



Jemena Gas Networks (NSW) Ltd

2020-25 Access Arrangement Proposal

Attachment 5.5

Input cost escalation





**BIS OXFORD
ECONOMICS**

LABOUR COST ESCALATION FORECASTS TO 2024/25

**PREPARED BY BIS OXFORD ECONOMICS
FOR JEMENA GAS NETWORKS**

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20 March 2019

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EXECUTIVE SUMMARY

+3.8%

Annual wage increases expected for employees in the NSW utilities industry over the 5 years to 2024/25

Nominal growth in NSW Electricity, Gas, Water and Waste Services WPI

REAL COST ESCALATION FORECASTS TO 2024/25

In September 2018, BIS Oxford Economics was engaged by Jemena Gas Networks to provide price forecasts of labour costs that are relevant to the New South Wales electricity and water distribution industry for the period 2018/19 to 2024/25. Forecasts for wage escalation will be used by Jemena Gas Networks to develop the real price changes over its upcoming regulatory period, which, in turn, will be used by the business to construct its operating and capital expenditure forecasts.

BIS Oxford Economics expects total wage costs for the Australian Electricity, Gas, Water and Waste Services (EGWWS or 'Utilities') sector — as measured in the Wage Price Index — will grow (escalate) by an average of 3.9% per annum over the five years to 2024/25, 0.4% higher than the national 'All Industries' average over the same five-year period. Over the same 5-year period to 2024/25, the New South Wales EGWWS WPI is forecast to average 3.8% p.a., also 0.4% higher than the state all industries average of 3.4% p.a.

National and NSW utilities wages are forecast to increase by more than the national and state all industries averages because of the following factors:

- The electricity, gas and water sector is a largely capital intensive industry whose employees have higher skill, productivity and commensurately higher wage levels than most other sectors.
- Strong union presence in the utilities sector will ensure outcomes for collective agreements, which now cover 65% of the workforce, remain above the wage increases for the national 'all industry' average. In addition, with the higher proportion of employees on EBAs compared to the national average (37%), and EBAs wage rises normally higher than individual agreements, this means faster overall wage rises in the EGWWS sector.
- Increases in individual agreements (or non-EBA wages) are expected to strengthen from the current weak pace as the labour market tightens and labour productivity growth builds from early next decade.
- Demand for skilled labour has picked up and will strengthen with the large increases in utilities investment over 2017/18 to 2019/20, with investment levels expected to remain elevated over the medium term. This will also be a key driver of wages going forward.
- The overall national average tends to be dragged down by the lower wage and lower skilled sectors such as Retail Trade, Wholesale Trade, Accommodation, Cafés and Restaurants, and, in some periods, also Manufacturing and Construction. These sectors tend to be highly cyclical, with weaker employment suffered during downturns impacting on wages growth in particular. The EGWWS sector is not impacted in the same way due to its obligation to provide essential services and thus retain skilled labour.

Given that NSW utilities employment accounts for just under 30% of total Australian utilities employment, it is not surprising that wage growth trends in

the NSW utilities sector are close to the national utilities average. However, over the past 3 years to 2017/18, the average wage rises in the NSW utilities sector were well below the national average. This appears to be an aberration, and may have been related to downward pressure on wages (particularly wage increases in the areas outside collective agreements) before, during and immediately following the privatisation of the NSW electricity businesses. Prior to 2015, the NSW utilities wage increases were usually close to the national average.

Over the past five quarters, wage rises in the NSW utilities sector have recovered, back to near the quarter-on-quarter national rises. We expect this trend to continue, and for wage rises in the NSW utilities sector to track the national average. Wider pressures in the overall state labour market – the current NSW unemployment rate at 3.9% is well below the national average of 5%, and we expect the state unemployment rate to remain below or close to the national average - will also ensure that wage rises will tend to track the national average at the broader (all industries) level, as well as putting pressure on certain industries such as the electricity sector with its higher skill demands.

We also expect some degree of ‘catch-up’ to occur, especially in relation to the Victorian utilities sector, where wage rises over recent years have significantly outpaced the NSW utilities wage increases (and national average). The NSW utilities businesses will find they need to offer higher wages to local workers ‘to meet the market’ and keep pace with interstate utilities wages growth, to both avoid losing workers interstate and to attract workers from interstate with the necessary requisite skills.

Other factors will also act to push up NSW utilities wages, including an acceleration in construction sector and total wages and relatively high levels of utilities-related engineering construction over the next seven years. The acceleration in construction sector wages growth in particular - and indeed all industries (total) wages growth – will put upward pressure on utilities wages. The construction sector, along with the mining and manufacturing sectors, tend to compete with the utilities sector for similarly skilled labour. Meanwhile, the relatively high levels of utilities-related engineering construction activity will add to labour demand in the NSW and Australian utilities sector.

This will see a marked strengthening in wages growth in the NSW utilities sector over the 2020/21 to 2023/24 period, before easing. Overall, WPI growth in the NSW utilities sector is forecast to average 3.8% over the five years to 2024/25 inclusive (i.e. Jemena Gas Networks’ next regulatory period), or 1.5% in real (inflation adjusted) terms (see Summary table 1.1).

Growth in total ‘all industries’ wages at the state level usually depends on the relative strength of the state economy and labour markets, compared to the national average. Over the past five years, the NSW all industries state average has been stronger than the national average. This is in line with the NSW economy out-pacing growth in the national economy and the state unemployment rate being consistently below the national average. The tighter labour markets and higher labour demand has resulted in higher wages growth over the past five years.

Going forward, we expect NSW economic and employment growth to slip below the national average from the early 2020s. However, growth will not be significantly below, given our forecast that economic growth will be 0.3% to 0.4% below the national average – with employment growth around 0.2% to 0.3% below the national average. However, we expect the state’s unemployment rate will remain below or close to the national average over the long term – it has been consistently below the national average by around 0.5% over the past few years. Indeed, we expect the state unemployment rate to remain below 5% over the next seven years, and be close to 4% on occasion.

The tight labour markets over the next seven years means there will continue to be upward pressure on wages in the state. Accordingly, we are forecasting wages growth at the all industries (or total state average) level will be similar to the national average over the forecast period. In the five years to 2024/25, we are forecasting the total state (all industries) WPI in New South Wales to average 3.4%, just below the 3.5% national average. In real (inflation-adjusted) terms, the average annual increase is forecast to be almost 1.1% (see Table 1.1 Summary).

Table 1.1 Summary – Labour Costs Escalation Forecasts for New South Wales and Australia
(per cent change, year average, year ended June)

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	5 yr Avg (f)
					Forecasts		Next Regulatory Period					
NOMINAL PRICE CHANGES												
<u>1. Internal Gas Network-Related Labour</u>												
EGWWS WPI - New South Wales (a)	3.0	1.3	1.3	1.3	2.7	3.0	3.5	3.8	4.0	3.9	3.7	3.8
EGWWS WPI - Australia (b)	2.8	2.4	2.2	2.0	2.8	3.1	3.6	3.9	4.1	4.0	3.7	3.9
EGWWS AWOTE - Australia (b)	0.7	3.5	4.3	2.3	1.3	3.4	3.9	4.3	4.4	4.4	4.0	4.2
<u>2. General Wages</u>												
All Industries WPI - New South Wales (c)	2.3	2.1	2.1	2.1	2.4	2.6	3.1	3.5	3.6	3.5	3.4	3.4
All Industries AWOTE - New South Wales (c)	4.3	2.3	0.6	3.1	2.6	3.4	3.6	4.0	4.2	4.2	3.9	4.0
All Industries WPI - Australia (b)	2.4	2.1	2.0	2.1	2.4	2.6	3.2	3.6	3.7	3.6	3.3	3.5
All Industries AWOTE - Australia (b)	2.4	1.9	2.0	2.4	2.5	3.2	3.6	4.2	4.3	4.1	3.8	4.0
Consumer Price Index (headline) (d)	1.7	1.4	1.7	1.9	1.8	1.9	2.2	2.3	2.3	2.3	2.3	2.3
REAL PRICE CHANGES (e)												
<u>1. Internal Gas Network-Related Labour</u>												
EGWWS WPI - New South Wales (a)	1.3	-0.1	-0.4	-0.6	0.9	1.1	1.3	1.5	1.7	1.6	1.4	1.5
EGWWS WPI - Australia (b)	1.1	1.0	0.5	0.0	1.0	1.2	1.4	1.6	1.8	1.7	1.4	1.6
EGWWS AWOTE - Australia (b)	-1.0	2.2	2.6	0.4	-0.4	1.5	1.7	2.0	2.1	2.1	1.7	1.9
<u>2. General Wages</u>												
All Industries WPI - New South Wales (c)	0.6	0.7	0.4	0.2	0.7	0.8	0.9	1.2	1.3	1.2	1.0	1.1
All Industries AWOTE - New South Wales (c)	2.6	1.0	-1.1	1.2	0.8	1.6	1.4	1.7	1.9	1.9	1.6	1.7
All Industries WPI - Australia (b)	0.7	0.7	0.2	0.1	0.6	0.7	1.0	1.2	1.4	1.3	1.0	1.2
All Industries AWOTE - Australia (b)	0.7	0.5	0.3	0.5	0.7	1.3	1.4	1.9	2.0	1.8	1.4	1.7

source: ABS, RBA, Department of Employment, BIS Oxford Economics

- (a) Electricity, Gas, Water and Waste Services (EGWWS) for Wage Price Index (WPI) for New South Wales.
- (b) Australian sector wage forecasts provided for comparison. AWOTE is average weekly ordinary time earnings for full time adult persons, where overtime payments are excluded, but bonus payments are included.
- (c) New South Wales WPI and AWOTE are total or "All industries' wage movements.
- (d) Inflation forecasts are RBA forecasts for the next 2 1/2 years. Beyond that, forecasts are calculated as a geometric mean of the 'official' inflation forecasts over the next 10 years. This methodology has been adopted by the AER in their recent revenue decisions.
- (e) Real price changes are calculated by deducting the inflation rate from nominal price changes.
- (f) Average Annual Growth Rate for 2020/21 to 2024/25 inclusive ie for AA's next regulatory period.

1. INTRODUCTION

On 25 September 2018, BIS Oxford Economics was engaged by Jemena Gas Networks (JGN) to provide price forecasts of labour costs relevant to electricity, gas and water distribution networks in the New South Wales from 2018/19 to 2024/25. Forecasts of wages will be used by Jemena Gas Networks to develop the real price changes over its upcoming regulatory period, which, in turn, will be used by the business to construct its operating and capital expenditure forecasts. Over the next regulatory period forecasts of both nominal and real price growth of the relevant inputs are provided.

The Australian Bureau of Statistics 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. The data used in the projections is the latest available as at early March 2019 and includes the December quarter 2018 WPI data release. Other inflation and interest rate data were sourced from the Reserve Bank of Australia.

Forecasts of the economic variables in this report were mostly sourced from BIS Oxford Economics reports, including *Australian Macro Service, Long Term Forecasts: 2018 – 2033, Engineering Construction in Australia 2019-2033* and *Building in Australia 2018-2033*, along with other unpublished forecasts and from BIS Oxford Economics internal research and modelling.

The previous Summary section presents an overview of the outlook for the labour costs including numerical forecasts which are presented in the summary table.

Section 2 provides a macroeconomic outlook for Australia and the New South Wales. This section also has forecasts of key economic variables plus a discussion of the drivers and logic underpinning the projections, to provide context for the labour market outlook.

Section 3 discusses BIS Oxford Economics' national projections and discusses the use of the Reserve Bank of Australia forecasts of the Consumer Price Index (CPI) for the deflation of nominal wages. Not that most of the references to historical data and forecasts of wages in Sections 3 and 4 are in nominal terms unless specifically stated that the data/forecasts are in real (inflation adjusted) terms.

Sections 4 provides the forecasts and rationale of the wage projections for the Electricity, Gas, Water and Waste Services (EGWSS) sector for both Australia and the New South Wales, as measured by the Wage Price Index (WPI).

Appendices include an explanation of different wage measures and CV's of key personnel.

2. MACROECONOMIC OUTLOOK

2.1 AUSTRALIA OUTLOOK

Australia's economic growth has bounced back over the past year, with GDP increasing by 2.8% in 2017/18 (and calendar 2018), following only 2.3% in 2016/17 and an average of 2.6% over the past 6 years. However, overall growth is estimated to have slowed to 2.3% over the current financial year (2018/19), with a modest pick-up to 2.5% predicted for 2019/20.

Solid short-term outlook for Australian economy, mainly driven by exports

Over the next 2 to 3 years, GDP will be boosted by net exports, with solid growth in export volumes forecast. Underpinning this will be positive momentum in the global economy, new LNG capacity, and moderate increases in capacity in other key commodities. Also contributing is strong growth in services exports, led by inbound international tourism and education, which is being supported by a more competitive AUD. The outlook for manufacturing and rural exports is also positive (droughts notwithstanding), with both sectors taking advantage of Australia's comparative advantage in high quality, high value-added output.

Pace of expansion has been relatively subdued since the end of the mining investment boom

Australia moved from broad-based growth in the early 2000s and into an unprecedented mining investment boom over the decade to 2013. This shift was driven largely by the industrialisation and urbanisation of China (where annual GDP growth averaged over 10%), which lifted the Australian dollar to over US\$1.00 – a level not seen since the previous commodity boom of the early 1980s. The economy shifted resources toward servicing the mining investment boom and away from the (other) tradeables sector, which were negatively impacted by the appreciation of the A\$.

The end of the mining boom precipitated a sharp slowdown in the pace of growth of domestic demand. The main drag has been a substantial decline in the level of mining investment, which has coincided with (and contributed to) weakness in non-mining business investment. Net exports has acted as a partial offset during this period, with resource exports booming following the substantial increase in capacity, services exports recovering (driven by the depreciation of the A\$) and weak growth in import volumes.

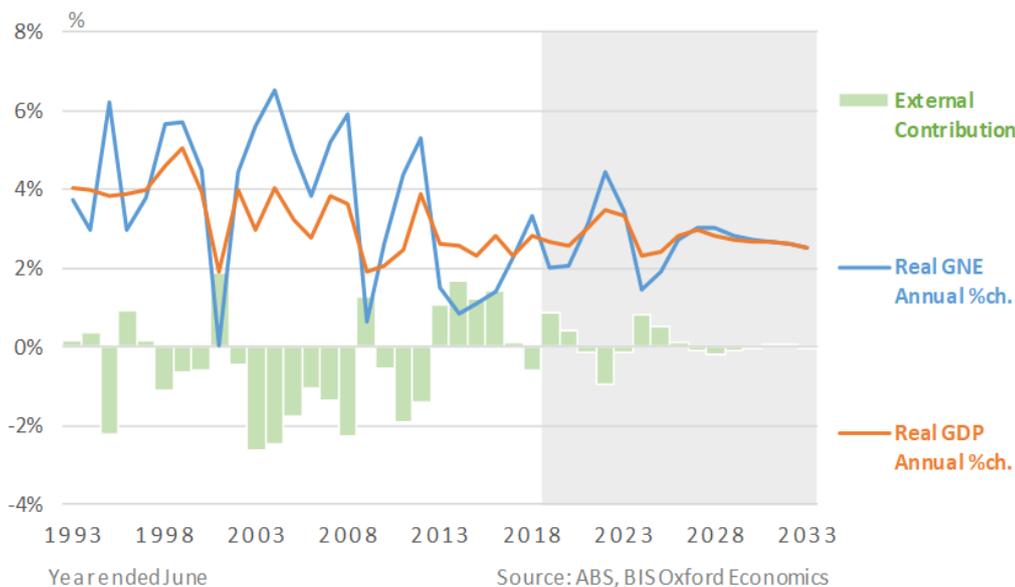
Broad-based growth has returned, with lower A\$ a key factor

Looking ahead, it is becoming apparent that the structural shift in the Australian economy back to broad-based growth following the mining boom is finally gathering speed, with the economy now more balanced and sustainable – back to where it was 15 years ago.

The lower A\$, which has weakened steadily over the last twelve months and currently sits around US 71 cents per AUD, has been fundamental in facilitating

the return of broad-based growth. Together with rising capacity utilisation and the recovery in profits, it has facilitated a turnaround in non-mining investment, which has become a key driver of domestic demand over the last year. Businesses in the agriculture, mining, tourism, international education and some other services have seen their competitiveness improve markedly, enabling them to compete on the international stage. And with all the major industry shutdowns now complete (the last being car production in 2017), the manufacturing sector is now taking advantage of the weaker A\$.

Figure 2.1 Australia – Basic Economic Indicators



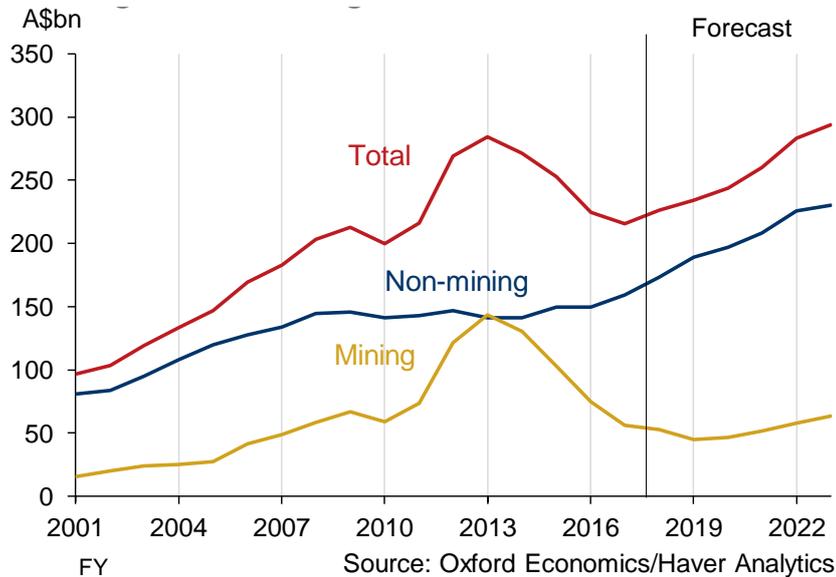
Strong global economy is supporting exports, but trade protectionism concerns rising

The acceleration in global growth over the past two years has also been supportive, boosting export volumes and initiating a recovery in commodity prices. Looking ahead, global economic growth is expected to have peaked in 2018 at 3.8%, with a gradually deceleration over the next five years to 3.3% in calendar 2023. The US economy is currently growing at its fastest pace in four years, but with capacity constraints starting to bite, we expect growth to slow as this year’s fiscal boost dissipates and inflation and US interest rates rise. Chinese growth will continue to decelerate as the economy proceeds with its own structural transformation toward domestic led growth and services. Momentum is also expected to ease in Japan and Europe as they return to full employment. On the other hand, solid growth is expected to continue in India and most of east Asia (excluding Japan), which augers well for Australian exports. Nevertheless, rising US interest rates will pose a risk for a number of emerging economies.

Of more concern is rising protectionism in the form of tariffs imposed by the USA and the reciprocal responses from China and Europe. Although our current view is that the trade war will have a minimal impact on overall global growth, the downside risks have increased. Much of the risks relate to uncertainty and their effects on business and consumer confidence. Already

there has been a sharp correction to commodity prices in late 2018, and we expect the trade uncertainty to weigh on prices for the next 1-2 years. However, by the early 2020s, the tightening supply-demand balance in a number of commodity markets is expected to initiate a recovery in prices, which will fuel the next round of mining investment.

Figure 2.2 Mining and Non-Mining Business Investment



Slower growth in domestic demand for next two years, following 2017/18 rebound

The recovery in domestic demand, which grew 3.4% in 2017/18, drove Australia’s GDP last year, but we expect it to weaken again over the next two years. Dwelling building is forecast to suffer a sharp decline over the next 2-3 years, public investment will decline in 2019/20 due to the end of the NBN roll-out and some major roads projects, while government consumption expenditure will also slow markedly over the next 3 years. Momentum in household spending is expected to slow, with consumers held back by slowing employment growth, weak growth in wages and other sources of income (including interest receipts and dwelling rental income). The main sources of growth in the domestic economy will come from moderate growth in non-mining investment and a recovery in mining capital expenditure from 2019/20.

Synchronisation of investment to drive stronger growth from early 2020s

By early next decade, the investment cycles – which are currently offsetting each other and out-of-sync – are all expected to move into upswing, although there will be differences in the strength and timing across the residential, business and public investment components. The strengthening in investment will lead to an increase in the pace of employment growth and, with the labour market tightening, an increase in wages, household incomes and consumer spending. In addition, with the government’s budgetary position improving due to increased taxes, the government is expected to loosen fiscal policy – either via increased recurrent or capital spending or tax cuts, or more likely a combination of all three.

The upshot is that growth in domestic demand will strengthen, while export growth is forecast to moderate as the increase in LNG production increases hit capacity, although services and non-commodity exports are expected to continue to grow. However, much stronger imports (in line with domestic demand) will see net exports put a small drag on growth. Nevertheless, GDP growth is forecast to lift and average 3.3% over 2021/22 to 2022/23.

Table 2.1 Australia – Key Economic Indicators, Financial Years

Year Ended June					Forecasts						
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total New Private Investment (+)	-2.1	-5.1	-1.6	3.8	-0.5	-1.3	2.5	8.5	7.3	-1.6	-2.2
New Public Investment (+)	-8.0	8.4	6.4	8.4	3.4	-0.6	1.6	4.0	3.5	-0.1	2.6
Gross National Expenditure (GNE)	1.1	1.4	2.2	3.4	2.1	1.7	2.6	4.1	4.0	1.7	1.6
GDP	2.3	2.8	2.3	2.8	2.3	2.5	2.7	3.3	3.3	2.3	2.4
Inflation and Wages											
CPI (Yr Avg) - RBA forecasts (*)	1.7	1.4	1.7	1.9	1.8	1.9	2.2	2.3	2.3	2.3	2.3
Wage Price Index (Jun on Jun)(**)	2.3	2.1	1.9	2.1	2.5	2.7	3.4	3.6	3.7	3.6	3.3
Wage Price Index (Yr Avg)(**)	2.4	2.1	2.0	2.1	2.4	2.6	3.2	3.6	3.7	3.6	3.3
Average Weekly Earnings (Yr Avg)(^)	2.4	1.9	2.0	2.4	2.5	3.1	3.6	4.2	4.3	4.1	3.8
Employment											
– Employment Growth (Yr Avg)	1.2	2.3	1.5	3.0	2.3	1.3	1.2	1.7	2.0	1.6	1.0
– Employment Growth (May/May)	2.0	1.9	2.1	2.6	2.3	1.0	1.4	1.8	2.1	1.1	1.1
– Unemployment Rate (May) (%)	5.9	5.7	5.5	5.4	5.1	5.2	5.2	4.9	4.7	4.8	4.8
Labour Productivity Growth											
– Total	1.1	0.6	0.8	-0.2	0.1	1.2	1.4	1.6	1.3	0.7	1.4
– Non-farm	1.1	0.8	0.7	0.0	0.3	1.1	1.3	1.8	1.3	0.7	1.4

Source: BIS Oxford Economics, ABS and RBA

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

*Headline CPI forecasts based on Reserve Bank of Australia's forecasts to December 2020 quarter. Beyond this, we've used the mid-point of the Reserve Bank's 2 to 3 per cent inflation target range.

** Based on Ordinary Time Hourly Rates of Pay Excluding Bonuses.

^ Average Weekly Ordinary Time Earnings for Full-Time Adult Persons.

Inflation and interest rates to remain low over the next 2 years, before gradually rising over early 2020s

With wages growth well below historical averages, domestic cost push pressures are expected to remain limited in the near term. Underlying inflation is forecast to rise from 1.7% now to 2.1% in 2020/21. A lack of inflation and continuing slack in the labour market is expected to keep the RBA on hold for a while, with the cash rate forecast to remain at 1.5% until late-2020, before rising to 2.75% by mid-2023 as wages and CPI inflation rise back toward (and slightly above) historical averages, and the unemployment rate falls below 5%. 10-year government bond rates will also gradually rise toward 3.5% by 2023, from just over 2% now. Australian long-term bond rates are expected to track the rise in US bonds over the next few years, with US bond rates expected to rise as a result of monetary tightening and the deterioration in the US budget

deficit. Meanwhile, the 1.25%pt rise in the cash rate in Australia means the benchmark housing variable rate will rise to 6.5% by mid-2023, which will be enough to slow consumer spending and impact housing and business investment over 2023/24 and 2024/25, with annual GDP growth easing to around 2.4%.

Overall, average annual GDP growth over the five years to 2022/23 is forecast to be 2.8%, which will be an improvement on the 2.6% average of the 5 years to 2017/18. Growth will also be far more domestically oriented, with Gross National Expenditure forecast to average 2.9%, compared to only 1.8% in the 5 years to 2017/18.

Mild slowdown in mid-2020s, before economy moves to trend growth

The tightening of monetary policy will precipitate an overall slowing of economic growth in the mid-2020s. But as consumers and businesses re-adjust to the 'normalcy' of higher interest rates – although at much lower levels than the 2000s and early 2010s – investment and consumer spending will return to long term trend (or potential) rates of growth over the second half of the 2020s.

2.2 NEW SOUTH WALES ECONOMIC OUTLOOK

In New South Wales, State Final Demand (SFD) is still growing at a solid pace but has slowed compared with the stellar growth of almost 4% seen a couple of years ago. Furthermore, as growth in other states improves, New South Wales is no longer an outperformer compared with the national average. In FY2018, the state's 3.4% growth rate for SFD matched the 3.4% growth in Australian domestic demand.

Spending in the state is being driven by strong business and public investment, strong growth in government spending and a healthy consumer sector, while growth in dwelling investment has slowed sharply over the past year from its double-digit increases of the previous three years. However, growth in Gross State Product (GSP) slipped below Australian GDP growth in FY18 (2.6% versus 2.8%), due to weak net international exports detracting from growth, although net interstate exports have positively contributed in line with the improvement in other states' economies. International exports have been weak due to declines in rural exports, sluggish minerals and coal exports, and a slowdown in services exports; while imports have been strong.

Meanwhile, employment has bounced back from the soft FY2017 to record growth of 4.1% for the year to January 2019, which is markedly ahead of overall national jobs growth of 2.2%. The state unemployment rate continues to track well below the national average and was a very low 3.9% in January 2019, compared to the national rate of 5.0%.

Over the next three years we expect GSP growth in New South Wales to continue to lag the national economy, growing at an average of 2.4% per annum on average. That's a result of a divergent pattern in some of the state's key drivers.

- Dwelling building has been a key driver of growth, but tighter lending restrictions are reining in demand, prices and development feasibility. Residential investment is forecast to decline over the next three years,

before favourable fundamentals, including a significant stock deficiency and (still) low interest rates, drive the next upswing from 2021/22 and the sector again becomes a key contributor to growth in the state economy.

- Private non-dwelling building will be key driver of growth over FY2019 to FY21, driven by strength in office, shop, hotel, transport-related and institutional building (such as private prisons). Meanwhile, further strong growth in private infrastructure (including electricity and telecommunications) and a recovery in mining investment in NSW will see private engineering construction make another strong contribution to growth in FY2019, before declining over FY20 and FY21 as some major projects finish.
- Strength in public investment is set to continue in FY2019, as partial privatisation of the state's electricity poles and wires network, amongst other assets, plus increased stamp duties and payroll taxes, have providing a boost to funding. The NSW Government is investing these funds into a range of transport infrastructure projects – including the North-West and Metro rail projects, WestConnex and Sydney Light Rail, plus Pacific Highway roadworks – while construction of public social and institutional buildings is also rising significantly, including schools, hospitals and sports stadiums. However, the completion of several projects (including the NBN), will see public investment decline in FY2020 and FY2021.
- Conversely, after another poor year of export growth, we expect exports to strengthen from FY2020 as rural exports recover from the current drought, as mineral and coal exports increase as new capacity comes onstream and the AUD remains in a US71-78 cents band, helping manufacturing and services exports and import substitution. Stronger growth in other states will also see a larger contribution from interstate trade. Meanwhile, only moderate growth in household spending is projected, held in check by weak wages growth and slower employment and population increases, compared to recent years.

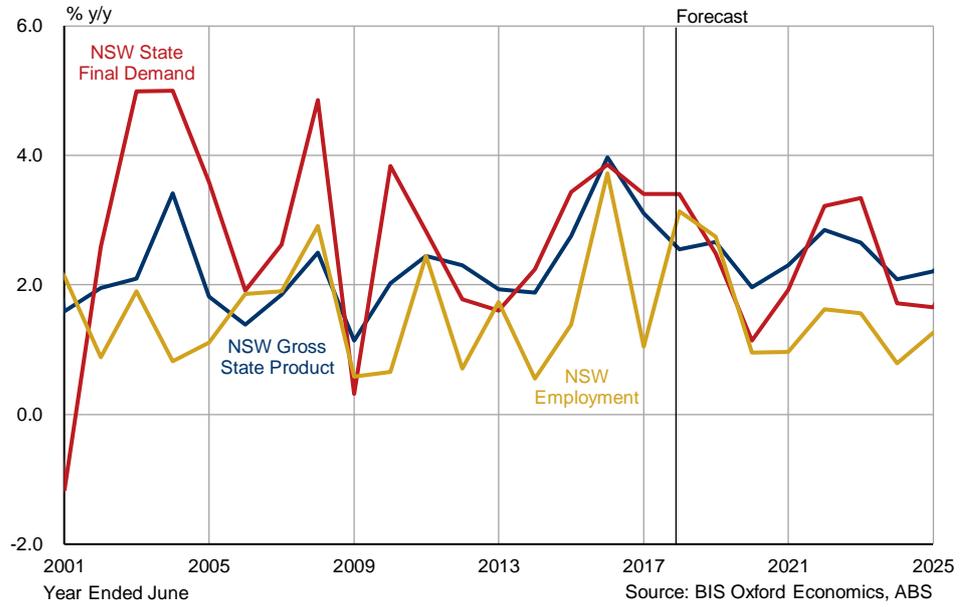
Overall, SFD is forecast to moderate over the next 2 years to 2.6% and 1.3% in FY2019 and FY2020 respectively, before picking up from FY2021 and averaging 2.8% over the 3 years to FY2023. GSP growth will be slightly weaker at 2.6%, but well up on the decade to FY2014, when growth averaged only 1.9%.

SFD and GSP growth is projected to slow over FY2024 and FY2025, due to faster increases in interest rates over 2022-2023 impacting housing investment and consumer demand, with NSW suffering relative to the national average due to a higher household debt burden. A gradual pickup in growth is then expected to ensue from FY2025, as consumer spending and housing recover and strengthen.

Over the next seven years to FY2025 inclusive, growth in the New South Wales economy is forecast to lag the national average, by around -0.3% to -0.4% for both SFD and GSP. A key reason will be slower population growth compared to the national average, with the state's population to grow at an average of almost 1.2%, -0.25% slower than the national average, and down from the 1.5% of the past 5 years when the state virtually matched national population increases. Another reason is that the mining states will return to solid growth,

now that the mining investment slump has finished, with those states set to again return to above-average growth.

Figure 2.3 New South Wales Key Economic Indicators



3. WAGES AND INFLATION OUTLOOK

3.1 CPI OUTLOOK

Limited inflationary pressures in recent years

Consumer price inflation has been subdued for the past four years, with the substantial depreciation of the A\$ (which would normally increase inflation) between 2013 and 2016 coinciding with a sharp correction in oil prices (which reduced both petrol prices and freight costs) and falling internal price pressures. Underlying inflation fell below the Reserve Bank's target 2-3% band in March 2016 and has stayed there, while headline inflation has also remained (mostly) below 2% since late 2014.

Tradeables inflation has been especially weak - virtually non-existent since the June quarter 2014. Stagnant world prices for manufactured goods, reduced transport costs, margin compression by exporters globally, and potential hedging by importers have combined to limit price rises for imported consumer goods. Furthermore, the appreciation in the Australian dollar over the 18 months to December 2017 reduced import prices, although the A\$ depreciation over the past year has partially reversed this trend, leading to rises in tradeables inflation – 0.6% over 2018. However, high levels of retail and supermarket competition domestically have continued to limit price growth.

Meanwhile, non-tradeables inflation – which now constitutes almost two-thirds of the CPI – averaged 3.1% through FY18, before diving to 2.2% (annual growth) through-the-year to September 2018, before rising to 2.4% in the December quarter, 2018. Driving non-tradeables inflation in FY18 were sharp rises in electricity and gas prices, cigarettes and tobacco (due to hikes in excise taxes), child care, house purchases, health services, education and insurance services. However, a large one-off fall in child care costs and a much smaller rise in utilities bills underpinned the lower increase in non-tradeables inflation in the September quarter. Other areas of non-tradeables inflation have been contained by dismal wages growth, which has kept down unit labour costs, limiting cost-push inflationary pressures.

Oversupply of housing will keep a lid residential rent increases

In addition to goods and services provided by producers, the CPI basket also includes residential property rent (with a weigh of 7.2%). In addition to low wage growth and the retail environment, residential property rent growth has been subdued, with Sydney recording the largest annual fall in rents on record. Rents across the entire country have risen only 1.6% over the last year, according to CoreLogic, and year-ended rent inflation in the Consumer Price Index in December, 2018 was 0.5%, the lowest since 1994. Rental price growth is likely to stay low until the early-to-mid 2020's, when currently oversupplied markets become more balanced.

Price pressures set to remain subdued in the near term

Overall, the headline CPI inflation rate increased from 1.9% in the March quarter, 2018, to 2.1% in the June quarter, largely due to a spike in petrol prices, before easing back to 1.8% in the December quarter, 2018. Meanwhile,

underlying (or core) inflation - the average of the RBA's trimmed mean and weighted median inflation measures – has also eased back to 1.8% over the June to December quarters from 2.0% in the March quarter. Nevertheless, with inflationary pressures building globally and the economy gradually absorbing the remaining spare capacity, we expect both headline and underlying inflation to rise from here, albeit only gradually and slowly.

Hefty jumps in tobacco excise to continue to boost headline CPI, with further rises in utility prices likely

Putting upward pressure on the headline rate will be further planned increases in tobacco excise duty over the next three years. Tobacco excise duties are legislated to increase by 12.5% each year on September 1 of each year from 2017 through to September 1 2020. This combined with the bi-annual indexation of the tobacco excise to average weekly ordinary time earnings and aligning the tax treatment of roll your own tobacco and cigarettes, will add significantly to headline CPI – around 0.25% points to the annual rate. Meanwhile, energy prices are likely to rise over the next one to two years as higher wholesale prices are passed on to consumers, despite optimism as expressed by the RBA and competition regulators that competition among electricity retailers will limit any further increases.

A\$ depreciation and higher oil and food prices to provide upward price pressure

In the near term, upward price increases will come from the depreciation of the A\$ since early 2018, with the exchange rate declining from over US79 cents in January 2018 (65.3 on a trade-weighted index – TWI) to around US71 cents (or around 60.5 for the TWI) in the March quarter, 2019. Consumer import prices increased a cumulative 3.3% over calendar 2018, while overseas holiday travel and accommodation prices in the CPI have increased. Our forecast is for the A\$ to hold around 70 to 73 cents until late 2020, before gradually rising.

Rising oil prices pushed up the CPI during 2018, before a sharp decline in the December quarter saw fuel prices tumble. Oil prices are now rising again, and although we don't expect the rapid increases of 2018 to be repeated, oil and local fuel prices are expected to gradually rise over the next few years. In addition, there will be indirect impacts via higher transport costs in the supply chain.

The current drought and higher food import prices (from the lower \$A) are also expected to push up food prices over the near term, reversing a key factor which has muted prices over recent years – food accounts for over 10% of CPI basket (excluding meals out and takeaway food). In any case, food inflation is expected to rise over the medium term. Food inflation has averaged close to 3% p.a. over the past two decades but had been very weak over the past five years (averaging only 1.3% p.a.), due to intense competition between the major supermarkets (Coles, Woolworths and 'new-comer' Aldi) and falling or weak global agricultural prices. These two influences are unsustainable – the supermarkets cannot keep cutting prices (and either their own margins or suppliers' margins), while world agricultural prices will pick up over the medium term as global oversupply dissipates.

Softness in the economy will offset pressures on inflation in the near term, before inflation rises in early-to-mid 2020’s

Offsetting these inflationary pressures will be soft growth in wages and the competitive retail environment, which will limit final price rises over the next two years. Headline CPI inflation is forecast to gradually pick up to 2.5% by late 2021, while the underlying rate drifts back up to 2.4%, with the difference in the two measures of price inflation due to hikes in tobacco, utilities, food and fuel.

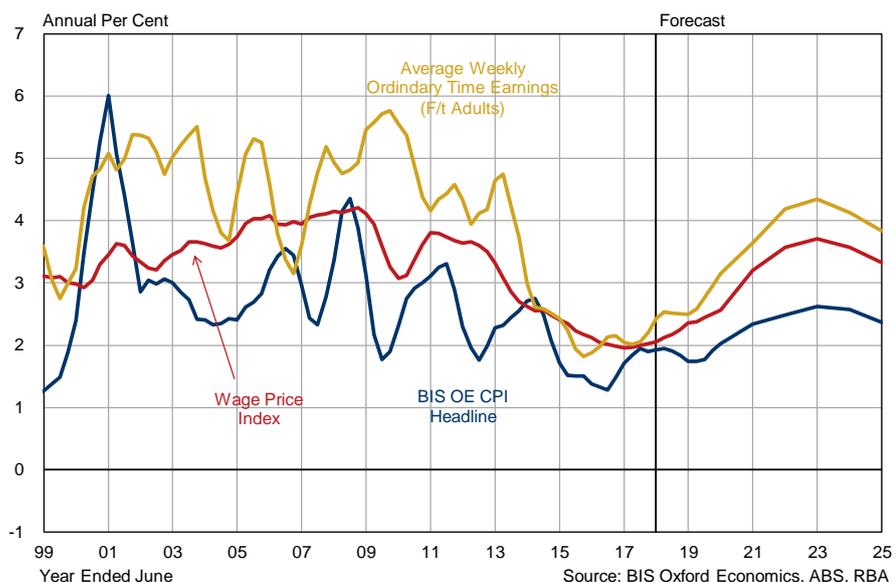
It is our view that inflation will subsequently accelerate and rise above the 2.5% mid-point of the RBA’s band during 2022 as economic growth increases, profits, employment and wage growth strengthen, and inflationary pressures begin to build. The rise in the A\$ toward US79 cents in late 2022 will provide some offsetting pressures over 2021/22 and 2022/23.

CPI inflation projected to average close to 2.5% over the long term

Headline CPI inflation is expected to sit close to the mid-point of the RBA’s 2-3% target band in the long run based on the following:

- Tradeables inflation, which constitutes around one-third of the CPI basket, is forecast to increase by an average of around 1.0% - 1.5% per annum contributing around 0.4% to annual inflation. Limited movements in the A\$, steady (but subdued) increases in global manufacturing costs and some commodity price increases underpin this projection.
- Non-tradeables inflation (comprising the remaining two-thirds of the basket) is assumed to increase by around 3.0 to 3.3% per annum contributing roughly 2.1% to headline inflation. The main driver of this is the projected acceleration in wage growth.

Figure 3.1 Australia: Wages and Prices



3.1.1 RBA CPI Forecasts are used to calculate real wages

To calculate real wage increases, we deflate nominal wages growth by deducting expected inflation over a 10-year period, using the CPI forecasts from the Reserve Bank of Australia (RBA). The RBA's February 2019 'Statement on Monetary Policy' forecast the headline CPI rate at "1¾ per cent" in the June 2019 and December 2019 quarters, rising to 2% in the June 2020 quarter – giving an average of 1.8% for 2018/19 and 1.9% for 2019/20. The RBA then forecasts headline CPI to rise to "2¼ percent" in both the December 2020 and June 2021 quarters - giving a year average of 2.2% for 2020/21. We then impose the mid-point of the RBA's target band, 2.5%, as the projection for the June quarter 2022, giving a year average CPI rate of 2.4% for 2021/22.

Expected inflation for the next 10 years is derived by using the geometric mean of RBA forecasts for the next three years, with the 2.5% mid-point of the RBA's inflation target band (i.e. 2 to 3%) used for the remaining 6 years. The geometric mean of the 10 years from 2018/19 to 2027/28 is then 2.3%, which is then used as the wage deflator for the regulatory period. This methodology has been adopted by the AER (Australian Energy Regulator) in their recent revenue decisions. For example, see Transgrid Draft Determination 2018-23, Attachment 3, page 142.

3.2 WHOLE ECONOMY WAGE OUTLOOK

3.2.1 National Wages

The key determinants of nominal wages growth are consumer price inflation, productivity, the relative tightness of the labour market (i.e. the demand for labour compared to the supply of labour), and compositional (structural) changes in the labour market following the end of the mining investment boom.

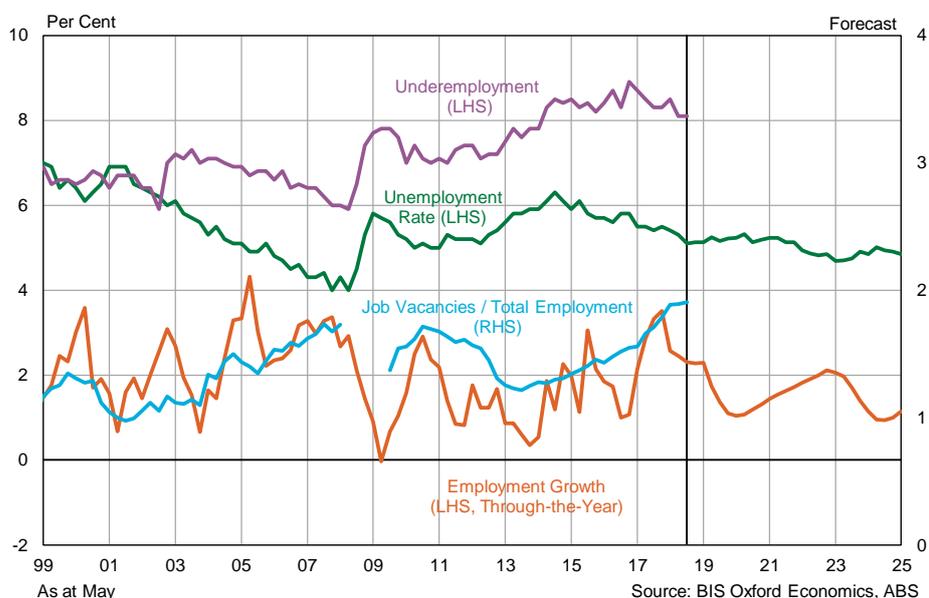
Wages growth has slowed markedly over the past 5 years, primarily due to weaker demand for labour, caused by both cyclical and structural factors. Among the underlying structural changes causing this unspectacular wage growth are increasing market flexibility and casualisation of the work force (what is commonly coined the 'gig-economy'), falling union membership, slower productivity growth and the effects of lower inflation expectations.

Low wages growth is both a product of and key cause of low underlying inflation. Low wages are keeping business costs down and thus muting upward price pressures, while a significant section of pay deals are being set in line with CPI inflation – especially for employees on awards.

The unemployment rate and underemployment rate are key indicators of the amount of slack in the labour market. The unemployment rate has been trending down in recent quarters, falling to 5% in September 2018 and holding there since. Historically this rate was seen as close to the NAIRU, (the Non-Accelerating Inflationary Rate of Unemployment or the 'natural rate of unemployment'), but our latest research suggests that the natural rate has decline in recent years, as a result of falling rates of unionisation and increasing casualisation. Given this, we still see spare capacity in the labour market.

Compounding this, Australia's underemployment rate¹ remains at historic highs – averaging 8.3% over the past year. The high underutilisation rate – the sum of unemployment and underemployment – reflects considerable slack in the labour market, which limits the bargaining power of workers and reduces pressure on wages.

Figure 3.2 Employment and Unemployment



Looking ahead, we expect employment growth to weaken over the next two years. There has been a slowdown in the growth of job advertisements recently (a good leading indicator for employment growth), and the recent high frequency indicators have confirmed our view that the economy is growing at a solid but not spectacular pace. Jobs growth will weaken due to the worsening downturn in residential investment, slower growth in government spending and subdued consumer spending. With employment growth set to remain modest and unemployment to drift up marginally, upward pressure on wages will be limited.

Trends in wage growth by pay-setting method have diverged in recent years. Aggregate wage growth has slowed significantly since December 2012 due to a collapse in wage increases awarded to the 47% of non-managerial full-time workers who are on individual agreements (contracts) with their employers. In contrast, workers subject to collective agreements have maintained wage rises above 3% pa. However, with union membership at an all-time low, the proportion of the full-time non-managerial workforce on collective agreements has fallen from 42% in 2010 to 37% in 2016, although they have edged up to 38% in 2018. Workers on individual agreements, whose wage rises respond more to prevailing labour market conditions, have been at the mercy of slackness in labour market and the end of the mining investment boom.

¹ Underemployment comprise all employed persons who are willing and available to work additional hours, and were not fully employed (worked less than 35 hours) in the reference week.

The latest data suggests that we have moved off the bottom of the current wage cycle, with the wage price index (WPI) rising from its lows of 1.9% in June 2017 to 2.3% in the December quarter, 2018. These increases may have been helped by higher increases in the minimum wage decisions and collective bargaining outcomes over the past year.

3.5% increases in the National Wage Case and recent higher enterprise agreements will push wages up

At the Annual Wage Review in June 2018, the Fair Work Commission awarded a 3.5% increase to the National Minimum Wage (NMW). In its decision, the panel estimated 22.7% of the labour force have their pay set by awards. However, this accounts for only about 13% of full-time employees (more if you include part-time and casuals) - those paid at junior, apprentice or trainee rates based on the NMW and modern award rates and of course those on the NMW. The minimum award rises take effect from the 1st July 2018. However, the effects may reach a much larger number of employees, potentially up to 40% in total, because wage increases in some enterprise agreements are linked or benchmarked in some way to the review's outcome.

There has also been an improvement in the outcome of enterprise agreements (via collective bargaining) since the low of 2.2% set in September quarter, 2017. Average annualised wage increases (AAWIs) formalised in the enterprise agreements increased to 2.7% in the March and June quarters 2018, before jumping to 3.2% in the September 2018 quarter (latest data from the Department of Jobs and Small Business). It's likely that these outcomes could have been influenced by the 2017 national wage case which awarded a 3.3% effective July 2017 (which was appreciably higher than the 2.4% and 2.5% increases awarded in the previous two years). The improving labour market may have helped lead to the recent higher outcomes in collective agreements. The even higher 3.5% national wage case increase last year should underpin further upward momentum. However, the average duration for the collective agreement is around 3 years, so the recent improvement in formalised agreements will take time to manifest in overall wage outcomes. The AAWI in current operating agreements is 2.7%, and, given the low number of agreements negotiated last year, overall wage agreements in the collective bargaining segment – which cover 38% of the workforce – are likely to see limited increases on the 2.7% recorded in the latest data.

The remaining 48% of employees have their pay set by individual arrangements, whether it be individual contracts or some other form of salary agreement, which may include incentive-based schemes. As the accompanying table shows, it is this segment that has experienced the weakest wage outcomes over the past five years, averaging only 1.3% y/y. It is this segment that has been impacted by the structural and cyclical weaknesses outlined above, and is the main reason why WPI increases are at record lows. Nevertheless, we expect a continuation of the higher NMW and overall improvements in pay rises in the individual arrangements segment to lift the WPI from 2.1% in 2017/18 to 2.4% and 2.6% in 2018/19 and 2019/20. Other wage measures – average weekly earnings (AWE) and average weekly ordinary time earnings (AWOTE) - will also pick up over the next two years, slightly faster than WPI due to compositional effects and bonuses and incentives linked to recent higher profits.

Wage growth is then predicted to accelerate from 2020/21, as tighter conditions in the labour market feed through. The forecast increases in profits, combined with rising price inflation and declines in unemployment, will push up wages over 2020/21 to 2022/23. The WPI is projected to increase 3.6% in 2021/22 and peak at 3.7% in 2022/23, before subsequently easing as economic growth slows around the mid-2020s – while AWE and AWOTE are forecast to rise to around 4.3% by 2022/23.

Table 3.1 Australia All Industries: Wages Growth Segmented by Pay Setting Method

Year Ended June	% of Workforce in 2016	Year Average % change												Average 2019-25	Average 2021-25
		2015	2016	2017	2018	Forecasts									
						2019	2020	2021	2022	2023	2024	2025			
Wage Price Index															
Awards Only	15.9%	3.0	2.5	2.4	3.3	3.5	3.0	3.1	3.4	3.5	3.4	2.8	3.2	3.2	
Collective Agreements	37.1%	3.3	3.2	3.1	2.8	2.8	2.9	3.2	3.4	3.7	3.7	3.6	3.3	3.5	
Individual Arrangements	47.0%	1.4	1.1	0.8	1.0	1.6	2.1	3.3	3.7	3.8	3.5	3.3	3.1	3.5	
Wage Price Index (a)	100%	2.4	2.1	2.0	2.1	2.4	2.6	3.2	3.6	3.7	3.6	3.3	3.2	3.5	
Compositional Effects + Bonuses, etc		0.0	-0.2	0.1	0.4	0.1	0.6	0.4	0.6	0.6	0.6	0.4	0.5	0.5	
AWOTE (b)	100%	2.4	1.9	2.0	2.4	2.5	3.2	3.6	4.2	4.3	4.1	3.8	3.7	4.0	

Source: BIS Oxford Economics, Haver Analytics/ABS, Department of Employment

(a) Ordinary time hourly rates of pay for full-time adults.

(b) Average Weekly Ordinary Time Earnings for Full-time Adults (excludes overtime but includes bonuses).

In the long run, wage growth is determined by productivity growth and inflation. We expect that AWE growth will level off at its long run level of around 3.8% over the decade to 2033, driven by non-farm productivity growth of around 1.3% and inflation of around 2.5%. In terms of the wage price index, long run growth in the WPI is expected to be around 0.3% less than AWE, in line with the average historical trends over the past two decades since the introduction of the WPI.

3.2.2 New South Wales ‘All Industries’ Wage Outlook

The ‘all industries’ WPI for New South Wales is used to escalate JGN’s general labour (i.e. non-network and non-external professional labour) costs. Growth in total ‘all industries’ wages at the state level usually depends on the relative strength of the state economy and labour markets, compared to the national average. Over the past five years, the NSW all industries state average has been stronger than the national average. This is in line with the NSW economy out-pacing growth in the national economy, in terms of state final demand (SFD), Gross State Product (GSP) and employment, for most of the past five years. This has seen the state unemployment rate being consistently below the national average. The tighter labour markets and higher labour demand has resulted in higher wages growth over the past five years.

Going forward, we expect NSW economic and employment growth to slip below the national average from the early 2020s. However, growth will not be significantly below, given our forecast that economic growth will be 0.3% to 0.4% below the national average – with employment growth around 0.2% to 0.3% below the national average. However, we expect the state’s unemployment rate will remain below or close to the national average over the long term – it has been consistently below the national average by around 0.5%

over the past few years. Indeed, we expect the state unemployment rate to remain below 5% over the next seven years, and approach 4% on occasion.

The tight labour markets over the next seven years means there will continue to be upward pressure on wages in the state. Accordingly, we are forecasting wages growth at the all industries (or total state average) level will be similar to the national average over the forecast period. In the five years to 2024/25, we are forecasting the total state (all industries) WPI in New South Wales to average 3.4%, just below the 3.5% national average. In real (inflation-adjusted) terms, the average annual increase is forecast to be almost 1.1% (see summary table in the Executive Summary).

BIS Oxford Economics Wage Growth Model

BIS Oxford Economics' model of wage determination is based on the analysis of expected future wage movements in the three main methods of setting pay, as each discrete pay setting method has its own influences and drivers (see Table 3.1). The main pay setting categories and their key determinants are:

- Employees under awards have their pay determined by Fair Work Australia in the annual National Wage case. When determining pay increases, Fair Work Australia aim to maintain the standard of living of those employed on awards by providing a safety net of fair minimum wages. Hence, they focus on the overall performance of the domestic economy, taking into account productivity, business competitiveness, inflation and employment growth. This means that increases in the Federal Minimum Wage are usually based on recent CPI growth along with Fair Work Australia's view on short term future conditions for the Australian economy. From 1 July 2018, the minimum wage has increased by 3.5% following a 3.3% rise in July 2017 and a 2.4% rise on 1 July 2016. At the all industries level, 13% of all non-managerial full-time employees (data excludes those in agriculture, forestry and fishing) have their pay rises determined by this method.
- For employees under collective agreements (representing 38% of all employees), their pay is determined through enterprise bargaining, and wage increases are influenced through a combination of recent CPI, inflationary expectations, profitability levels of relevant enterprises, business conditions, and the short term economic outlook. Workers unions can also play a significant part in negotiations, especially unions with a good position in industrial relations through strong membership. With the average duration of these agreements currently two to three years, BIS Oxford Economics use the most recent agreements formalised in recent quarters as a basis for our near term forecasts. Beyond that, collective agreements are based on our expectations of economic conditions.
- The remaining 48% of employees have their pay set by individual arrangements, whether it be individual contracts or some other form of salary agreement, which may include incentive-based schemes. Similar to the minimum wage and collective agreements, inflation and inflationary expectations have a strong influence on agreements, as well as the strength of the labour market. Individual arrangements are skewed towards more skilled workers, so the balance between demand and supply in skilled labour can be an important influence

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 WPI, particularly at the all industries level, although some compositional problems occur at the sectoral level, particularly for sectors with a relatively small employment base (such as electricity, gas, water and waste services).

The 'bottom-up' approach to wage forecasting is complemented by a more formalised 'top-down' macroeconomic modelling framework – to ensure an overall macroeconomic consistency with output, employment, productivity and price variables. The top-down macroeconomic modelling methodology becomes more relevant beyond the next 2-3 years.

4. UTILITIES WAGES OUTLOOK

4.1 CHOICE OF THE WAGE PRICE INDEX AS THE MEASURE OF LABOUR COSTS

The WPI (wage price index) for the EGWWS (Electricity, Gas, Water & Waste Services or “Utilities”) sector in New South Wales is used as a proxy for all of JGN’s ‘network’ labour costs. Network labour costs includes all internal labour (i.e. all head office staff including professional and admin employees plus field employees) as well as any external labour hired to provide field services such as ‘asset management’ services. Businesses providing these field services are usually classified to the utilities sector. Hence, including their labour costs as part of JGN’s opex ‘network’ labour and escalating it with the WPI for the state utilities sector will be consistent with the AER’s framework. That being said, some of JGN’s internal staff may be involved in project delivery such as replacement and/or augmentation capital projects. Their labour cost can be included in the capex calculations. If they are included in the capex, they should be excluded from the opex in order to avoid double counting of costs.

BISOE chose to use the Wage Price Index (WPI) as the key measure of labour costs for the forecasts of Electricity, Gas, Water and Waste Services. The key motivations for this are:

- (a) Greater data availability: the EGWWS WPI is available at the national level and for some key states (NSW and Victoria), both on quarterly and annual basis. Average Weekly Earnings (AWE) and Average Weekly Ordinary Time (AWOTE) are not available by industry by state, and at the national level are only published every 6 months; and
- (b) The Australian Energy Regulator (AER) prefers the WPI as it has less volatility than AWOTE and is a better measure of underlying trends.

4.2 NATIONAL EGWWS WPI FORECASTS

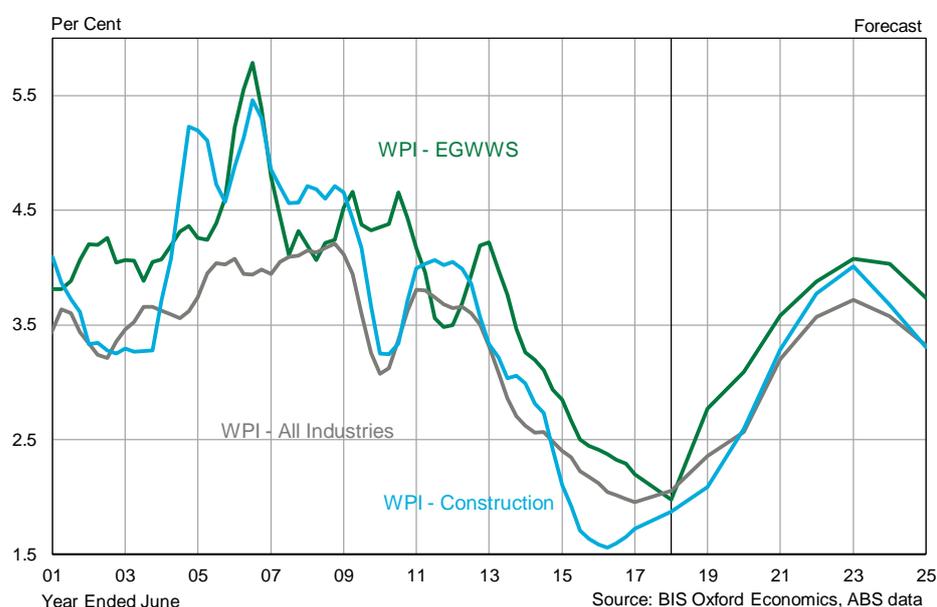
The EGWWS wage price index growth has consistently been above the national average since the index’s inception in 1997 and averaged 0.6% higher over the past 17 years (see Table 4.2 and Fig 4.1). While growth in average weekly ordinary time earnings (AWOTE) of the electricity, gas, water and waste services sector has displayed considerably more volatility over the past two decades (mainly related to compositional effects), AWOTE growth in the sector has also usually been higher than the national average over the past six years (see Table 4.2).

Wages growth in the EGWWS sector is invariably higher than the total Australian national (all industry) average.

To a large extent, this has been underpinned by strong capital works program in the utilities sector since the beginning of the last decade until 2012/13 (resulting in robust employment growth over the same period), strong competition from the mining and construction workers for similarly skilled labour and the powerful influence of unions in the utilities sector.

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

Figure 4.1 Wage Price Index - Australia All Industries, Electricity, Gas, Water and Waste Services



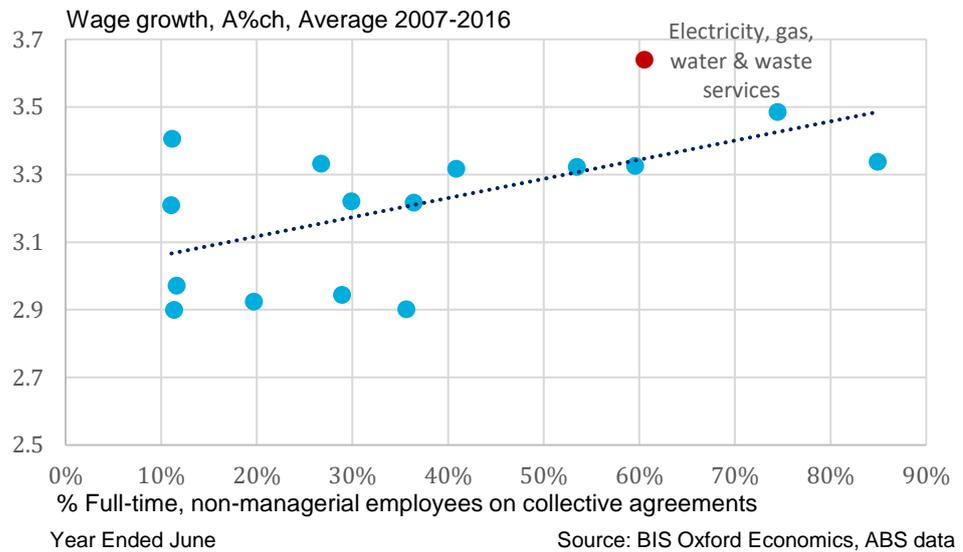
Strong Union presence in the industry have seen collective agreements outcomes above the All Industry average.

Trade unions are typically able to negotiate higher-than-average wage outcomes for their members through collective bargaining, resulting in stronger wage growth than the all-industry average. Across the EGWWS sector, there are a number of utilities unions such as the Communications, Electrical and Plumbing Union (CEPU) and Australian Services Union (ASU), which have a history of achieving high wage outcomes for the sector. Other unions active in the sector include the Australian Workers Union (AWU).

As at May 2018, 64.6% of full-time non-managerial employees in the EGWWS industry have their wages set by collective agreements, considerably higher than the national average of 38.4%. Over the past 10 years, a higher proportion of workers on collective agreements is associated with higher wage growth, with a correlation coefficient of +0.6 (see Figure 4.2). As we expect that the EGWWS industry will continue to have higher levels of unionisation than the

national average, we expect that unions in the EGWWS industry will continue to be able to negotiate for higher wages for a substantial proportion of EGWWS employees, resulting in EGWWS wages growing faster than the national average.

Figure 4.2 Average wage growth and unionisation rates by industry, 2007-2016



The key elements of the utilities wage forecast are set out in Table 4.1. This shows that collective bargaining dominates the pay setting arrangements in the utilities sector, while the relative absence of workers relying on (often) low-increase awards (set in the National Wage Case) means the overall average level of total utilities wages (in A\$ terms) will generally be higher than the all industries average. Over the past five years, the outcomes from collective agreements in the EGWWS sector have been 0.2%pts higher, on average, than the all industries collective agreements average (3.5% compared to 3.3%). We expect this trend to continue over the outlook period, with collective agreements achieving average increases of 3.7% for the utilities sector, compared to 3.3% for all industries.

BIS Oxford Economics analysis shows collective agreements in the EGWWS sector have been on average around 1.5% higher than CPI inflation over the decade to 2010 (excluding the effects of GST introduction in 2000/01). In the five years to 2010 when the labour market was very tight, collective agreements were on average 1.7% above the CPI. Given the strength of unions in the sector and a still strong demand for skilled labour, collective agreements are forecast to remain around 1.3% above the 'official' CPI over the forecast period, which is lower than previous periods.

As well as increases in CPI, increases in collective agreements under enterprise bargaining are also influenced by a combination of inflationary expectations, the recent profitability of relevant enterprises, current business conditions and the short-term economic outlook, and, as mentioned, by the

industrial relations ‘strength’ of relevant unions. Because the average duration of agreements runs for two-to-three years, BIS Oxford Economics bases its near-term forecasts of Enterprise Bargaining Agreement (EBA) wages on the strength of recent agreements, which have been formalised or lodged (i.e. an agreement has been reached or approved) over recent quarters.

We expect EBA outcomes to show modest growth over the next two years but remain above inflation and the ‘all industries’ average given that the demand for skilled labour remains strong and particularly given the recent high enterprise agreement outcomes in the construction sector. This will influence negotiations in the EGWWS sector, as some skills can be transferable.

We believe investment in the sector, particularly engineering construction, has been the key driver of employment growth in the sector over the past decade. Fig. 4.2 illustrates this relationship, and shows employment has a stronger relationship with utilities engineering construction rather than utilities output.

Individual agreements will strengthen from their current weakness.

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

Wage growth from individual agreements is estimated to have slowed appreciably over the past three years, although we believe there have been compositional effects that have negatively impacted the estimation for this segment. Nevertheless, some of this reflects general weakness in the economy and the full-time labour market. However, this is expected to turn around from this year, albeit gradually. Currently there are pressures building: a recent survey by the Australian Industry Group found that 3 in 4 employers reported an increasing shortage of technicians and trade workers, and employees with STEM skills. These are essential workers in the utilities sector. Other business surveys are reporting similar findings in terms of increasing difficulties in sourcing skilled workers.

With the economy expected to return to balanced and trend growth early next decade, employment growth will outpace population and labour force growth and the unemployment rate is expected to drop below 5% early-to-mid next decade. Hence, from the early-to-mid 2020s, we expect to again witness the re-emergence of skilled labour shortages and competition for scarce labour particularly from the construction sector, which will push up wage demands in the utilities sector. Stronger increases are expected from the beginning of next decade in line with a strengthening economy. Businesses will find they must ‘meet the market’ on remuneration in order to attract and retain staff and we expect wages under individual arrangements to continue to rise through the middle of the next decade.

Utilities wage growth is forecast to continue to outpace the national ‘all industries’ average over the forecast period.

Overall, BIS Oxford Economics expects total wage costs for the Australian Electricity, Gas, Water and Waste Services (EGWWS or Utilities) sector —

expressed in Average Weekly Ordinary Time Earnings (AWOTE) — will average 4.2% per annum over the five years to 2024/25, 0.2% higher than the national All Industries AWOTE average of 4.0% per annum over the same five-year period (see Table 4.2). In terms of underlying wages growth in the utilities sector for total Australia — expressed in wage price index (WPI) terms — BIS Oxford Economics is forecasting an average of 3.9% per annum (0.4 percentage points higher than the national all Industries WPI average of 3.5% per annum) over the five years to 2024/25.

Our AWOTE forecasts are higher due to compositional effects. Apprentices, trainees and numbers of new staff have increased markedly over recent years, across the electricity, gas and water sector generally. Given slower growth in employment numbers over the next decade, it is likely that there will be overall up skilling of the existing workforce, which will see a commensurate movement by much of the workforce into higher grades (i.e. on higher pay), resulting in higher earnings per employee.

Table 4.1 Electricity, Gas, Water & Waste Services, Australia - Wages Growth by Workforce Segmented by Pay Setting Method

Year Ended June	% of Workforce in 2016	Year Average Per Cent Change (a)												
		2015	2016	2017	2018	Forecast								Average 2019-25
						2019	2020	2021	2022	2023	2024	2025		
Awards Only	5.7%	3.0	2.5	2.4	3.3	3.5	3.0	3.1	3.4	3.5	3.4	2.8	3.2	3.2
Collective Agreements	60.6%	3.3	3.2	3.0	2.9	3.1	3.2	3.5	3.8	4.1	4.1	3.9	3.7	3.9
Individual Arrangements	33.6%	1.9	0.9	0.6	0.0	1.9	2.8	3.9	4.1	4.2	4.0	3.7	3.5	4.0
Wage Price Index (a)	100%	2.8	2.4	2.2	2.0	2.8	3.1	3.6	3.9	4.1	4.0	3.7	3.6	3.9
Compositional Effects + Bonuses, etc		-2.2	1.1	2.1	0.3	-1.4	0.3	0.3	0.4	0.3	0.4	0.3	0.1	0.3
AWOTE (b)	100%	0.7	3.5	4.3	2.3	1.3	3.4	3.9	4.3	4.4	4.4	4.0	3.7	4.2

Source: BIS Oxford Economics, Haver Analytics, Department of Employment

(a) Ordinary time hourly rates of pay for full-time adults.

(b) Average Weekly Ordinary Time Earnings for Full-time Adults (excludes overtime but includes bonuses).

Total EGWWS wages growth understates wages growth in the Electricity sub-sector.

Related to the above point, we also believe the overall wage growth forecasts for the total EGWWS sector (presented in the accompanying tables) will understate wages growth in the electricity sub-sector, particularly as the labour market tightens for workers with higher skills. Independent studies have shown that the electricity and gas sub-sectors have a larger number of specialised roles, such as electrical engineers, structural engineers, electricians and gas fitters – who have skills that are transferable across other industries such as mining, construction and manufacturing, and are often in high demand.

On the other hand, the water supply, sewerage and drainage services and waste collection, treatment and disposal services sub-sectors have a higher proportion of non-specialised occupations with lower skill levels, e.g. truck drivers, forklift drivers (Source: Victorian Department of Education and Early Childhood Development, Victorian Electricity and Gas Industry Skills & Training Needs 2013; Victorian Waste and Waste Services Skills & Training Needs 2013. May 2014). With the supply of lower skilled workers growing relatively

quickly, wage increases for this group are subdued compared to higher skilled workers.

This is supported by Industry wage data for 2016/17 from the ABS, which shows that average wage levels in the electricity sub-sector are over 50% higher than employees in the waste sub-sector, and 40% higher than those in the water and sewerage sub-sector. In effect, the overall EGWWS average wage level is dragged down by the water and (particularly) waste sub-sectors. Therefore, it is likely that future labour escalation rates for electricity and gas workers will exceed those of other workers in the overall EGWWS sector.

EGWWS sector has high levels of productivity, compared to the national average, which underpins higher wages.

The EGWWS sector has one of the highest levels of sectoral productivity – as measured by real Gross Value Added (GVA) per employed person – among the 18 industry sectors, with only Mining and Finance & Insurance Services having higher productivity. Utilities’ productivity is more than double the national average according to ABS data for Australia and well above the average for the New South Wales (see figure 4.5). High productivity levels and commensurate skill levels are the key reasons why wage levels are much higher in the utilities sector than most other industries (in terms of average weekly earnings measures – see table 4.2).

However, over the past 18 years, the growth in productivity in the sector has not been a driver of higher wages growth in the utilities sector. Productivity suffered a steep decline over 2001 to 2014 due to a combination of strong employment growth (mainly due to rising investment, as previously discussed) and weak growth in GVA, both in Australia and the New South Wales (see figure 4.3). Meanwhile, utilities wages growth was relatively strong over this same period (see table 4.2). In effect, there is no clear relationship between wages growth and the traditional productivity measures (i.e. GVA/Employment) in the utilities sector. Low productivity is set to continue in part because GVA (output) growth is expected to remain low, with low output a function of low demand caused both by high prices and energy-saving (and water-saving) measures. However, employment levels are expected to remain relatively stable due to the need to maintain a skilled workforce to ensure reliability and undertake capital works to cater for population and economic growth and for capital replacement.

Table 4.2 Total Australia (All Industries) and Electricity, Gas, Water and Waste Services Average Weekly Ordinary Time Earnings and Wage Price Index (Year Average Growth)

Year Ended June	Average Weekly Ordinary Time Earnings ⁽¹⁾				Wage Price Index ⁽²⁾			
	All Industries		Electricity, Gas, Water and Waste Services		All Industries		Electricity, Gas, Water and Waste Services	
	\$	%CH	\$	%CH	Index	%CH	Index	%CH
2000	765	3.2	867	4.8	71.7	3.0	68.2	3.8
2001	804	5.1	918	6.0	74.2	3.5	70.8	3.8
2002	847	5.4	981	6.8	76.7	3.3	73.8	4.2
2003	890	5.0	1,001	2.1	79.3	3.5	76.8	4.1
2004	932	4.7	1,057	5.5	82.2	3.6	79.9	4.1
2005	973	4.4	1,091	3.2	85.3	3.7	83.3	4.3
2006	1 018	4.6	1,111	1.9	88.7	4.1	87.6	5.2
2007	1 054	3.6	1,152	3.7	92.2	3.9	91.8	4.8
2008	1 106	4.9	1,183	2.7	96.1	4.1	95.7	4.2
2009	1 166	5.5	1,255	6.1	100.0	4.1	100.0	4.5
2010	1 231	5.6	1,351	7.6	103.1	3.1	104.4	4.3
2011	1 283	4.2	1,474	9.1	107.0	3.8	108.7	4.2
2012	1 338	4.3	1,510	2.5	110.9	3.6	112.5	3.5
2013	1 400	4.6	1,602	6.1	114.6	3.3	117.3	4.2
2014	1 442	3.0	1,635	2.0	117.6	2.6	121.1	3.2
2015	1 477	2.4	1,646	0.7	120.4	2.4	124.5	2.8
2016	1 505	1.9	1,704	3.5	123.0	2.1	127.5	2.4
2017	1 536	2.0	1,777	4.3	125.4	2.0	130.3	2.2
2018	1 573	2.4	1,818	2.3	127.9	2.1	132.9	2.0
Forecasts								
2019	1 612	2.5	1,843	1.3	130.9	2.4	136.6	2.8
2020	1 663	3.1	1,905	3.4	134.3	2.6	140.8	3.1
2021	1 724	3.6	1,980	3.9	138.6	3.2	145.8	3.6
2022	1 796	4.2	2,064	4.3	143.5	3.6	151.5	3.9
2023	1 873	4.3	2,155	4.4	148.9	3.7	157.6	4.1
2024	1 950	4.1	2,250	4.4	154.2	3.6	164.0	4.0
2025	2 024	3.8	2,340	4.0	159.3	3.3	170.1	3.7
Compound Annual Growth Rates ⁽²⁾								
2000-2010	4.9		4.5		3.7		4.3	
2010-2018	3.1		3.8		2.7		3.1	
2018-2025	3.7		3.7		3.2		3.6	
2020-2025	4.0		4.2		3.5		3.9	

Source: BIS Oxford Economics, ABS

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

(2) CAGR (Compound Annual Growth Rates) for 2020-2025 is the annual growth for 2020/21 to 2024/25 inclusive i.e. next Revenue Determination period.

4.2.1 New South Wales Utilities Wages Outlook

Given that NSW utilities employment accounts for just under 30% of total Australian utilities employment, it is not surprising that wage growth trends in the NSW utilities sector are close to the national utilities average. This has been the case for most of the past two decades (with earlier ABS data for AWOTE for the narrower categorised Electricity, Gas and Water sector showing the NSW utilities sector mostly outpaced the national utilities average wage growth, until the ABS stopped publishing AWOTE by industry by state in 2011).

However, over the past 3 years, the average wage rises in the NSW utilities sector have been well below the national average. This appears to be an aberration, and may have been related to downward pressure on wages (particularly wage increases in the areas outside collective agreements) before, during and immediately following the privatisation of the NSW electricity businesses. Prior to 2015, the NSW utilities wage increases were usually close (on average) to the national average.

Over the past four-to-six quarters, wage rises in the NSW utilities sector have recovered, back to near the q/q national rises. We expect this trend to continue, and for wage rises in the NSW utilities sector to track the national average. Wider pressures in the overall state labour market – the current NSW unemployment rate at 3.9% is well below the national average of 5%, and we expect the state unemployment rate to remain below or close to the national average - will also ensure that wage rises will tend to track the national average at the broader (all industries) level, as well as putting pressure on certain industries such as the electricity sector with its higher skill demands.

We also expect some degree of ‘catch-up’ to occur, especially in relation to the Victorian utilities sector, where wage rises over recent years have significantly outpaced the NSW utilities wage increases (and national average). The NSW utilities businesses will find they need to offer higher wages to local workers and keep pace with interstate utilities wages growth to both avoid losing workers interstate and to attract workers from interstate with the necessary requisite skills.

Other factors will also act to push up NSW utilities wages, including an acceleration in construction sector and total wages and relatively high levels of utilities-related engineering construction over the next seven years. Figure 4.1 shows BIS Oxford Economics’ forecasts of EGWWS and construction sector wages growth. The acceleration in construction sector wages growth in particular - and indeed all industries (total) wages growth – will put upward pressure on utilities wages. The construction sector, along with the mining and manufacturing sectors, tend to compete with the utilities sector for similarly skilled labour. Meanwhile, the relatively high levels of utilities-related engineering construction activity will add to labour demand in the NSW and Australian utilities sector.

This will result in a marked strengthening in wages growth in the NSW utilities sector over the 2020/21 to 2023/24 period, before easing. Overall, WPI growth in the NSW utilities sector is forecast to average 3.8% over the five years to 2024/25 inclusive (i.e. Jemena Gas Networks’ next regulatory period), or 1.5% in real (inflation adjusted) terms (see Summary table 1.1).

Figure 4.3 Australia – Utilities Employment, Output and Investment

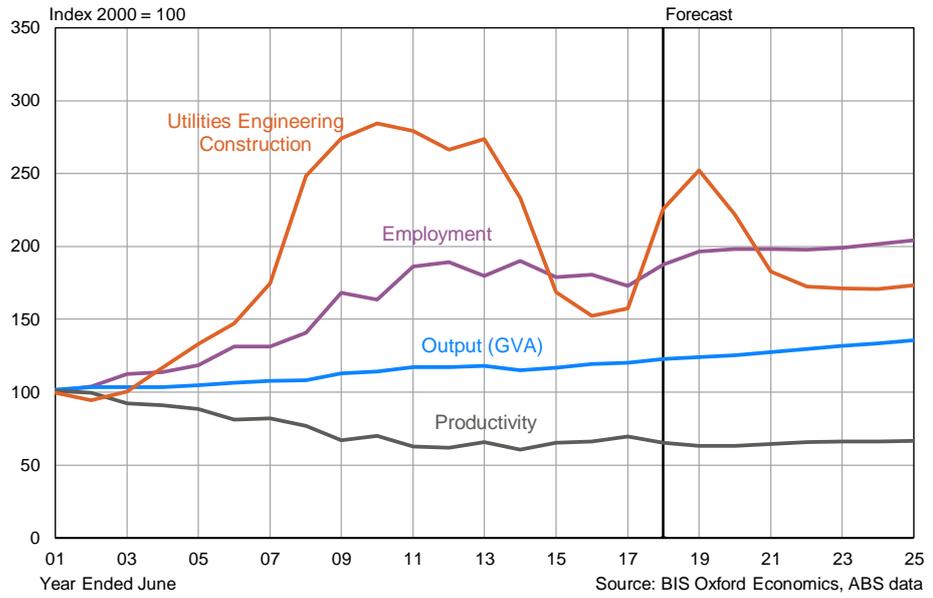


Figure 4.4 New South Wales – Utilities Employment, Output and Investment

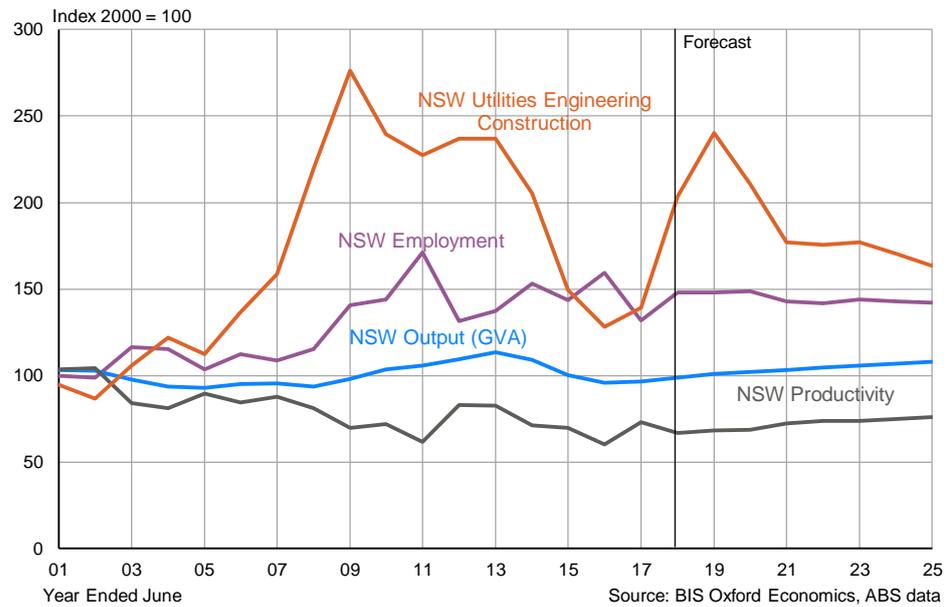
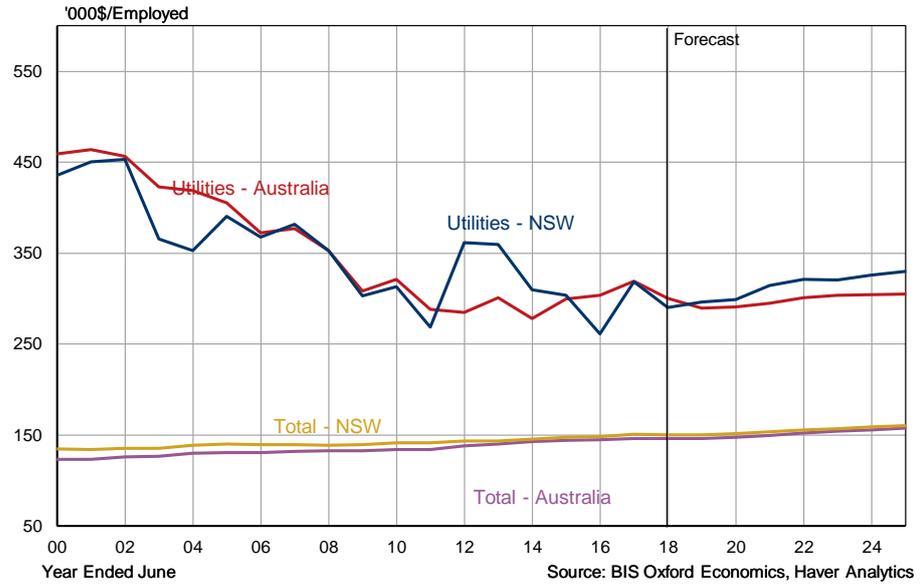


Figure 4.5 Utilities Productivity in Australia and the New South Wales



APPENDIX 1: A NOTE ON DIFFERENT WAGE MEASURES

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 Oxford Economics forecasts.
- Average Weekly Earnings (AWE) — represents average total gross earnings (before tax) of all employees (including full-time and part-time workers). They include weekly ordinary time earnings plus over-time payments.
- The Wage Price Index (WPI) — a CPI-style measure of changes in wage and salary costs based on a weighted combination of a surveyed 'basket' of jobs. The WPI used in this report excludes bonuses. The WPI also excludes the effect of changes in the quality or quantity of work performed and most importantly, the compositional effects of shifts within the labour market, such as shifts between sectors and within firms. The WPI figures quoted in this report are sourced from ABS catalogue number 6345.0, with BIS Oxford Economics forecasts.

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

between male and females (or males and all persons) — between -0.2 and +0.2 per cent — since the 1980s or basically since the equal pay legislation was enacted through the 1970s.

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

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

APPENDIX 2: CURRICULUM VITAE OF PERSONNEL

Richard Robinson – Senior Economist and Associate Director - Economics

Richard Robinson has been employed with BIS Oxford Economics since 1986.

Richard is the company's principal economic forecaster, being largely responsible for the short term economic forecasts presented at BIS Oxford Economics' half yearly conferences in March and September. He contributes forecasts and analysis to the regular subscription services, Australian Macro Service and Long Term Forecasts.

Richard regularly analyses and forecasts resources investment and civil engineering construction activity, and production of manufactures, consumer goods and commodities. In this work, he has developed considerable industry expertise in the construction, manufacturing, agriculture, services, commodity and resources sectors of the Australian and state economies.

Richard has also been involved in a wide range of consultancy and private client projects including formulating end-use sector demand models for forecasting product demand, project evaluation studies, cost-benefit analysis, assessments of individual property markets and analysing the consistency of escalators in contracts. Some other projects have included analysing and forecasting freight tonnages; a study of the repair and maintenance market; the preparation of economic arguments for the National Wage Case for a private industry group; regular analysis and detailed short and long term forecasts of economic variables in a number of overseas countries; and contributing discussion papers to CEDA (Committee for Economic Development of Australia).

Richard holds a Bachelor's Degree in Commerce with Honours from the University of Wollongong.

Harry Good – Economic Analyst

Harry Good is an economic analyst in Economics and Infrastructure & Mining at BIS Oxford Economics. Harry is responsible for monthly updates regarding the labour market as well as retail turnover and writes researching briefings that offer insights into a wide range of economic trends. Harry is also involved economic forecasting, modelling and macroeconomic related consultancy projects. Harry studied Economics at the University of Technology Sydney, receiving a First-class Honours.



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