



**OXFORD
ECONOMICS**
AUSTRALIA

INPUT COST ESCALATION: FORECASTS TO 2029/30

**PREPARED BY OXFORD ECONOMICS
AUSTRALIA
FOR ENERGY QUEENSLAND**

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Oxford Economics Australia

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1. EXECUTIVE SUMMARY

Oxford Economics Australia (OEA) was engaged by Energy Queensland to prepare forecasts of a discrete set of labour escalation price indices, relevant to operation of Energy Queensland's infrastructure from 2022/23 to 2029/30. We understand these forecasts will be used by Energy Queensland to develop their capital and operating expenditure forecasts over the forecast period. These forecasts, in turn, will be included Energy Queensland's regulatory submission to the Australian Energy Regulator (AER) – due to be submitted in January 2024 - with the regulatory period covering the five-year period from 2025/26 to 2029/30 (FY26 to FY30) inclusive.

The labour escalation forecasts incorporate the latest data and macro-economic forecasts as at early June 2023, including the June quarter 2023 releases of the Consumer Price Index (CPI) and Wage Price Index (WPI), plus the Reserve Bank of Australia (RBA) forecasts for the CPI and WPI contained in the RBA August 2023 'Statement of Monetary Policy'.

For **electricity network related labour**, Oxford Economics Australia forecasts that total wage costs for Queensland Electricity, Gas, Water and Waste Services (EGWWS or 'Utilities') sector — expressed in Wage Price Index (WPI) terms — will average 3.7% per annum over the five-year period from FY26 to FY30 inclusive, equal to the Australian EGWWS WPI average of 3.7% over the same period. In real (inflation-adjusted) terms, the Queensland EGWWS WPI is forecast to average 1.2% p.a. over the five years to FY30 (see Table 1.1 below).

Note that the wage price index measure does not include the Superannuation Guarantee charge (SGC). As the SGC is in effect a labour 'on-cost', in terms of escalating wage costs over the forecast period, **the full annual 0.5% for the SGC therefore needs to be added to the forecast increases in the WPI** for each of the years from FY22 to FY26.

Over the forecast period, the Australian and Queensland EGWWS WPI growth is expected to push above and remain higher than the All Industries WPI average, with the Queensland and national All Industries WPI forecast to average 3.5% and 3.4% respectively over the five years to FY30. This means that the Australian EGWWS WPI is expected to be 0.3% higher than the All Industries average, which is slightly lower than the 0.4% historical difference of the decade to FY21.

Utilities wages are forecast to increase by more than the national average over the forecast period 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 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 (38%), and EBAs wage rises normally higher than individual agreements, this means higher overall wage rises in the EGWWS sector.
- increases in individual agreements (or non-EBA wages) are expected to push higher over the next two years and remain high in FY26 due to the tight labour market, with the unemployment rate now expected to remain between 3.6% to 4% over the next two years.
- demand for skilled labour will strengthen further due to record levels of utilities investment, with utilities investment expected to gradually increase and remain elevated over the next seven years (and beyond). Oxford Economics Australia is forecasting electricity-related engineering

construction to be 20% higher in FY30 compared to FY23 levels (which follows a 41% increase over the past two years). This will also be a key driver of utilities wages going forward.

- the overall national average tends to be dragged down by the lower wage and lower skilled sectors such as the Retail Trade, Wholesale Trade, Accommodation, Cafés and Restaurants, and, in some periods, also Manufacturing and Construction. These sectors tend to be highly cyclical, with weaker employment suffered during downturns impacting on wages growth in particular, such as occurred in the wake of the COVID-19 impacts. The EGWWS sector is not impacted in the same way due to its obligation to provide essential services and thus retain skilled labour.

The economy is expected to remain resilient over the short-to-medium term and, although OEA's economic growth (GDP) forecasts are for modest weakening over FY24 and FY25, we still expect the labour market to remain tight, with labour demand still relatively strong and the unemployment rate remaining around 3.6% to 4% over the next two years to FY25. The rise in the unemployment rate is also expected to be kept in check by falls in the participation rate, as some workers drop out of the labour force as employment growth slows (many of these will fully retire). Skill shortages, which have already emerged, are expected to remain acute in many parts of the economy, although there has been some recent evidence of shortages of unskilled labour beginning to ease. The tight labour market will see wage pressures remain elevated.

Wages have been slower to pick up compared to the inflation rate, due to lags in the transmission of wage increases, particularly in the enterprise bargaining segment, where the duration of agreements runs for 2-3 years. The All industries WPI is forecast to increase to a peak of 3.9% in FY24 (from 3.5% in FY23), before easing slowly over the subsequent four years as the economy cools and the unemployment rate rises back above 4%. The strengthening in economic and employment growth from FY28 will then see All Industries WPI growth pick up sharply over FY29 and FY30.

We expect to see the continuation of critical skilled labour shortages and competition for scarce labour - particularly from the mining and construction sectors - which will push up wage demands in the utilities sector. Mining investment is now picking up and is forecast to see significant increases over the next 2 years to FY25 and remain at elevated levels to the end of the decade. Meanwhile, overall construction activity will remain elevated at close to current levels over the next four years (before again lifting from 2027/28), leading to strong labour demand in that sector, particularly over FY23 and FY24 when activity surpasses the 2018 levels (excluding oil and gas construction). With regard to utilities investment, Oxford Economics Australia is forecasting steady increases over the next 7 years, with electricity-related engineering construction projected to be 20% higher in FY30 compared to FY23 levels (and this follows a 41% increase over the past two years). However, given the need for much greater amounts of transmission and distribution investment, let alone renewables generation, these projections could be considered conservative – there is a significant upside risk to the quantum of electricity-related investment required.

Employers are already reporting an increasing shortage of technicians and trade workers, and employees with STEM skills. These are essential workers in the utilities sector. A key problem is that the TAFE (technical and further education) systems across the country have simply not been training enough workers. OEA research shows this is compounded by new graduates in the trades stream, in particular, not increasing fast enough to replace retiring workers, with new graduate numbers in some trades actually falling. Despite government announcements that they are moving to address the TAFE system, it is unlikely that these issues will be addressed within the next 5 years. Added to this is that skilled immigration only fully returned in the first half of 2022, after being suspended since early 2020. Although now resumed, the backlog of skilled labour shortages will be slow to fill, meaning that the skill shortages will persist for at least the next 2 years.

With strong competition for similarly skilled labour from the mining and construction industries, firms in the utilities sector will need to raise wages to attract and retain workers. In other words, the mobility of workers between the EGWWS, mining and construction industries means that demand for workers in those industries will influence employment, the unemployment rate and hence spare capacity in the EGWWS labour market. Businesses will find they must 'meet the market' on remuneration in order to attract and retain staff and we expect wages under both individual arrangements and collective agreements to show further strong increases over the FY24 to FY26 period. The EGWWS WPI rebounded strongly over FY23 to match the national All Industries average. From FY24, we expect the EGWWS WPI to again outpace the All Industries WPI over the forecast period. Driving this will be much higher EBAs negotiated in an environment of high inflation and a very tight labour market, particularly for the types of skilled labour that dominate in the EGWWS sector.

Table 1.1 Summary – Labour Cost Escalation Forecasts: Queensland & Australia
(per cent change, year average, year ended June)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Average (f)	
	Actuals						Forecasts		Next Revenue Determination Period						
Nominal Wage Changes															
<u>Electricity Network-Related Labour</u>															
EGWWS WPI - Queensland (a)	2.5	3.0	2.7	1.9	1.6	4.8	4.9	4.2	4.0	3.7	3.4	3.7	3.9	3.7	
EGWWS WPI - Australia (b)	2.0	2.8	2.7	1.8	1.5	3.5	4.1	4.1	3.9	3.6	3.4	3.7	3.8	3.7	
<u>Contractor Labour Cost Escalation</u>															
Construction WPI - Queensland (c)	1.5	1.7	0.6	0.7	1.9	3.2	4.2	4.1	3.9	3.5	3.4	3.7	3.9	3.7	
Construction WPI - Australia (b)	1.9	1.9	1.5	1.3	2.6	3.7	4.2	4.0	3.8	3.5	3.4	3.7	3.9	3.7	
<u>All Industries Wages</u>															
All Industries WPI - Queensland	2.1	2.3	1.9	1.6	2.5	3.6	4.0	3.8	3.6	3.3	3.2	3.5	3.7	3.5	
All Industries WPI - Australia (d)	2.1	2.3	2.1	1.5	2.4	3.5	3.9	3.7	3.5	3.3	3.2	3.5	3.7	3.4	
Consumer Price Index (headline) (e)	1.9	1.6	1.3	1.6	4.4	7.0	4.2	3.2	2.7	2.5	2.5	2.5	2.5	2.5	
Real Wage Changes (g)															
<u>Electricity Network-Related Labour</u>															
EGWWS WPI - Queensland (a)	0.6	1.4	1.4	0.3	-2.9	-2.2	0.7	1.0	1.3	1.2	0.9	1.2	1.4	1.2	
EGWWS WPI - Australia (b)	0.0	1.1	1.3	0.2	-2.9	-3.5	-0.1	0.9	1.2	1.1	0.9	1.2	1.3	1.1	
<u>Contractor Labour Cost Escalation</u>															
Construction WPI - Queensland (c)	-0.4	0.1	-0.7	-0.9	-2.5	-3.9	0.0	0.9	1.2	1.0	0.9	1.2	1.4	1.2	
Construction WPI - Australia (b)	-0.1	0.2	0.2	-0.3	-1.8	-3.3	0.0	0.8	1.1	1.0	0.9	1.2	1.4	1.1	
<u>All Industries Wages</u>															
All Industries WPI - Queensland	0.2	0.7	0.6	-0.1	-2.0	-3.5	-0.2	0.6	0.9	0.8	0.7	1.0	1.2	0.9	
All Industries WPI - Australia (d)	0.1	0.7	0.8	-0.1	-2.1	-3.6	-0.3	0.5	0.8	0.8	0.7	1.0	1.2	0.9	

Source: ABS, RBA, Oxford Economics Australia

(a) Electricity, Gas, Water and Waste Services (EGWWS) Wage Price Index (WPI) for Queensland

(b) Australian sector wage forecasts provided for comparison

(c) Construction Sector Wage Price Index (WPI) for Queensland

(d) Australian All Industries WPI provided for comparison.

(e) Inflation forecasts are RBA forecasts for the next 2-3 years from latest 'Statement of Monetary Policy'. Beyond that, inflation forecasts are based on the mid-point of RBA inflation target (2.5%).

(f) Average Annual Growth Rate for 2025/26 to 2029/30 inclusive, ie for next regulatory period.

(g) Real price changes are calculated by deducting the inflation rate from nominal price changes.

Wages in the Queensland utilities sector are expected to move in line with the national utilities sector average over Energy Queensland's upcoming regulatory period (see tables 1.1). In the near-term, the Queensland EGWWS WPI is expected to be somewhat higher than the national EGWWS WPI in FY23. Higher EBAs in Queensland than the national EBA average recently are also expected to see Queensland utilities wages track above the national WPI outcomes over FY24 and FY25, although the sharp rise in utilities-related construction may have also boosted wages growth over FY23 and FY24. Wages in the Queensland utilities sectors is then expected to move in line with the national utilities sector average over the 5 years from FY26.

Given service providers outsourced labour is mostly supplied by firms in the construction industry, we proxy Energy Queensland's **external labour cost escalation** by wages growth (as measured by the

WPI) in the Queensland's construction industry. Our research has shown that construction activity (ie work done in the sector) normally has a strong influence on construction wages, although changes in wages tend to lag construction (in work done terms) by around one year. Hence, our wage forecasts are based on Oxford Economics Australia forecasts of construction activity by state (which includes residential and non-residential building, plus engineering construction) as well as predicted movements in the construction wages at the national level.

Construction wages are forecast to strengthen further over FY24 to FY26 as construction activity increases, particularly as construction activity levels surpass the previous highs of FY18 and FY13 and serious and widespread skills shortages continue, underpinning higher wages due to strong labour demand. Although residential building activity and non-residential building activity are now coming off the boil, rising engineering construction is pushing total construction activity higher, driven by a new wave of mining investment and a plethora of publicly funded transport infrastructure projects (particularly in the eastern states of the nation). The stronger activity will underpin higher wages due to strong labour demand and expected widespread skill shortages in the construction industry. We then expect wage growth to ease over FY27 and FY28 as construction activity falls back, before wage growth again picks up in FY29 in line with stronger construction.

Our forecast is for the Australian and Queensland Construction WPI to average 3.7% over the five years from FY26 to FY30 inclusive (Energy Queensland's next regulatory period) – or 1.1% to 1.2% per annum on average in real (inflation-adjusted) terms. Queensland construction wages outpace the national average over FY24 to FY26, because EBAs approved over the past year have lifted to be higher than the national average, while growth in construction activity in the state is forecast to be much stronger than national construction activity growth from FY24 to FY27. Wages growth will then match the national average over the remaining four years to FY30, as the state activity growth will then be similar to the national growth. The need to build Olympics-related facilities and supporting infrastructure over the second half of the decade will support growth in Queensland's construction activity and keep construction wages growth somewhat elevated, compared to the state All Industries average.

Materials & Construction Costs

Construction materials prices have increased significantly over the past 18-24 months and, although they are expected to ease over the short-to-medium term, prices will remain elevated (particularly compared to five years to FY21). Overall, we expect the supply constraints and other factors that are driving current high prices will gradually ease over the medium, helped by an easing in total construction activity post-2024, which will take some of the heat of the current strong demand for materials and labour. However, strong wages growth will tend to limit the price declines across a number of the input materials and overall construction indices. Also, some materials prices can tend to be 'sticky downwards' if demand remains fairly strong (which we expect to be sustained) and especially in markets where there is a concentration of market power. Furthermore, continuing high levels of construction activity and demand can support profit margins of both materials suppliers and construction companies. With regard to the latter, the collapse of some construction companies recently also provides scope for the remaining players to achieve higher margins in an environment of less competition.

There are two key drivers of the rapidly rising commodity and construction materials prices that construction companies are experiencing. Firstly, international factors such as Covid-related shutdowns in China impacted supply chains, the war in Ukraine and, even prior to the war in Ukraine, there were rising commodity prices due to a stalling of investment due to low prices over 2014-18, with the Covid-19 epidemic further stalling new investment. Furthermore, governments around the world targeted stimulus towards the construction of transportation and other infrastructure to help their economies recover from the coronavirus pandemic. This, in turn, led to sustained strong global

demand for key construction materials, such as copper and steel. Global supply chains are now beginning to 'normalise', while other related factors such as global shipping costs are coming down from previous highs – but supply conditions are still not back to pre-covid levels, so price pressures will persist in the near-term. These factors are expected to support the domestically driven higher price levels over the near-term.

The second major reason driving cost growth is local factors, specifically the growth in construction activity both nationally and in Queensland, with Queensland activity expected to continue increasing over the next 7 years and surpass the previous peak of FY18 in FY25 and the record peak of 2013 in FY28 - excluding oil and gas construction, which we exclude as a significant proportion of the materials and equipment in the mega-projects in the sector are imported. A key area of concern, relating to these very high levels of construction, is that local material production capacity and labour supply (especially skilled labour) is struggling and will continue to struggle to meet this demand.

Table 1.2 Commodity and Materials Price Forecasts

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Average (k)
	Actuals				Forecasts		Next Revenue Determination Period					
Nominal Commodity Prices												
Copper (A\$/tonne)	8438	10655	13304	12320	12969	11720	12606	13421	13671	14063	14517	13656
Copper (US\$/tonne) (a)	5663	7962	9657	8297	8522	8503	8966	9378	9954	10407	10888	9919
Oil - Brent Crude (A\$/barrel)	76.9	72.5	125.7	128.9	134.0	118.4	121.0	113.1	108.8	113.9	111.7	113.7
Oil - Brent Crude (US\$/barrel) (b)	51.6	54.2	91.2	86.8	88.1	85.9	86.0	79.0	79.3	84.3	83.8	82.5
Exchange rate (US\$/A\$)	0.67	0.75	0.73	0.67	0.66	0.73	0.71	0.70	0.73	0.74	0.75	0.73
% ch												
Copper (A\$/tonne)	-1.8	26.3	24.9	-7.4	5.3	-9.6	7.6	6.5	1.9	2.9	3.2	4.4
Oil (A\$/barrel)	-19.9	-5.8	73.4	2.6	4.0	-11.6	2.1	-6.5	-3.8	4.6	-1.9	-1.1
Nominal Fuel Prices (AUD) (c)												
Petrol (cents/litre) (QLD)	138	133	173	185	196	182	185	182	185	193	197	188
Diesel (cents/litre) (QLD)	141	124	175	209	206	193	195	191	191	198	202	196
% ch												
Petrol (cents/litre) (QLD)	-3.2	-3.6	29.9	6.7	6.1	-7.3	1.9	-1.8	1.4	4.5	1.9	1.6
Diesel (cents/litre) (QLD)	-6.7	-11.8	40.4	19.4	-1.4	-6.3	1.2	-1.8	-0.2	3.8	2.0	1.0
Nominal Material Producer Price Indices (PPI)												
Steel Beams and Sections PPI (Australia) (d)	112.9	118.7	155.2	162.7	145.9	140.5	140.7	144.4	150.9	159.5	168.2	152.7
Concrete, Cement and Sand PPI (QLD) (d)	100.5	100.5	107.5	132.2	143.1	144.4	145.3	148.0	152.7	158.7	163.3	153.6
Poles - Wood (e)	115.7	110.9	116.9	122.6	127.5	129.1	130.4	130.4	133.7	140.8	147.5	136.6
Cable (Electrical Cable Manufacturing PPI) (f)	99.2	103.7	127.2	143.4	159.9	152.7	151.8	160.0	163.7	168.0	172.8	163.3
Switchgear (Other Electrical Equipment Manufacturing PPI) (g)	105.7	109.0	114.9	129.9	135.8	133.3	133.2	135.7	139.3	143.7	147.4	139.8
Non-hydro Electricity Engineering Construction IPD (h)	118.2	120.5	127.9	137.5	147.0	147.4	149.9	155.4	160.7	167.1	173.1	161.2
% ch												
Steel Beams and Sections PPI (Australia) (d)	0.2	5.1	30.8	4.8	-10.3	-3.7	0.1	2.6	4.5	5.7	5.4	3.7
Concrete, Cement and Sand PPI (QLD) (d)	-3.9	0.0	6.9	23.0	8.3	0.9	0.6	1.8	3.2	4.0	2.9	2.5
Poles - Wood (e)	4.4	-4.1	5.4	4.9	4.0	1.3	1.0	0.1	2.5	5.3	4.8	2.7
Cable (Electrical Cable Manufacturing PPI) (f)	-2.2	4.5	22.6	12.8	11.5	-4.5	-0.5	5.4	2.3	2.6	2.9	2.5
Switchgear (Other Electrical Equipment Manufacturing PPI) (g)	-1.4	3.1	5.5	13.1	4.5	-1.8	-0.1	1.9	2.6	3.2	2.6	2.0
Non-hydro Electricity Engineering Construction IPD (h)	2.6	1.9	6.2	7.5	6.9	0.3	1.7	3.6	3.4	4.0	3.6	3.3
Consumer Price Index - headline (i)	1.3	1.6	4.4	7.0	4.2	3.2	2.7	2.5	2.5	2.5	2.5	2.5
Real Commodity Price Changes (j)												
Copper (A\$/tonne)	-3.1	24.6	20.4	-14.4	1.1	-12.8	4.9	4.0	-0.6	0.4	0.7	1.9
Oil (A\$/barrel)	-21.3	-7.4	68.9	-4.5	-0.2	-14.8	-0.6	-9.0	-6.3	2.1	-4.4	-3.6
Real Fuel Prices (AUD)												
Petrol (cents/litre) (QLD)	-4.5	-5.2	25.4	-0.4	1.9	-10.5	-0.8	-4.3	-1.1	2.0	-0.6	-0.9
Diesel (cents/litre) (QLD)	-8.0	-13.4	36.0	12.4	-5.6	-9.5	-1.5	-4.3	-2.7	1.3	-0.5	-1.5
Real Material Producer Price Indices (PPI)												
Steel Beams and Sections PPI (Australia)	-1.2	3.5	26.4	-2.2	-14.5	-6.9	-2.6	0.1	2.0	3.2	2.9	1.1
Concrete, Cement and Sand PPI (QLD)	-5.3	-1.6	2.5	15.9	4.1	-2.3	-2.0	-0.7	0.7	1.5	0.4	0.0
Poles - Wood	3.1	-5.8	1.0	-2.1	-0.2	-1.9	-1.7	-2.4	0.0	2.8	2.3	0.2
Cable (Electrical Cable Manufacturing PPI)	-3.6	2.9	18.2	5.8	7.3	-7.7	-3.2	2.9	-0.2	0.1	0.4	0.0
Switchgear (Other Electrical Equipment Manufacturing PPI)	-2.7	1.4	1.0	6.0	0.3	-5.0	-2.8	-0.6	0.1	0.7	0.1	-0.5
Non-hydro Electricity Engineering Construction IPD	1.3	0.3	1.7	0.5	2.7	-2.9	-1.0	1.1	0.9	1.5	1.1	0.7

Source: ABS, Oxford Economics Australia

- (a) London Metal Exchange data. Forecasts based on Department of Industry, Science & Resources (DISR) projections
 (b) Department of Industry, Science & Resources (DISR) data. OEA forecasts
 (c) Historical figures (terminal gate prices) come from Australian Institute of Petroleum.
 (d) Historical data from Table 18 of ABS release 6427 "Input to the House construction industry PPI".
 (e) Historical figures come from Australian Bureau of Agriculture Resources Economics and Sciences. The index of Plantation and Native Hardwood prices are used.
 (f) The Electrical Cable Manufacturing PPI is the proxy for cables. Historical figures come from Table 12 of ABS release 6427.
 (g) The Other Electrical Equipment Manufacturing PPI is the proxy for switchgears and transformers. Historical figures come from Table 12 of ABS release 6427.
 (h) Historical figures come from the ABS Engineering Construction Service series, provided as an unpublished 'Special Run series'.
 (i) Inflation forecasts are RBA forecasts for the next 2-3 years from latest 'Statement of Monetary Policy'. Beyond that, inflation forecasts are based on the mid-point of RBA inflation target (2.5%).
 (j) Real price changes are calculated by deducting the inflation rate from nominal price changes.
 (k) Average for the next revenue determination period i.e. from 2025/26 to 2029/30 inclusive.

As a result, higher construction material prices, which have already materialised, are expected to be sustained in the near-term. Similar to overseas, there has been little addition to the local materials manufacturing capacity, so supply was already constrained leading into this current construction boom.

We believe there is a positive correlation between construction activity and construction costs because high (and rising) levels of demand (i.e. construction activity) not only places pressure on the existing supply of inputs, boosting input prices, but also allows construction companies to raise their prices (and possibly margins). Where capacity constraints exist, rising construction activity can lead to strong increases in input prices as investment in new capacity is costly and takes time to come on stream. Consequently, a significant driver of growth in construction costs is the amount of construction activity going on at any time.

In particular, construction costs will often accelerate when the level of overall construction activity surpasses the previous peak. This often coincides with the emergence of capacity constraints across broad areas of the construction materials and labour sectors, particularly if there has been little new addition to capacity or skilled labour supply since previous peaks. Our construction activity forecasts indicate that total Australian construction work done will surpass the previous FY18 peak in FY24.

The broad-based measure for electricity related construction costs, the Non-Hydro Electrical Engineering Implicit Price Deflator (IPD) which summarise the average yearly change in construction costs, is estimated to have seen another year of strong growth in FY23. Internationally driven price increases (namely for copper and fuel) saw construction costs rise around 6.2% in FY22. Despite some easing of certain material prices, increasing demand for domestically sourced components – wages, concrete, transportation, and electricity, in particular, saw a 7.5% rise in construction costs in FY23. These inflationary pressures are expected to spill over into FY24, seeing a further 6.9% rise in construction costs. Over the second half of the decade, overall construction costs will benefit from normalising supplies of construction materials. However, higher wages growth, and increasing demand for electricity infrastructure related to the ‘energy transition’ will see moderate growth in construction costs, which are forecast to average 3.3% p.a. over FY26 to FY30.

2. INTRODUCTION, DATA & LAYOUT

Oxford Economics Australia was engaged by Energy Queensland to provide price forecasts of labour, commodity and materials that are relevant to Queensland's electricity transmission and distribution industry for the period 2025/26 to 2029/30 (FY26 to FY30). Forecasts for wage and material cost escalation will be used by Energy Queensland to develop their capital and operating and capital expenditure forecasts. The forecasts in this report were finalised in mid-September 2023.

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 September 2023 and includes June quarter 2023 Consumer Price Index (CPI), Producer price Index (PPI) and Wage Price Index (WPI), RBA August 2023 'Statement of Monetary Policy' and the June quarter 2023 National Accounts data releases. 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 Oxford Economics Australia reports, including the *Australian Macro Service, Long Term Forecasts: 2022 – 2036*, *Engineering Construction in Australia 2022-2036* and *Building in Australia 2022-2036*, along with other unpublished forecasts and from Oxford Economics Australia internal research and modelling.

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

Section 3 provides a macroeconomic and construction outlook for Australia and Queensland. 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 4 discusses Oxford Economics Australia's national wage and CPI projections and discusses the use of the Reserve Bank of Australia forecasts of the CPI for the deflation of nominal wages. Forecasts of the All Industries WPI are also provided in chapter 3. Not that most of the references to historical data and forecasts of wages in Sections 4 and 5 are in nominal terms unless specifically stated that the data/forecasts are in real (inflation-adjusted) terms.

Section 5 provides the forecasts and rationale of the wage projections for the Electricity, Gas, Water and Waste Services (EGWSS) and Construction sectors for Australia and Queensland as measured by the WPI.

Section 6 the forecasts and rationale for commodities and materials prices, and overall construction costs.

Appendices include an explanation of different wage measures and wage models.

3. MACROECONOMIC AND CONSTRUCTION OUTLOOK

3.1 AUSTRALIA MACROECONOMIC FORECASTS

Australian economy now slowing, but recession not expected in the near-term

Real Gross Domestic Product (GDP) has recovered well from the COVID-related slump in 2020, posting growth of 2.2%, 3.7% and 3.4% over FY21, FY22 and FY23 respectively, with Gross National Expenditure (GNE: domestic demand plus change in stocks) experiencing faster growth of 3.7%, 5% and 3.6% respectively in those years.

GDP growth has slowed, falling back from 0.7% q/q in each of the September and December quarters 2022 to 0.4% q/q in each of the March and June quarters 2023, with through-the year (y/y) at 2.1% in the June quarter, compared to 2.6% y/y in the December quarter and 6% y/y in the September quarter 2022. In the June quarter 2023, activity was well supported by investment and net exports. An improvement in weather conditions and a drawdown of inventories boosted mining exports. Meanwhile, the recovery in the services balance gained pace in Q2 due to strong inward tourist and student flows. However, consumption growth remains meagre, with high inflation and the drag from higher interest rates weighing heavily on discretionary spending.

Household consumption increased by just 0.1% q/q in Q2. The divergent trends between discretionary and essential spending continued to widen, with the recent contraction in discretionary spending worsened in Q2 to a 0.5% q/q decline despite a pickup in vehicle sales. The savings rate has fallen below its pre-pandemic level, meaning the scope for households to fund consumption by saving less is becoming more limited. However, the tight labour market, rising wage growth, and strong population growth will all support spending over the next year.

Private business investment activity was relatively strong over the first half of 2023, increasing by 4.6%. Some of this strong performance reflects the clearing of some supply bottlenecks. Machinery and equipment investment was particularly strong in Q2 due to businesses taking delivery of new vehicles. Moreover, the cessation of tax incentives for equipment spending has brought forward some activity and will make momentum over the second half of 2023 patchier. Mining investment picked up over FY21 and FY22, and into FY23. With prices for a number of commodities expected to remain at healthy levels over the medium term and strong demand for renewable energy related minerals, we expect further investments to get underway and mining investment to continue to rise and remain strong through most of this decade. Overall, new business investment increased 6% in each of FY22 and FY23, with around 4% growth expected in each of FY24 and FY25, before growth eases. The recovery in business investment will not only drive near term demand but will increase the economy's productive capacity in the long run.

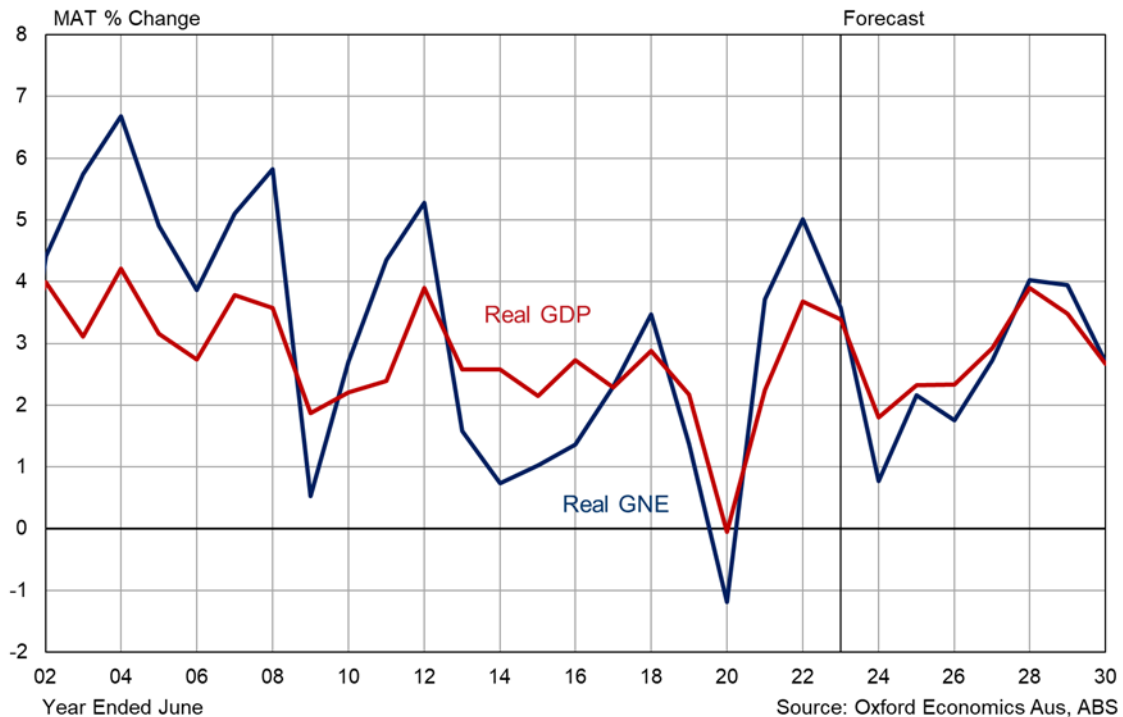
Public investment is still being well supported by transport infrastructure and health projects, although some commitments have been wound back. Despite the considerable backlog of work still to be done, dwelling investment continues to falter, contracting by a further 0.2% q/q in Q2, although this was driven by another sharp fall in alterations and additions activity. There remains a substantial backlog of work to be done in new dwellings, but the realisation of these projects remains constrained by stretched capacity, compounded by a spate of recent insolvencies in the construction sector.

Import demand was broadly flat in the quarter, meaning the goods trade made a positive contribution to growth. Services exports continued to recover sharply from the pandemic, increasing by a remarkable 12.1% q/q in Q2. Growth was driven by tourist and student flows, with the number of

international students in the country surpassing its pre-pandemic level. The outlook for services exports remains positive, but growth will slow from here.

We expect that some of the factors that supported growth in the first half of 2023 will prove to be temporary and that momentum will slow in the second half. Investment in machinery and equipment is likely to pull back, and the recovery in the services balance does not have as far to run. Nevertheless, population growth remains strong, which is supporting growth in household spending and will add to demand for housing and infrastructure going forward.

Figure 3.1 Australia – Basic Economic Indicators



The labour market continues to track strongly. Employment growth was an exceptional 4.2% in FY23, with the unemployment rate sitting in a narrow band between 3.4-3.7% and averaging 3.5%, while the participation rate is at record highs. Labour demand remains very strong – employment growth was 3.0% y/y in August while job vacancies are still at high levels, suggesting further solid growth in employment in the near term (see chart 4.2). Faster population growth has facilitated strong jobs growth. This strength is the best insurance the economy has against a drastic collapse in growth. But it is adding to inflationary pressures in the economy. While the labour market continues to track in such a strong position, there will continue to be upward pressure on wage growth, and wages growth will pick up further in FY24.

One main negative influence on economic growth in the near-term is the progressive tightening of fiscal policy, which will see government consumption expenditure wound back. However, the tax cuts slated for July 2024 represent a reversal of this tightening stance and also represent an upside risk to inflation.

After rate hikes at 10 consecutive meetings, the RBA finally paused its hiking cycle in April, but then added another 0.25% increase in May and June, before pausing again over July, August and September. The official cash rate now at 4.1%. Price growth has peaked, and while the resolution of supply-side issues will relieve some of the inflation, it's the breadth and persistence of core inflation

pressures that are causing most of the bank's concerns. The pickup in wage growth and emergence of strong demand pressures in rental markets pose upside risk to the inflation outlook. Inflation remains uncomfortably high, and the very tight position of both labour and rental markets means there is lots of scope for an upside surprise to core inflation. It's still possible there may be another one or two rate hikes in the near-term. There is also an elevated risk that the tax cuts of July 2024 may induce another one or two rate hikes, particularly if core inflation has not been markedly reduced by early 2024.

Global Economic Outlook

Our baseline forecast for global GDP growth is 2.5% in calendar 2023, 2.6% for FY23 and a weak 2% in FY24, following 3.1% in calendar 2022 (and 4.3% in FY22). Growth is then predicted to improve to 2.5% in FY25 and 3% in FY26. Although economic data continue to paint a relatively downbeat picture, it doesn't suggest that economies are entering a deeper slump. Growth will still remain weak through 2023, particularly in the US, Canada and most of Europe where growth will be between 0.5% and 1.5% over the next two years.

Offsetting the weakness of advanced economies will be strong Chinese GDP growth, forecast to increase by 5% in calendar 2023 (after 3% in 2022), 4.4% in FY23 and 4.7% in FY24, before easing back to around 4.5% over FY25 to FY29. However, recent problems in China's property sector and some weakness in data releases is of concern, although we think that China will take action to keep its economy growing in the near-term. The stronger outlook for China will also improve the outlook in the rest of Asia. Overall, we think that the balance of risks is now less tilted to the downside and believe that the risks of a substantial global economic slump have diminished over the past 8 months.

High and rising US interest rates and increased uncertainty has seen a broad-based appreciation of the US dollar since late 2021, which has pushed down the value of the Australian dollar to around US\$0.68 since mid-2022, with another downshift recently to below US\$0.65. Our outlook is for the AUD to remain weak over 2023 and 2024, before appreciating gradually to US\$0.73 by mid-decade as US interest rates fall faster than Australian rates, with an average of US\$0.73 projected over the second half of the decade.

Beyond the near-term weakness, we expect global growth will return to its trend pace of around 3% by FY26, and gradually slow over the long term as resident population growth eases. Australia's trading partner growth (weighted by exports) is forecast to grow at a faster pace over the next 5-20 years (between 0.5 to 1% higher), due to the high weights of China, East Asia and India (all of which are expected to outpace the average pace of global growth) in Australia's export mix.

Domestic demand and GDP to weaken sharply in FY24, improving in FY25

Australian domestic demand is forecast to slow from 3.4% in FY23 to 0.8% in FY24, with a partial rebound to 2.1% in FY25. Net exports are expected to provide a positive contribution over the next two years, as tourism and education boost exports, while imports weaken due to slowing domestic demand and a low A\$. GDP growth is forecast to be 1.8% in FY24 and 2.3% in FY25.

Housing investment is expected to decline over FY24 and FY25 as the current backlog of work is finished and high interest rates impact new dwelling construction and alterations and additions activity. On the other hand, we expect further moderate growth in business investment in FY24 and FY25 as some deferred investment is undertaken, although some sectors, such as hotel construction and other tourism-related investment, will take longer to recover. Private sector engineering construction will remain buoyant due to higher levels of electricity and telecommunications infrastructure and higher levels of mining investment, particularly oil and gas. Meanwhile, public investment is expected to see moderate growth over the next two years to FY25, as a large pipeline of transport infrastructure and social and institutional buildings projects come through. Meanwhile,

government recurrent expenditure is expected to weaken sharply as governments attempt budget repair. With employment growth expected to slow as investment and government spending eases, household consumption expenditure growth will also slow sharply over FY24, with higher inflation and higher interest rates also weighing on spending. Tax cuts slated for July 2024 will boost spending in FY25, although there is still some uncertainty around these tax cuts.

Trade volumes will be a mixed bag. We expect mining export volumes to pick up over the next 2-3 year as new capacity comes onstream. Rural exports bounced back over calendar 2021 and will remain strong over FY23 and into FY24, with bumper seasons in the eastern states boosting grain, other crops and dairy exports. Meat exports will strengthen too. Manufacturing exports will remain constrained due to weak global growth but will pick up over FY25 and FY26 as overseas conditions improve. Overall merchandise export volumes will continue to display moderate growth over FY23 to FY26. Meanwhile, growth in import volumes will weaken sharply in FY24 before improving in FY25, in line with domestic demand. Net exports are expected to make a positive contribution to growth over FY24 and in FY25.

Large increase in both service credits and debits are expected over FY23 and FY24, before moderating in FY25. This will have different implications for the all-important tourism and education services trade and related industry sectors. Education exports were worth \$37.6 billion in FY19 (before the COVID pandemic), or almost 39% of overall services exports (compared to only \$461m for outbound education import 'debits'). Education exports have bounced back, helped by the earlier-than-expected return of Chinese students and partly because there is a large backlog of visas already for overseas students. We also expect inbound tourism 'exports' to recover well in the medium-term, aided by a low A\$. Tourism exports (including 'business travel') were worth \$25.3 bn in FY19 (26% of overall services exports), compared to \$50.6 billion for outbound services 'imports' – which then accounted for almost 50% of overall services debits. We expect a slower ramp-up in outbound tourism (compared to inbound tourism), with tourism flows unlikely to recover back to their previous levels for another couple of years. The forecasts assume that the tourism and education credits (inbound) will recover back to pre-COVID levels by early-2024, while outbound tourism debits will not get back to the 2018 peaks until 2026.

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

Annual headline inflation jumped to 7.8% (y/y) in the December quarter 2022, while underlying inflation lifted to 6.4%, before the headline rate fell back to 7.0% in the March quarter 2023 and then 6% in the June quarter. Although we think the inflation peak has passed, the rise and broadening of inflationary pressures has seen the RBA lift the cash rate by 4% since May 2022 to 4.1% in June 2023, with standard variable housing rates now around 8.5% and variable discounted rates at 7.1%. The RBA may raise rates again in the near-term, but we expect a pause in rises over FY24. However, large tax cuts expected in July 2024 is likely to see a further lift in rates (potentially higher) over the second half of 2024, as the RBA attempts to curtail the extra demand pressures from the tax cuts, with elevated inflationary pressures still expected to be present with unemployment rate at or just below 4%. The persistence of high interest rates – with the extra lift in mid-late 2024 - will continue to impact consumer spending and housing and business investment over FY25 and into FY26. With government capital spending weakening at that time and recurrent spending still constrained, the end result will see annual domestic demand growth falling below 2% in FY26 and remaining somewhat subdued in FY27. GDP growth will also be soft.

Interest rate cuts are expected from early-to-mid 2025 and over FY26 and FY27 in response to the weakening in the economy and because we expect inflation to be back in the RBA target range of 2%-3%. The large rate cuts will precipitate a very strong rebound in dwelling construction – by mid-decade there will be a very large undersupply of housing, with pent-up demand waiting to be unleashed. The current undersupply is only being exacerbated by high immigration and under-

building. As consumers and businesses re-adjust to the ‘normalcy’ of higher interest rates – although at much lower levels than the 2000s and 2010s – investment and consumer spending will return to long term trend (or potential) rates of growth over the second half of the 2020s with an initial rebound in GDP growth to 2.9% in FY27 and then 3.9% in FY28, before subsequently easing back.

Table 3.1 Australia – Key Economic Indicators, Financial Years

Year Ended June							Forecasts						
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total New Private Investment (+)	3.6	-2.8	-3.4	3.6	6.0	1.0	1.1	-0.1	1.4	5.3	8.5	7.1	3.0
New Public Investment (+)	11.3	4.7	0.1	4.2	7.1	5.4	1.4	2.7	-1.0	-2.7	1.0	4.0	1.4
Gross National Expenditure (GNE)	3.5	1.4	-1.2	3.7	5.0	3.6	0.8	2.2	1.8	2.7	4.0	3.9	2.7
GDP	2.9	2.2	-0.1	2.2	3.7	3.4	1.8	2.3	2.3	2.9	3.9	3.5	2.7
Inflation and Wages													
CPI (Yr Avg) - RBA forecasts (*)	1.9	1.6	1.3	1.6	4.4	7.0	4.2	3.2	2.7	2.5	2.5	2.5	2.5
Wage Price Index (Yr Avg)(**)	2.1	2.3	2.1	1.5	2.4	3.5	3.9	3.7	3.5	3.3	3.2	3.5	3.7
Average Weekly Earnings (Yr Avg)(^)	2.4	2.7	3.9	2.7	1.9	3.4	4.2	4.3	4.1	3.7	3.3	3.7	4.2
Employment													
– Employment Growth (Yr Avg)	3.0	2.3	0.5	0.5	3.3	4.3	2.4	1.3	0.9	1.0	1.8	2.3	1.8
– Employment Growth (May/May)	2.6	2.7	-5.7	8.2	3.4	3.4	1.6	1.2	0.7	1.4	2.1	2.2	1.5
– Unemployment Rate (May) (%)	5.4	5.2	7.0	5.1	3.9	3.6	3.8	4.0	4.4	4.3	3.9	3.6	3.6
Labour Productivity Growth													
– Total	-0.1	-0.2	-0.5	1.7	0.4	-0.9	-0.6	1.0	1.5	1.9	2.0	1.2	0.9
– Non-farm	0.0	0.1	-0.3	1.2	-0.1	-0.7	-0.4	1.0	1.6	1.9	2.1	1.2	0.9

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 June 2023 quarter. Beyond this, we've used the arithmetic mean the next 2 years and the the mid-point of the Reserve Bank's 2 to 3 per cent inflation target range after 2024.

** Based on Ordinary Time Hourly Rates of Pay Excluding Bonuses. Includes impact of Superannuation Guarantee increases.

^ Average Weekly Ordinary Time Earnings for Full-Time Adult Persons. Includes impact of Superannuation Guarantee increases.

e: estimate

Over the longer term, potential growth will slow primarily due to a smaller contribution from labour force growth compared to recent history. Net overseas migration will fall back to a more normal level, and the contribution from natural increase (births minus deaths) will also moderate. The relatively large cohort of Australians aged 65+ moving into retirement will also place downward pressure on the labour force participation rate, although this will continue to be somewhat alleviated by relatively high net immigration.

3.2 OUTLOOK FOR THE QUEENSLAND ECONOMY

The Queensland economy has slowed over the past year, after state final demand (SFD) showed strong growth of 5% in both FY21 and FY22, with Gross State Product (GSP) also outpacing the Australian equivalent at 2.9% and 4.4% respectively. The state's outperformance over these two years has been partly driven by a rise in interstate migration, which has provided both additional demand for goods and services and an increasing supply of workers. We think this boost is close to running its course, and the state's performance over the next few years will be less pronounced. In FY23, SFD eased to 2.9%, while GSP is estimated to have been quite weak at 1.8%, largely due to a decline in merchandise exports – mostly offsetting strong services exports - and strong growth in imports.

Although mining investment has been subdued recently, the near term is more positive given firms' intentions to replace existing capital capacity. High commodity prices have boosted profits, which will help facilitate this expenditure. But the investment ramp up will be smaller than the previous boom, and Queensland's exposure to thermal coal will limit the mining sector in the long term. Recent services export data suggest tourism exports are picking up quite sharply, and Queensland's economy will particularly benefit from the normalising tourism flows. Strong population growth will continue to boost the state economy. Population growth in the state was 0.8% faster than the national average over FY21 and FY22 – growing at 1% and 2% in respectively – rising to 2.5% in FY23, 0.6% faster than the national average. Population growth is forecast to ease back to 2.1% and 1.8% in FY24 and FY25. From FY26 to FY30, population growth will gradually ease, averaging 1.6% p.a., almost 0.3% above the national average.

In FY24, SFD is forecast to ease to 1.9%, while GSP picks up to 3.4% as merchandise exports rebound, services exports continue to recover and import growth weakens in line with SFD. Household spending and government consumption spending are expected to be the main drags on growth. Dwelling building activity is expected to grow as better weather allows a catch-up in delayed projects. Although dwelling building subsequently falls back in FY25, a large undersupply is expected to drive a strong upswing over FY27 to FY29 (see next section). Business investment is expected to pick-up over FY24 and FY25, largely driven by strong growth in private engineering construction activity, particularly related to roads and subdivisions, electricity infrastructure (mainly renewables) and mining. Public investment is also expected to remain elevated, boosted by utilities and transport projects, and education and health buildings. In the second half of the decade, public investment will show strong growth, boosted by the construction of facilities related to the Brisbane 2032 Olympics.

Table 3.1 Queensland – Key Economic Indicators, Financial Years

Year Ended June							Forecast						
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Queensland													
Total Construction Activity(*)	5.4	-9.2	-4.5	-1.3	3.6	3.4	7.1	4.9	0.8	4.1	8.4	7.6	3.6
State Final Demand	3.6	0.9	0.3	5.0	5.0	2.9	1.9	3.1	2.3	3.2	4.4	4.2	3.1
Gross State Product (GSP**)	3.9	1.0	-0.9	2.9	4.4	1.8	3.4	2.8	2.5	3.1	4.1	3.8	3.0
Employment Growth (Year Avg)	4.2	1.5	0.7	2.4	5.1	3.7	2.4	1.8	1.2	1.3	2.2	2.6	2.1
Australia													
Total Construction Activity(*)	12.2	-9.1	-3.7	-0.7	2.0	5.7	1.6	-0.7	-0.8	2.8	8.0	7.5	2.6
Australian Domestic Demand	3.4	1.6	-0.8	3.0	5.0	3.6	0.8	2.1	1.9	2.8	4.0	3.9	2.7
Gross Domestic Product (GDP)	2.9	2.2	-0.1	2.2	3.7	3.4	1.8	2.3	2.3	2.9	3.9	3.5	2.7
Employment Growth (Year Avg)	3.0	2.3	0.5	0.5	3.3	4.3	2.4	1.3	0.9	1.0	1.8	2.3	1.8

Source: Oxford Economics Australia, ABS

* Total construction work done in constant prices as per the ABS Building Activity and Engineering Construction Activity
Total construction is the sum of new dwelling building (includes alterations and additions activity greater than \$10,000), new non-building activity and new engineering construction.

** GSP is an estimate for FY2023

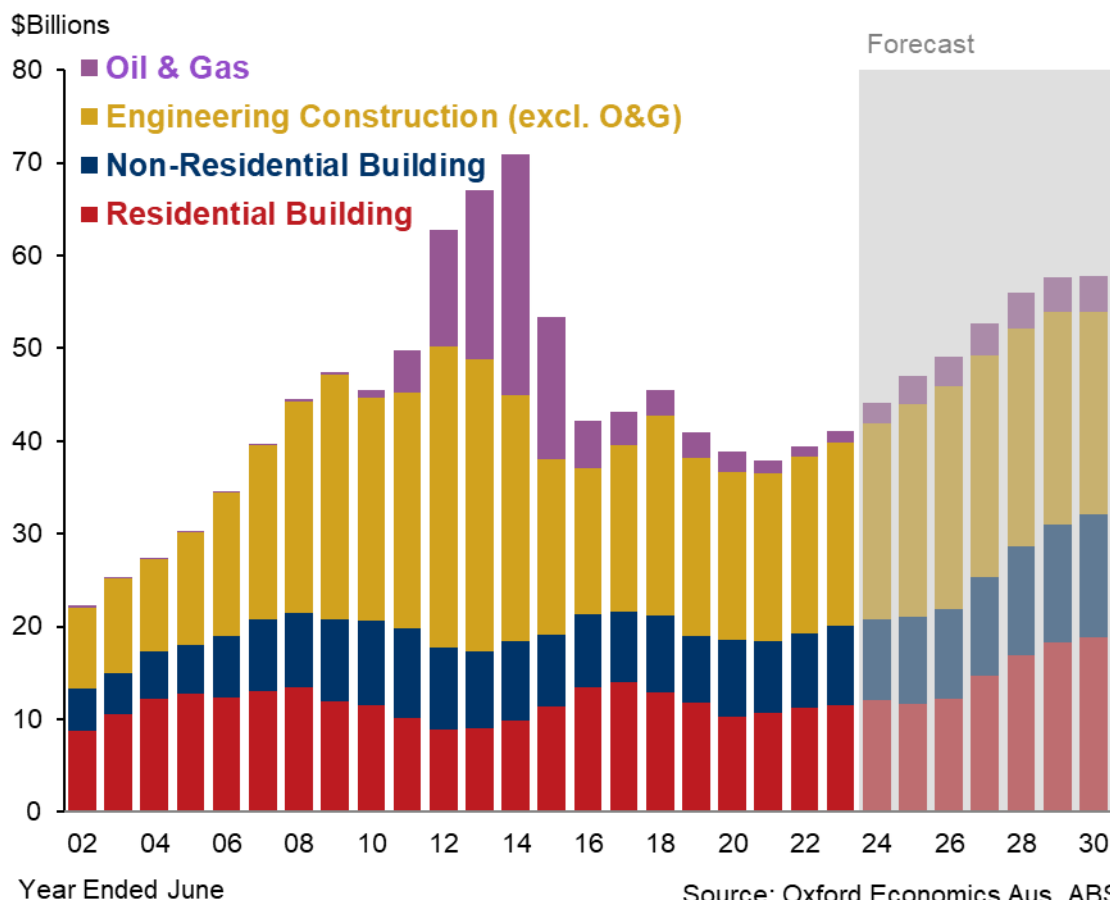
Employment growth has been quite strong over the past three years, with the unemployment rate falling from over 6% - where it has been stuck since FY2014 – to lows of 3.3% in the second half of 2022, although it has drifted up to 4.1% recently (August 2023). We expect further healthy employment growth over FY24 and FY25 - boosted by rising construction – to keep the unemployment rate around 4-4.3%, before drifting up to around 4.5% over FY26 and FY27 as employment growth eases. Thereafter, strong construction growth and broad-based economic growth is expected to again see strong employment growth, with the unemployment rate falling back below 4% from FY29 and pushing up wage pressures. The healthy employment growth in the next two years will underpin household spending and higher wages (partly offsetting higher interest rates and inflation) and again from FY28.

Overall, GSP and SFD are expected to average 3.3% and 3.2% per annum respectively over the next 7 years from FY24 to FY30 inclusive.

3.3 CONSTRUCTION OUTLOOK FOR QUEENSLAND

Total construction in Queensland has been more reliant on the engineering construction sector over the last decade due to the importance of mining and associated infrastructure. A downturn in both engineering construction and building drove total construction work done down to a trough of \$38bn in FY21. Activity over the past two years, hitting \$41bn in FY23. Moving forward, strong investment in both residential, non-residential and engineering sector with see strong construction activity growth over next five years, averaging around 6.4% annual average growth to hit \$56bn in FY28.

Figure 3.2 Queensland Construction Outlook



Source: Oxford Economics Aus, ABS

Building Construction

Driven predominately by a housing construction downturn, Queensland building (residential plus non-residential) construction activity had been on the decline since FY18, and troughed at \$18.5bn in work done for FY21. Overall activity then picked up in FY22 and FY23 both in both the non-residential and residential sectors due to strong fundamentals (developing housing stock pressure, elevated flow of interstate arrivals, strong investment demand, and bright economic outlook). Building construction activity is forecast to sustain positive growth out to FY30, with a notable residential upswing over FY27 and FY28 seeing 14% average growth in each of the two years. Some of the strength in

buildings in the second half of the decade is related to facilities being constructed for the Brisbane 2032 Olympics, however, the main driver will stem from private residential investment.

Engineering Construction

The extensive scale of mining and heavy industry projects in Queensland has historically driven trends across the entire engineering construction segment (with mining and heavy industry construction accounting for 70% of total engineering construction at its \$35bn peak in FY14). Significant growth in the transport and electricity sectors – and recovering mining & heavy industry investment – will drive strong near-term growth in Queensland’s engineering construction market – with work done rising 30% over the next four years, from \$21bn in FY23 to a peak of \$27bn in FY27. The latter half of the decade will see a steady level of activity, as the winding down of major transport projects is met by a pickup in water, renewable energy, and gas related projects.

4. WAGES AND INFLATION OUTLOOK

4.1 CPI OUTLOOK

Current strong inflationary pressures will be slow to abate

Consumer price inflation was subdued for the five years to the March quarter 2020, with annual (through-the-year or y/y) headline CPI inflation ranging between 1.0% and 2.2%; averaging 1.7%. Meanwhile, underlying (or core) inflation fell below the Reserve Bank's target 2-3% band in March 2016 and stayed there. The onset of COVID-19 in early 2020 then saw considerable volatility in the headline CPI measure over 2020 and 2021, due to volatility in oil prices, government responses to Covid, demand impacts and then supply chain impacts due to Covid – but the CPI remained under 2% over FY20 and FY21.

However, by late 2021/early 2022 it was apparent that inflationary pressures were increasing and broadening. Significantly, the September quarter 2021 saw core inflation – which excludes the extreme price movements, such as the 'usual' petrol price volatility – move back into the RBA's 2-3% target range for the first time since the December quarter 2015. Both core and headline inflation accelerated through 2022, with headline CPI peaking at 7.8% and core inflation peaking at 6.4% in the December quarter 2022, as a number of factors conspired to worsen local and global inflation. These factors included severe supply chain shortages and delays, the zero-Covid policy pursued by China, the outbreak of war in Ukraine (and associated sanctions on Russian oil and other commodity exports). Food prices also jumped in early 2022 because of the impact on wheat and other foods prices from the Ukraine war, while the floods in eastern Australia led to substantial rises in some food prices through 2022. The supply-chain disruption for imported goods were also exacerbated by the decline in the Australian dollar over 2022 and into 2023. Added to this was evidence of rising demand inflation via widening profit margins, as local businesses took advantage of stronger economic conditions.

Another important component of procyclical inflation since mid-2021 has been the cost of constructing a new dwelling (which constitute 8.6% of the CPI basket). Cost inflation in the construction sector has been escalating since late 2020, due to both the surge in construction work generated by the HomeBuilder subsidy, and materials and labour shortages caused by this additional demand and exacerbated by supply bottlenecks and workplace restrictions. The house purchase component increased 20.7% y/y over the year to September 2022, before easing over the subsequent three quarters. Construction cost inflation will slow further in the coming quarters, but over the next year it will still remain high relative to its history.

Price inflation to ease back over the next 2 years as supply pressures ease

Although we expect oil and other commodity prices to ease further through 2023, it will take some time for supply networks to completely normalise. But most of these supply-side pressures will abate over 2023, and their absence will cool headline inflation materially through 2023. Demand-driven inflation will be slow to abate over the year, despite RBA attempts to 'cool' strong demand with higher interest rates. Moreover, the tightening labour market - with the unemployment rate currently around 3.7% and expected to stay under or near 4% for the next 2 years - will contribute to wage pressures, which have so far contributed little to the above-average CPI inflation, apart from construction costs. Overall, headline CPI inflation averaged 4.4% in FY22 and 7% in FY23, (following 1.6% in FY21), with annual (through-the-year, or y/y) price growth easing back to 6.0% in June quarter, pushed down by the 0.8% q/q rise in the June quarter.

However, some structural factors will add to inflation over the short-to-medium term, such as household energy costs and a return to higher rental and food inflation. Rents constitute around 6% of the CPI while food accounts for over 10% of CPI basket (excluding around 7% for meals out and takeaway food). Rental price growth rose to 4% (y/y) in the December quarter 2022 and further to 6.7% in the June quarter 2023. Given the extreme tightness in rental markets currently, the CPI measure of rents is expected to increase markedly over the next 2-3 years as existing rental contracts roll over to new, much higher rents. Another factor driving inflation over the next 2-3 years will be further sharp increases in electricity and gas prices (which constitute 3.2% of CPI).

Food inflation had averaged around 2.8% p.a. over the 25 years to 2014 but had been very weak over the five years to FY19 (averaging only 1.1% p.a.), which was a key factor which muted prices over those years. This was due to intense competition between the major supermarkets and falling or weak global agricultural prices. The supermarkets cannot keep cutting prices (and either their own margins or suppliers' margins), while world agricultural prices will remain elevated over the medium term, now the previous global oversupply has dissipated. So while we expect food inflation to ease back from the 10% rises of 2022, food prices are unlikely to track back to the sub-2% of the 2015-2019 period.

Underlying and headline CPI inflation are expected to remain somewhat elevated over FY24 to FY26 as the supply and demand pressures slowly abate and employment remain buoyant, and wage growth strengthens. Wages growth will accelerate as the unemployment rate is expected to remain below 4% over FY23 to FY25. Although global inflationary pressures will ease over the next year, they will remain elevated, contributing to higher manufacturing costs and prices over the near term. The sharp decline in the exchange rate from around US\$0.72 in the first half of 2022 to below US\$0.65 recently will also add to inflationary pressures in the near term. Conversely, we expect the A\$ to appreciate toward US75 cents over the next two years, which will provide some offsetting pressures between FY24 and FY26.

Overall, OEA forecasts headline CPI inflation to be 4.4% in FY24, 3.2% in FY25 and 2.7% in FY26. The expected softening in the economy around mid-decade will see price and wage pressures weaken, with the CPI to ease back to around 2.5% over FY27, where it is expected to sit over the latter years of the 2020s (see figure 4.1). Our forecasts, on average, are similar to the August RBA forecasts over FY23 to FY26 (see section 4.1.1 below).

CPI inflation projected to average close to 2.5% over the medium-to-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 currently constitutes around one-third of the CPI basket, is forecast to increase by an average of around 1% to 2% per annum contributing around 0.5% 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 comprises the remaining two-thirds of the basket, but this proportion is increasing due to the move toward services and higher price inflation (than tradeables). It is assumed to increase by around 2.5-3% per annum, contributing around 2% to headline inflation. This is weaker than the 3.7% average achieved from 2001 to 2015 when relatively high wage inflation, lower than average productivity growth to 2009 and also large rises in utilities prices pushed non-tradeables inflation to well outside of the RBA's 2 to 3% target range. We expect higher wages growth in the longer term and lower long-term productivity will also contribute to the maintenance of relatively high non-tradeables inflation.

4.1.1 RBA CPI Forecasts are Used to Calculate Real Wages

To calculate real wage and other cost increases, we deflate nominal price growth by deducting expected inflation. For the inflation forecast, we use the methodology preferred by the Australian Energy Regulator (AER). This methodology involves using the official near-term CPI forecasts from the Reserve Bank of Australia (RBA) and a longer-term average based on the 2.5% mid-point of the RBA's inflation target band (i.e. 2 to 3%).

The RBA's August 2023 'Statement on Monetary Policy' forecast the headline CPI rate to be 4 ¼ % for the December quarter 2023 and then to 3 ½ % in the June quarter 2024 – giving a year average CPI rate of 4.2% for FY24. The RBA's CPI forecast for December 2024 is 3 ¼ %, and 3% by June 2025 - giving a year average CPI rate of 3.2% for FY25 – before easing to 2 ¾ % in December 2025. Beyond the RBA's forecast from the SoMP, we assume the CPI averages 2.5% over the medium-to-long term.

4.2 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. The low wage growth of the 2014-21 period was both a product of and key contributor of low underlying inflation. Low wages helped keep business costs down and thus muted upward price pressures, while a significant section of pay deals are 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 was just above 5% over the two years to the March quarter 2020, before the COVID impacts. 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 lowered in recent years, possibly to around 4%.

Wage growth now rebounding, and will lift further as the labour market remains tight

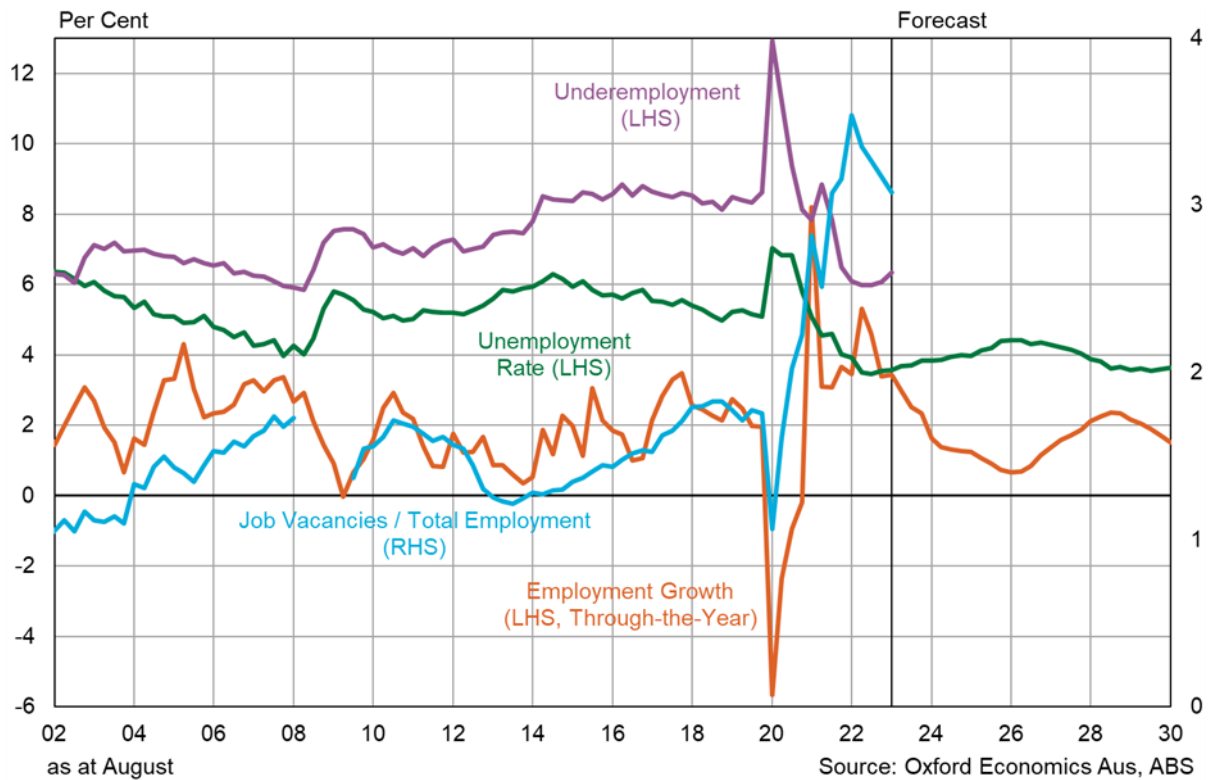
Following the covid-inspired slump in wages in FY20 and FY21, wages growth picked up over FY22, with the All Industries wage price index (WPI) increasing to 2.4% in FY22 (from 1.5% in FY21). A further acceleration in wages growth occurred in FY23 – to 3.5% - and we expect wages growth to strengthen over FY24 and FY25, before easing over FY26 to FY28.

A key element adding to wage pressures in FY22 and over FY23 was the rapid tightening in the national labour market. Employment is now well above pre-COVID levels, with the unemployment rate now (August 2023) at 3.7% and labour force participation rates at record levels. A key to the outcomes over FY22 was little growth in the pool of available labour. The cessation of international migration to Australia since March 2020 saw population growth plummet to just 0.2% in the year to June 2021, while the working age population (above 15 years old) increased by only 50,000 (+0.2%) over 2020/21 and 206,000 in 2021/22, compared to over 330,000 persons in FY19 and in the year to March 2020. Growth in the labour force has been facilitated by a marked increase in the labour force participation rate to record levels. However, there is now little scope to raise the participation rate further and, with the underemployment rate at historical lows and job vacancies well above pre-COVID levels, wage pressures are continuing to build.

Figure 4.1 Australia: Wages and Prices



Figure 4.2 Australia: Employment and Unemployment



The economy is expected to remain resilient over the short-to-medium term and, although OEA's economic growth (GDP) forecasts are for modest weakening over FY24 and FY25, we still expect the labour market to remain tight, with labour demand still relatively strong and the unemployment rate remaining around 3.6% to 4% over the next two years to FY25. The rise in the unemployment rate is also expected to be kept in check by falls in the participation rate, as employment growth slows. Skill shortages, which have already emerged, are expected to remain acute in many parts of the economy, although there has been some recent evidence of shortages of unskilled labour beginning to ease. The tight labour market will see wage pressures remain elevated. Wages have been slower to pick up compared to the inflation rate, due to lags in the transmission of wage increases, particularly in the enterprise bargaining segment, where the duration of agreements runs for 2-3 years.

In the short-term, our wage forecasting methodology involves an analysis of the expected future wage movements in the three main methods of setting pay – for those reliant on awards (13% of the full-time workforce), collective agreements (38% of the workforce) and those who have their pay set by individual arrangements (48%). In terms of those workers on awards who have their pay determined by the Fair Work Commission (FWC) in the annual National Minimum Wage (NMW) case, the increase given in June 2022 for the 2022/23 financial year was much higher than previous years – with the FWC awarding a 5.2% increase to workers on the minimum wage, although workers on award rates only received a 4.6% increase (minimum \$40/week increase for award rates below \$870/week). A key element of this decision was the very high CPI inflation rate of 5.1% in the March quarter 2022 (which was then the latest available quarter).

The June 2023 NMW decision (for the 2023/24 financial year) was even higher, driven by CPI inflation of 7% in the March quarter 2023. The Commission awarded an 8.6% in the minimum wage and an increase of 5.75% for workers on awards. This will underpin a lift in wages growth in FY24. It is likely that the minimum and award increases provided by the FWC will remain high for the next 1-2 years, particularly given the support for higher wages from the new Federal Labor government (which the previous government did not support). Although only 13% of full-time workers (a much higher proportion for part-time workers) rely on the annual increase in the minimum and award wage as their primary wage-payment mechanism, a significant proportion of workers are also indirectly influenced by the NMW increase, as it usually flows onto industry awards, with the Fair Work Commission estimating its decisions will affect more than 2.7 million workers (around 20% of the workforce). Accordingly, these FWC decisions will also influence the strength of wage increases given to those who receive their wages via 'individual arrangements' pay setting arrangements, as a significant proportion of wage increases given under individual arrangements are based on awards. Recent inflation outcomes, inflationary expectations and the tightness of the labour market are also key influences in the setting of wage increases under individual arrangements.

It is important to note that wage growth usually lags changes in the labour market, inflation and economic conditions, because of the inherent lags in wage setting mechanisms. Although wage increases related to the NMW and relevant awards are set each July, many of the enterprise agreements – covering 38% of the full-time workforce – run for an average of 2-3 years. These agreements averaged 2.6% over the five years to December 2021, having been set in an environment of low inflation and a much less tight labour market. However, as these previous (low wage increases) agreements expire, we expect the next round of agreements to be materially higher, due to ongoing high CPI inflation and because of widespread skilled labour shortages (with the unemployment rate expected to be below 4%). The latest DEWR (Department of Employment and Workplace Relations) data shows that recent agreements have lifted to 3.7% in the March quarter 2023. Of the other 49% of workers on individual agreements, those of who are on awards will receive an annual pay increase via the FWC increase, while others may receive an annual salary increase, but there are a significant proportion on fixed contracts running over a few years. The bottom line is that the next round of wage rises negotiated by workers will be much higher than recent years.

Forecasts for All industries wages are detailed in the Summary table in the Executive Summary. The Australian All industries WPI is forecast to increase to 3.9% in FY24 and remain elevated at 3.7% over FY25, before easing over the subsequent 3 years as the economy cools and the unemployment rate rises back above 4%. Stronger wage growth is then expected to resume over FY29 as stronger economic and employment growth return from 2028. Overall, using RBA CPI forecasts, real (inflation-adjusted) WPI growth for the Australian All Industries WPI is forecast to decline in FY23 and FY24 as high CPI inflation out-paces WPI growth (as occurred in FY22). Thereafter, with WPI growth remaining relatively high and CPI inflation easing, there will be positive growth in real wages from FY25 to FY30. Over the five-year period from FY26 to FY30 inclusive, the real rate of increase is forecast to average 0.9% p.a., which will be on par with the 0.9% average of the decade to FY2011 inclusive and higher than the 0.5% of the decade to FY21.

The Queensland All Industries WPI is expected to largely track over the national All Industries WPI over the forecast period, with minor year-by-year differences related to the relative strength of the respective state economic growth and labour markets. Over the five years to FY30 the Queensland All Industries WPI are forecast to average 3.5% in nominal terms and 0.9% in real terms.

5. INDUSTRY WAGES - UTILITIES & CONSTRUCTION: AUSTRALIA & QUEENSLAND

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

The WPI for the EGWWS (Electricity, Gas, Water & Waste Services or 'Utilities') sector in Queensland is used as a proxy for all of Energy Queensland's electricity network related 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 Energy Queensland'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 Energy Queensland'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.

OEA chose to use the Wage Price Index (WPI) as the key measure of growth in Energy Queensland's internal 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 the key states (NSW, Victoria and Queensland), 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.

In terms of overall wage costs, **the full 0.5% for the SG increases each year should be added to the forecast WPI increases each year** for internal wages and also external wages, to arrive at the total percentage increase in labour costs. This is in line with advice from Deloitte Access Economics (DAE) to the AER in their Superannuation Guarantee paper, that "...taking into account the uncertainty regarding how individual NSPs will respond to changes in the minimum superannuation guarantee, it is recommended that the full 0.5 percentage point annual increase to the superannuation guarantee be added to forecast WPI growth" (page 5 of DAE impact of *Changes to the Superannuation Guarantee on Forecast Labour Price Growth*, July 2020).

5.2 NATIONAL & QUEENSLAND EGWWS WPI FORECASTS

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

The national (Australia-wide) EGWWS WPI growth has consistently been above the national (All Industries) average since the index's inception in 1997 and averaged 0.6% higher over the past two decades (see Table 5.1 and Figure 5.1). Over these two decades, the average growth in the real (inflation adjusted) WPI was 1.3%. Since the collapse in wages growth following the end of the mining boom, the EGWWS WPI has continued to outpace the All Industries average, increasing by an average of 2.5% over the 8 years to FY21 inclusive, 0.4% higher than the 2.1% national average.

Over the 5-year period from FY26 to FY30 inclusive - Energy Queensland's next regulatory period - the Australian EGWWS WPI is forecast to average 3.7%, which will be 0.3% above the All Industries average. In real terms, the Australian EGWWS WPI is forecast to average 1.1% p.a. over the five years to FY30. Note that these forecasts include the impact of the SG increase, which is expected to see the EGWWS WPI be -0.04% lower over FY23 to FY26 than if the SG increase did not proceed. The overall real average of 1.1% is a bit above the 0.9% p.a. averaged over decade to FY21, but below the 1.5% average of the decade to FY2011. In terms of the historical difference vis-à-vis the All Industries WPI average, the difference is slightly below the 0.4% difference of the decade to FY21.

Table 5.1 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		
	Nominal \$/week	%CH	Real AWOTE %CH	Nominal \$/week	%CH	Real AWOTE %CH	Nominal Index	%CH	Real WPI %CH	Nominal Index	%CH	Real WPI %CH
2005	973	4.4	2.0	1,091	3.2	0.8	85.3	3.7	1.3	83.3	4.3	1.8
2006	1 018	4.6	1.4	1,111	1.9	-1.3	88.7	4.1	0.9	87.6	5.2	2.0
2007	1 054	3.6	0.6	1,152	3.7	0.7	92.2	3.9	1.0	91.8	4.8	1.8
2008	1 106	4.9	1.6	1,183	2.7	-0.7	96.1	4.1	0.8	95.7	4.2	0.8
2009	1 166	5.5	2.3	1,255	6.1	3.0	100.0	4.1	1.0	100.0	4.5	1.4
2010	1 231	5.6	3.2	1,351	7.6	5.3	103.1	3.1	0.8	104.4	4.3	2.0
2011	1 283	4.2	1.0	1,474	9.1	6.0	107.0	3.8	0.7	108.7	4.2	1.1
2012	1 338	4.3	2.0	1,510	2.5	0.1	110.9	3.6	1.3	112.5	3.5	1.2
2013	1 400	4.6	2.4	1,602	6.1	3.9	114.6	3.3	1.0	117.3	4.2	1.9
2014	1 442	3.0	0.3	1,635	2.0	-0.7	117.6	2.6	-0.1	121.1	3.2	0.4
2015	1 477	2.4	0.7	1,646	0.7	-1.0	120.4	2.4	0.7	124.5	2.8	1.1
2016	1 504	1.9	0.5	1,704	3.5	2.2	123.0	2.1	0.7	127.5	2.4	1.0
2017	1 535	2.0	0.3	1,777	4.3	2.6	125.4	2.0	0.2	130.3	2.2	0.5
2018	1 572	2.4	0.5	1,818	2.3	0.4	127.9	2.1	0.1	132.9	2.0	0.0
2019	1 614	2.7	1.0	1,842	1.3	-0.3	130.9	2.3	0.7	136.6	2.8	1.1
2020	1 676	3.9	2.5	1,896	2.9	1.6	133.7	2.1	0.8	140.2	2.7	1.3
2021	1 721	2.7	1.1	1,927	1.6	0.0	135.6	1.5	-0.1	142.7	1.8	0.2
2022	1 755	1.9	-2.5	1,979	2.7	-1.7	138.8	2.4	-2.1	144.9	1.5	-2.9
2023	1 814	3.4	-3.6	2,077	4.9	-2.1	143.7	3.5	-3.6	149.6	3.2	-3.8
Forecasts												
2024	1 891	4.2	0.0	2,164	4.2	0.0	149.3	3.9	-0.3	155.3	3.8	-0.4
2025	1 973	4.3	1.1	2,257	4.3	1.1	154.8	3.7	0.5	161.6	4.0	0.8
2026	2 054	4.1	1.4	2 349	4.1	1.4	160.3	3.5	0.8	167.8	3.9	1.2
2027	2 131	3.7	1.2	2 438	3.8	1.3	165.5	3.3	0.8	173.7	3.5	1.0
2028	2 201	3.3	0.8	2 522	3.4	0.9	170.8	3.2	0.7	179.3	3.2	0.7
2029	2 281	3.7	1.2	2 620	3.9	1.4	176.8	3.5	1.0	185.9	3.7	1.2
2030	2 376	4.2	1.7	2 726	4.1	1.6	183.2	3.7	1.2	193.0	3.8	1.3
Compound Annual Growth Rates ⁽³⁾												
2001-2010	4.8		2.0	4.4		1.5	3.7		0.9	4.4		1.6
2010-2020	3.1		1.1	3.4		1.4	2.6		0.6	3.0		1.0
2023-2030	3.3		1.1	3.4		1.1	3.0		0.7	3.2		0.9
2025-2030	3.8		1.2	3.8		1.3	3.4		0.9	3.6		1.1

Source: Oxford Economics Australia, ABS

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

(2) Wage Price Index, excluding overtime and bonuses

(3) CAGR (Compound Annual Growth Rates) for 2025-2030 is the average annual growth for 2025/26 to 2028/30 inclusive i.e. next Revenue Determination period.

Oxford Economics Australia regards the WPI to be a measure of the *underlying* wages growth in the utilities sector for total Australia. In terms of total wage costs — expressed in Average Weekly Ordinary Time Earnings (AWOTE) — Oxford Economics Australia expects EGWWS AWOTE to

average 3.8% per annum over the five years to FY30, 0.2% higher than the EGWWS WPI. 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 upskilling 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.

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

During the COVID-19 crisis, the EGWWS sector fared much better than just about all other sectors, along with the Education, Health & Social Assistance and Finance and Insurance sectors, in terms of wage increases over FY20 and FY21. However, in FY22, annual growth in the EGWWS WPI (1.5%) slipped below the All Industries average (2.4%) for only the second time in the past two decades. We believe this will be a short-lived aberration and that the EGWWS WPI will rebound strongly over the next year to again outpace the national average. Driving this will be much higher EBAs negotiated in an environment of very high inflation and a very tight labour market, particularly for the types of skilled labour that dominate in the sector.

To a large extent, higher relative wages growth has been underpinned by strong capital works program in the utilities sector over the past two decades (and particularly up to 2013 - 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. This is set to continue over the next decade (see figures 5.3, 5.4 and 5.5).

In addition, the electricity, gas and water sector is a largely capital intensive industry whose employees have higher skill, productivity and commensurately higher wage levels than most other sectors. Further, the overall national average tends to be dragged down by the lower wage and lower skilled sectors such as the Retail Trade, Wholesale Trade, Accommodation, Cafés and Restaurants, and, in some periods, also Manufacturing and Construction. These sectors tend to be highly cyclical, with weaker employment suffered during downturns (such as the recent COVID-19 inspired downturn) impacting on wages growth in those sectors. 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.

Strong Union presence in the utilities industry and higher collective agreements outcomes pushes utilities wages above the All Industries 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 5.2). 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.

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 outlook period, we expect collective agreements in the EGWWS sector to achieve average increases of 3.8%.

Figure 5.1 Wage Price Index - Australia All Industries, Electricity, Gas, Water & Waste Services, and Construction (includes SG increases impacts)

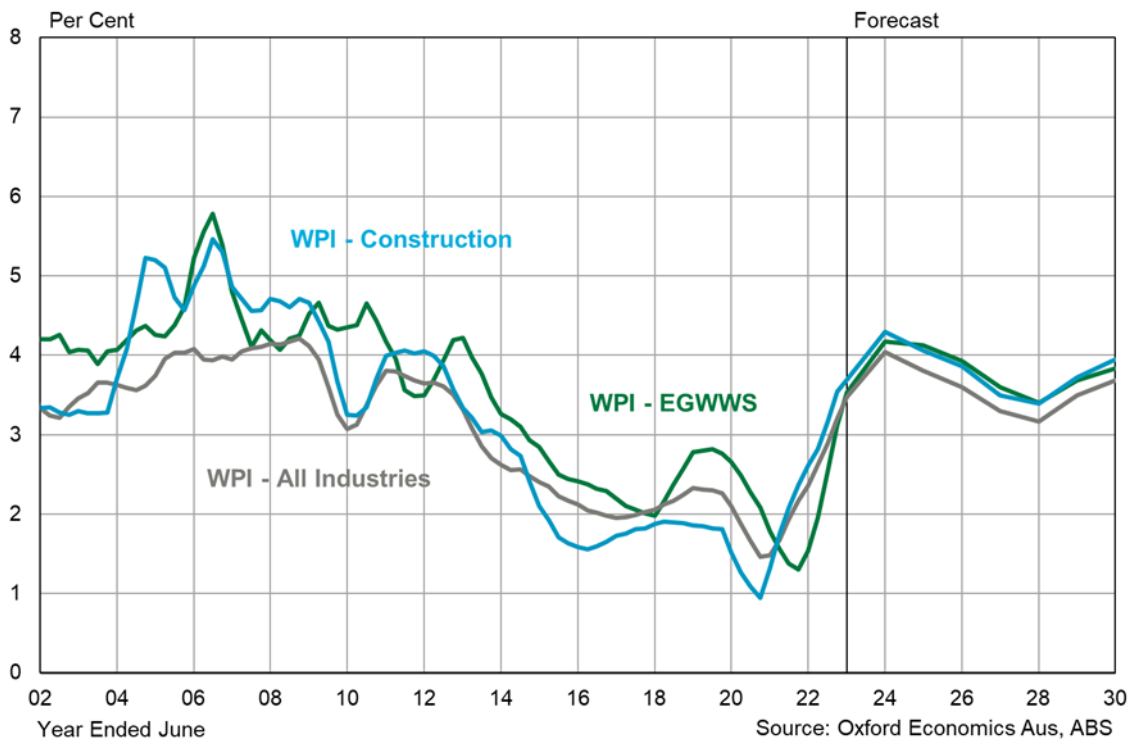
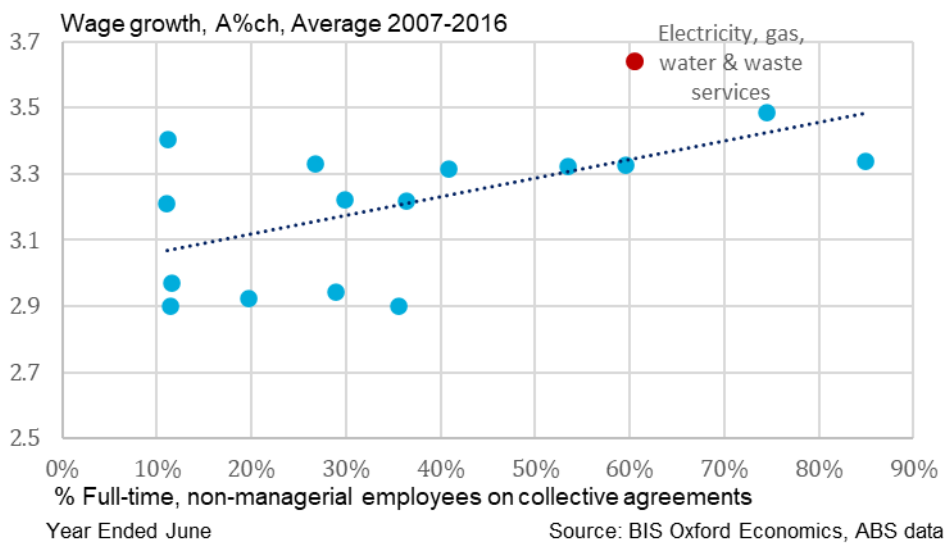


Figure 5.2 Average wage growth and unionisation rates by industry, 2007-2016



Oxford Economics Australia analysis shows collective agreements in the EGWWS sector were on average around 1.5% higher than CPI inflation over the 15 years to FY2014 (excluding the effects of GST introduction in 2000/01). In the six years to FY20, collective agreements were on average 1.4% 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 1.2% above the 'official' CPI over FY26-30, although this 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, Oxford Economics Australia 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.

EBA outcomes were relatively weak over FY21 and remain subdued in FY22 (averaging 2.5%), compared to the 5 years to FY20, when EBAs averaged around 2.9%. However, EBAs have picked up appreciably over the past three quarters, with the latest March 2023 data showing that approved EBAs have picked up to 3.7%. We expect the next rounds of EBAs negotiated in the sector to rise further over the next 1-2 years, due to several factors:

- CPI inflation will remain high (averaging 7% in FY23, 4.2% in FY24, 3.2% in FY25),
- the demand for skilled labour remains strong, and
- the recent high enterprise agreement outcomes in the construction sector 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 two decades. Figures 5.5 and 5.6 illustrate this relationship, and shows employment has a much stronger relationship with utilities engineering construction rather than utilities output.

Wage increases under Individual agreements and EBAs will strengthen from 2023 due to tight supply and stronger demand for skilled labour from the Mining and Construction sectors.

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.

The overall labour market is expected remain very tight over the next 2 years, with the unemployment rate to remain between 3.6% to 4%, despite a slowing in employment growth from 4.3% in FY23 to 2.4% in FY24 and 1.3% in FY25. We expect population and labour force growth to largely match employment growth, with small declines in the participation rate keeping the unemployment rate low, as workers with a 'loose attachment' to the workforce dropping out as labour demand eases (some to fully retire). Hence, we expect to see the continuation of critical skilled labour shortages and competition for scarce labour - particularly from the mining and construction sectors - which will push up wage demands in the utilities sector. Mining investment is now picking up and is forecast to see significant increases over the next 2 years to FY25 and remain at elevated levels to the end of the decade (see figure 5.3). Meanwhile, there is similar strong growth coming through in in the Construction sector, with solid increases across all segments of the overall construction sector (residential building, non-residential building and civil engineering & infrastructure construction) over FY23 to FY25, leading to strong labour demand in that sector, particularly over FY23 and FY24 when activity surpasses the 2018 levels – excluding oil and gas, where a significant proportion of the 'work done' measure is large imported components assembled on-site (see figure 5.4).

Figure 5.3 Australia – Mining Investment

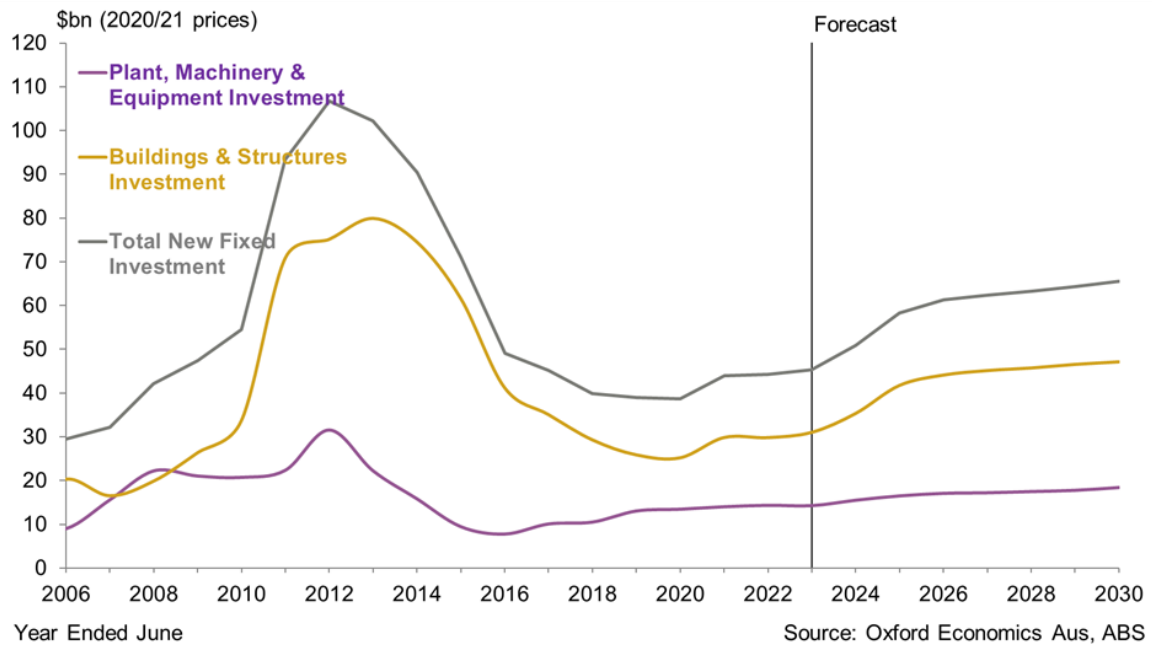
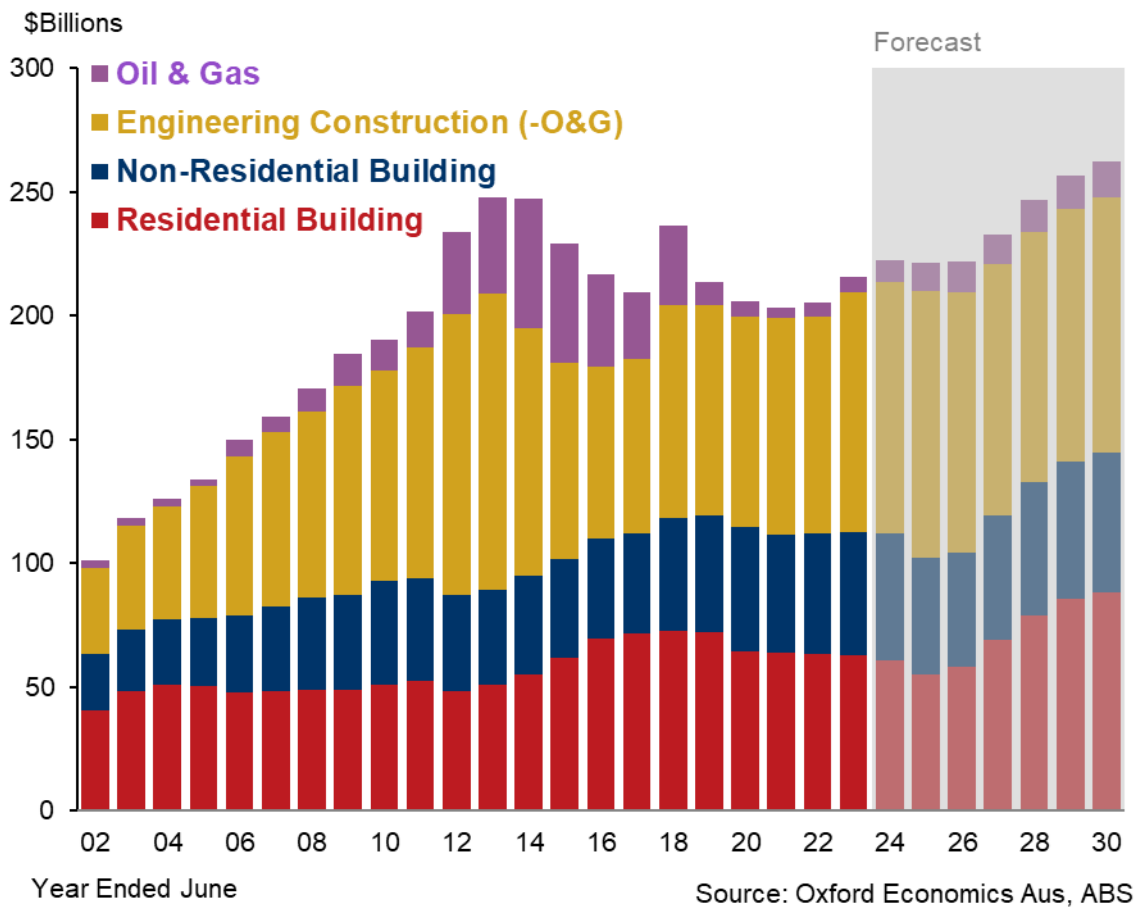


Figure 5.4 Australia – Construction Activity (real work done)



With regard to utilities investment, Oxford Economics Australia is forecasting steady increases over the next 7 years, with electricity-related engineering construction projected to be 20% higher in FY30 compared to FY23 levels, following a 41% increase over the past two years (see chart 5.5). However, given the need for much greater amounts of transmission and distribution investment, let alone renewables generation, these projections could be considered conservative – there is a significant upside risk to the quantum of electricity-related investment required.

Employers are already reporting an increasing shortage of technicians and trade workers, and employees with STEM skills. These are essential workers in the utilities sector. A key problem is that the TAFE (technical and further education) systems across the country have simply not been training enough workers. Oxford Economics Australia research shows this is being compounded by new graduates in the trades stream, in particular, not increasing fast enough to replace retiring workers, with some numbers actually falling. Despite government announcements that they are moving to address the TAFE system, it is unlikely that these issues will be fully addressed within the next 5 years. Added to this is that skilled immigration only fully returned in the first half of 2022, after being suspended since early 2020. Although now resumed, the backlog of skilled labour shortages will be slow to fill, meaning that the skill shortages will persist for at least the next 2 years.

With strong competition for similarly skilled labour from the mining and construction industries, firms in the utilities sector will need to raise wages to attract and retain workers. In other words, the mobility of workers between the EGWWS, mining and construction industries means that demand for workers in those industries will influence employment, the unemployment rate and hence spare capacity in the EGWWS labour market. Businesses will find they must 'meet the market' on remuneration in order to attract and retain staff and we expect wages under both individual arrangements and collective agreements to increase markedly over the FY24 to FY26 period.

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 Queensland (see figure 5.8). 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 5.1).

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 Queensland (see figure 5.5 and 5.6). Meanwhile, utilities wages growth was relatively strong over this same period. 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 or enhancement.

5.2.1 Outlook for Utilities Wages Growth in Queensland

Wages in the Queensland utilities sector are expected to move in line with the national utilities sector average over Energy Queensland's upcoming regulatory period (see tables 1.1 and 5.2). Currently,

however, the Queensland EGWWS WPI was higher than the national EGWWS WPI in FY23, due to very high quarterly increases in the June 2022, December 2022 and June 2023 quarters. Higher EBAs in Queensland than the national EBA average recently are also expected to see Queensland utilities wages track above the national WPI outcomes over FY24 and FY25, although the sharp rise in utilities-related construction (see figure 5.6) may also be boosting wages growth over FY23 and FY24. Further increases in utilities engineering construction in Queensland will see Queensland utilities WPI growth keep pace with the national EGWWS average over the forecast period.

Figure 5.5 Australia – Utilities Employment, Output, Investment & Productivity

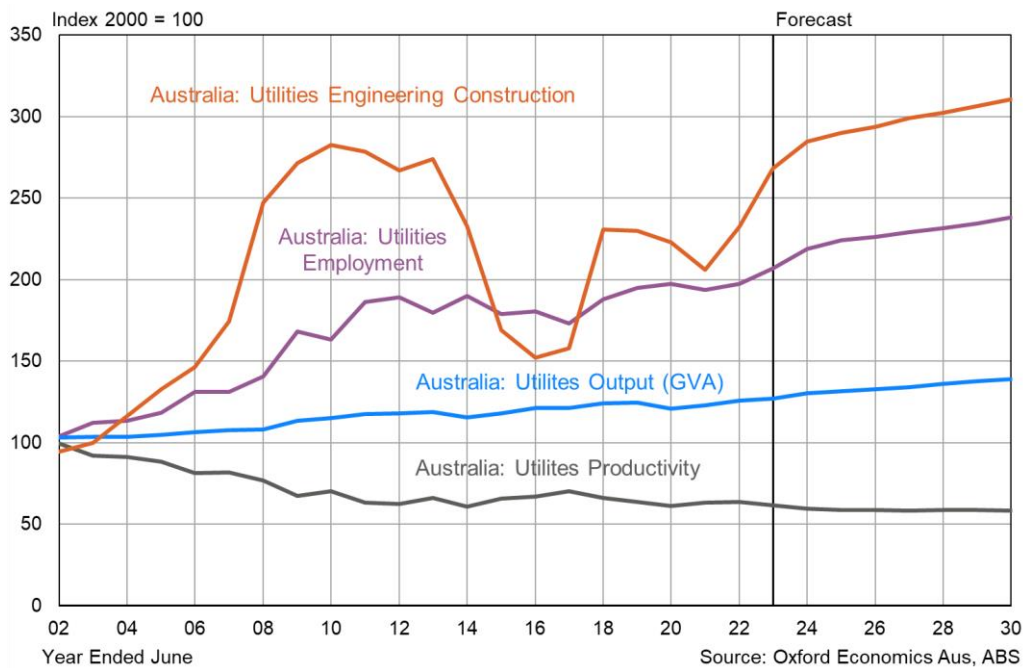


Figure 5.6 Queensland – Utilities Employment, Output, Investment & Productivity

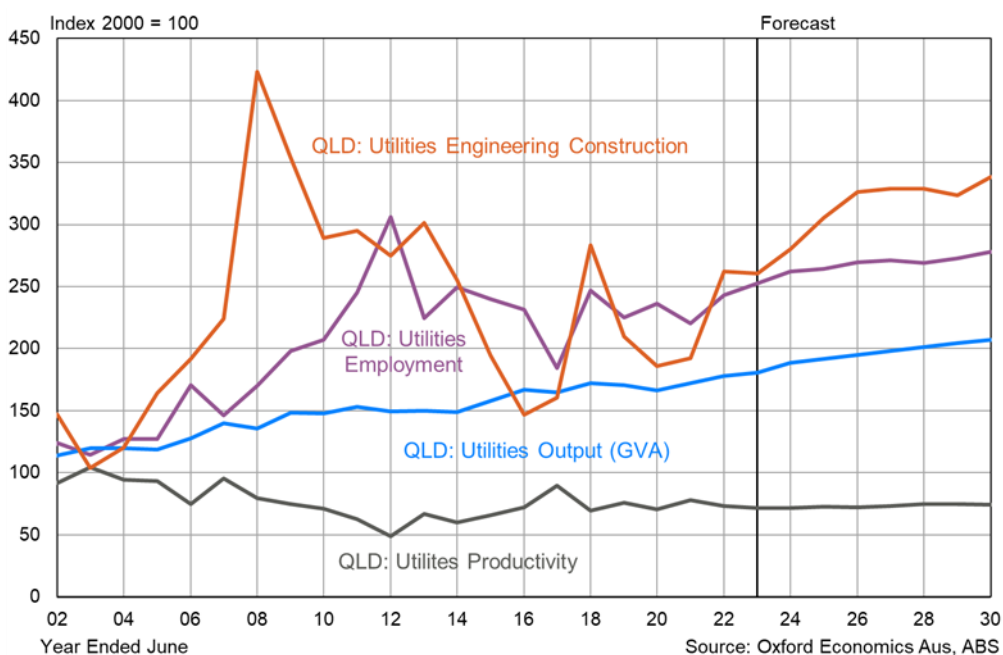
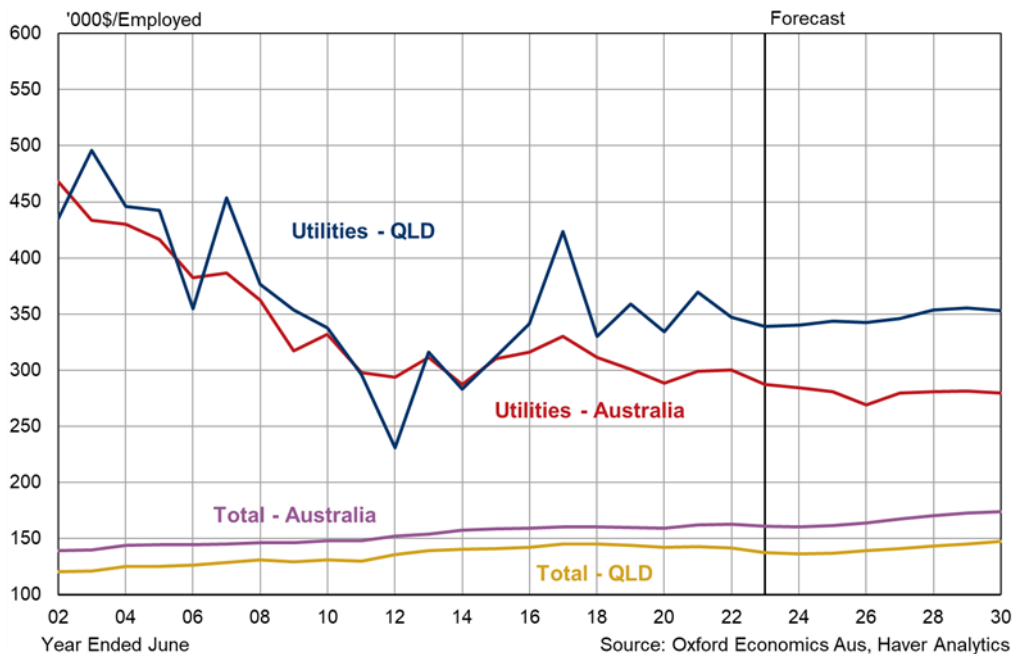


Figure 5.7 Utilities Productivity in Australia and Queensland



5.3 CONSTRUCTION WAGES

Given service providers outsourced labour is mostly supplied by firms in the construction industry, we proxy Energy Queensland’s external labour cost escalation by wages growth (as measured by the WPI) in the Victorian and Tasmanian construction sectors. Our research has shown that construction activity (ie work done in the sector) normally has a strong influence on construction wages, although changes in wages tend to lag construction (in work done terms) by around one year. Hence, our wage forecasts are based on Oxford Economics Australia forecasts of construction activity by state (which includes residential and non-residential building, plus engineering construction) as well as predicted movements in the construction wages at the national level.

Our forecast is for the Australian Construction WPI to average 3.7% over the five years from FY26 to FY30 inclusive (Energy Queensland’s next regulatory period) – or 1.1% per annum on average in real (inflation adjusted) terms. Queensland Construction wages are also forecast to average 3.7%, and a slighter higher 1.2% in real terms (see tables 1 and 5.2). While this is a marked improvement on the past five years, it is still well down on the 4.3% annual national average (nominal terms) of the decade to 2011/12. Note that these wage forecasts for the Construction WPI include the economic incidence impacts of the SG increase. In the construction industry sector, we estimate the economic incidence impacts will be -0.07% for each year of the SG increase (FY24 to FY26 forecasts).

Construction wages are forecast to strengthen further over FY24 to FY26 as construction activity increases, particularly as construction activity levels surpass the previous highs of FY18 and FY13 (see figure 5.4) and serious and widespread skills shortages continue, underpinning higher wages due to strong labour demand. Although residential building activity and non-residential building activity are now coming off the boil, rising engineering construction is pushing total construction activity higher, driven by a new wave of mining investment and a plethora of publicly funded transport infrastructure projects (particularly in the eastern states of the nation). The stronger activity will underpin higher wages due to strong labour demand and expected widespread skill shortages in the construction industry. We then expect wage growth to ease over FY27 and FY28 as construction

activity falls back, before wage growth again picks up in FY29 in line with stronger construction activity.

Table 5.2 Queensland: Utilities & Construction WPI

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Average (f)
	Actuals						Forecasts		Next Revenue Determination Period					
Nominal Wage Changes														
<i>Electricity Network-Related Labour</i>														
EGWWS WPI - Queensland (a)	2.5	3.0	2.7	1.9	1.6	4.8	4.9	4.2	4.0	3.7	3.4	3.7	3.9	3.7
EGWWS WPI - Australia (b)	2.0	2.8	2.7	1.8	1.5	3.5	4.1	4.1	3.9	3.6	3.4	3.7	3.8	3.7
<i>Contractor Labour Cost Escalation</i>														
Construction WPI - Queensland (c)	1.5	1.7	0.6	0.7	1.9	3.2	4.2	4.1	3.9	3.5	3.4	3.7	3.9	3.7
Construction WPI - Australia (b)	1.9	1.9	1.5	1.3	2.6	3.7	4.2	4.0	3.8	3.5	3.4	3.7	3.9	3.7
<i>All Industries Wages</i>														
All Industries WPI - Queensland	2.1	2.3	1.9	1.6	2.5	3.6	4.0	3.8	3.6	3.3	3.2	3.5	3.7	3.5
All Industries WPI - Australia (d)	2.1	2.3	2.1	1.5	2.4	3.5	3.9	3.7	3.5	3.3	3.2	3.5	3.7	3.4
Consumer Price Index (headline) (e)	1.9	1.6	1.3	1.6	4.4	7.0	4.2	3.2	2.7	2.5	2.5	2.5	2.5	2.5
Real Wage Changes (g)														
<i>Electricity Network-Related Labour</i>														
EGWWS WPI - Queensland (a)	0.6	1.4	1.4	0.3	-2.9	-2.2	0.7	1.0	1.3	1.2	0.9	1.2	1.4	1.2
EGWWS WPI - Australia (b)	0.0	1.1	1.3	0.2	-2.9	-3.5	-0.1	0.9	1.2	1.1	0.9	1.2	1.3	1.1
<i>Contractor Labour Cost Escalation</i>														
Construction WPI - Queensland (c)	-0.4	0.1	-0.7	-0.9	-2.5	-3.9	0.0	0.9	1.2	1.0	0.9	1.2	1.4	1.2
Construction WPI - Australia (b)	-0.1	0.2	0.2	-0.3	-1.8	-3.3	0.0	0.8	1.1	1.0	0.9	1.2	1.4	1.1
<i>All Industries Wages</i>														
All Industries WPI - Queensland	0.2	0.7	0.6	-0.1	-2.0	-3.5	-0.2	0.6	0.9	0.8	0.7	1.0	1.2	0.9
All Industries WPI - Australia (d)	0.1	0.7	0.8	-0.1	-2.1	-3.6	-0.3	0.5	0.8	0.8	0.7	1.0	1.2	0.9

Source: ABS, RBA, Oxford Economics Australia

(a) Electricity, Gas, Water and Waste Services (EGWWS) Wage Price Index (WPI) for Queensland

(b) Australian sector wage forecasts provided for comparison

(c) Construction Sector Wage Price Index (WPI) for Queensland

(d) Australian All Industries WPI provided for comparison.

(e) Inflation forecasts are RBA forecasts for the next 2-3 years from latest 'Statement of Monetary Policy'. Beyond that, inflation forecasts are based on the mid-point of RBA inflation target (2.5%).

(f) Average Annual Growth Rate for 2025/26 to 2029/30 inclusive, ie for next regulatory period.

(g) Real price changes are calculated by deducting the inflation rate from nominal price changes.

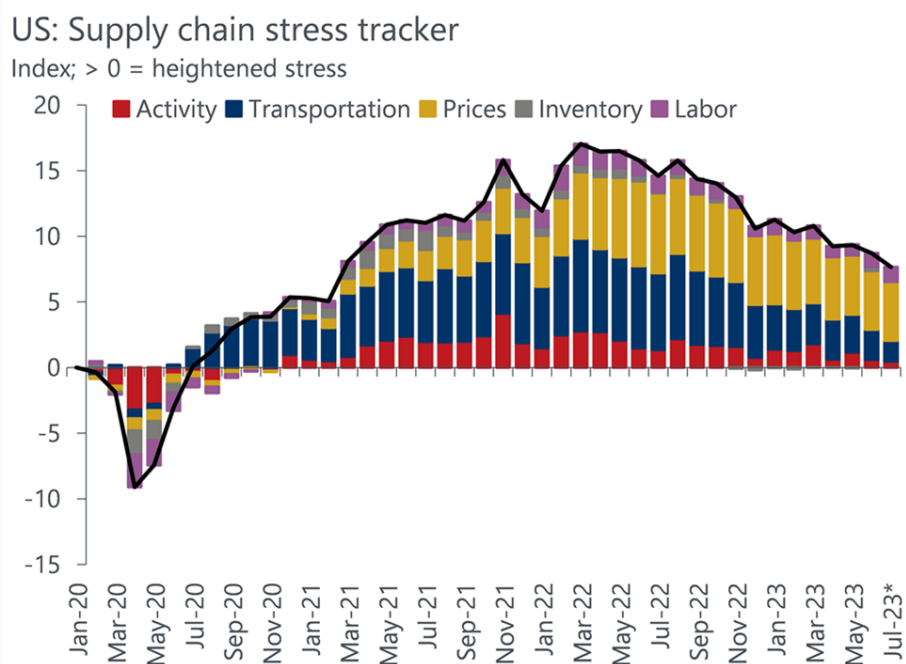
The Australian Construction WPI growth recovered over FY22 to 2.6% (in year average terms) from 1.3% in FY21 and then jumped to 3.7% in FY23. Meanwhile, Queensland Construction WPI growth was 1.9% in FY22 and then accelerated to 3.2% in FY23, with both of these outcomes well below than the national average. Lower construction sector EBAs in the state (compared to the national average) have pulled down the state construction wages, but so too has weaker growth in total construction activity compared to the national average over recent years. However, both of these relative negatives are now reversing. EBAs approved over the past year have lifted to be higher than the national average, while growth in construction activity in the state is forecast to be much stronger than national construction activity growth from FY24 to FY27. This is expected to see Queensland construction wages outpace the national average over FY24 to FY26, before matching the national average over the remaining three years to FY30, as the state activity growth will then be similar to the national growth. The need to build Olympics-related facilities and supporting infrastructure over the second half of the decade will support growth in Queensland's construction activity and keep construction wages growth somewhat elevated, compared to the state All Industries average.

6. MATERIAL AND CONSTRUCTION COSTS

6.1 OVERVIEW - GLOBAL & AUSTRALIAN SUPPLY CHAIN PRESSURES

Global and domestic supply chain disruptions have seen sustained easing over 2023, signalling an improvement in both logistical conditions, and reduced escalation of costs. Our inhouse US supply chain stress tracker (figure 6.1), a proxy for overall global supply chain pressures, records overall conditions having now eased back to those seen in early 2021 – a time before global demand/ supply dynamics were severely thrown out of balance.

Figure 6.1 Oxford Economics US supply-chain stress tracker



Note: * estimate based on preliminary data and OE estimates

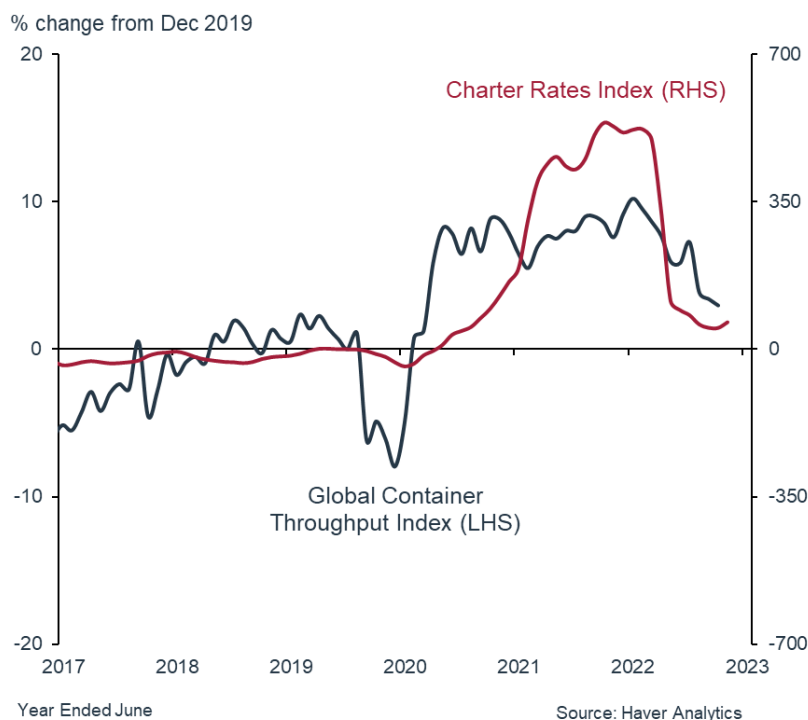
Global supply chain stresses initially built up following the onset of the COVID-19 pandemic, reaching a peak in early 2022. Pandemic-induced lockdowns restricted the manufacturing and logistics capacity of most economies, whilst a substitution away from services consumption towards goods consumption (e.g., from dining out to electronic goods) meant demand outstripped supply of both the goods, and the ability to move them. The conflict in Ukraine only exacerbated the issue, adding to already increasing transportation and input costs as energy commodity prices skyrocketed.

The first half of 2023 has seen both easing of global shipping bottlenecks and a normalisation of consumer spending patterns. Furthermore, the tightening of credit availability, in response to a higher inflation environment, is expected to further dampen demand, and reduce pressure on manufacturing capacity utilisation and inventories.

The supply chain tracker categorises five components of supply chain stress – manufacturing capacity, transportation, input prices, inventory stock, and labour stresses. As depicted in Figures 6.1, supply chain stresses have continually improved since early 2022, with easing transportation

bottlenecks responsible for the majority of the improvement (see Figure 6.2). Persistently higher prices, however, remain an obstacle to the complete normalisation of conditions – though this is seen as a continually softening issue.

Figure 6.2 Easing global shipping prices (Charter Rate Index) and normalisation of shipping volumes (Global Contained Throughput Index)



Local supply chains

Australia’s supply chain pressures have for the most part followed suit to those seen internationally. The key difference faced domestically has been the historically tight labour market, which has added supply pressures to locally produced goods and services. A recent NAB Business Survey reported that only 36% of surveyed firms identified materials as a supply concern in 2023, representing a decline of 14 percentage points since 2022. Over the near term, we expect that rising interest rates and a slowing economy will dampen goods demand, further easing any lingering supply chain pressures.

In a recent Oxford Economics survey of 30 construction industry players, we have found similar findings, with global products such as fuel, bitumen and imported equipment seeing relatively low supply risk ratings. However, the survey found that some domestic factors continue to contribute to supply risks. The availability of skilled and unskilled labour is considered the biggest challenge for the construction supply chain. The collapse of net overseas migration (NOM) during the pandemic, combined with a strong post-Covid economic recovery in Australia, has seen Australia’s unemployment rate fall to multi-decade lows. While NOM has recovered strongly in the past year, Australia’s total workforce population is expected to remain below pre-Covid projections.

Compounding this, certain locally sourced materials such as quarry, cement and steel have faced persistent shortages due to strong demand, and a lack of labour in key areas along the supply chain. The same survey noted that these two domestic supply chain issues are of most concern to the construction sector in 2023, a sentiment which contrasts to the global narrative. We believe these

locally derived supply chain issues are close to peaking, but some pressures will persist along the supply chain, meaning they may persist for more than a year or so. With high immigration levels expected to be sustained over the coming years, this will see increases in the labour force which will slowly help alleviate the current shortage in skilled and unskilled labour. However, as discussed in the previous section, the wage pressures will be slow to dissipate.

6.2 OIL AND FUEL PRICES

Brent Oil prices averaged US\$91/barrel in FY22, with the A\$ price surging 73% to A\$126/barrel - a record high in nominal terms. The rebound in global demand post covid and associated strong price rises over 2021 was exacerbated by a supply shock mainly due to the Russian invasion of Ukraine in early 2022 and subsequent trade restrictions and supply disruptions. Global oil supplies have since improved over 2023, while oil demand weakened in response to high prices and the global economic slowdown in response to higher interest rates – leading to easing oil prices which fell -4.8% in FY23, to average US\$87/brl. Over the first quarter of FY24, production cuts by OPEC+ member has seen upward pressure on prices emerge, and with group expected to maintain restricted output to 2024, oil prices are forecast to remain elevated, at \$US88/brl – a 1.5% increase. With the exchange rate forecast to depreciate, the result will be a 4.0% increase in A\$ oil prices in FY24.

Although US\$ oil prices are expected to ease back to around US\$86 over FY25-26 as the global supply increases, an appreciation in the A\$ will see A\$ oil prices fall to around A\$120/brl (A\$ prices falling -11.6% in FY25). Over FY27-28 we expect to see supply and demand normalise, with US\$ prices easing as the global economy accelerates its transition away from fossil fuels, with A\$ to sit around A\$111/brl. Towards the end of the 2020's, we anticipate oil prices to begin strengthening as demand and supply start trending in opposite directions. Demand will continue to rise as economies expand (despite intensifying electrification), and supply will be constrained due to the expectation of inadequate investment over the coming years, and also due to the depletion of cheaper and easier to access oil (especially in the US). Overall, oil prices are forecast to rise around 6% to sit around US\$84 over FY29-30.

Movements in QLD **diesel** and **petrol** prices generally track global oil prices (in A\$ terms), but with less amplitude. This difference between Australian gate prices for diesel and petrol and global oil price movements are usually the result of exchange rate fluctuations, refiner margins, transport costs or competition within the region, while changes to government fuel excise (which is now indexed to CPI inflation) also play a role.

The oil price shock in the first half of 2020 gave way to a corresponding dip in the price of fuel – diesel falling -11.8% and petrol -3.6% in FY21. With the onset of the war in Ukraine and the subsequent energy crisis, oil prices shot up in early 2022. Brent crude oil prices have jumped 73% (in A\$ terms) in FY22, driving diesel prices up by 40% and petrol 30% in the same financial year - with the cut to the fuel excise in the June quarter muting the overall price increase at the bowser.

With the temporary fuel excise cut (worth around 22 cents per litre for petrol) finishing in the December quarter and with refiner margins expected to have widened again, diesel prices increased faster than oil prices in year-average terms in FY23, increasing by 19.4% to 209¢/litre. Petrol on the other hand, which is typically less volatile than diesel, saw a 6.7% price increase, reaching 185¢/litre.

Higher oil prices over FY24 is expected to see petrol prices rise 6.1%, whilst diesel prices will see a minor correction as they come off a higher FY23 price level, easing -1.4%. Over the first half of the revenue determination period (FY26 to FY28), fuel prices are forecast to remain relatively stable, before they pick up over FY29 and FY30 as oil prices lift. Overall, diesel prices will average 196¢/litre and petrol 188¢/litre over the next revenue determination period, which will be 7.9% and 8.3% higher, respectively, than the current revenue determination period. In real terms, the average diesel and

Figure 6.3 Oil Price Forecasts

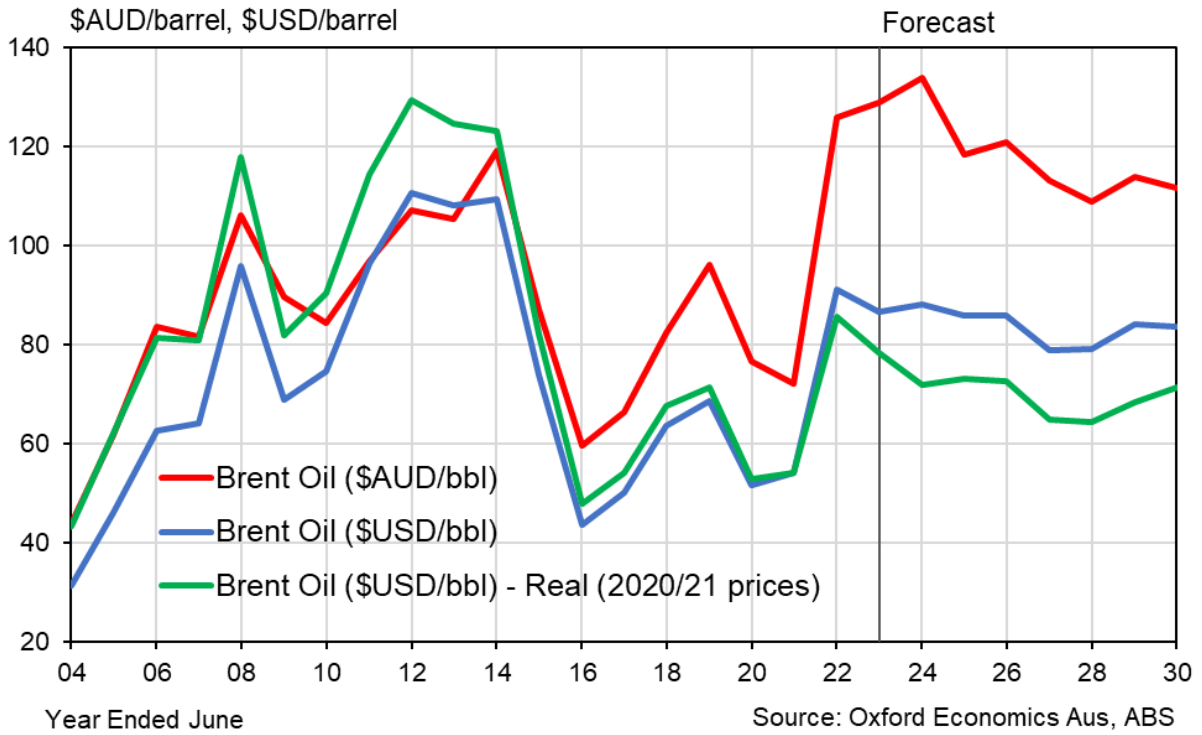
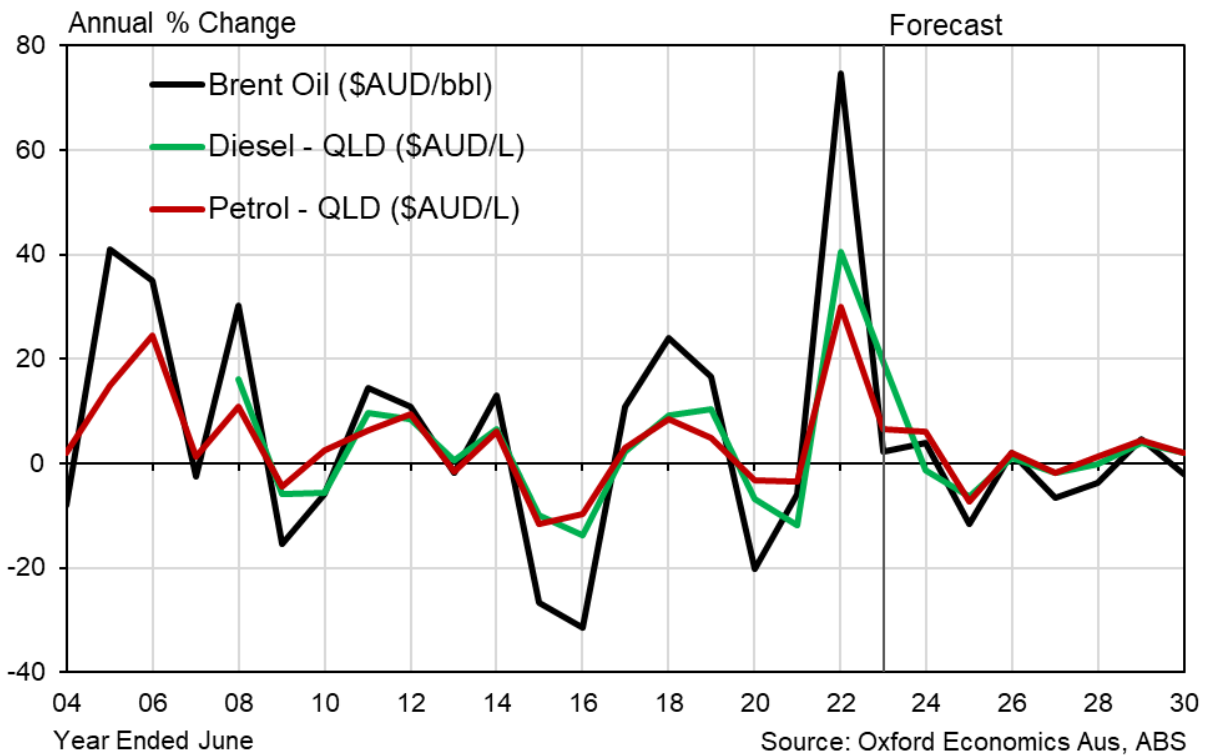


Figure 6.4 Diesel and Petrol Price Drivers - QLD



petrol price growth is forecast to ease back slightly, -1.5% and -0.9% p.a., respectively, over the FY26 to FY30 period.

6.3 STEEL BEAMS & SECTIONS PPI

Steel beams and section prices are largely driven by movements in the main input costs of iron ore and coking coal, which are determined on international commodity markets, while there are also local influences such as manufacturing wages, energy costs and the strength of construction activity, which is the main market for steel. Other global factors may also have an influence, such as the degree of over- or under-supply or demand influences in global steel production. In terms of the latter, substantial increases in Chinese steel production capacity over the 1990s and 2000s tended to constrain steel prices, compared to movements in the commodity inputs. However, over recent years, China has been closing old, inefficient and high-polluting capacity, and this and other reductions in global oversupply has helped improve steel prices and margins. Steel prices now tend to be more influenced by movements in their input prices.

Iron ore prices have been high since the dam collapse in Brazil reduced global supply in early 2019. Supply was further restricted over the course of the pandemic due to shutdowns of mines in Brazil due to COVID, which was further exacerbated by the sanctions imposed on Russian exports, following the conflict in Ukraine.

On the demand side, iron ore prices have historically been highly correlated with the Chinese residential construction market, driven by the demand for steel in high density dwelling construction activity. FY22 saw the Chinese government impose strict curbs on the property sector which weighed down demand for steel, and subsequently iron ore. Furthermore, Beijing's zero covid policy also curbed industrial production, while the enforcement of reduced steel production in an effort to curb emissions, combined to push down iron ore prices in FY22 and the second half of 2022.

Iron ore prices (using average export prices for Australia) fell back from the covid-induced high of US\$171 in the June quarter 2021, and subsequently averaged US\$110/t over FY22.

Weaker demand saw prices fall back further in the second half of 2022 to a low of US\$83/t in the December quarter 2022, before jumping to around US\$100/t over the first half of 2023 following a bounce back in Chinese demand as most of the Covid restrictions were lifted. Resultingly, iron ore prices averaged around US\$93/t over FY23.

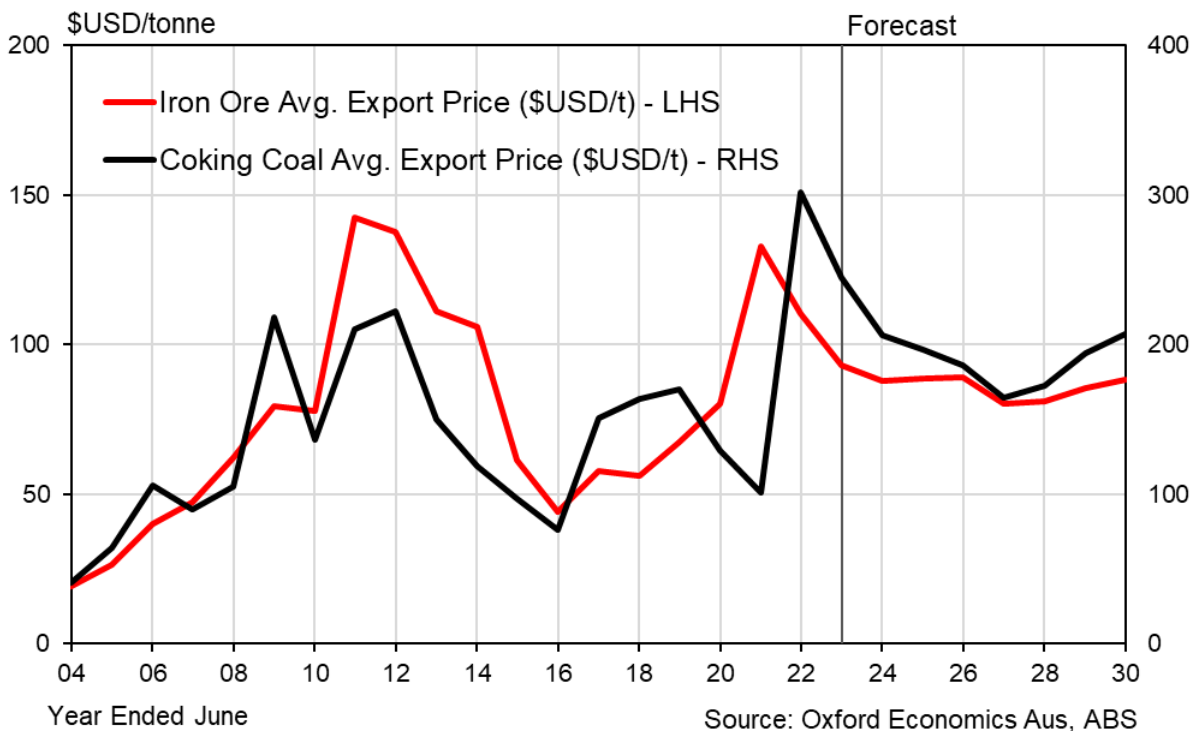
New supply sources that are under construction will add to supply in the coming years, whilst demand is expected to hold firm despite a likely slowdown in global economic growth as governments continue to direct stimulus towards infrastructure construction. Overall, iron ore prices are expected soften somewhat over the next few years, from US\$96/t in FY24 to US\$81/t in FY27, and average around US\$86/t over FY26 to FY30.

Coking Coal prices surged to historic highs in the first half of 2022 - with the benchmark Goonyella hard coking price leaping to over US\$490 - due to the energy crisis brought about by the war in Ukraine. The average export coking coal price almost trebled to an annual average of \$US302/tonne in FY22, compared to FY21 (US\$101/t). With Russia accounting for just under 20% of global coal exports, continued sanctions weighed down on global export supplies over the second half of 2022 and into 2023, keeping prices high. Furthermore, the Indonesian governments temporary January ban on exports due to a period of high seasonal demand, and production disruptions in Australia due to severe flooding, put further upward pressure on thermal coal prices, which in turn flowed onto coking coal prices.

Coking coal prices remained high over FY23, although they corrected off their FY22 peak, falling -19% to US\$245/t as supplies adjusted. Further price declines are forecast over the coming years

(averaging -9% p.a. over FY24 to FY27), in part influenced by the declines in thermal coal prices as supplies increase and global demand weakens. Aiding this downward pressure is China's anticipated reduction in steel output as its residential construction sector slows and as Beijing commits to curbing emissions. We then forecast coking coal prices to begin rising towards the end of the decade as reduce mining investment over the 2020's, as governments and the private sector divests away from coal production, sees supply dropping away quicker than demand.

Figure 6.5 Iron Ore and Coking Coal Prices (\$USD/Tonne)



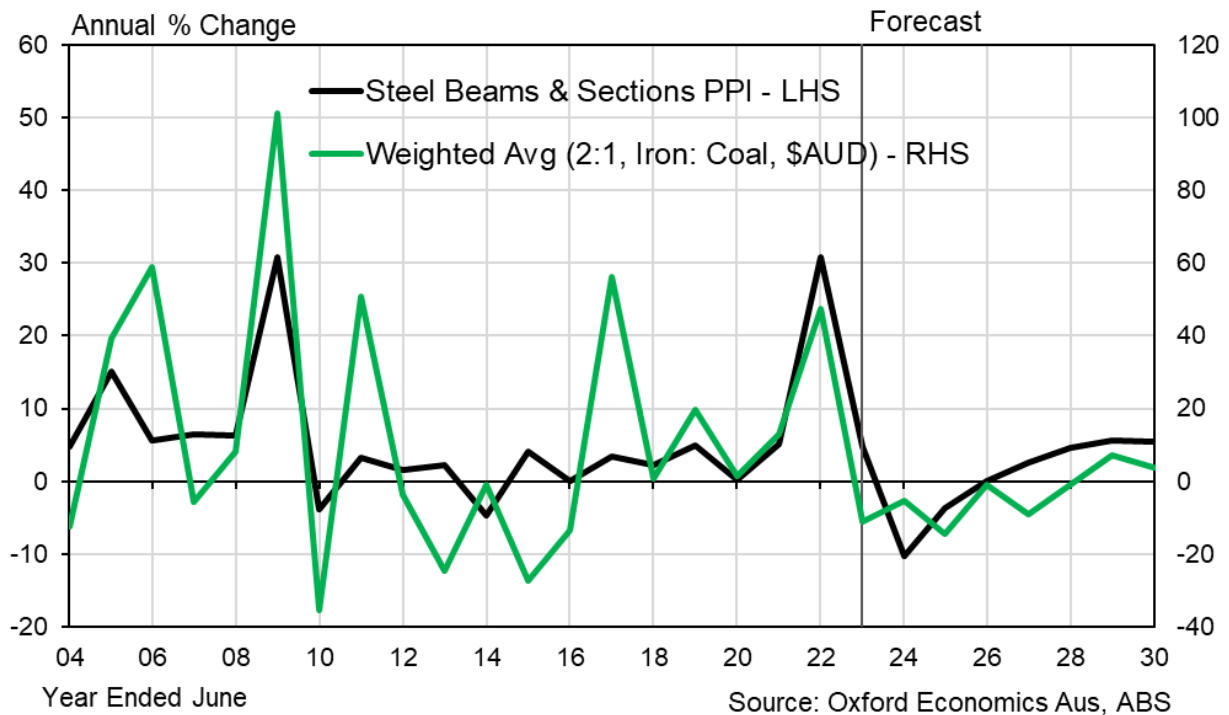
The **Steel Beams & Sections (SB&S) PPI** has had a consistently tight relationship with the primary input prices – i.e., the prices for iron ore and metallurgical coking coal. This was particularly apparent in FY22, where the soaring iron ore prices coincided with a rise in the SB&S PPI of 30.8%. Correspondingly, falling commodity prices over the first half of FY23 has seen the first price declines in the PPI in around two years.

However, despite the collapse in iron ore prices and falling international steel prices, domestic steel prices remained high over FY23, with rising construction activity (and thus demand for steel) allowing local markets to maintain higher price levels in combination with difficulties procuring Chinese steel due to relatively weak production levels and still-high shipping costs. With a high base of prices over the first half of FY23 the average SB&S prices grew 4.8% in FY23.

Easing coal and iron ore prices are then expected to lead to a -10.3% decline in the PPI in FY24, and -3.7 in FY25 – with the overall price decline muted by higher manufacturing costs (due to skyrocketing energy costs and higher manufacturing wages) and the huge jump in the price of imported steel in FY22 and into FY23, which will tend to put a floor under the price correction as wholesalers and downstream fabricators attempt to regain lost profits. Despite commodity prices continuing to ease off over FY26 and FY27, strong levels of construction activity, higher manufacturing costs (namely electricity and wages), and rising global steel prices will result in modest upward price pressures, with 1.4% average annual growth over the 2 years. Steel price growth is then expected to pick up

over FY28-FY30 (averaging 5.2% p.a.) due to rising iron ore prices and coking coal prices, with the strong growth in construction activity, namely in the residential sector, leading to increased demand and subsequently upward price pressure.

Figure 6.6 Steel Beams & Sections Price Drivers - Australia



6.4 CONCRETE

Research performed by Oxford Economics Australia has found that the Brisbane Concrete, Cement & Sand (CC&S) PPI is heavily driven by the level of construction activity in the economy – and for this index we employ statistical techniques that take account of residential, non-residential and engineering construction activity in Queensland (with the subtraction of aluminium, pipeline and oil & gas-related work done, which have much less concrete per \$m than other engineering construction categories) to predict future price levels.

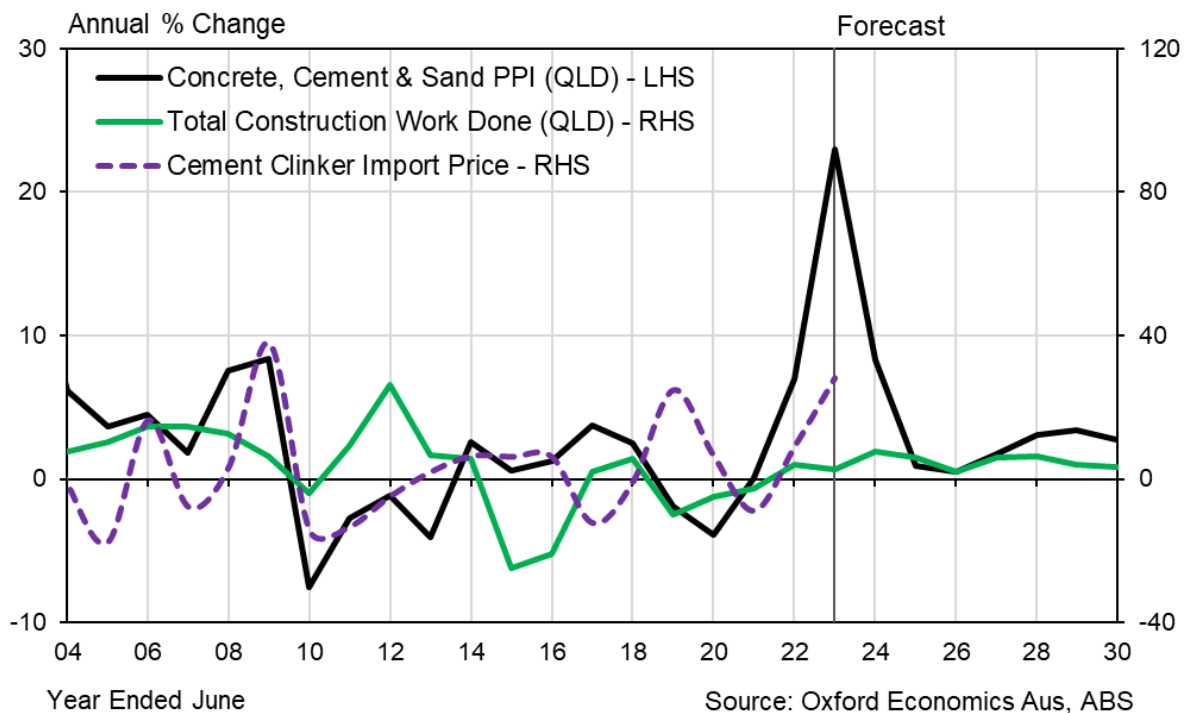
Consecutive years of strong construction activity between FY03-FY08 led to substantial growth in the price of concrete, only to stumble in FY10 when demand dwindled from the GFC. The economic recovery within the construction industry would put a floor under the falling prices and prepare concrete for the next growth peak during the large wave of engineering construction at the beginning of the 2010's. Recent years have seen weaker growth in concrete prices, with below-par demand in the market caused by the fall-off in engineering construction activity from FY14.

The Brisbane CC&S PPI stabilised in FY21 after two years of negative growth, before lifting around 7% in FY22, driven by the increased construction activity brought about by commencements of major engineering projects and strong residential construction activity. Concrete prices again lifted in FY23 due to multiple supply and demand factor – increased construction activity, constrained supplies of aggregate, and higher manufacturing costs (namely clinker production, both domestically and for imported clinker) – with the concentrated nature of domestic cement manufacturing likely to have

make it easier for these higher input costs to be passed on to the consumer. Consequently, concrete prices jumped 23% in FY23.

With construction activity seeing strong growth again in FY24, the Brisbane Concrete, Cement and Sand PPI is forecast to remain high, and growth a further 1.5%. A downturn in the residential construction sector set to materialise over 2024 will then see demand soften, leading to concrete prices to flatline in FY25. The latter end of the 2020's will see overall construction activity in QLD strengthen as strong population growth and the 2032 Brisbane Olympics necessitates infrastructure investment. As such, demand for CC&S will strengthen, accelerating price growth from 2.5% in FY27 to 4.5% in FY30.

Figure 6.7 Concrete and Cement Drivers – QLD

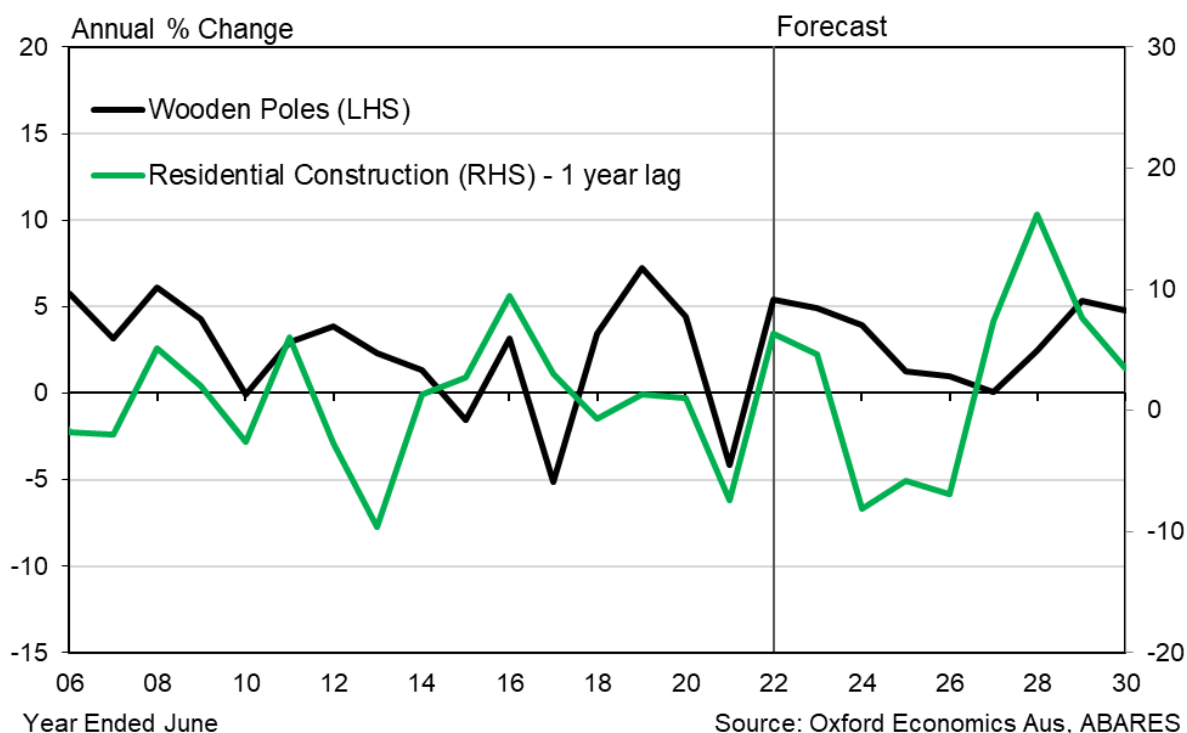


6.5 WOODEN POLES

The price index of 'Plantation and Native Hardwood', sourced from the Australian Bureau of Agricultural and Resources Economics and Sciences (ABARES) is used as the proxy for **Wooden Poles**. To forecast wooden poles prices, we modelled prices on residential house construction, GDP per capita and the exchange rate, with adjustments for supply problems due to the 2019/20 fires and the current global supply shortages (also due to strong global demand).

We estimate there has been a significant increase in prices over FY22 and FY23 resulting from local supply shortages and heightened levels of residential construction activity, before moderating over the four years to FY27 as housing construction eases back and supply problems are gradually addressed. Overall, an average annual increase of 3.1% is forecast for the next revenue determination period (between FY26 and FY30), with the real prices expected to remain stable.

Figure 6.8 Wooden Poles Price Drivers – Australia

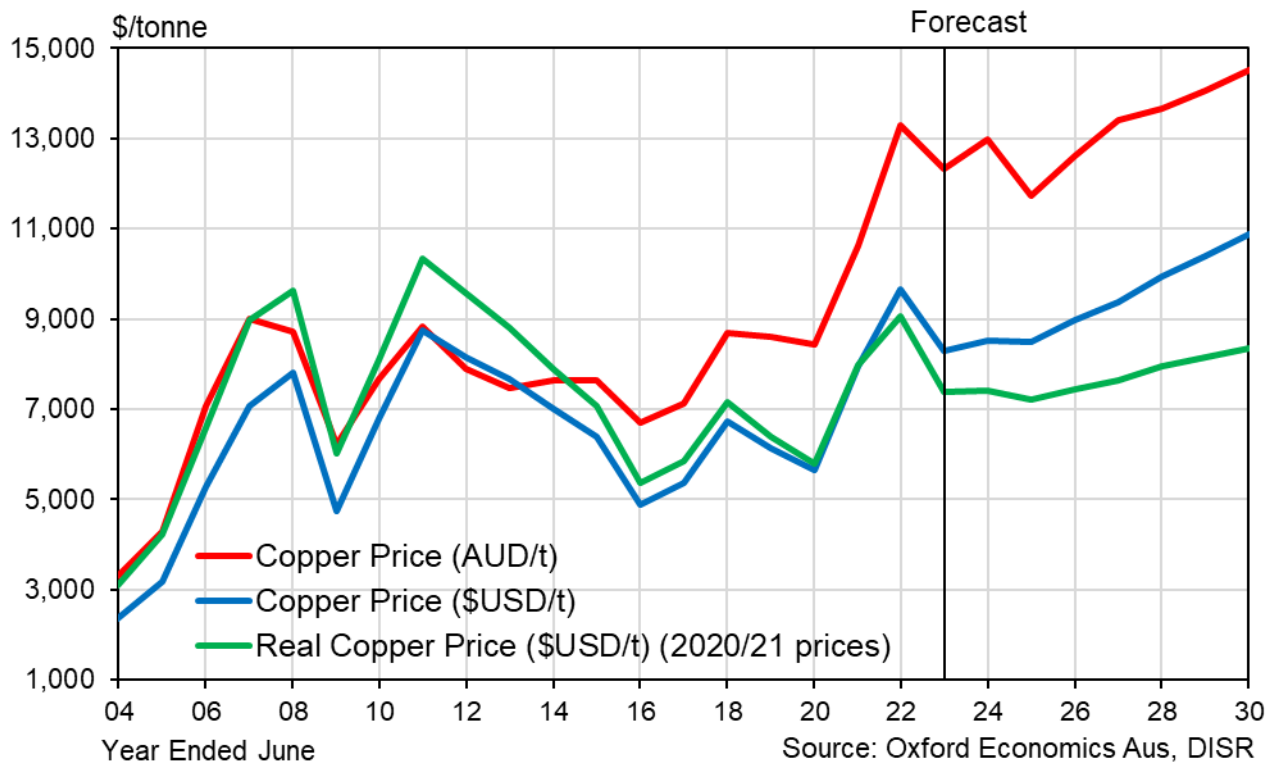


6.6 COPPER

Copper is an industrial metal and its usage is seen as a barometer of global industrial activity and economic growth. Copper prices fell -7.8% in FY20 to an annual average below US\$5,700/t. Subsequently, acute production problems due to covid disruptions and the recovery in demand saw prices surge 40.6% in FY21 to an annual average of just under US\$8,000/t. While the Big 4 copper producers (BHP Billiton, Codelco, Freeport McMoran and Glencore) aimed to increase copper production over 2021, reduced investment activity throughout the pandemic has thinned the pipeline of project development. Over FY22, signs of increased supply began to appear, despite continued production issues in Chile (due to strikes and water shortages). However, prices increased 21.3% in FY22, averaging US\$9,657/t (a 25% increase in A\$ terms to A\$13,304/t). Prices then fell 14% in FY23 to US\$8,297/t, given the deterioration in market sentiment amidst recession fears and a softening demand outlook.

Over the near term, copper prices are expected to hold relatively steady, with 1.2% annual average growth over FY24 and FY25. Prices will then see sustained growth over the following 5 years, averaging 5.1% p.a. due to strengthening demand as global electrification demand strengthens, and slower growth in supply due to weak investment over the past few years and high energy prices. However, increases in A\$ copper prices over the back half of the decade are expected to be offset by a stronger A\$. Overall, copper prices are forecast to average US\$9,919/t (A\$13,656/t) over FY26 to FY30. However, given the supply-demand fundamentals which suggest higher prices in the long term, there may be some upside to this forecast, particularly with regard to the stability of real prices (see figure 6.7). Higher real (and nominal) prices are quite possible.

Figure 6.9 Copper Price Forecasts

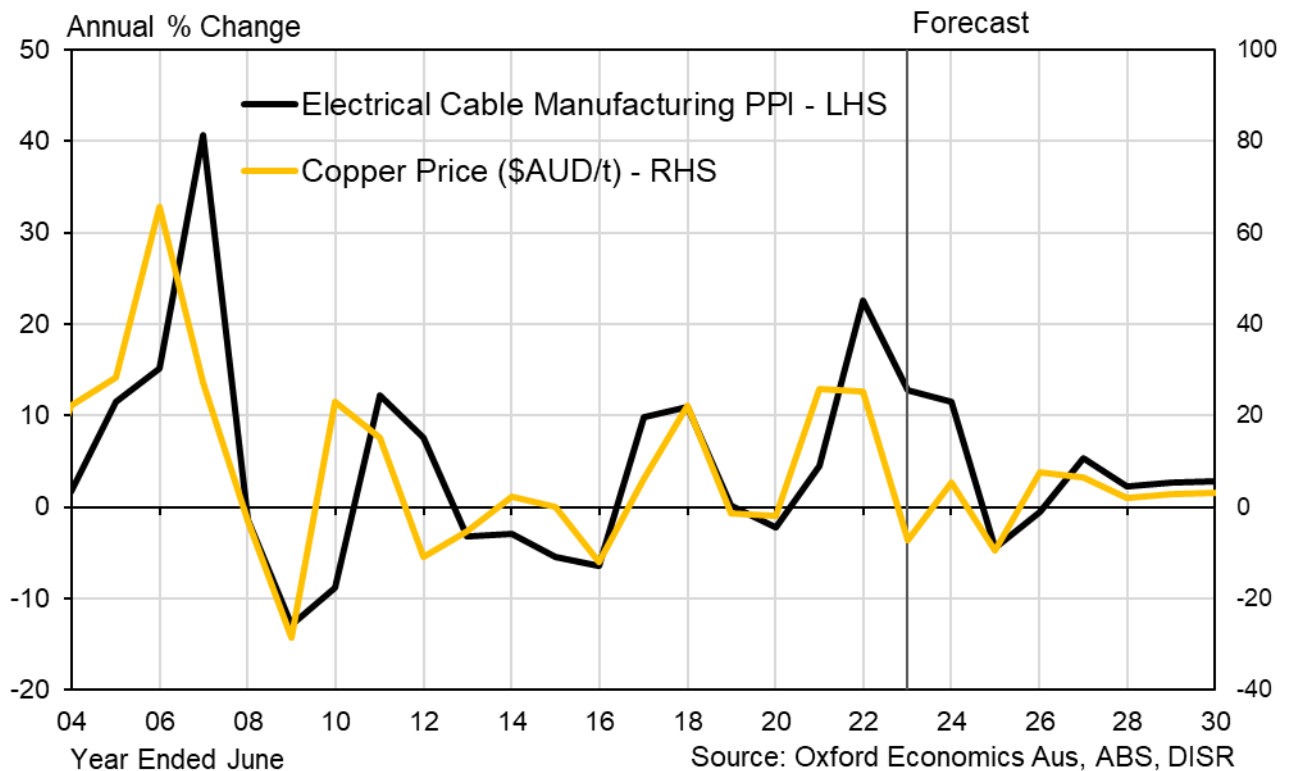


6.7 ELECTRICAL CABLE AND CONDUIT

We employ the ABS ‘**Electrical Cable and Wire Manufacturing**’ PPI to measure price changes of electricity cable and conduit over time. This index tracks the changing manufacturing output price of this sub-sector for conductive cable & wire, optical fibre, telecommunications cable and fuse wire. There is a clear and direct link between this index and the price of copper as it is a key input into the manufacturing process of electric cable and wire, along with wages and energy.

The Electrical Cable Manufacturing PPI exhibited solid growth over the three years to FY19, in line with the sharp rise in copper prices in FY17 and FY18, although the price increases eased in FY19 due to the falling copper price. With the onset of Covid, and copper supply disruptions taking hold in Latin America, copper prices soared upwards in FY21. Subsequently, with an approximate 12-month lag, copper prices fed through into manufacturing margins and the Electric Cable and Wire Manufacturing PPI 22.6% in FY22. With a further rise in copper prices in FY22, electrical cable prices rose again in FY23, by 12.8%. Despite copper prices forecast to grow just 2.7% in FY24, because of a 17.3% jump in the PPI’s June quarter 2023 electrical cable prices will be on average 11.2% higher in FY24. An appreciating \$A and flatlining US\$ copper prices will then contribute to a -4.6% fall in FY25.

Figure 6.10 Electrical Cable Price Drivers - Australia



Over the back half of the decade, copper prices are forecast to somewhat stabilise, but at a higher average level than before the pandemic, as global supply adjusts, but demand holds strong with the anticipated electrification of vehicles, continuing transition to renewable energy generation and overall move to the electrification of whole economies. Whilst we expect copper demand will get a boost from greater use in electric vehicles and green electricity production over the long term, these sectors are currently too small to offset the strong mine supply growth currently in the pipeline. There is also likely to be some substitution away from copper towards aluminium in end-use markets such as wire and cable and air-conditioning. Subsequently, electrical cable prices are expected to see moderate annual average growth of around 2.3% over FY26 to FY30.

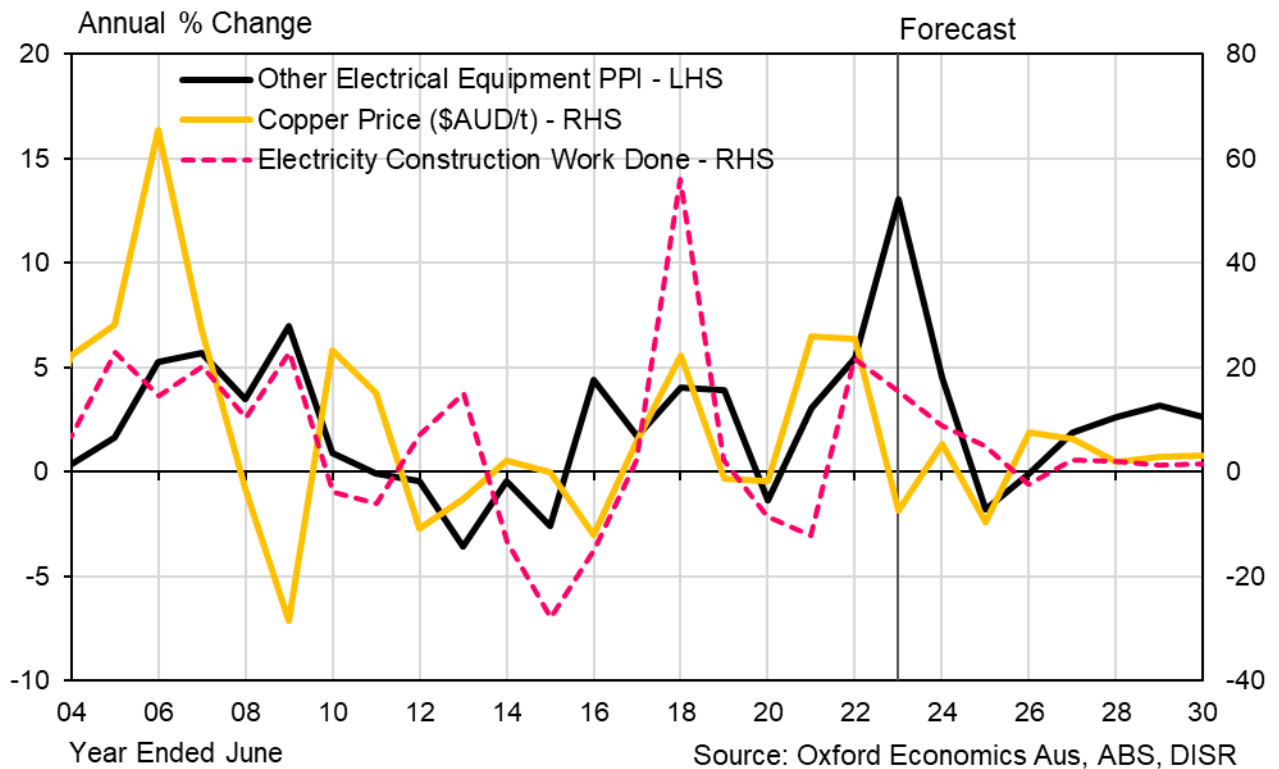
6.8 ELECTRICAL EQUIPMENT PRICES

The 'Other Electrical Equipment Manufacturing PPI' has been selected as the most suitable proxy for Switchgear and Transformer prices. The Other Electrical Equipment Manufacturing PPI tracks the price of manufacturing electrical equipment other than lighting equipment, and includes switchgear, transformers, electric motors, electricity transmission and distribution equipment, and power generating equipment, etc. As with Electrical Cable, copper is a key input into Other Electrical Equipment and therefore influences movements in the index over time, with manufacturing wages and investment in electricity infrastructure also key influences.

FY22 saw Other Electrical Equipment prices grow at their fastest rate since 2009, at 5.5%, on the back of two years of significant growth in copper prices as well as a spike in electricity engineering construction work done. Wage growth, elevated levels of electricity engineering construction work done, and the lagged impact of copper prices then saw growth accelerate over FY23, with the PPI

rising 13.1%. Higher copper prices in FY24 will then help see the PPI grow moderately, at 3.6%. As copper prices remain elevated and electricity engineering construction work done continues growing towards the forecast horizon, other electrical equipment prices are projected to grow modestly in the second half of the decade – averaging 3.1% annual average growth over FY26 to FY30.

Figure 6.11 Electrical Equipment Manufacturing Drivers – Australia



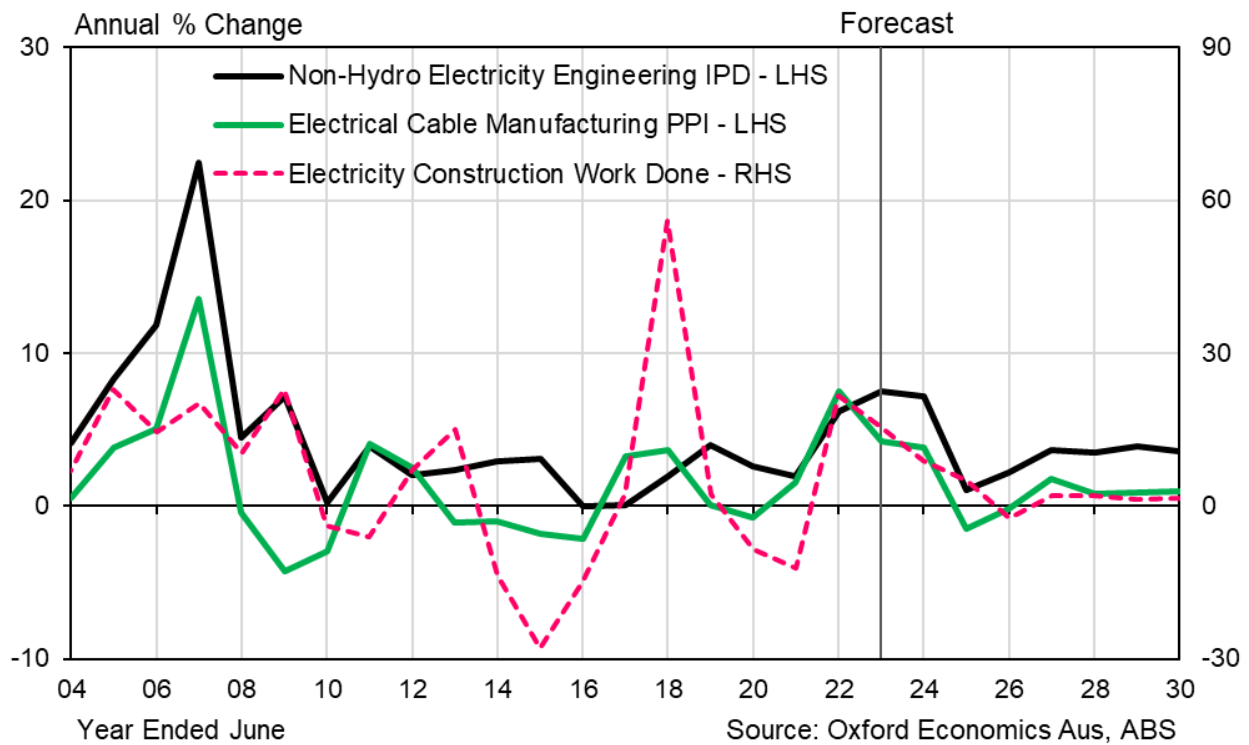
6.9 OVERALL CONSTRUCTION COSTS

Price movements in overall electricity infrastructure construction costs is captured by the **Non-hydro Electricity Engineering Construction IPD**, which is an aggregate measure of the change in cost of construction within the electricity construction sector (including the change in margins). We build the forecast for the index from individual components – i.e., an average price growth is computed across a basket of relevant construction inputs which will then provide a general indicator for broad cost movements across the sector. Given use of similar materials and labour inputs, costs for electrical engineering construction are linked to broader cost trends in the building and construction industry – albeit, with key differences over time due to shifts in market tightness and varying importance of certain inputs specific to electrical engineering (e.g., copper and other electrical components).

The transition to renewable energies will be taking a step up in coming years, with the announcement and commencement of major solar and wind projects picking up pace, which, combined with the significant expansion and enhancement of transmission, will see the demand for electricity engineering inputs intensify. Pushed up by higher copper prices, the IPD is estimated to have increased 6.2% in FY22, and 7.5% in FY23 as higher construction materials prices persisted and wages growth accelerated. Construction cost are forecast to rise a further 7.2% in FY24, as high price increases for electrical cable and equipment inputs are fed through.

As copper prices correct and supply chain pressure dissipate by FY25, growth in the IPD will slow to 1.1%. Over the second half of the decade (FY26 to FY30), we are forecasting price growth to remain elevated, averaging 3.4% p.a., as the renewable transition accelerates, both domestically and internationally, putting upward pressure on specific input material prices. Relatively strong construction wages growth will support solid growth in the PPI over the forecast period.

Figure 6.12 Non-Hydro Electrical Engineering Construction IPD - Australia



7. APPENDIX A: A NOTE ON DIFFERENT WAGE MEASURES & WAGE MODELS

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 Oxford Economics Australia 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 Oxford Economics Australia forecasts.

Each measure provides a slightly different gauge of labour costs. However, the main distinction between average earnings measures and the wage price index relate to the influence of compositional shifts in employment. The compositional effects include changes in the distribution of occupations within the same industry and across industries, and the distribution of employment between industries. For example, a large fall in the number of lower paid employees, or in employment in an industry with lower average wages, will increase average weekly earnings (all else being equal). While this is a true reflection of the average cost of labour to businesses, it is not necessarily the best measure of ongoing wage inflation (i.e. trends in wage-setting behaviour in the labour market). Another compositional problem with using the 'all persons' AWOTE is variations in the proportion of male and female employees (particularly as average female AWOTE is lower than average male AWOTE). However, in practice, the data shows only minor differences in the AWOTE growth rates between male and females (or males and all persons) — between -0.2 and +0.2 per cent — since the 1980s or basically since the equal pay legislation was enacted through the 1970s.

The wage price index was specifically designed to get around these compositional problems. It uses a weighted average of wage inflation across a range of closely specified jobs. As it measures the collective variations in wage rates made to the current occupants of the same set of specified jobs,

the WPI reflects pure price changes, and does not measure variations in quality or quantity of work performed. However, like the CPI (Consumer Price Index), the weights are fixed in a base year, so that the further away from that base and the more the composition of the labour market changes over time, the more 'out of date' the measure becomes.

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

Oxford Economics Australia Wage Growth Model

Oxford Economics Australia' model of wage determination in the short-to-medium term 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. 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 2022, the minimum wage was increased by 5.2%. This followed rises of 2.5%, 1.3%, 3.5% and 3.5% respectively in previous years. 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, but only 1.5% of Electricity, Gas, Water & Waste Services' (EGWWS) employees.
- For employees under collective agreements (representing 38% of all employees; 64.5% of EGWWS), 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, Oxford Economics Australia 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 (or 33.9% of EGWWS 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 that 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 wage price index is a function of the following explanatory variables:

- CPI
- unemployment rate
- labour productivity (GDP/employment)
- lagged wage (WPI) growth (to capture 'sticky' nature of wage determination in the short term).

The top-down macroeconomic modelling methodology becomes more relevant beyond the next 2-3 years.



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