while the growth in AWOTE was close to the 2010/11 levels at 4.3 per cent.

BIS Shrapnel is forecasting moderate wage inflation over 2012/13 largely due to sluggish employment growth resulting in the unemployment rate tracking sideways for most of next year. However, a broadening in employment, profits and investment is expected from mid-to-late 2013 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 2013/14 and widening skills shortages — with the unemployment rate pushing below 5 per cent by mid 2014 — will drive up wages growth during 2013/14 and particularly 2014/15. We expect wages growth (in year average terms) to peak at 5.3 per cent for AWOTE and 4.3 per cent for LPI in 2014/15.

This will see the RBA act to constrain economic growth and inflationary pressures during 2014 and 2015 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 over 2015.

The higher interest rates are expected to cause a slowdown in economic and employment growth during 2015, and this will eventually feed through to wages growth in 2016 and 2017, with wages growth in the individual arrangements and award segments slowing first. However, as wages growth is sticky downwards, we do not expect a sudden deceleration in wage inflation. We forecast wages growth to ease to 4.1 per cent in LPI terms in 2015/16 before declining to 3.7 per cent in 2016/17. Meanwhile, AWOTE wages growth is forecast to fall to 5.1 per cent and 4.7 per cent in 2015/16 and 2016/17 respectively.

But with only a small rise expected in the unemployment rate to around 5.7 per cent in 2016 because of the deceleration in 'working population' and slower 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, ie retirements and less hours worked per person (especially for older workers). 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.

In summary, for the four years from 2012/13 to 2016/17 inclusive, the annual growth in the 'All Industries' LPI is forecast to average 4 per cent per annum, while AWOTE growth will average 4.8 per cent per annum.

3.2 Use of labour force categories and choice of index measure

The significant majority of QR National's workforce are based in central Queensland — a region which is experiencing high levels of mining investment. QR National therefore has to compete with the mining sector for similarly skilled labour.

Meanwhile, reconstruction-related activity (reported widely to cost well over $5 billion) following the floods and Cyclone Yasi last year is driving very strong growth in construction activity now. In addition, recent announcements of major LNG and coal-related projects will boost resources investment over the near to short-term. Non-dwelling building is also expected to 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 2012/13, before growth eases over the following three years. Nonetheless, the high levels of construction activity in Queensland expected over the next four years will place upward pressure on construction sector wages growth.

As QR National has to compete with the mining and construction sectors for similarly skilled labour, we believe wages growth in Queensland mining and construction sectors will have a significant influence on QR National's wage growth over the next four years. As a result, we recommend that QR National use an average of wages growth in the mining and construction sectors in Queensland as its preferred labour escalator. We believe this average escalator will better reflect QR National's actual labour costs than the Queensland 'All Industries' average wages growth.

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

With respect to the choice of escalator (or index measure), 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 Average Weekly Ordinary Time Earnings (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 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).

In summary, if a wage series is intended to be an 'actual' or real labour cost escalator then the AWOTE series should be used. This view is also supported by Professor Borland and Professor Mangan in their recent independent submissions to the AER.[4]

While BIS Shrapnel considers that AWOTE is a superior measure for labour costs in the circumstances, LPI forecasts are also provided for QR National's labour cost escalator.

In the next part of this section, we will consider the key drivers of the sustained strong growth in underlying wages growth (ie the LPI measure) in the national construction and mining sectors, and draw comparisons with the all industries average. This will be followed by a discussion of the Queensland construction and mining sector wages growth.

3.3   Outlook for Construction Sector Wages Growth

3.3.1   Outlook for Australian Construction Wages

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 wage forecasts.

Booming construction activity since the 2000/01 economic downturn has been a major driver of national employment and economic growth, but has also seen construction sector real wages grow at a much faster rate than the national average. In particular, construction sector employment has increased by an average 5 per cent per annum over 2000–2010, compared to average employment growth of 2.2 per cent for all industry sectors. In turn, this has helped drive AWOTE wages in the construction sector up 5.1 per cent per annum on average in this period, compared to 4.7 per cent per annum on average for all industry sectors.

In the six years up to 2008/09 we have seen strength in all the major categories of construction except private residential construction. The global financial crisis and subsequent world recession in late 2008/early 2009, however, slowed Australia's recent construction boom. Project deferrals or cancellations (as a result of a shortage of finance and weak demand) severely impacted on private non-dwelling building. Despite capacity constraints easing, in line with weaker demand, wages growth, which stood at 7.7 per cent in 2009/10, was only marginally down on the previous year's result.

This result, however, may look surprising at first glance. However, wages growth typically lags movements in construction activity by one or two years, this event was no different with wages growth easing to 5 per cent in 2010/11 in line with weaker levels of construction activity in 2009/10.

Over the next five years, AWOTE construction sector wages growth is forecast to enter a phase of strong growth, peaking at 6.3 per cent in 2014/15 as skilled labour constraints again arise, before moderating to 5.2 per cent in 2016/17.

Our projections are based on a broad based recovery in construction activity from 2012/13. Mining and mining related sectors construction activity — underpinned by the multi-billion dollar oil & gas, coal and iron ore projects — is set to soar. Meanwhile, after a pause through 2011, we are also expecting an extended recovery in dwelling construction to come through from the second half of this year. However, growth in this initial period will be constrained by weaker levels of non-residential building and to a lesser extent public sector engineering construction as the stimulus projects reach completion. However, we expect both sectors to return to stronger levels of activity closer to the middle of the decade.

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[4] See, Professor Mangan, Labour Cost Report: report undertaken for Powerlink Pty Ltd regarding labour cost escalators in the Australian Energy Regulator's Powerlink Draft Decision, January 2012; and Professor Borland, labour cost escalation report for Envestra Ltd, 2011.

The net effect is AWOTE construction sector wages growth will average 5.3 per cent over the next five years, this compares to 6.6 per cent experienced over the past five years.

Table 3.5: Construction Sector Wages Growth – Queensland and Australia

Year Ended	Queensland - Nominal				Australia - Nominal			
May	AWOTE		LPI		AWOTE		LPI	
	$	A%Ch	Index	A%Ch	$	A%Ch	Index	A%Ch
1995	551.2				618.0	4.2		
1996	633.2	14.9			652.0	5.5		
1997	656.9	3.7			682.2	4.6		
1998	650.0	-1.0	64.3		704.0	3.2	64.5	
1999	698.3	7.4	66.3	3.1	724.7	2.9	66.6	3.3
2000	637.3	-8.7	68.6	3.5	722.1	-0.4	68.5	2.9
2001	640.6	0.5	70.8	3.3	730.5	1.2	71.3	4.1
2002	708.6	10.6	73.1	3.2	769.6	5.3	73.6	3.3
2003	795.9	12.3	75.4	3.2	832.3	8.2	76.1	3.3
2004	852.1	7.1	79.2	5.0	875.2	5.1	78.9	3.7
2005	898.2	5.4	82.7	4.4	924.6	5.7	83.0	5.2
2006	906.0	0.9	86.4	4.5	941.8	1.9	87.0	4.9
2007	975.4	7.7	90.5	4.7	987.8	4.9	91.3	4.9
2008	1060.1	8.7	94.6	4.5	1078.2	9.2	95.6	4.7
2009	1137.2	7.3	100.0	5.7	1162.0	7.8	100.0	4.7
2010	1236.2	8.7	102.9	2.9	1250.9	7.7	103.3	3.3
2011	1365.0	10.4	106.7	3.6	1313.7	5.0	107.4	4.0
2012	1418.8	4.0	112.4	5.4	1359.8	3.5	111.7	4.1
Forecasts								
2013	1495.8	5.4	118.4	5.3	1414.8	4.0	115.8	3.6
2014	1596.9	6.8	125.3	5.9	1486.6	5.1	121.1	4.6
2015	1710.0	7.1	131.5	4.9	1580.1	6.3	127.3	5.2
2016	1800.9	5.3	137.5	4.6	1670.5	5.7	133.5	4.9
2017	1907.7	5.9	143.1	4.1	1756.8	5.2	139.4	4.4
Compound Annual Growth Rates								
2002-2012	7.2		4.4		5.9		4.3	
2007-2012	7.8		4.4		6.6		4.1	
2012-2017	6.1		4.9		5.3		4.5	

Source: ABS, BIS Shrapnel

3.3.2 Outlook for Queensland Construction Wages

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 7.3 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, saw overall construction decline again in 2010/11.

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 to cost well over $5 billion) following the floods and Cyclone Yasi last year will continue to drive very strong growth in construction activity in 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 2012/13, before growth eases over the following three years.

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 7.1 per cent in 2014/15, before easing.

3.4   Outlook for Mining Sector Wages Growth

3.4.1   Outlook for Australian Mining Wages

The mining investment boom over the second half of the 2000s resulted in rapid employment growth in the mining sector, strong demand for labour — particularly skilled labour — and an escalation in wages growth. Rapidly rising commodity prices and high profits also fuelled the escalation in mining wages. Over the 2007/08 to 2011/12 period, mining sector wages growth in AWOTE terms averaged 7.1 per cent per annum and 4.9 per cent per annum in LPI terms, at the Australian level.

However, wages growth in the mining sector in LPI terms slowed sharply in 2009/10 in a lagged response to the downturn in resource exports and output in 2008/09 and delays to the commencement of new investment projects caused by the global financial crisis. Meanwhile, mining AWOTE growth in 2009/10 remained high (7.2 per cent) due to compositional effects — the cut backs in mining employment impacted disproportionately on lower paid workers, boosting the overall average wage. Employment growth has since bounced back and mining LPI growth picked-up to 4.4 per cent in 2011/12. AWOTE growth, meanwhile, eased to 6.2 per cent. Beyond 2011/12, both AWOTE and LPI growth is forecast to grow solidly over the next three years before easing — but still exhibiting relatively high growth (compared to 'all industries' Australian average) in the second half of this decade.

Driving the high wages growth this decade will be strong demand for labour, and particularly skilled labour, as a result of the mining investment boom projected to occur over the forecast period. Projections for continued strong economic growth in China and India — with their long term programs of industrialisation and urbanisation, which are metals and energy intensive — plus ongoing growth throughout other parts of Asia and, by mid-decade, a sustained recovery in the US and European economies, will all combine to underpin healthy demand for minerals and energy. Commodity prices are still at exceptionally high levels and further price rises are forecast over the next two-to-three years. Prices over the next four to five years are expected to be well above historical averages, both in real and nominal terms.

The strong outlook has locked-in another round of mining related projects over the next five years. The capital intensive nature of mining means not only that labour costs are usually a low proportion of total costs, but that the mining sector has a requirement for more highly skilled labour. Relatively high prices also mean that the mining sector can afford to offer higher wages.

Overall, mining sector wages in LPI terms are forecast to average 5.3 per cent per annum over the five years from 2012/13 to 2016/17 at the Australian level (see table 3.6).

Table 3.6: Mining Sector Wages Growth – Queensland and Australia

Year Ended	Queensland - Nominal				Australia - Nominal			
May	AWOTE		LPI		AWOTE		LPI	
	$	A%Ch	Index	A%Ch	$	A%Ch	Index	A%Ch
1995	953.5				946.7	-1.2		
1996	1037.0	8.8			1024.9	8.3		
1997	1098.1	5.9			1052.2	2.7		
1998	1257.4	14.5	64.6		1122.2	6.7	64.6	
1999	1238.6	-1.5	66.3	2.6	1158.9	3.3	66.3	2.6
2000	1196.4	-3.4	67.9	2.5	1203.5	3.9	67.9	2.5
2001	1264.9	5.7	70.1	3.1	1261.4	4.8	70.0	3.1
2002	1357.5	7.3	72.5	3.5	1291.5	2.4	72.4	3.5
2003	1436.4	5.8	75.1	3.6	1326.5	2.7	75.0	3.6
2004	1362.8	-5.1	77.3	2.9	1389.1	4.7	77.2	2.9
2005	1407.3	3.3	80.4	4.1	1419.1	2.2	80.4	4.1
2006	1518.7	7.9	84.5	5.0	1483.6	4.5	84.4	5.0
2007	1620.7	6.7	89.5	6.0	1579.9	6.5	89.5	6.0
2008	1713.8	5.7	94.7	5.8	1707.3	8.1	94.6	5.8
2009	1907.3	11.3	100.1	5.7	1832.5	7.3	100.0	5.7
2010	2112.0	10.7	103.8	3.8	1964.2	7.2	103.6	3.6
2011	2190.9	3.7	107.9	3.9	2091.3	6.5	108.1	4.3
2012	2314.3	5.6	111.9	3.7	2221.6	6.2	112.8	4.4
Forecasts								
2013	2458.5	6.2	117.1	4.6	2353.4	5.9	118.3	4.9
2014	2639.7	7.4	124.1	6.0	2500.3	6.2	124.7	5.4
2015	2841.1	7.6	131.3	5.8	2678.6	7.1	131.8	5.7
2016	3044.3	7.2	138.1	5.2	2860.5	6.8	139.2	5.6
2017	3222.1	5.8	145.5	5.3	3041.5	6.3	146.3	5.2
Compound Annual Growth Rates								
2002-2012	5.5		4.4		5.6		4.5	
2008-2012	7.4		4.6		7.1		4.7	
2012-2017	6.8		5.4		6.5		5.3	

Source: ABS, BIS Shrapnel

3.4.2   Outlook for Queensland Mining Wages

Strong demand from China and other rapidly growing Asian nations has brought about a significant round of investment in mining across Queensland, especially in coal, base metals, gold and more recently oil & gas. As these mines came on stream, demand for labour strengthened rapidly across all spectrums. Skilled labour shortages promptly emerged and remained at persistently high levels. In addition, miners also began paying a premium to attract general labour to more remote areas.

This saw mining wages growth accelerate reaching double digit figures in the years up to the GFC, before softening following the onset of the global financial crisis. More recently, heavy flooding in Queensland last year impacted on resource exports and mining output and by extension on wages growth.

Over the next five years, BIS Shrapnel is forecasting mining wages growth in AWOTE terms to grow at an average rate of 6.8 per cent per annum, 0.3 percentage points more than the Australian equivalent. While mining investment and demand for labour is expected to remain elevated over the next five years, wages growth (in AWOTE terms) is not expected to rise to levels seen prior to the onset of the global financial crisis.

In the past few years a considerable amount of attention has been given to resolving skilled labour shortages by industry and government alike across Queensland While we are not suggesting skilled labour constrains won't emerge in a number of subsectors, they are not likely to emerge in the severity as they did prior to the GFC. In addition, we also expect a higher penetration of FIFO (fly-in fly-out) works from other states and cheaper imported labour to subdue wage escalation in the Queensland mining sector.

4.   MAINTENANCE CONSUMABLES PRICE FORECASTS

This section provides price forecasts of QR National's maintenance consumables. They include price forecasts for basic metals and fabricated metal products, transport equipment and parts producer price index, hire of heavy plant and equipment and non-residential building construction price index.

Table 4.1: Forecasts for Selected Articles Produced by the Manufacturing Industry

Year Ended June	Indices			
	Basic Metal Products	**Fabricated Metal Products**	**Transport Equipment**	**Non-Residential Building IPD**
	Annual Average Values			
2000	104.7	112.3	119.6	66.8
2001	104.6	113.1	124.1	68.2
2002	101.0	119.1	128.5	68.7
2003	105.6	125.1	129.4	71.5
2004	115.3	128.1	127.0	77.7
2005	127.7	132.0	126.1	85.2
2006	159.2	142.7	126.3	89.7
2007	188.1	144.7	129.2	95.0
2008	172.9	151.5	128.0	101.4
2009	165.5	169.9	129.5	103.9
2010	156.8	163.8	130.7	100.0
2011	163.6	165.6	129.7	101.9
2012	161.9	172.5	130.7	102.4
Forecasts				
2013	156.8	173.9	131.5	105.1
2014	168.2	171.4	130.4	109.7
2015	186.3	169.0	131.5	114.4
2016	195.6	169.5	132.8	118.4
2017	197.1	180.3	135.6	122.1
	Per Cent Change			
2000	7.5	-2.7	1.5	3.4
2001	-0.1	0.7	3.7	2.1
2002	-3.5	5.3	3.5	0.7
2003	4.6	5.0	0.7	4.1
2004	9.2	2.4	-1.8	8.6
2005	10.8	3.1	-0.8	9.7
2006	24.6	8.1	0.2	5.2
2007	18.2	1.4	2.3	6.0
2008	-8.1	4.7	-1.0	6.7
2009	-4.3	12.1	1.2	2.4
2010	-5.3	-3.6	0.9	-3.8
2011	4.3	1.1	-0.7	1.9
2012	-1.0	4.1	0.8	0.5
Forecasts				
2013	-3.2	0.8	0.6	2.6
2014	7.3	-1.4	-0.8	4.4
2015	10.8	-1.4	0.8	4.3
2016	5.0	0.3	1.0	3.5
2017	0.7	6.4	2.1	3.1

4.1 Basic Metals and Fabricated Metal Products Price Index

The ABS basic metals products and fabricated metal products PPIs are output indices. They reflect changes in prices received by producers exclusive of any taxes, transport costs and trade margins. That is, the pricing point is ex-factory. As a result, they essentially reflect prices of raw materials and labour used in the production process as well as the manufacturers' profit margins. The final indices are calculated as a weighted index of these components. To ascertain the price elasticity of the raw material components (such as coking coal, iron ore, aluminium, copper, and zinc) and labour costs, we specified a regression model for each of the price indices with the key input components as the explanatory variables. By applying each price elasticity to the respective input component index (constructed in-house), we have been able to approximate reasonably closely the historical percentage changes in basic metal products and fabricated metal products PPIs (see Charts 4.1 and 4.2).

The outlook for these indices, therefore, is based on our future price expectations of key components of the overall index as well as the estimated price elasticities. The price forecasts of key base metals are discussed next.

Basic metal product prices are expected to continue trending downwards next year, however, from 2013/14 until 2015/16, strong growth is expected in line with rising coal, iron ore and metal prices. Fabricated metal product prices will fall back in 2013/14 and 2014/15, although 2016/17 will see growth of 6.4 per cent.

4.1.1 Coking Coal and Iron Ore

The rapid industrialisation of Asia, particularly China and India, has been the key driver of steel consumption growth in recent years. Due to the high steel intensity of infrastructure construction, demand for steel and its major raw material inputs, coking coal and iron ore, soared. Coal and iron ore have experienced similar global growth influences as oil and metals over recent years, but prices have held up better due to both supply disruptions (cyclones, floods and industrial disputes) and because steel production growth has remained resilient, particularly in China. But it is now apparent that China has over-produced steel, with production there not adjusting quickly enough to the weakening in exports or the slowdown in internal construction. There have been reports of high steel inventories in China. We expect some cut-backs in steel production over the second half of 2012 to reduce those inventories, which will be aided by the expected ramp up of steel-intensive infrastructure and a recovery in building construction as previous tight conditions are eased.

Once Chinese steel inventories are reduced, steel production should increase, leading to a rise in iron ore demand and prices from late 2012. Adding to upward pressure on iron prices will be the shutdown of high cost Chinese iron-ore mines, where production costs are reported to be above US$130/tonne, due to the lower iron-content (relative to high iron content Brazilian and Australian iron ore). Prices have recently fallen to around $90/tonne.

On the other hand, coking coal prices are expected to ease over the next six-to-nine months after industrial action in Queensland and other supply problems temporarily pushed up prices in the September quarter 2012. Prices are subsequently expected to push higher over 2013/14 and 2014/15 as global steel production increases. However, both iron ore and coking coal prices are unlikely to return to the extreme highs of mid-2011, despite the recovery in demand, because of increased supply coming on stream both in Australia and overseas. Indeed, sharp declines in these prices are projected from around mid-decade.

4.1.2   Aluminium, copper and zinc

While accelerating demand for metals will foster price rises over the next few years, the high levels of inventories, coupled with new capacity coming on stream, will limit the upside to prices. Indeed, high inventories and low prices for aluminium and zinc have seen some production shutdown permanently or temporarily mothballed in order to reduce oversupply.

For most of the metals, prices will struggle to reach the post-GFC highs of early-mid 2011. Even if stronger-than-expected demand growth eventuated, and pushed prices up towards those post-GFC highs, the restarting of mothballed capacity would limit further price upside.

Aluminium prices dropped substantially following the GFC, but have made up some ground over the last few years. We expect aluminium prices to dip slightly in 2012/13, but rise over the following few years to peak in 2015/16, above the previous peak in 2006/07.

A similar pattern can be seen in zinc prices, although they will peak far below the record high of 2006/07. As demand returns with a recovery in industrial production levels and inventory levels begin to fall, we expect the zinc price to again rise. The recovery in the US housing and automotive sectors will strengthen prices further.

Industrial growth in China and India has been the main driver of copper demand over this decade. In 2011/12 prices fell back and this will continue through to 2012/13, due to concerns over Europe and the question mark over China's slowing growth. In 2013/14, prices will jump to an almost record annual average peak before declining over the next few years.
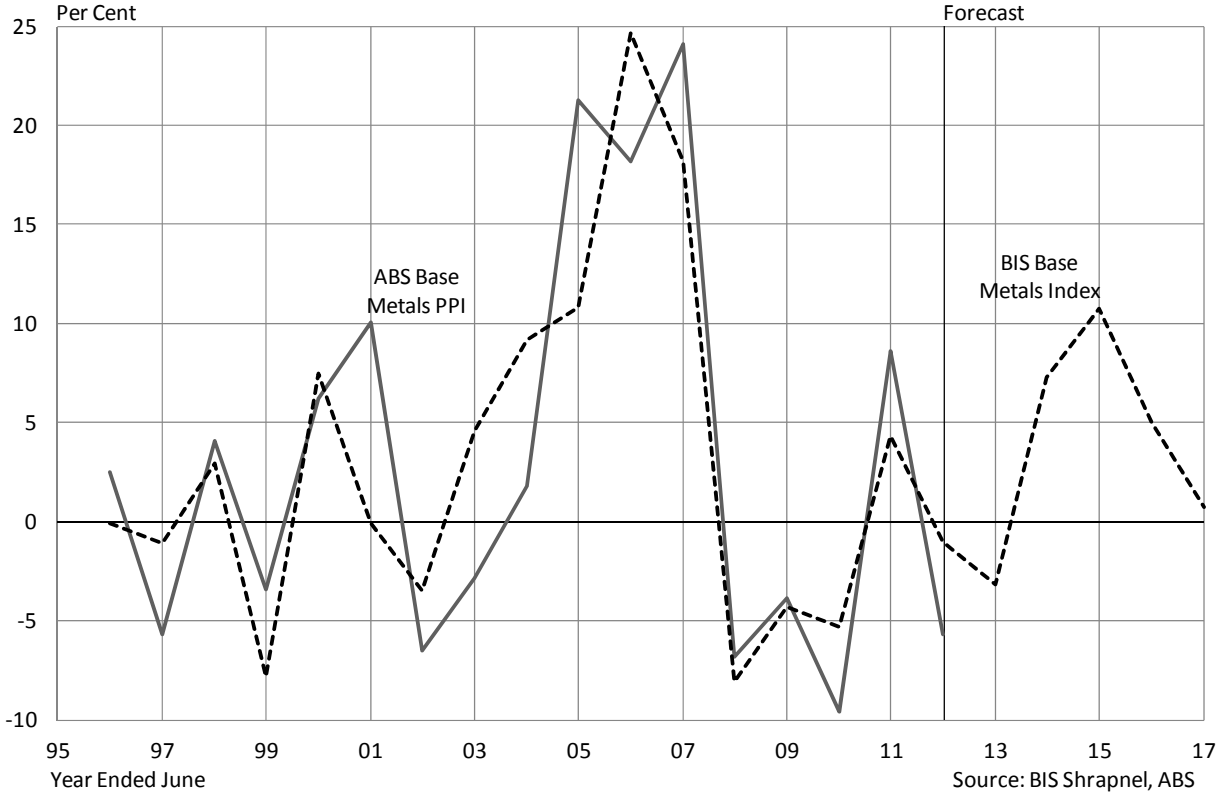
25 Per Cent   Forecast

ABS Base
Metals PPI

BIS Base
Metals Index

95   97   99   01   03   05   07   09   11   13   15   17
Year Ended June   Source: BIS Shrapnel, ABS
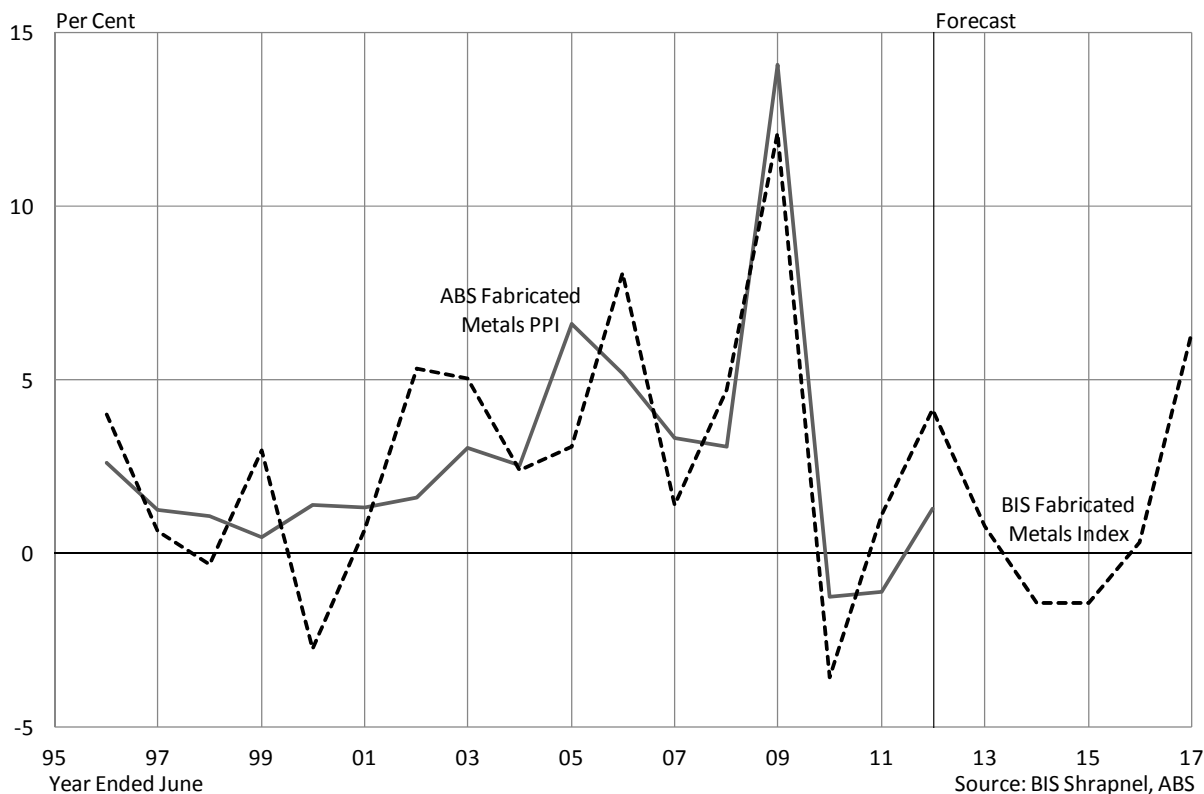
Chart 4.1: Basic Metal Products Producer Price Index

**Chart 4.2: Fabricated Metal Products Producer Price Index**

4.2   Transport Equipment and Parts Producer Price Index

The ABS transport equipment and parts PPI is also an output index. That is, it measures the rate of change in the prices of products as they leave the producer. As a result, movements in this index are influenced by technological change, efficiency gains, government policy (such as import tariffs), and competition which affect the manufacturers' profit margins as well as the Australian dollar.

To forecast the growth in this price series over the next four years, we make use of our CPI inflation for price of motor vehicles and for motor vehicle parts and accessories. We believe the (output) producer price indices reflect upstream cost pressures and increases in PPI are eventually reflected in an up-shift in consumer price inflation particularly during strong conditions. Our forecasts are tabulated in Table 4.1.

Overall, we expect prices to strengthen over the next few years, reflecting the weakening Australian dollar. The resultant higher import prices, as well as a rise in demand as the market strengthens, will see prices increase by an average of 0.7 per cent per annum over the five years to 2016/17.

Table 4.2: Transport Equipment and Parts Producer Price Index
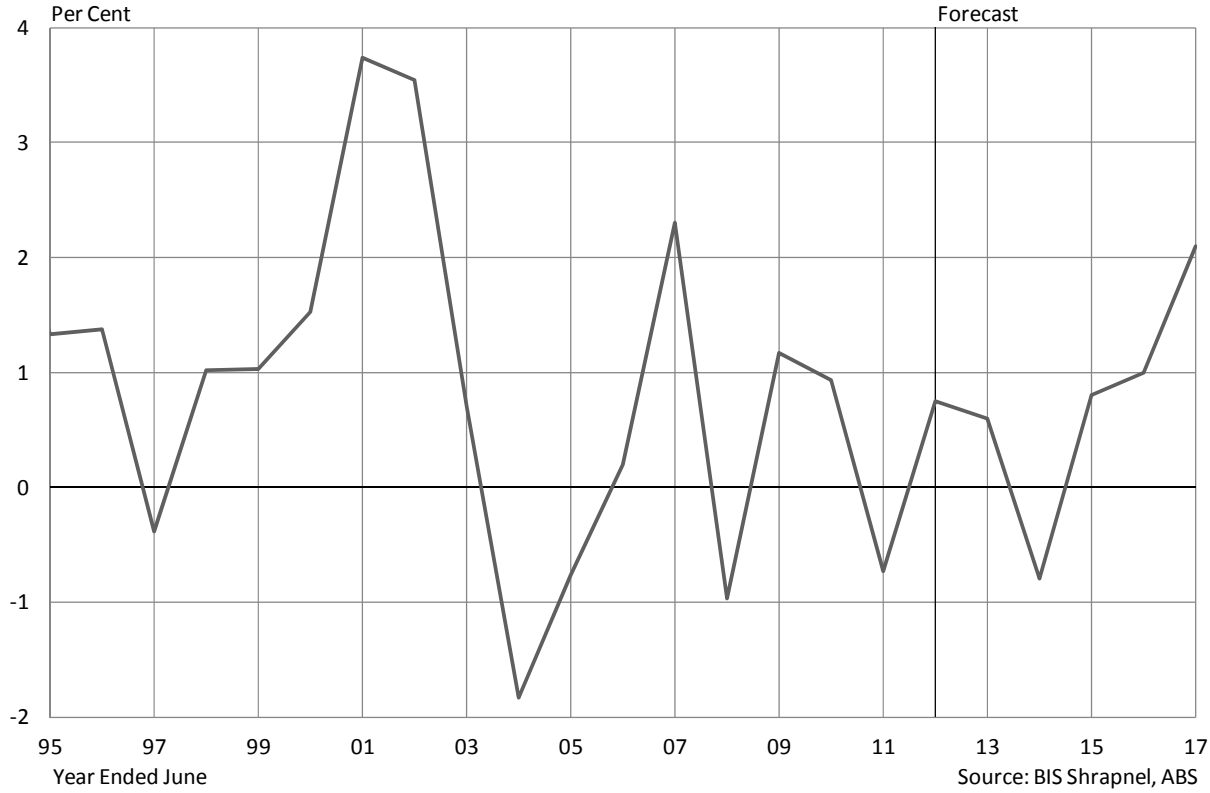
4.3 Hire of Heavy Plant and Equipment

An index was constructed for hire of heavy plant and equipment based on national hire rates ($ per hour) for mobile cranes, bulldozers, excavators, graders and loaders. Essentially, we calculated an average hourly rate for these equipment based on the hourly rates of the different models within each type of plant and/or equipment. These average hourly rates were then converted into an index measure with 2009 chosen as the base year. Historical hire rates were sourced from the Rawlinson's Australian Construction Handbook (at the national level).

Heavy plant and equipment hire rates rose by 1.3 per cent in 2011/12, reflecting strong engineering and total construction activity, and we expect small increases over the next two years. Our forecasts for plant and equipment hire costs are based on our outlook for national construction activity. In 2014/15 and 2015/16, hire rates is expected to decline in line with shrinking construction activity as investment in the current round of mining projects peters off. A small increase is expected in 2016/17.

Table 4.3: Hire of Heavy Plant and Equipment Index

	Index
Year Ended June	**Hire of Heavy Plant and Equipment**
	Annual Values
2009	100.0
2010	100.0
2011	100.1
2012	101.4
Forecasts	
2013	101.8
2014	102.2
2015	102.0
2016	101.5
2017	101.7
	Per Cent Change
2009	2.9
2010	0.0
2011	0.2
2012	1.3
Forecasts	
2013	0.5
2014	0.4
2015	-0.2
2016	-0.6
2017	0.2

4.4   Non-Residential Building Construction Price Index

Building construction costs are highly cyclical. They are linked to the amount of construction activity that is going on at any time which, in turn, is determined by property cycles.

In the non-residential building sector, an old rule of thumb says that it costs 25 per cent less in real terms to build in a bust than a boom and around one third more to build in a boom than a bust. While the rule of thumb may not match past experience exactly, there is certainly a strong correlation between movements in non-residential building costs as captured by the non-residential IPD (implicit price deflator) and the volume of building and construction activity undertaken.

The ABS building industry output price indexes are used as deflators in the calculation of chain volume estimates of capital expenditure in the Australian National Accounts. The indexes are also important inputs into the stage of production producer price indexes. As with the engineering construction implicit price deflator, the non-residential building implicit price deflator can also be derived by calculating the differential between current price (nominal) and constant price (real) non-residential data sourced from the Australian Bureau of Statistics (ABS). Also, as with the engineering construction implicit price deflator, there is a strong correlation between construction activity and movements in the non-residential building implicit price deflator.

As a point of difference to the engineering construction implicit price deflator, non-residential building IPDs are calculated based on cost movements within states. Consequently, the ABS reports movements in non-residential building costs by state in the producer price index series. As yet, the ABS does not provide separate state-level data for engineering construction cost growth (except for roads).

A downturn in non-dwelling construction in 2000/01, coupled with a downturn in the global economy which depressed steel and oil prices, produced a slowdown in the nominal growth of the national non-residential building implicit price deflator. Thereafter, strong growth in non-dwelling construction in Australia (boosting demand for local inputs) as well as robust increases in prices for steel and oil drove strong growth in the IPD through much of the 2000s. Between 2001/02 and 2008/09, the national non-residential building IPD grew at an annual average rate of 6.7 per cent (resulting in a cumulative increase of 48 per cent).

In 2009/10, the IPD fell by -3.8 per cent as the impacts of the global financial crisis (on steel and fuel prices, as well as new commencements) came through. The IPD then increased by 1.9 per cent in 2010/11, recovering some of the previous years losses.

Outlook for national non-residential building costs

BIS Shrapnel anticipates that the non-residential building IPD will continue to move high over the next five years. While non-residential building activity itself is forecast to decline over the next two years (as the Federal Government's education stimulus package fades out, joining already weak commercial building activity), overall construction activity will edge higher as rising engineering construction activity and residential building activity mitigate the non-residential sector This, coupled with a rebound in steel prices and generally higher wages, concrete and oil prices is expected to see the non-residential building deflator increase by an average of 3.6 per cent per annum over the five years to 2016/17 (peaking at 4.4 per cent in 2013/14, see table 4.1 and chart 4.3).

**Chart 4.3: Non-Residential Building Implicit Price Deflator versus
Non-Dwelling Construction Activity – Australia**
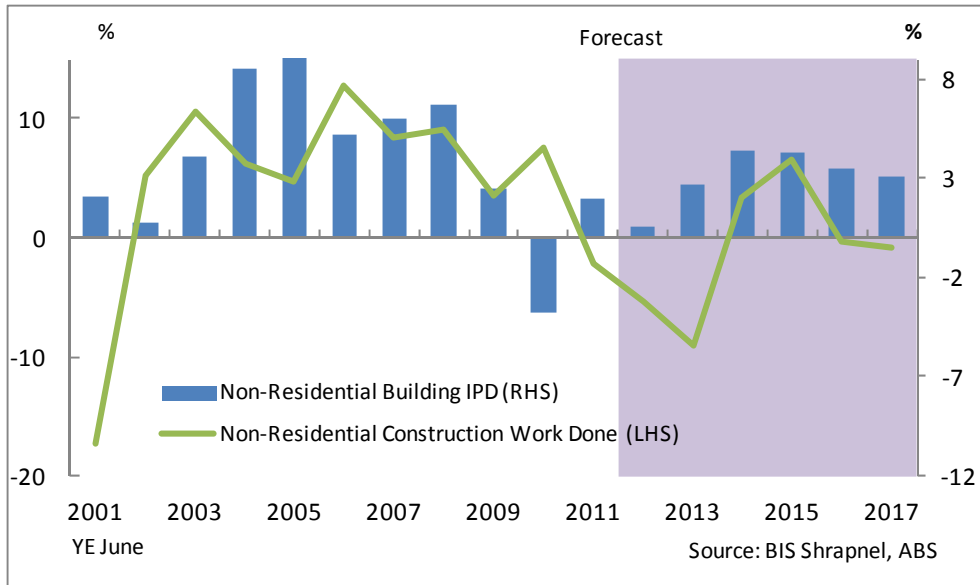
5. ACCOMMODATION PRICE FORECASTS FOR CENTRAL QUEENSLAND

The ABS average room rate for hotels and motels in the Fitzroy and Mackay regions was used as a proxy for accommodation costs. Note that from 2008/09, Central Queensland accommodation rates have been used as a proxy for the Fitzroy accommodation rates as the ABS stopped publishing the Fitzroy accommodation rates from this date. Forecasts for the room rates in these regions are based on the historical relationship between the occupancy rate in these regions, the Brisbane occupancy rates and our forecasts of Brisbane occupancy rates.

Accommodation costs in the Fitzroy and Mackay regions are forecast to rise over the next two years, before falling from 2014/15. This reflects the expected decline in occupancy rates due to construction activity falling in mid-decade as mining investment eases in these regions.

Table 5.1: Accommodation Costs for the Fitzroy and Mackay regions

Year Ended June	Average Room Rates	
	Fitzroy	**Mackay**
	Annual Average Values ($)	
2007	125.53	155.39
2008	122.91	152.15
2009	116.15	143.47
2010	119.19	146.78
2011	126.59	155.67
2012e	128.52	157.95
Forecasts		
2013	132.13	162.40
2014	134.19	164.93
2015	130.68	160.61
2016	124.06	152.48
2017	120.13	147.65
	Per Cent Change	
2007		
2008	-2.1	-2.1
2009	-5.7	-5.5
2010	2.3	2.6
2011	6.1	6.2
2012e	1.5	1.5
Forecasts		
2013	2.8	2.8
2014	1.6	1.6
2015	-2.6	-2.6
2016	-5.1	-5.1
2017	-3.2	-3.2

e: estimated

6.   FUEL PRICE FORECASTS FOR SELECTED QUEENSLAND REGIONS

The benchmark oil price, West Texas Intermediate (WTI), continued to exhibit considerable volatility over the past 12 months, as global economic uncertainty impacted on prices. In particular, a plethora of bad news regarding economic growth and industrial production emanating from China and other overseas economies saw the spot WTI oil price resume its downward trajectory, following a brief rally in the March 2012 quarter, as markets reacted to weaker demand and continued news of slower global economic growth over the past year.

However, we believe that overall world GDP growth and the WTI oil price have now passed their respective weakest points in this current post-GFC cycle. The WTI oil price has already began to show tentative signs of a stabilisation in price, which is now around US$96/barrel, up from the recent lows of below US$80/barrel in June 2012 quarter. And with our prediction of a rebound in growth from the Chinese economy beginning in the December 2012 quarter, as pro-growth policies (including monetary easing and fiscal stimulus) finally kick in, China will begin to accelerate. Inevitably, Chinese demand will provide the impetus for a pick-up in world growth, boosting other Asian economies, the US (which appears to only be suffering a modest slowdown) and Europe – where signs of stabilisation are appearing after 2 to 3 quarters of negative growth have dominated news over the past six months.

Stronger world GDP growth will in turn lead to a pick-up in oil demand, which combined with some positive growth news, and speculative funds flowing into oil markets, will fuel further increases in the WTI price from the corresponding December 2012 quarter. As global economic growth becomes entrenched WTI oil prices are predicted to rise steadily over the next few years, rising over US$100/barrel in the first half of 2013 and push towards a cyclical peak of US$115/barrel around mid 2015.

Increasing demand for oil from developing counties (particularly China), coupled with increased use of fuel oil in Japanese electricity generation – partly replacing moth-balled nuclear generation capacity – will be the driver of prices. On the supply side, stronger growth in both OPEC and non-OPEC oil production – the latter mainly from North and South America – has helped keep a lid on prices in 2012. But with non-OPEC production growth to slow over 2013 and 2014, OPEC production increases will be the key to magnitude of price rises, with Saudi Arabia (who has the most spare capacity) continuing its role as swing supplier.

Given our oil price assumptions described above we expect that year average pump prices will strengthen, but at a decreasing rate, over most of our forecast horizon before eventually easing in 2016/17. The difference between the WTI oil price and the domestic terminal gate prices will continue to be determined by exchange rate movements, shipping costs and domestic refiner margins. Similarly, the difference between terminal gate prices, city pump prices and regional pump prices will continue to be determined by taxes, transport costs and local retailer margins.

Table 6.1: Average Annual Fuel Price - Brisbane
AIP Terminal Gate (Wholesale) Prices, Australian cents Per Litre

Year Ended June	Unleaded Petrol	%	Diesel	%
2005	98.5	n.a.	106.0	n.a.
2006	119.1	21.0	126.0	18.9
2007	118.9	-0.2	121.7	-3.4
2008	131.2	10.3	140.9	15.7
2009	122.0	-7.0	131.2	-6.9
2010	116.9	-4.2	116.0	-11.6
2011	123.9	6.0	127.2	9.7
2012	134.7	8.8	137.7	8.3
Forecast				
2013	141.3	4.8	150.4	9.2
2014	145.5	3.0	158.5	5.4
2015	150.6	3.5	163.1	2.9
2016	153.2	1.7	165.7	1.6
2017	151.2	-1.2	163.7	-1.2

Source: AIP, BIS Shrapnel

Table 6.2: Average Annual Unleaded Petrol Price – Australia, Brisbane, and Selected Queensland Regions
AAA Retail (Pump Price) Data, Australian cents Per Litre

Year Ended June	Brisbane	% ch	Emerald	% ch	Gladstone	% ch	Mackay	%ch	Australia ([1])	% ch
2002	77.7		83.6		81.1		80.5		84.6	
2003	81.9	5.4	87.5	4.6	85.3	5.2	85.6	6.3	89.8	6.1
2004	84.2	2.8	88.6	1.3	85.3	0.0	86.5	1.1	91.4	1.8
2005	94.6	12.4	98.7	11.4	97.4	14.2	95.9	10.8	101.8	11.4
2006	115.3	22.0	121.7	23.2	119.0	22.1	118.8	23.9	122.2	20.0
2007	116.7	1.2	122.2	0.4	120.7	1.4	119.4	0.5	122.7	0.4
2008	128.7	10.3	134.7	10.3	133.2	10.4	131.3	10.0	135.5	10.4
2009	122.2	-5.1	126.3	-6.3	126.1	-5.4	122.5	-6.8	128.4	-5.2
2010	126.0	3.2	128.0	1.3	129.0	2.3	125.6	2.5	125.1	-2.6
2011	133.9	6.2	136.2	6.4	134.7	4.4	133.0	5.9	133.2	6.5
2012	145.6	8.8	148.1	8.7	145.9	8.3	145.7	9.6	144.2	8.3
Forecast										
2013	151.9	4.3	154.7	4.4	152.6	4.6	152.4	4.6	150.4	4.3
2014	156.2	2.9	159.8	3.3	158.7	4.0	157.1	3.1	154.5	2.8
2015	161.0	3.0	165.0	3.2	164.0	3.3	162.0	3.1	159.1	2.9
2016	163.5	1.5	167.1	1.3	166.0	1.2	164.6	1.6	161.7	1.6
2017	161.7	-1.0	165.0	-1.2	163.7	-1.3	162.2	-1.4	160.2	-0.9

([1]) weighted average of 8 capital cities   Source: AAA, BIS Shrapnel

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 Table 3.1):

- Those dependent on awards rely on pay increases given in the annual National Wage case by Fair Work Australia (formerly by the Fair Pay Commission and 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 DEEWR (Department of Education, Employment and Workforce Relations) are used for wage increases under collective agreements..

The limitation of this methodology is that because individual arrangements are calculated as a residual, all of the compositional effects in terms of AWOTE (ie from more or less lower-paid workers being employed in the relevant year) plus all (or most) of the bonuses and incentives from those under award or collective agreements end up in the individual arrangements residual, which distorts the pay increases in this segment. However, the methodology works well for the LPI, particularly at the all industries level, although some compositional problems occur at the sectoral level, particularly for sectors with a relatively small employment base (such as electricity, gas 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 C: 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_May 2012.pdf
BOP 5302.0 June 2012.pdf
BA 87520_Mar 2012.pdf
CAPEX 56250_June 2012.pdf
CPI 64010_June 2012.pdf
ECA 87620_Mar 2012.pdf
EEAH 63060_May 2010.pdf
Labour Force 62020_May 2012.pdf
LPI 63450_June 2012.pdf
Labour Force 6291.0.55.003 May 2012.pdf
National Accounts 52060_June 2012.pdf
State National Accounts 52200_2010-11.pdf
Internation Trade in goods and Services 5368.0_July 2012.pdf

BIS Shrapnel Documents – Strictly Confidential
BIA Report – 2012-2027.pdf
RPP 2012-2015 Report.pdf
ECA 2011/12-2025/26 Report.pdf
EO Bulletin Sepetmber 2012.pdf
LTF 2012-2027 Report.pdf

Other Documents
Clarius Skills Index June 2012 Quarter.pdf
DEEWR Skills Shortage List_Australia June 2012.pdf
DEEWR Skills Shortage List_Victoria June 2012.pdf
DEEWR TrendsM12.pdf
RBA August 2012 Statement on Monetary Policy.pdf
Mangan, Labour Cost Report submitted to the Australian Energy Regulator, January 2012
Borland, Labour Cost Escalation report for Envestra Ltd, 2011.