OXFORD ECONOMICS AUSTRALIA

ELECTRICITY-RELATED LABOUR & MATERIALS ESCALATION COSTS: FORECASTS TO FY31

PREPARED BY OXFORD ECONOMICS AUSTRALIA FOR MARINUS LINK PTY LTD

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This report/document can be made public and published on the Australian Energy Regulator's website as part of **Marinus Link** Regulatory Proposal.

The modelling and results presented here are based on information provided by third parties, upon which Oxford Economics Australia has relied in producing its report and forecasts in good faith. Any subsequent revision or update of those data will affect the assessments and projections shown.

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1. EXECUTIVE SUMMARY

Oxford Economics Australia (OEA) was engaged by Marinus Link to prepare forecasts of a discrete set of labour and material escalation price indices, relevant to electricity transmission networks and undersea cabling from 2023/24 to 2030/31. We understand these forecasts will be used by Marinus to develop their operating and capital expenditure forecasts. These forecasts, in turn, will be included in a revenue submission to the Australian Energy Regulator (AER), due around the end of February 2024. The forecasts in this report were finalised in mid-January 2024 and incorporate the latest data and macro-economic forecasts as at early January 2024.

OEA was engaged by Marinus Link to prepare forecasts for additional labour and material price indices in June 2024. This extension of the report did not include providing updated forecasts for the indices which were included in the report (prepared February 2024). The additional indices are discussed in Section 7 and are based on the latest data available as at late June 2024.

Wages

For **electricity network related labour**, Oxford Economics Australia forecasts that total wage costs for the Victorian and Tasmanian Electricity, Gas, Water and Waste Services (EGWWS or 'Utilities') sector — expressed in Wage Price Index (WPI) terms — will average 3.7% to 3.8% per annum over the seven-year period from FY25 to FY31 inclusive, similar to the Australian EGWWS WPI average of 3.8% over the same period. In real (inflation-adjusted) terms, the EGWWS WPI is forecast to average 1.1% p.a. over the seven years to FY31 (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 FY24 to FY26.

Over the forecast period, the Australian, Victorian and Tasmanian EGWWS WPI growth is expected to push above and remain higher than the All Industries WPI average, national All Industries WPI forecast to average 3.5% over the seven years to FY31. 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 strengthen as the labour market remains tight, with the unemployment rate now around 3.9% and expected to remain around 4% over the next 1½ years and only rising to a peak of around 4.5% in FY26, before again tightening over the FY27 to FY30 period.

- demand for skilled labour will remain high and strengthen with the high levels of utilities investment from FY22 to FY31 (and beyond), which are well above the levels of the past two decades. Oxford Economics Australia is forecasting electricity-related engineering construction to be 47% higher in FY31 compared to FY23 levels. 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 3.8% to 4.1% over the next 1½ 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 4.1% in 2023/24 (from 3.5% in 2022/23), 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 2027/28 will then see All Industries WPI growth pick up sharply to 3.5% and 3.7% over 2028/29 and 2029/30.

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 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 as activity surpasses the 2018 levels. With regard to utilities investment, Oxford Economics Australia is forecasting steady increases over the next 8 years (and beyond), with electricity-related engineering construction projected to be 47% higher in FY30 compared to FY23 levels, following the 42% 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 and therefore upside to the levels of skilled labour 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 2023/24 to 2025/26 period. The EGWWS WPI rebounded strongly over FY23 to match the national 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 1.1a Summary – Labour Cost Escalation Forecasts: Victoria, Tasmania & Australia

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

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Average 2025-31 (g)
	Actuals					Forecasts	Determination Period							
Nominal Wage Changes														
Electricity, Gas, Water and Waste Services WPI - Victoria (a)	3.0	3.3	2.1	1.6	2.7	3.79	4.00	3.89	3.59	3.41	3.69	3.86	3.80	3.75
Electricity, Gas, Water and Waste Services WPI - Tasmania (a)	2.6	2.7	2.1	2.0	3.9	4.22	4.09	3.97	3.64	3.38	3.69	3.83	3.81	3.77
Electricity, Gas, Water and Waste Services WPI - Australia (b	2.8	2.7	1.8	1.5	3.5	4.17	4.12	3.93	3.60	3.40	3.68	3.83	3.83	3.77
Construction WPI - Victoria (c)	2.4	2.2	1.0	3.2	3.5	4.22	3.90	3.73	3.44	3.36	3.70	3.94	3.72	3.68
Construction WPI - Tasmania (c)	1.7	1.5	1.3	2.4	3.5	4.09	3.96	3.84	3.56	3.33	3.64	3.88	3.59	3.69
Construction WPI - Australia (b)	1.9	1.5	1.3	2.6	3.7	4.30	4.07	3.86	3.50	3.36	3.72	3.94	3.73	3.74
All Industries WPI - Australia (d)	2.3	2.1	1.5	2.4	3.5	4.14	3.80	3.60	3.29	3.17	3.50	3.67	3.55	3.51
Consumer Price Index (headline) (e)	1.6	1.3	1.6	4.4	7.0	4.02	3.16	2.73	2.50	2.50	2.50	2.50	2.50	2.63
Real Wage Changes (f)														
Electricity, Gas, Water and Waste Services WPI - Victoria (a)	1.4	1.9	0.5	-2.8	-4.4	-0.23	0.8	1.2	1.1	0.9	1.2	1.4	1.3	1.12
Electricity, Gas, Water and Waste Services WPI - Tasmania (a)	1.0	1.4	0.5	-2.4	-3.1	0.20	0.9	1.2	1.1	0.9	1.2	1.3	1.3	1.14
Electricity, Gas, Water and Waste Services WPI - Australia (b	1.1	1.3	0.2	-2.9	-3.5	0.15	1.0	1.2	1.1	0.9	1.2	1.3	1.3	1.14
Construction WPI - Victoria (c)	0.7	0.9	-0.7	-1.2	-3.6	0.20	0.7	1.0	0.9	0.9	1.2	1.4	1.2	1.05
Construction WPI - Tasmania (c)	0.1	0.2	-0.3	-2.0	-3.5	0.07	0.8	1.1	1.1	0.8	1.1	1.4	1.1	1.06
Construction WPI - Australia (b)	0.2	0.2	-0.3	-1.8	-3.3	0.28	0.9	1.1	1.0	0.9	1.2	1.4	1.2	1.11
All Industries WPI - Australia (d)	0.7	0.8	-0.1	-2.1	-3.6	0.12	0.6	0.9	0.8	0.7	1.0	1.2	1.0	0.88

Source: ABS, RBA, Oxford Economics Australia

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

(b) Australian sector wage forecasts provided for comparison

(c) Construction Sector Wage Price Index (WPI) for Vic and Tas

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

(g) Average Annual Growth Rate for 2024/25 to 2030/31 inclusive, ie for the revenue determination or regulatory period.

Table 1.1b Summary – Labour Cost Escalation Forecasts: Victoria, Tasmania & Australia

(per cent change, year-on-year, June quarter)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Average 2025-31 (g)
	Actuals					Forecasts	Determination Period							
Nominal Wage Changes														
Electricity, Gas, Water and Waste Services WPI - Victoria (a)	3.1	2.9	1.8	1.8	3.0	4.09	3.96	3.81	3.55	3.49	3.72	3.84	3.80	3.74
Electricity, Gas, Water and Waste Services WPI - Tasmania (a)	2.6	2.6	2.1	2.5	3.9	4.18	4.06	3.88	3.58	3.47	3.72	3.82	3.81	3.76
Electricity, Gas, Water and Waste Services WPI - Australia (b)	2.9	2.5	1.3	2.2	3.9	4.24	4.07	3.83	3.51	3.43	3.76	3.86	3.82	3.75
Construction WPI - Victoria (c)	2.9	1.1	1.1	4.4	3.8	4.06	3.86	3.59	3.45	3.57	3.78	3.77	3.76	3.68
Construction WPI - Tasmania (c)	1.6	1.4	2.0	2.8	3.6	3.91	3.92	3.70	3.48	3.55	3.72	3.67	3.65	3.67
Construction WPI - Australia (b)	1.9	0.7	2.2	3.2	3.8	4.41	3.97	3.75	3.38	3.38	3.85	3.97	3.68	3.71
All Industries WPI - Australia (d)	2.4	1.7	1.8	2.6	3.6	4.41	3.71	3.50	3.21	3.23	3.57	3.66	3.53	3.49
Consumer Price Index (headline) (e)	1.6	-0.3	3.8	6.1	6.0	3.84	3.24	2.63	2.50	2.50	2.50	2.50	2.50	2.62
Real Wage Changes (f)														
Electricity, Gas, Water and Waste Services WPI - Victoria (a)	1.5	3.2	-2.1	-4.3	-3.0	0.3	0.7	1.2	1.0	1.0	1.2	1.3	1.3	1.12
Electricity, Gas, Water and Waste Services WPI - Tasmania (a)	1.0	2.9	-1.7	-3.6	-2.1	0.3	0.8	1.3	1.1	1.0	1.2	1.3	1.3	1.14
Electricity, Gas, Water and Waste Services WPI - Australia (b)	1.3	2.8	-2.6	-3.9	-2.1	0.4	0.8	1.2	1.0	0.9	1.3	1.4	1.3	1.13
Construction WPI - Victoria (c)	1.3	1.4	-2.7	-1.8	-2.2	0.2	0.6	1.0	0.9	1.1	1.3	1.3	1.3	1.06
Construction WPI - Tasmania (c)	0.0	1.8	-1.9	-3.3	-2.4	0.1	0.7	1.1	1.0	1.1	1.2	1.2	1.1	1.05
Construction WPI - Australia (b)	0.3	1.0	-1.6	-3.0	-2.2	0.6	0.7	1.1	0.9	0.9	1.3	1.5	1.2	1.09
All Industries WPI - Australia (d)	0.8	2.1	-2.1	-3.6	-2.4	0.6	0.5	0.9	0.7	0.7	1.1	1.2	1.0	0.86

Source: ABS, RBA, Oxford Economics Australia

(a) Electricity, Gas, Water and Waste Services (EGWWS) Wage Price Index (WPI) for Vic and Tas
(b) Australian sector wage forecasts provided for comparison
(c) Construction Sector Wage Price Index (WPI) for Vic and Tas
(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) Real price changes are calculated by deducting the inflation rate from nominal price changes.
(g) Average Annual Growth Rate for 2024/25 to 2030/31 inclusive, ie for the revenue determination or regulatory period.

Given service providers outsourced labour is mostly supplied by firms in the construction industry, we proxy Marinus Link'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 seven years from FY25 to FY31 inclusive (Marinus Link's regulatory period) – or 1.1% per annum on average in real (inflation adjusted) terms. Both Victorian and Tasmanian Construction wages are also forecast to average 3.7%, or 1.1% in real terms (see Table 1.1).

The Australian Construction WPI growth recovered over FY22 to 2.6% and further to 3.7% in FY23 (in year average terms) from 1.3% in FY21. Construction wages are forecast to keep improving over FY24 and FY25 as construction activity increases and activity levels surpass the previous highs of FY18 and FY13 (in FY24) and serious skills shortages worsen, underpinning higher wages due to strong labour demand. Construction wages growth then eases over FY26 to FY28 as activity drops back, but then picks up again from FY29 as activity again surpasses the FY24 peak (in FY28). Higher levels of residential and non-residential building will be key drivers, while Engineering construction will be driven by higher electricity and mining investment and a plethora of publicly funded transport infrastructure projects (particularly in the eastern states of the nation).

Commodity and Materials Prices

Materials and commodity prices in Australia and globally have seen large increases over the past 2-3 years, due to a combination of factors – including supply chain disruptions (mainly due to COVID-19), war in Ukraine, high shipping costs, and strong demand for construction materials as low interest rates and government incentives and programmes drove strong construction activity. In Australia, the levels of overall construction activity pushed above previous peaks, but with little addition to materials

production capacity, demand came up against constrained supply. The strong growth in prices has now mostly peaked and prices have eased or actually fallen across a number of commodities and materials. However, prices are not expected to fall back to pre-Covid levels.

As supply chains 'normalise' and near-term demand is restrained by a combination of high interest rates and a pull-back in some government construction activity, prices are mostly expected to ease or decline over FY24 and FY25. However, as interest rates decline, economies begin to recover and demand returns, prices are expected to mostly pick up from FY26 or FY27, and are subsequently forecasts to mostly accelerate over the FY28 to FY30 period. Stronger activity and demand over the latter years of the decade will also put renewed pressure on the supply of some materials and commodities, which will underpin higher prices. Materials and commodities related to the construction and maintenance of electricity infrastructure will come under particular pressure. Both in Australia and globally, energy systems are transitioning to renewable energy and associated applications (such as electric vehicles). The urgency to manufacture and construct the infrastructure will see strong demand for key materials such as copper and aluminium, while electricity and energy prices will also add to the overall costs of producing such materials. Added to this is rising mining and refining costs for aluminium and copper, as the easier-to-access mega deposits are exhausted and replaced by higher cost mine, while some of the high-polluting smelters and refineries will shut down, exacerbating supply problems.

Over the forecast revenue determination period from FY25 to FY31, we expect a divergence of price movements. The commodities/materials with the highest projected increases include concrete, cement and sand in Tasmania, copper prices and steel beams and sections, while overall electricity construction costs will also see above average price increases. All of these items are expected to experience positive real price growth over the period. On the other hand, prices for some materials are projected to actually fall over the FY25-31 period, including oil prices and marine diesel. Meanwhile, most of the items related to high voltage direct current (HVDC) cables are expected to see only modest nominal price rises and declines in real terms, particularly in Italy. The forecasts are presented below in table 1.2.

Table 1.2 Materials and Commodity Price Forecasts

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Average 2025-31 (j)
	Actuals					Forecasts	Determination Period							
Nominal Commodity & Marine Diesel Prices														
Copper (A$/tonne)	8591	8438	10655	13304	12318	12309	11838	12800	13716	13726	14118	14462	15144	13686
Copper (US$/tonne) (a)	6146	5663	7962	9657	8296	8228	8446	8976	9430	9891	10447	10904	11358	9922
Aluminium (A$/tonne)	2683	2496	2715	3983	3464	3343	3339	3539	3533	3433	3570	3694	3903	3573
Aluminium (US$/tonne) (a)	1920	1675	2029	2891	2333	2235	2383	2482	2429	2474	2642	2786	2928	2589
Oil (A$/barrel)	96.1	76.9	72.5	125.7	128.8	129.2	114.0	112.9	111.0	106.7	107.5	106.5	108.2	109.5
Oil (US$/barrel) (a)	68.7	51.6	54.2	91.2	86.7	86.4	81.3	79.2	76.3	76.9	79.5	80.3	81.1	79.2
Marine diesel (A$/tonne)	1075	961	748	1271	1561	1366	1237	1274	1253	1195	1234	1224	1221	1234
Marine diesel (US$/tonne) (b)	769	645	559	923	1051	913	883	893	861	861	913	923	916	893
% ch														
Copper (A$/tonne)	-1.3	-1.8	26.3	24.9	-7.4	-0.1	-3.8	8.1	7.2	0.1	2.9	2.4	4.7	3.1
Aluminium (A$/tonne)	-2.5	-7.0	8.8	46.7	-13.0	-3.5	-0.1	6.0	-0.2	-2.8	4.0	3.5	5.7	2.3
Oil (A$/barrel)	16.9	-19.9	-5.8	73.4	2.5	0.3	-11.8	-0.9	-1.7	-3.9	0.8	-0.9	1.6	-2.4
Marine diesel (A$/tonne)	22.0	-10.6	-22.2	70.0	22.8	-12.5	-9.4	3.0	-1.7	-4.6	3.2	-0.8	-0.2	-1.5
Exchange rate ($USD/$AUD) (c)	0.72	0.67	0.75	0.73	0.67	0.67	0.71	0.70	0.69	0.72	0.74	0.75	0.75	0.72
Exchange rate (Euro/$AUD) (c)	0.63	0.61	0.63	0.64	0.64	0.61	0.60	0.57	0.58	0.61	0.62	0.62	0.62	0.60
Exchange rate (Kronor/$AUD) (c)	6.66	6.47	6.35	6.74	7.38	6.92	6.70	6.16	5.97	6.11	6.16	6.19	6.13	6.20
Nominal Material Producer Price Indices (PPI)														
Steel Beams and Sections PPI (Australia) (d)	112.7	112.9	118.7	155.2	162.7	143.5	142.9	142.1	146.2	151.3	159.2	167.1	173.0	154.6
Concrete, Cement & Sand PPI (Vic) (d)	108.2	109.1	109.7	111.6	132.8	139.0	140.0	140.6	143.1	147.3	152.6	157.8	161.7	149.0
Concrete, Cement & Sand PPI (Tas) (d)	117.3	120.4	117.8	125.8	136.5	141.5	147.3	152.5	158.2	164.8	171.7	178.5	184.9	165.4
Electrical Equipment Manufacturing PPI (d)	107.2	105.7	109.0	114.9	129.9	135.9	133.7	133.9	136.7	140.9	145.4	149.7	153.6	142.0
Fibre Optic cable (A$ index)	113.5	119.3	104.1	113.5	143.6									
Fibre Optic cable (US$ index) (e)	81.2	80.1	77.8	82.4	96.7									
% ch														
Steel Beams and Sections PPI (Australia) (d)	5.0	0.2	5.1	30.8	4.8	-11.8	-0.4	-0.6	2.9	3.5	5.2	4.9	3.6	2.7
Concrete, Cement & Sand PPI (Vic) (d)	5.3	0.8	0.6	1.7	19.0	4.7	0.7	0.5	1.8	2.9	3.6	3.4	2.4	2.2
Concrete, Cement & Sand PPI (Tas) (d)	1.9	2.6	-2.1	6.7	8.5	3.7	4.1	3.6	3.7	4.1	4.2	3.9	3.6	3.9
Electrical Equipment Manufacturing PPI (d)	3.9	-1.4	3.1	5.5	13.1	4.6	-1.6	0.2	2.0	3.1	3.2	3.0	2.6	1.8
Fibre Optic cable (A$ index)	8.6	5.1	-12.7	9.0	26.5									
Nominal Broad Construction Price Indice														
Non-hydro Electricity Engineering Construction IPD (f)	115.2	118.2	120.5	127.9	136.7	140.0	142.5	146.1	150.8	155.9	162.0	168.0	173.5	157.0
% ch														
Non-hydro Electricity Engineering Construction IPD (f)	4.0	2.6	1.9	6.2	6.9	2.4	1.8	2.5	3.3	3.4	3.9	3.7	3.3	3.1
HVDC Indicators (nominal %ch) (g)														
US HVDC - overall indicative escalation														
Aluminium (US$/tonne)	-10.0	-12.7	21.1	42.5	-19.3	-4.2	6.6	4.2	-2.1	1.9	6.8	5.4	5.1	4.0
Steel - hot rolled coil (US$/tonne)	5.0	-28.3	82.3	56.0	-43.5	0.4	-13.4	0.2	2.0	2.0	2.0	2.0	2.0	-0.4
Manufacturing wages - USA	3.1	7.1	1.2	3.0	5.9	5.2	3.5	2.8	2.5	2.1	2.1	1.7	1.8	2.4
Electricity costs - USA	5.4	-13.6	8.5	49.7	3.6	-18.4	3.1	1.7	0.8	1.5	1.7	1.5	1.5	1.7
Transport costs - USA	4.3	1.7	-1.0	16.8	7.7	1.2	2.4	2.1	2.0	2.2	2.2	2.1	2.1	2.2
Other cable maunufacturing costs - USA														
European HVDC - overall indicative escalation														
Aluminium (Euro/tonne)	-5.9	-10.0	12.2	50.9	-13.1	-8.8	-1.1	0.5	1.3	3.0	4.7	4.0	4.6	2.4
Steel - hot rolled coil (Euro/tonne)	-5.0	-14.8	56.0	56.8	-31.4	-9.1	-3.8	1.7	2.0	2.0	2.0	2.0	2.0	1.1
Manufacturing wages - Italy	1.6	5.0	-0.2	-1.1	4.5	3.2	2.4	1.8	1.9	2.1	2.1	2.1	1.9	2.0
Electricity costs - Italy	9.0	-2.6	-2.2	82.1	26.5	-18.2	1.1	-7.5	-6.2	1.1	-0.7	-0.8	0.5	-1.8
Transport costs - Italy	1.0	1.7	-0.4	0.6	5.1	6.0	3.2	2.8	2.4	2.2	2.2	2.2	2.2	2.5
Other cable maunufacturing costs - Italy														
Consumer Price Index - headline (h)	1.6	1.3	1.6	4.4	7.0	4.0	3.2	2.7	2.5	2.5	2.5	2.5	2.5	2.6
Real Commodity Price Changes (i)														
Copper (A$/tonne)	-2.9	-3.1	24.6	20.4	-14.4	-4.1	-7.0	5.4	4.7	-2.4	0.4	-0.1	2.2	0.4
Aluminium (A$/tonne)	-4.1	-8.3	7.2	42.3	-20.1	-7.5	-3.3	3.2	-2.7	-5.3	1.5	1.0	3.2	-0.3
Oil (A$/barrel)	15.3	-21.3	-7.4	68.9	-4.5	-3.7	-15.0	-3.7	-4.2	-6.4	-1.7	-3.4	-0.9	-5.0
Marine diesel (A$/tonne)	20.4	-11.9	-23.8	65.5	15.8	-16.5	-12.6	0.3	-4.2	-7.1	0.7	-3.3	-2.7	-4.1
Real Material Producer Price Indices (PPI) (i)														
Steel Beams and Sections PPI (Australia) (d)	3.4	-1.2	3.5	26.4	-2.2	-15.8	-3.5	-3.3	0.4	1.0	2.7	2.4	1.1	0.6
Concrete, Cement & Sand PPI (Vic) (d)	3.6	-0.5	-1.1	-2.7	12.0	0.7	-2.5	-2.3	-0.7	0.4	1.1	0.9	-0.1	-0.1
Concrete, Cement & Sand PPI (Tas) (d)	0.2	1.3	-3.7	2.3	1.5	-0.4	0.9	0.9	1.2	1.6	1.7	1.4	1.1	1.4
Electrical Equipment Manufacturing PPI (d)	2.3	-2.7	1.4	1.0	6.0	0.6	-4.8	-2.6	-0.5	0.6	0.7	0.5	0.1	-0.3
Fibre Optic cable (A$ index)	6.9	3.7	-14.3	4.6	19.5									
Real Broad Construction Price Indice														
Non-hydro Electricity Engineering Construction IPD (f)	2.3	1.3	0.3	1.7	-0.2	-1.6	-1.4	-0.2	0.7	0.9	1.4	1.2	0.8	0.5
Real HVDC Indicators %ch														
US HVDC - overall indicative escalation														
Aluminium (US$/tonne)	-11.7	-14.1	19.5	38.0	-26.4	-8.2	3.5	1.4	-4.6	-0.6	4.3	2.9	2.6	1.3
Steel (US$/tonne)	3.3	-29.6	80.7	51.6	-50.5	-3.6	-16.5	-2.5	-0.5	-0.5	-0.5	-0.5	-0.5	-3.1
Manufacturing wages - USA	1.5	5.8	-0.5	-1.4	-1.2	1.2	0.3	0.1	0.0	-0.4	-0.4	-0.8	-0.7	-0.3
Electricity costs - USA	3.7	-14.9	6.8	45.3	-3.4	-22.5	-0.1	-1.0	-1.7	-1.0	-0.8	-1.0	-1.0	-0.9
Transport costs - USA	2.6	0.4	-2.6	12.3	0.7	-2.8	-0.8	-0.6	-0.5	-0.3	-0.3	-0.4	-0.4	-0.5
Other cable maunufacturing costs - USA														
European HVDC - overall indicative escalation														
Aluminium (Euro/tonne)	-7.6	-11.3	10.6	46.5	-20.2	-12.8	-4.3	-2.2	-1.2	0.5	2.2	1.5	2.1	-0.2
Steel (Euro/tonne)	-6.6	-16.1	54.4	52.4	-38.4	-13.2	-6.9	-1.0	-0.5	-0.5	-0.5	-0.5	-0.5	-1.5
Manufacturing wages - Italy	-0.1	3.6	-1.8	-5.6	-2.5	-0.8	-0.8	-0.9	-0.6	-0.4	-0.4	-0.4	-0.6	-0.6
Electricity costs - Italy	7.3	-4.0	-3.9	77.6	19.5	-22.2	-2.1	-10.2	-8.7	-1.4	-3.2	-3.3	-2.0	-4.4
Transport costs - Italy	-0.6	0.4	-2.1	-3.8	-1.9	1.9	0.0	0.0	-0.1	-0.3	-0.3	-0.3	-0.3	-0.2
Other cable maunufacturing costs - Italy														

Source: ABS, RBA, Oxford Economics Australia

(a) Average of OEA and DISR forecasts. Copper and aluminium price figures use London Metal Exchange price as the benchmark price. Sourced from DISR
(b) Historical figures come from Ship and Bunker's 'Asia Pacific Marine Gas Oil Price'.
(c) OEA forecasts of exchange rate
(d) Historical figures come from tables xx,yy and 12 of ABS release 6427, Producer Price Indices.
(e) Fibre Optic data from US Federal Reserve Economic Data: producer Price Indices
(f) Historical figures come from the ABS Engineering Construction Service series, provided as an unpublished 'Special Run' series.
(g) Data from Oxford Economics databases in US andEurope. Commodity price forecasts based on OEA/DISR forecasts. All other US and European/Italian forecasts of materials sourced from OE global database.
(h) 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%).
(i) Real price changes are calculated by deducting the inflation rate from nominal price changes.
(j) Average annual values and growth rates for 2024/25 to 2030/31.

2. INTRODUCTION, DATA & LAYOUT

Oxford Economics Australia was engaged was engaged by Marinus Link to provide price forecasts of labour, commodity and materials that are relevant to the Victorian and Tasmanian electricity transmission and distribution industry for the period 2024/25 to 2030/31 (FY25 to FY31). Forecasts for wage and material cost escalation will be used by Marinus Link to develop their operating and capital expenditure forecasts. The forecasts in this report were finalised in mid-January 2024.

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 January 2024, including the September quarter 2023 releases of the Consumer Price Index (CPI), Wage Price Index (WPI and National Accounts, plus the Reserve Bank of Australia (RBA) forecasts for the CPI and WPI contained in the RBA February 2024 'Statement of Monetary Policy'. 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, Victoria and Tasmania. 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' 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.

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

Section 6 provides the forecasts and the rationale for the commodity price and materials price projections.

Section 7 provides the forecasts and the rationale for the additional wage and materials price projections.

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) recovered well from the COVID-related slump in 2020, posting growth of 2.2% and 3.7% over FY21 and FY22 respectively, with Gross National Expenditure (GNE - domestic demand plus change in stocks) experiencing faster growth of 3% and 5% respectively in those years. Solid growth of 3.4% for GNE continued in FY23, with GDP growth slightly lower at 3.1%, due to another negative contribution from net exports.

The latest September 2023 quarter national accounts showed that momentum in domestic activity is fading as tighter policy settings have brought demand growth closer into line with that of supply. Quarter-on-quarter growth has now slowed in each of the past four quarters for which data is available, moderating to 0.2% q/q in the September quarter. Brisk population growth will keep the Australian economy out of recession in 2024, but momentum will be patchy.

Consumption growth has ground to a halt, as brisk population growth and a further decline in the savings rate were not enough to overcome the drag from tighter policy settings in the quarter. Consumers face a tougher outlook. Household consumption was flat in the September quarter, but on a per capita basis, the decline in consumption gathered pace in the quarter. Vehicle sales were a bright spot as supply bottlenecks have cleared, but otherwise discretionary consumption faded away. Policy settings are likely at or very close to the peak drag they will impose on consumption, while slowing inflation will help support real incomes. But growth in spending will be modest over 2024. The savings rate has now fallen to its pre-pandemic level, meaning the scope for households to fund consumption growth by saving less is very limited. The tight labour market and rising wage growth will support incomes. High interest rates and price inflation will curb spending growth further in the next few quarters.

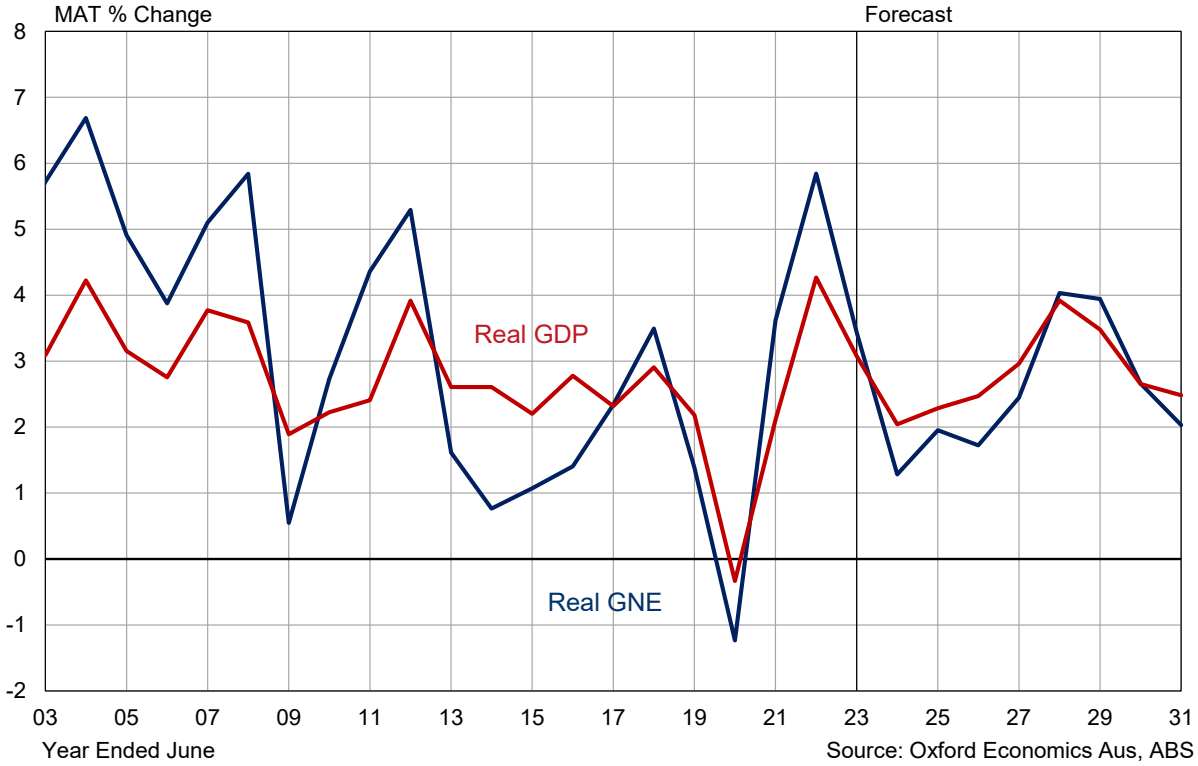
The investment outlook is patchy. Private sector business investment was relatively firm again in the September quarter, increasing by 1.5% q/q. Mining infrastructure works led growth in the quarter, while dwelling construction ticked up a little – a relatively weak result considering the large backlog of work to be done. Growth in machinery & equipment expenditure fell back following the cessation of tax incentives and we expect momentum will be subdued for some time. Public investment growth was also pared back after an extremely strong June quarter, although the pipeline of transport and health projects will continue to support growth in the near term, although some commitments have been wound back.

Nevertheless, the higher cost environment is threatening the viability of some future projects. Mining investment has picked up over the past three years. 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 well into the middle of the decade. Overall, new business investment increased 7% and 8.2% in FY22 in FY23 respectively, with a further 5.5% expected in FY24, before growth eases. The strength in business investment will not only drive near term demand but will increase the economy's productive capacity in the long run.

Net exports are expected to make a positive contribution to growth over FY24 and FY25, after a small negative in FY23. Export demand appears resilient despite slowing global momentum as commodity

volumes have been steady, while rural export volumes increased strongly over the past two years and will continue to increase after bumper crops over recent years boosted farm stocks. Services exports – including inbound tourism and education - are expected to continue to increase and outpace services debits (mainly tourism outflows), 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. Domestic demand growth is slowing in Australia, which will weigh on imports.

Figure 2.1 Australia – Basic Economic Indicators



The labour market continues to track strongly. Employment growth was an exceptional 4.3% 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 has been holding at 3% y/y over the past six months 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 to October. A higher than expected CPI outcome in the September 2023 quarter then saw the RBA add another 0.25% in November. The official cash rate now at 4.35%. 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 rate hike 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 a weak 2% in FY24, following 2.6% in FY23 (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 to 4.7% in FY24 (from 4.4% in FY23 and 3.7% in FY22), before easing back to around 4.1% over FY25 and FY26, before gradually easing to 3.6% in FY31. 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.

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.

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 from around US$0.75 in FY21, to US$0.65 in the December quarter 2023. Our outlook is for the AUD to gradually rise over 2024 and FY25 as US interest rates fall faster than Australian rates, before weakening over FY26 and FY27 as Australian interest rates are cut. Thereafter we expect the A$ to appreciate gradually over the latter years of the decade to the long term average of US$0.75.

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

Australian domestic demand is forecast to slow from 3.6% in FY23 to 1.6% in FY24, with a partial rebound to 1.9% in FY25. Net exports are expected to provide a positive contribution over the next two years, as tourism and education boost exports, with GDP growth forecast to be 2% in FY24 and 2.3% in FY25, although there is more downside risk to this outlook from a number of factors.

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. On the other hand, we expect further moderate growth in business investment in FY24 and FY25 as 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 peak in FY24, but remain at elevated levels in 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 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 merchandise volumes will weaken sharply in FY24 before improving in FY25, in line with domestic demand.

Large increase in both service credits and debits are expected to be maintained over 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, or almost 39% of overall services exports (compared to only $461m for outbound education import 'debits'). Education exports are now recovering rapidly, helped by the earlier-than-expected return of Chinese students and partly because there is a large backlog of visas already for overseas students. We also expect inbound tourism 'exports' to recover well in the medium-term, aided by a low A$. 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 a 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 2018 peaks until FY26.

Economy to remain weak through mid-2020s, before recovering from FY27

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 over 2023 to 5.4% by the September quarter 2023. Although we think the inflation peak has passed, the rise and broadening of in inflationary pressures has seen the RBA lift the cash rate by 4.3% since May 2022 to 4.35% in November 2023, with standard variable housing rates now around 8.8% and variable discounted rates at 7.3%. The RBA is expected to keep rates on hold in the near-term. However, large tax cuts expected in July 2024 is likely to see a further lift in rates 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 around 4%. Meanwhile, with the benchmark housing variable rate remaining around 8.8% from late 2023 to mid-late 2025, the high interest rates will keep consumer spending restrained and impact housing and business investment over FY24, FY25 and into FY26. With government capital spending falling over FY26 and FY27 and recurrent spending still constrained, the end result will see annual domestic demand growth remaining below 2% in FY26 before picking up from FY27. GDP growth will also be soft.

Interest rate cuts are expected from early-mid 2025 and particularly over FY26 and FY27 in response to the weakening in the economy and because we expect inflation to be comfortably 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 3% in FY27 and 3.9% in FY28, before subsequently easing back.

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 VICTORIAN ECONOMY

After outperforming the national economy in 6 years to 2019 inclusive, Victoria experienced a larger-than-average fall in output through the coronavirus downturn, due to the more severe experience of the pandemic which severely restricted activity over 2020 and 2021. The successful vaccination rollout and covid restriction and disruptions easing significantly then led to a strong rebound in economic activity, with State Final Demand (SFD) and Gross State Product (GSP) increasing 7.2% and 6.3% respectively in FY22. Another solid year of growth was recorded in FY23 – with SFD rising 3.8% and GSP 2.6% - but the state economy is now slowing sharply.

Economic growth is forecast to weaken sharply in FY24, before improving but remaining weak over FY25 and FY26, due to weaker dwelling, business and public investment, with overall SFD and GSP growth lagging the national economy. Growth will then begin to build from 2027 due to a strong upturn in construction, with Victoria subsequently showing above-average growth to the end of the decade.

SFD increased 0.4% in the September quarter 2023 to be up 2.1% on the September quarter 2022. Household spending increased by a mere 0.1% in the quarter and consumer spending is expected to remain weak – but positive - over the next few quarters. The diminishing pipeline of committed construction work, along with the broader slowdown due to tighter monetary policy will make conditions patchy over 2024. Private and public investment are expected to decline over coming quarters, as projects are finished, and the backlog of construction activity is exhausted. Overall, SFD is forecast to increase by only 0.4% in FY24. Further growth in tourist and student arrivals will boost activity in 2024, although this impetus to growth is fading as the recovery has largely progressed ahead of schedule. Along with solid growth in merchandise exports, this will see a net positive contribution from net exports, supported by an expected return to positive net interstate trade. GSP is forecast to increase by 0.9% in FY24.

Table 3.1 Victoria – Key Economic Indicators, Financial Years

						Forecast							
Year Ended June	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Victoria													
Total Construction Activity(*)	4.6	1.9	-5.0	4.1	5.2	-2.4	-8.3	-3.1	3.7	7.6	7.7	0.7	-1.6
State Final Demand	3.3	-0.7	0.9	7.2	3.8	0.4	1.1	1.8	2.9	3.9	3.9	3.0	2.2
Gross State Product (GSP)	**3.0**	**-0.3**	**-0.2**	**6.3**	**2.6**	**0.9**	**1.5**	**2.1**	**3.3**	**4.0**	**3.5**	**2.7**	**2.3**
Employment Growth (Year Avg)	3.1	0.8	-1.5	3.9	4.2	3.1	0.9	0.8	1.5	2.0	2.4	1.9	1.1
Australia													
Total Construction Activity(*)	-9.1	-3.7	-0.7	2.0	6.1	4.1	-1.3	-1.3	2.0	7.8	7.5	2.5	-0.7
Australian Domestic Demand	1.6	-0.9	2.9	5.5	3.6	1.6	1.9	1.8	2.5	4.0	3.9	2.7	2.0
Gross Domestic Product (GDP)	2.2	-0.3	2.1	4.3	3.1	2.0	2.3	2.5	3.0	3.9	3.5	2.7	2.5
Employment Growth (Year Avg)	2.3	0.5	0.5	3.3	4.4	2.6	1.3	0.8	1.0	1.8	2.3	1.8	1.1

Source: BIS Oxford Economics Australia and ABS

* Total construction work done in constant 2019/20 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.

The state's labour market is beginning to weaken, with employment growth slowing and the unemployment rate increasing over recent months to 4.0% - slightly above the national average, although employment growth has been stronger than the national average over recent months. Softer economic momentum and tighter policy settings will test the resilience of the labour market over the next 2 years, but we expect Victoria's unemployment rate to be only slightly higher than the national average over the remainder of FY24, and over FY25 to FY27.

In the long run we still expect the state to again outperform the national average, but by less than was evident pre-COVID - Victoria's economy had been partially driven by rapid expansions in higher education and tourism, and there will be permanent losses in these areas. Offsetting this will be the return of relatively stronger population growth, with Victoria's population growth expected to again outpace the national average from FY23 by around 0.2% p.a. This will provide an added boost to consumer, housing and infrastructure demand over the medium-to-long run.

3.3 OUTLOOK FOR TASMANIAN ECONOMY

Tasmania's State Final Demand (SFD) and Gross State Product (GSP) slowed sharply over FY23, slowing to 1.0% and 1.1% respectively, following strong growth over FY21 and FY22 when SFD grew 5.4% and 5.5% and GSP increased by 4.8% and 4.3%. Tasmania's post-coronavirus recovery relied heavily on government support, with the withdrawal of very easy fiscal settings posing a headwind to growth, particularly in FY23 and FY24. Slower growth household spending and falling dwelling investment also acted as drags on SFD growth in FY23, with these drags to continue over the next two years.

The decline in exports in FY23 also impacted GSP. Demand for the island's high value produce should improve as trade tensions with China (a major export market) abate. The weaker A$ will also provide some support. As Tasmania is highly exposed to transport costs, it has struggled with higher fuel costs and the removal of this headwind will support exports over FY24 and FY25. Overall exports of goods and services expected to be boosted over the next 1-2 years by the full return of international and interstate tourism, providing an important boost to overall output (GSP) in the state.

Also boosting growth will be stronger business investment, particularly mining and heavy industry engineering construction activity, aided by a recovery in non-dwelling building. Public investment will also show renewed strength, led by harbours, water and electricity infrastructure construction. The strengthening in construction and investment will see a pick-up in SFD and GSP over FY24 to FY26.

Table 3.2 Tasmania – Key Economic Indicators, Financial Years

						Forecast							
Year Ended June	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Tasmania													
Total Construction Activity(*)	15.4	0.3	1.1	5.7	-1.9	1.7	4.0	4.1	-2.4	6.0	4.6	0.9	-2.9
State Final Demand	4.5	-0.6	5.4	5.5	1.0	1.4	2.0	2.2	2.4	3.2	3.5	1.7	1.3
Gross State Product (GSP)	**3.7**	**0.1**	**4.8**	**4.3**	**1.1**	**1.4**	**2.6**	**2.2**	**2.6**	**3.2**	**3.1**	**1.7**	**1.6**
Employment Growth (Year Avg)	1.3	2.3	3.1	3.7	2.4	0.7	1.1	0.7	0.6	1.3	1.7	0.9	0.8
Australia													
Total Construction Activity(*)	-9.1	-3.7	-0.7	2.0	6.1	4.1	-1.3	-1.3	2.0	7.8	7.5	2.5	-0.7
Australian Domestic Demand	1.6	-0.9	2.9	5.5	3.6	1.6	1.9	1.8	2.5	4.0	3.9	2.7	2.0
Gross Domestic Product (GDP)	2.2	-0.3	2.1	4.3	3.1	2.0	2.3	2.5	3.0	3.9	3.5	2.7	2.5
Employment Growth (Year Avg)	2.3	0.5	0.5	3.3	4.4	2.6	1.3	0.8	1.0	1.8	2.3	1.8	1.1

Source: Oxford Economics Australia and 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.

Stronger growth is subsequently forecast to resume in FY28 and FY29, led by a strong upturn in dwelling investment – with a worsening undersupply of housing and lower interest rates from 2025 initiating the next dwelling construction boom. The improvement in the state economy will also see another round of business investment over the latter part of the decade, which will also contribute to economic and employment growth.

Employment has tracked higher over the past year, albeit in fits and spurts. This has been facilitated by a lift in the participation rate to record highs of around 62-63% and a small improvement in population inflows. Tasmania's participation rate is structurally lower than the rest of the country (by around 3-4% lower) due to the relatively older population. Significantly, Tasmania's unemployment rate has fallen to historically lows below 4%, after averaging 4.4% in FY22 and 3.9% in FY23. In November and December, the unemployment rate fell to 3.6%, which was lower than the national average – a rare feat. We expect low unemployment rates of around 4% to be maintained over the next 1-2 years, due to modest growth in employment matched by modest population growth. The strength of employment will underpin moderate household spending and overall SFD and GSP.

Lower population growth over the next few years will act to constrain household demand and longer term demand for infrastructure and housing. Population growth was very strong over FY17 to FY20, averaging 2.2% p.a. – 0.6% above the national average, which was quite contrary to historical 'norms' of Tasmanian population growth lagging the national average. Population growth has picked up from the lows of the past two years and is expected to average 1% in FY24 and FY25, before growth gradually eases to 0.7% by FY31 – with Tasmania's population growth projected to lag the national average by around -0.6% over the forecast period.

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 was the cost of constructing a new dwelling (which constitutes 8.5% 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 past year to 5.2% y/y in the September quarter 2023. Construction cost inflation will slow further in the coming quarters, but over the next year it will still remain high relative to its pre-covid history.

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

With most of the above supply-side pressures to ease further and oil and other commodity prices to weaken over 2023/24, we expect their absence will help subdue headline inflation materially through 2023/24. However, demand-driven inflation will be slow to abate over the year, despite RBA attempts to 'cool' strong demand with higher interest rates. Moreover, the tight labour market - with the unemployment rate currently around 3.9% and expected to stay around 4% for the next 1½ 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 and then 5.4% in the September quarter 2023 (latest data).

However, some structural factors will add to inflation over the short-to-medium term, such as household energy costs, rising higher rental and elevated food inflation. Rents constitute around 6% of the CPI, electricity and gas 3.4%, while food accounts for over 10% of CPI basket (or over 17% if you include meals out and takeaway food). Rental price growth rose to 4% (y/y) in the December quarter 2022 and has lifted to 7.6% in the September quarter 2023. Given the extreme tightness in rental markets currently, the CPI measure of rents is expected to increase further over the next 2-3 years as existing rental contracts roll over to new, much higher rents and new supply fails to keep with strong housing demand. Another factor driving inflation over the next 1-2 years will be further sharp increases in electricity and gas prices, both of which increased by around 15% in the September quarter. It is worth noting that both rent and energy price rises in the latest quarter were constrained by temporary government subsidies.

Food inflation had averaged around 2.8% p.a. over the 25 years to 2014 but were 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 food inflation has fallen back from the 10% rises of 2022 to below 5% y/y in the latest quarter, 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, the labour market remains tight, and wage growth strengthens. 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 US$0.65 in the December quarter 2023 will also add to inflationary pressures in the near term. Conversely, we expect the A$ to appreciate toward US73 cents over the next 1-2 years, which will provide some offsetting pressures over FY24 and FY25.

Overall, BISOE forecasts headline CPI inflation to be 4.4% in FY24, 3.3% 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 2.4% over FY27, before picking up from FY28 and averaging to 2.6% over the latter years of the 2020s (see figure 4.1). Our forecasts, on average, are similar to the November RBA forecasts over FY24 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 February 2024 'Statement on Monetary Policy' forecast the headline CPI rate to be 4.1% in the December quarter 2023 and 3.3% in the June quarter 2024 - giving a year average of 4.0% for FY24. An easing to 3.2 % is forecast for the December quarter 2024 and then to 3.1 % in the June quarter 2025 – giving a year average CPI rate of 3.2% for FY25. The RBA's CPI forecast for December 2025 is 2.8% and 2.6% in the June quarter 2026 – giving a year average CPI for FY26 of 2.7%. 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 around 2013. 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 mute 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%[1].

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

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 and remain elevated over FY24 to FY26, before easing over FY27 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 averaging 3.5% in FY23 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

[1] A 4% NAIRU is within the RBA's the lower bound estimate as of 2019. See the RBA's Assistant Governor Luci Ellis' 2019 speech "Watching the Invisibles".

Figure 4.1 Australia: Wages and Prices

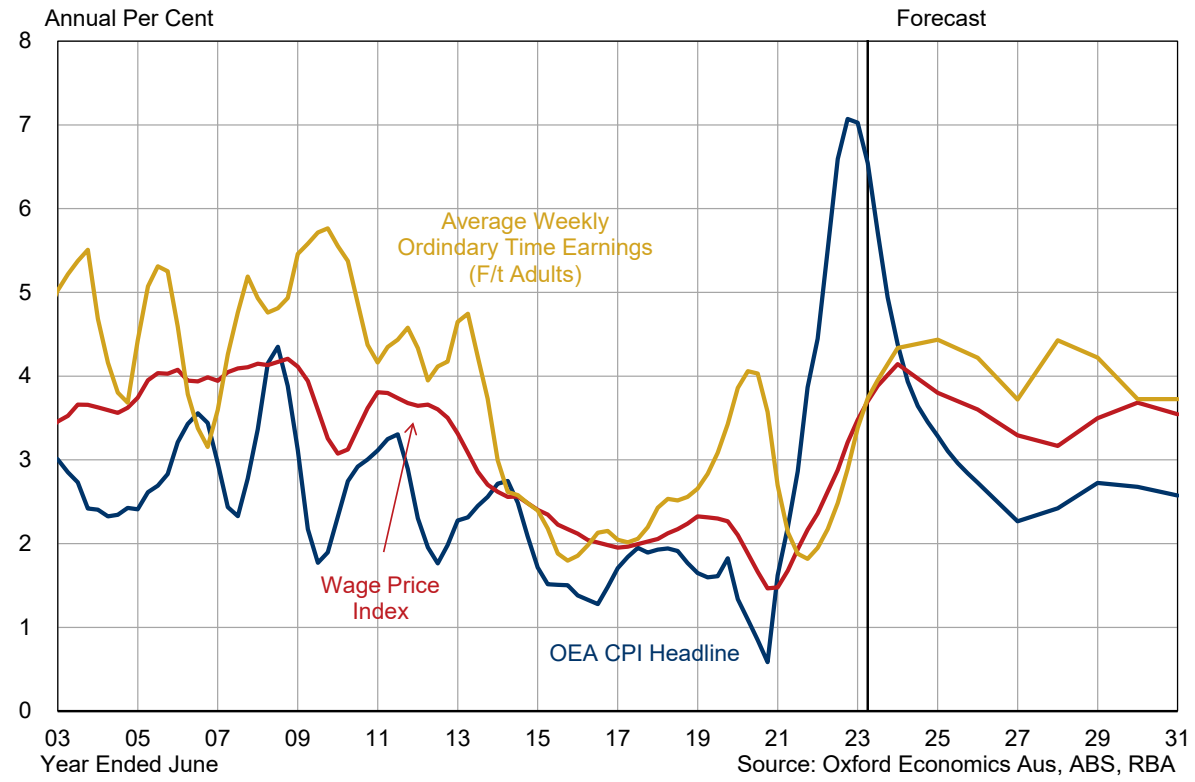
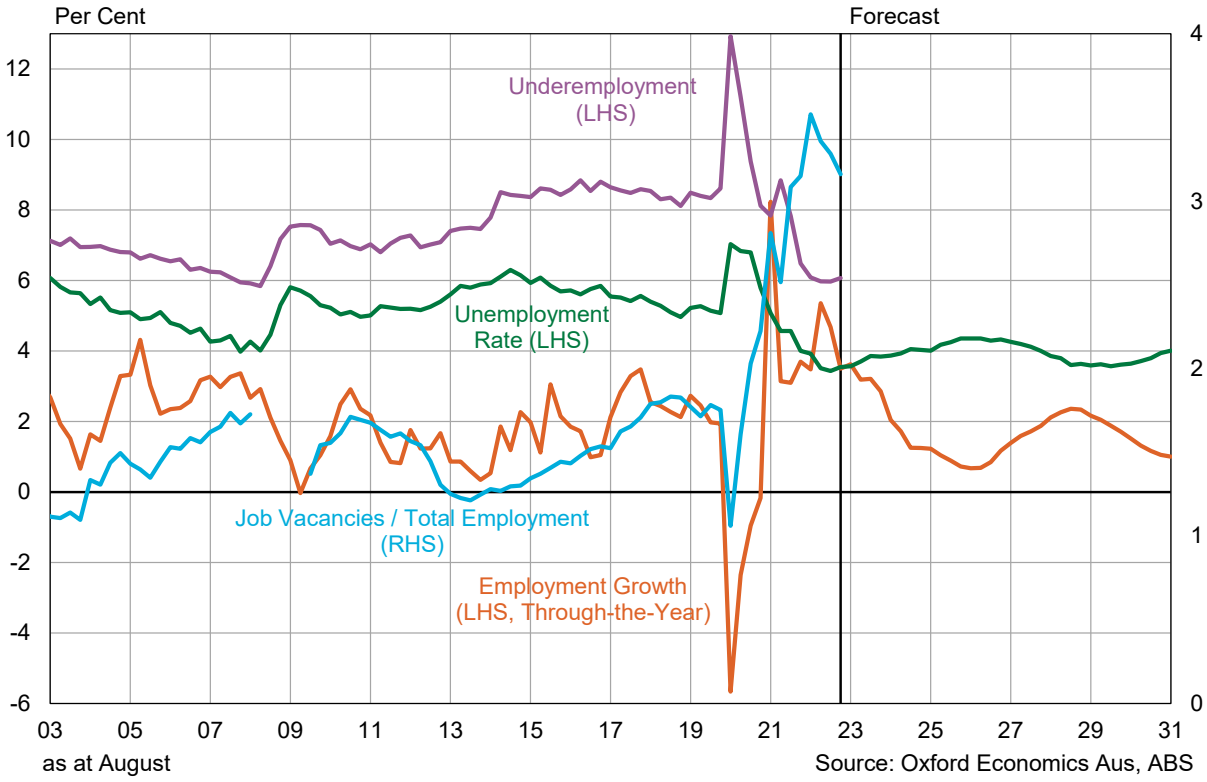


Figure 4.2 Australia: Employment and Unemployment



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 will remain elevated.

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 3.8% to 4% over the next 1 ½ years to FY25. Note that we expect the unemployment rate to drift up at a slower rate than some other forecasters (such as the Reserve Bank), with a peak of around 4.5% reached during FY26. Job ads are still very high – around 40% above pre-Covid levels and well above the levels in early 2022. Furthermore, while our employment growth forecasts are only slightly stronger over the next year, we expect that the rise in the unemployment rate will also be kept in check by falls in the participation rate from current record levels, as employment growth slows. This is likely to occur amongst those currently in the workforce with a 'loose attachment' to the workforce, such as older workers who stayed in the workforce due to strong labour demand. As demand eases, a significant proportion of workers are likely to drop out of the workforce (and hence the labour force statistics) and 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.

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, due to elevated CPI inflation and 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 agreements recently approved have lifted from 2.6% (average annualised wage increases – AAWI) in the September 2022 quarter to 4.1% in the September 2023 quarter. We expect similar high agreements to be negotiated over coming quarters. Of the other 48% 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 Table 5.1 and the Summary table in the Executive Summary. The Australian All industries WPI is forecast to increase to 4.1% in FY24 and remain elevated at 3.8% in 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 over FY29 and FY30 as stronger economic and employment growth returns from 2028. Overall, using RBA CPI forecasts, real (inflation-adjusted) WPI growth for the Australian All Industries WPI is forecast to decline in FY24 as high CPI inflation out-paces WPI growth (as occurred in FY22 and FY23). Thereafter, with WPI growth remaining high and CPI inflation easing, there will be positive growth in real wages from FY25 to FY31. Over the six-year period from FY265to FY31, the real rate of increase is forecast to average 0.8% p.a., which will be above the 0.6% average of the decade to FY20 inclusive.

The Victorian and Tasmanian All Industries WPI are 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.

5. INDUSTRY WAGES - UTILITIES & CONSTRUCTION: AUSTRALIA, VICTORIA & TASMANIA

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 Victoria and Tasmania is used as a proxy for all of Marinus Link'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 Marinus Link's opex and capex 'network' labour and escalating it with the WPI for the state utilities sector will be consistent with the AER's framework.

OEA chose to use the Wage Price Index (WPI) as the key measure of growth in Marinus Link'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 applies to FY24, FY25 and FY26. 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, VICTORIAN & TASMANIAN 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 Fig 5.1). Over the two decades to 2020/21, the average growth in the real (inflation-adjusted) WPI was 1.2%. 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 past decade from 2013/14 to 2022/23 inclusive, 0.2% higher than the 2.3% national average.

Over the 7-year period from FY25 to FY31 inclusive the Australian EGWWS WPI is forecast to average 3.8%, 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 seven years to FY31. 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 FY11. 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	2,109	6.6	-0.5	143.7	3.5	-3.6	150.1	3.5	-3.5
Forecasts												
2024	1 893	4.3	-0.1	2,222	5.4	0.9	149.6	4.1	-0.3	156.3	4.2	-0.2
2025	1 977	4.4	0.9	2,326	4.7	1.2	155.3	3.8	0.3	162.7	4.1	0.6
2026	2 060	4.2	1.4	2 426	4.3	1.5	160.9	3.6	0.8	169.1	3.9	1.1
2027	2 137	3.7	1.2	2 519	3.8	1.3	166.2	3.3	0.8	175.2	3.6	1.1
2028	2 207	3.3	0.8	2 610	3.6	1.1	171.4	3.2	0.7	181.2	3.4	0.9
2029	2 288	3.7	1.2	2 711	3.9	1.4	177.5	3.5	1.0	187.9	3.7	1.2
2030	2 384	4.2	1.7	2 821	4.1	1.6	184.0	3.7	1.2	195.1	3.8	1.3
2031	2 485	4.2	1.7	2 936	4.1	1.6	190.5	3.5	1.0	202.5	3.8	1.3
	Compound Annual Growth Rates (3)											
2001-2011	4.8		1.9	4.8		2.0	3.7		0.9	4.4		1.5
2011-2021	3.0		1.1	2.7		0.9	2.4		0.5	2.8		0.9
2023-2031	4.0		1.1	4.2		1.3	3.6		0.7	3.8		0.9
2024-2031	4.0		1.3	4.1		1.4	3.5		0.8	3.8		1.1

Source: BIS Oxford Economics, 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 2024-2031 is the average annual growth for 2024/25 to 2030/31 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 4.0% per annum over the seven years to FY31, 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. However, this proved to be a short-lived aberration, with the EGWWS WPI rebounding strongly over FY23 to match the national average of 3.5%. From FY24, we again expect the EGWWS WPI to outpace the All Industries WPI over the forecast period. 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 (also see figures 5.5, 5.6 and 5.7).

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 10 years to 2016, previous BIS Shrapnel research found that a higher proportion of workers on collective agreements was 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)

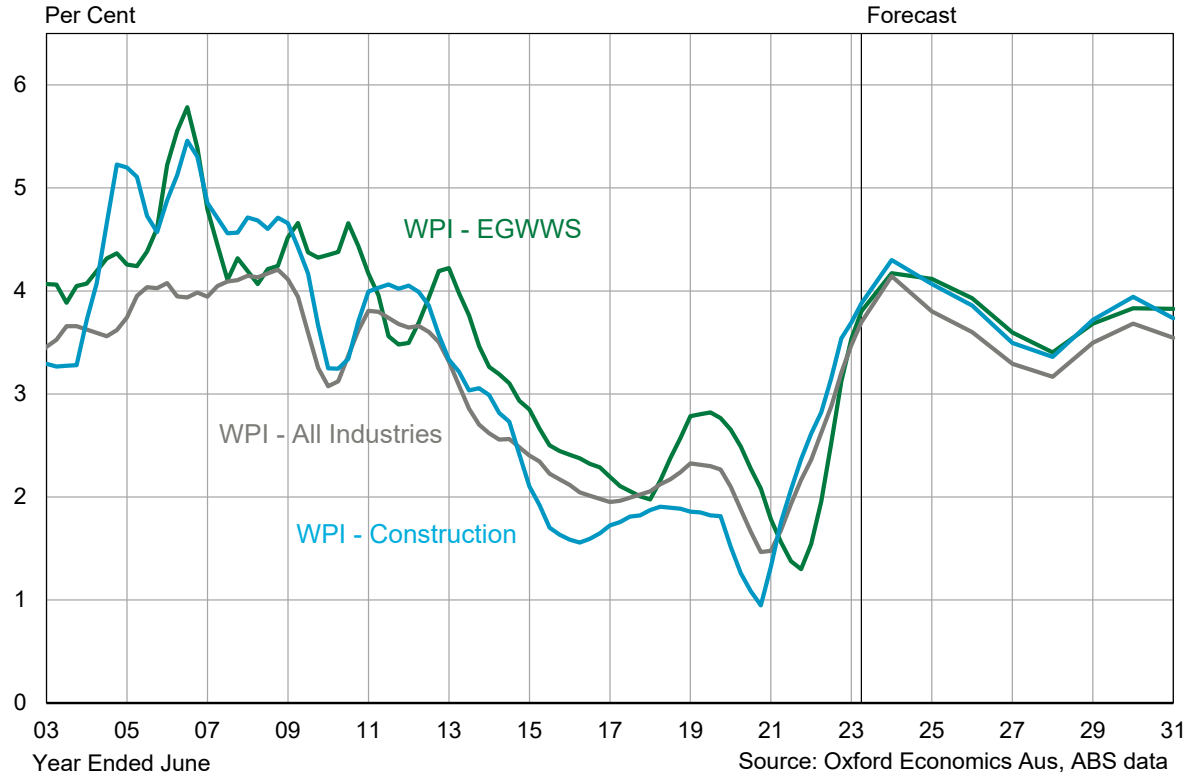
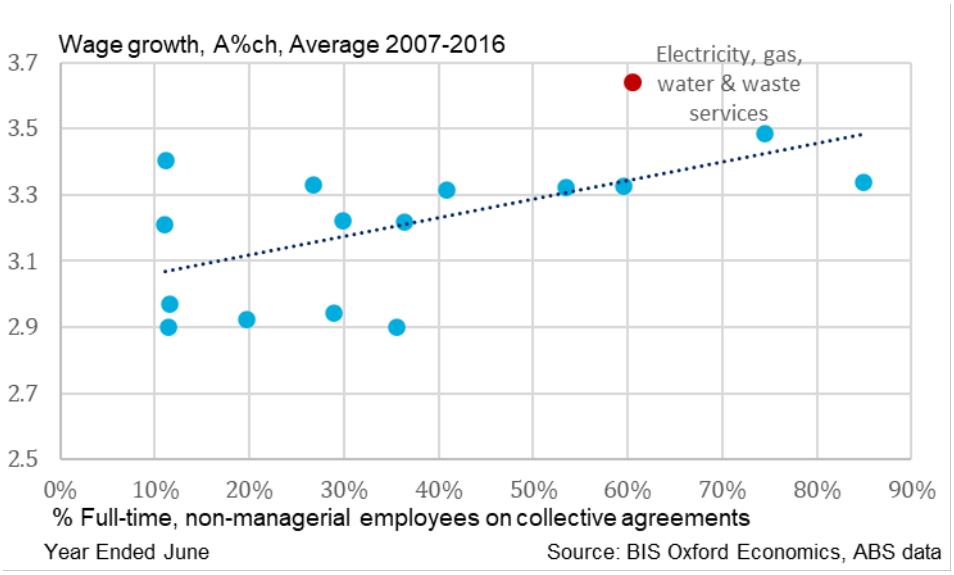


Figure 5.2 Average wage growth and unionisation rates by industry, 2007-2016



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 1.1% above the 'official' CPI over FY25-31, 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 remained 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 four quarters, with the latest September 2023 data showing that approved EBAs have picked up to 4.4% (AAWI terms). We expect the next rounds of EBAs negotiated in the sector to remain elevated around current levels, due to several factors:

- CPI inflation will remain high (averaging 7% in FY23, 4.4% in FY24, 3.5% 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.

Wage increases under Individual agreements and EBAs are strengthening due to tight supply and strong 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. Demand for labour (and hence wages) in the utilities sector are also significantly influenced by investment in the sector, particularly engineering construction, which has been the key driver of employment growth in the sector over the past two decades. Figures 5.6, 5.7 and 5.8 illustrate this relationship, and shows employment has a much stronger relationship with utilities engineering construction rather than utilities output.

The overall labour market is expected remain very tight over the next 2 years, with the unemployment rate to remain between 3.8% to 4.1%, despite a slowing in employment growth from 4.4% in FY23 to 2.6% 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 drop 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 steady increases over the next 7 years 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

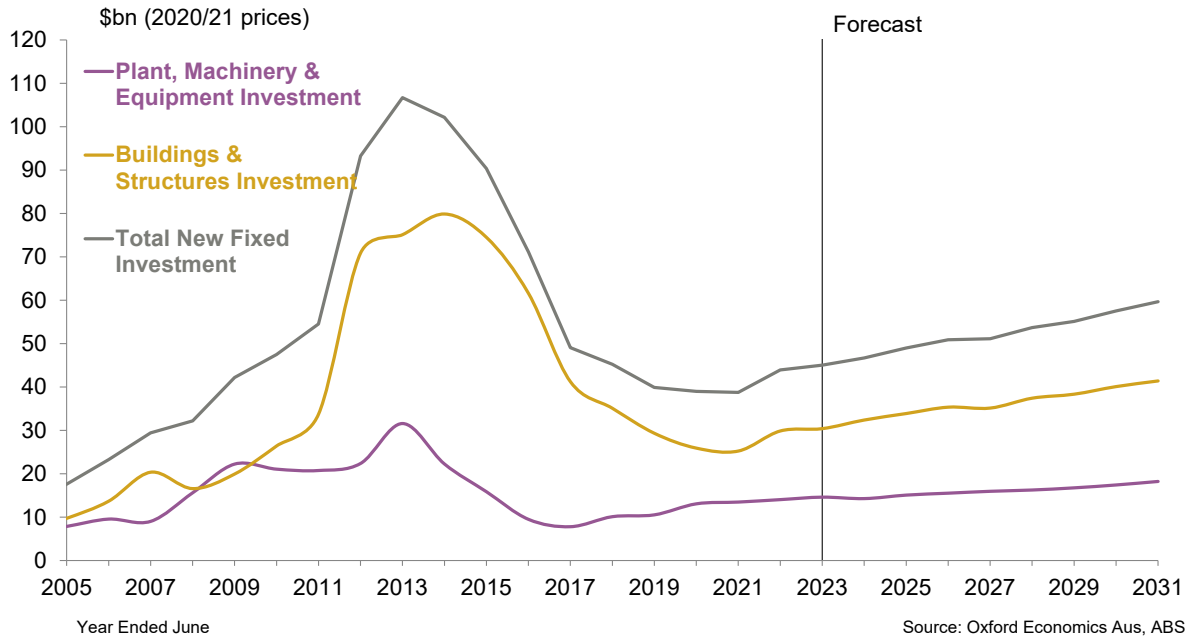
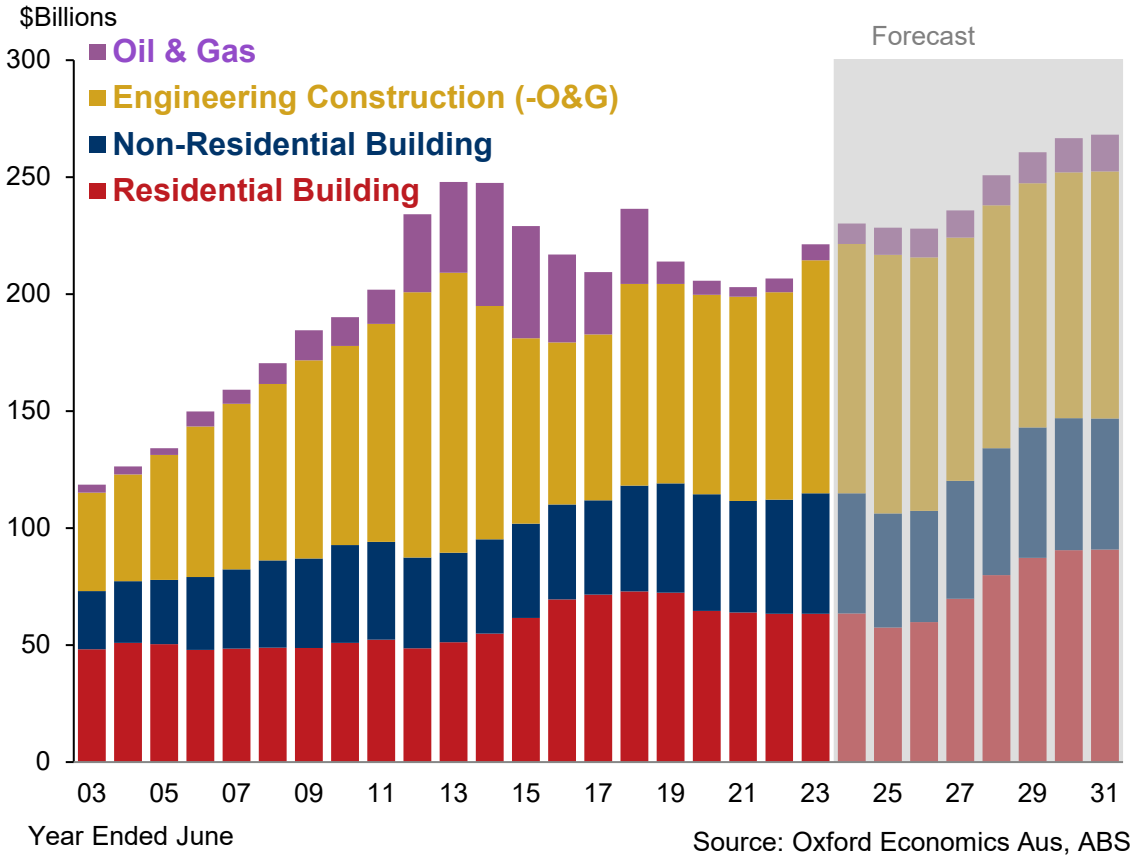


Figure 5.4 Australia – Construction Activity (real work done)

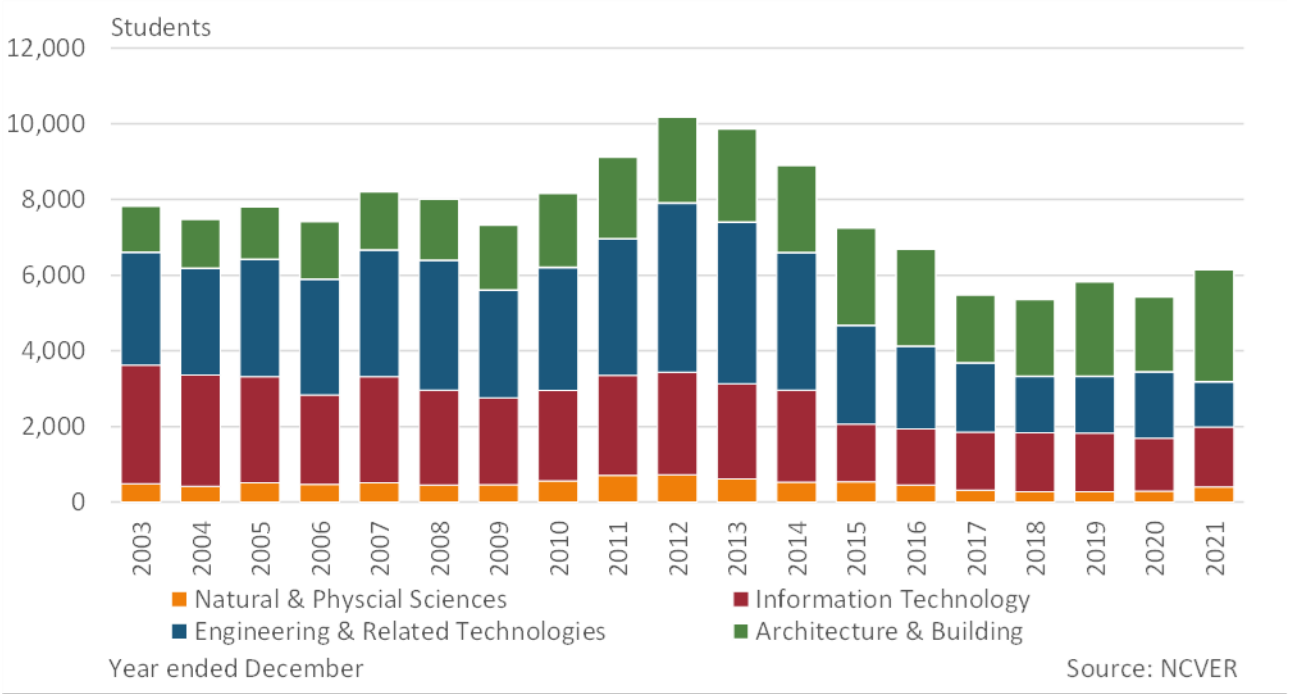


With regard to utilities investment, Oxford Economics Australia is forecasting steady increases over the next 8 years (and beyond), with electricity-related engineering construction projected to be 47% higher in FY31 compared to FY23 levels, following the 42% increase over the past two years (see chart 5.6). 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 and therefore to the levels of skilled labour 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 (see figure 5.5). 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 2023/24 to 2025/26 period.

Figure 5.5 Australia, number of completions, VET, 2003-2021



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 NSW (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 two decades, 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, in Australia and across all states (see figures 5.6, 5.7 and 5.8). 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 Victoria & Tasmania

Wages in the Victorian and Tasmanian utilities sectors are expected to move in line with the national utilities sector average over the 7 years from FY24 (see table 1.1). Wages in the **Victorian utilities** sector are expected to move in line with the national utilities sector average over the upcoming regulatory period (see Table 1.1). In the near-term, the Victorian EGWWS WPI is expected to be somewhat lower than the national EGWWS WPI in FY24, due to a surprisingly weak quarterly increases over recent quarters. Slightly weaker EBAs in Victoria than the national EBA average recently are also expected to see Victorian utilities wages track below the national WPI outcomes over FY24 and FY25. Subsequently, strong increases in utilities engineering construction in Victoria (see figure 5.7) will see Victorian utilities WPI growth keep pace with the national EGWWS average over the forecast period.

The ABS does not provide WPI data for the Utilities sector in **Tasmania**, providing state utilities data only for NSW, Victoria and Queensland (the latter since early 2019). These three states collectively account for around 77% of total Australian utilities employment, with South Australia accounting for 7% and Western Australia 11%. Tasmania only accounts for less than 3% of total Australian utilities employment. Historical data and forecasts of WPI for the EGWWS sector in Tasmania are therefore based on national EGWWS WPI forecasts, as well as movements in the 'unknown residual' for the utilities WPI and differences in outcomes in collective bargaining in Tasmania compared to the national average for the utilities sector.

Wages in the Tasmanian utilities sector are expected to move in line with the national utilities sector average over MARINUS LINK Group's upcoming regulatory period (see table 1). Over the past two years, we estimate that utilities WPI growth in Tasmania outpaced the national average, largely due to much stronger growth in enterprise bargaining agreements outcomes, compared to the national utilities EBA average. However, with the recent narrowing of this differential of Tasmania vis-à-vis the national average in terms of 'approved' agreements, we expect the 'current agreements' differential to also narrow and for the Tasmanian utilities WPI to track the national average.

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

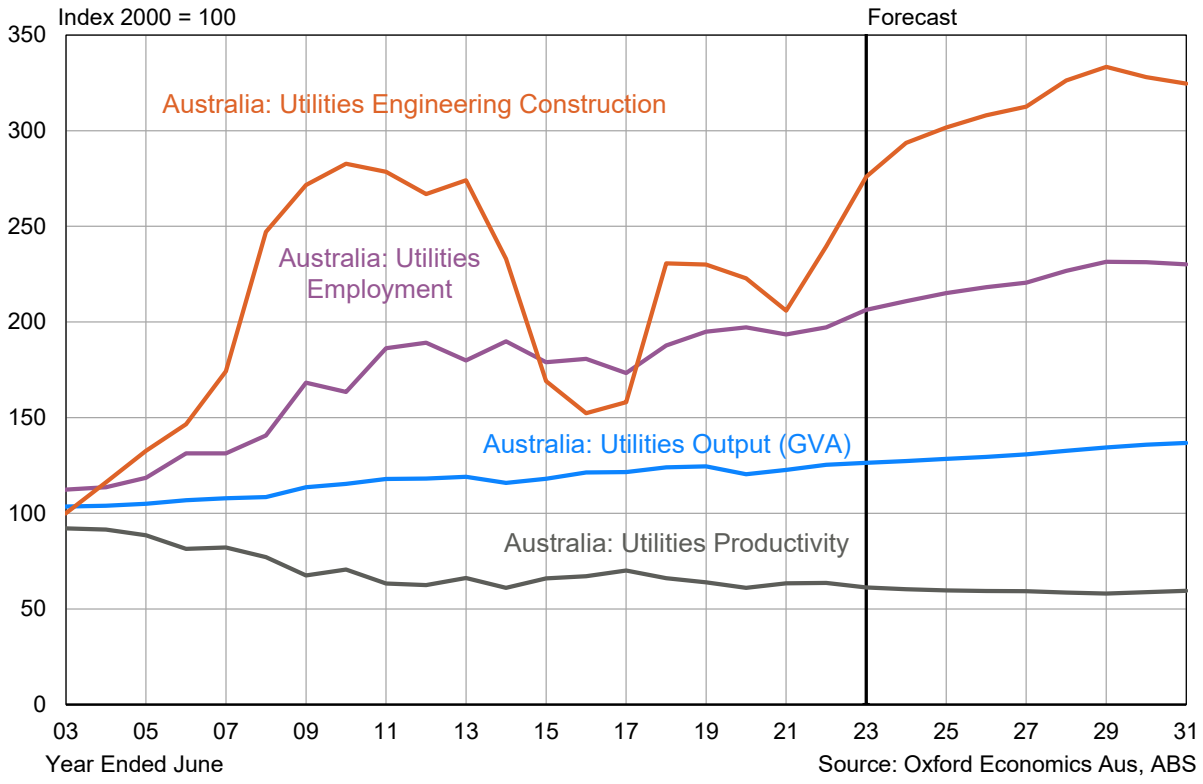


Figure 5.7 Victoria – Utilities Employment, Output, Investment & Productivity

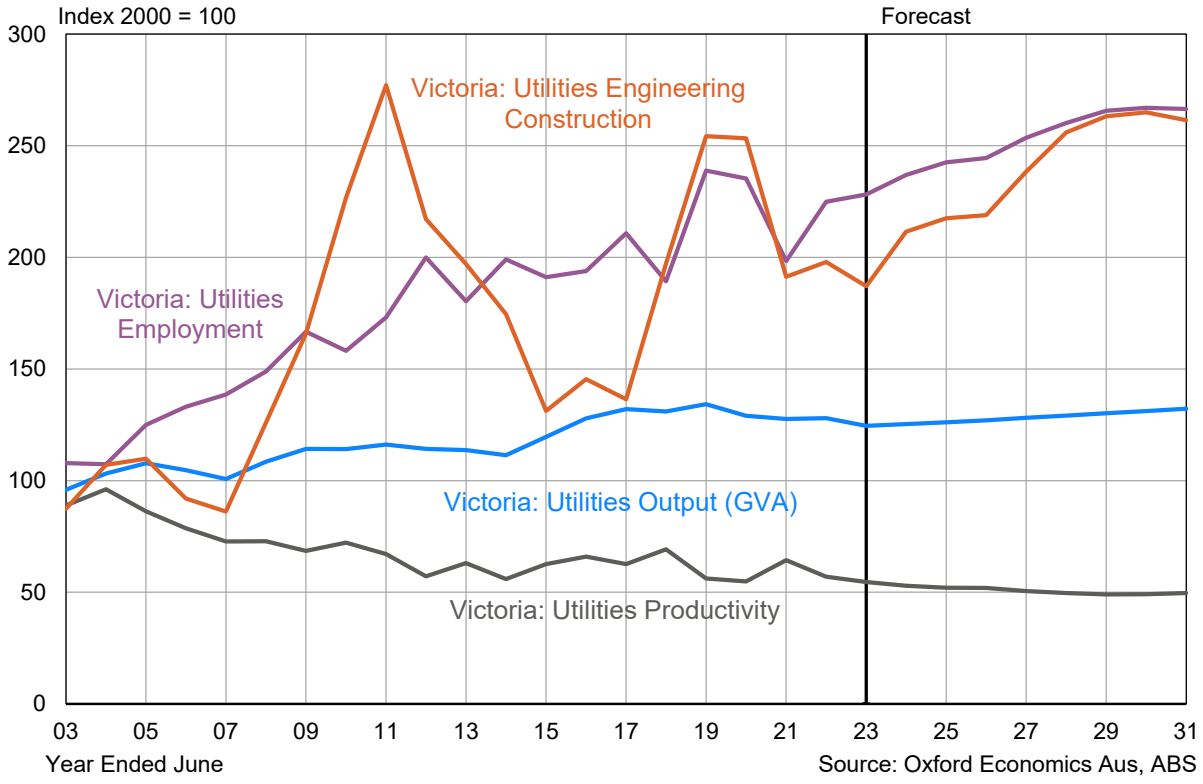


Figure 5.8 Tasmania – Utilities Employment, Output, Investment & Productivity

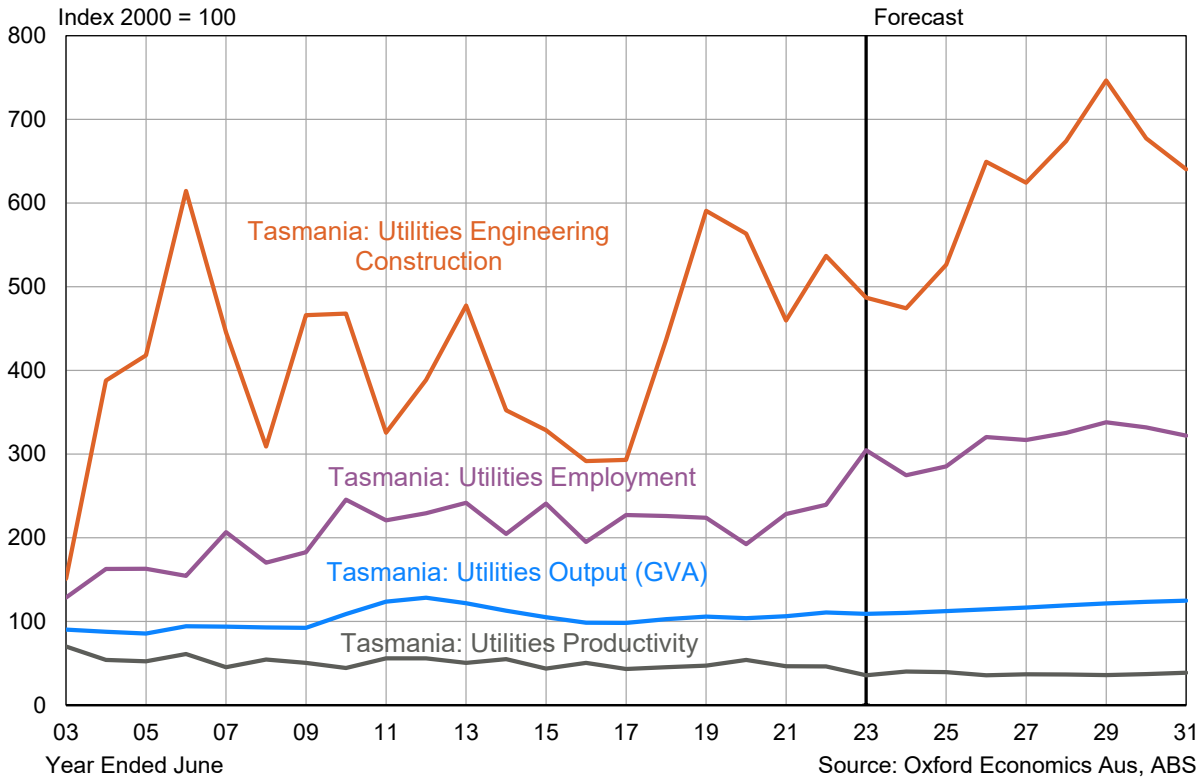
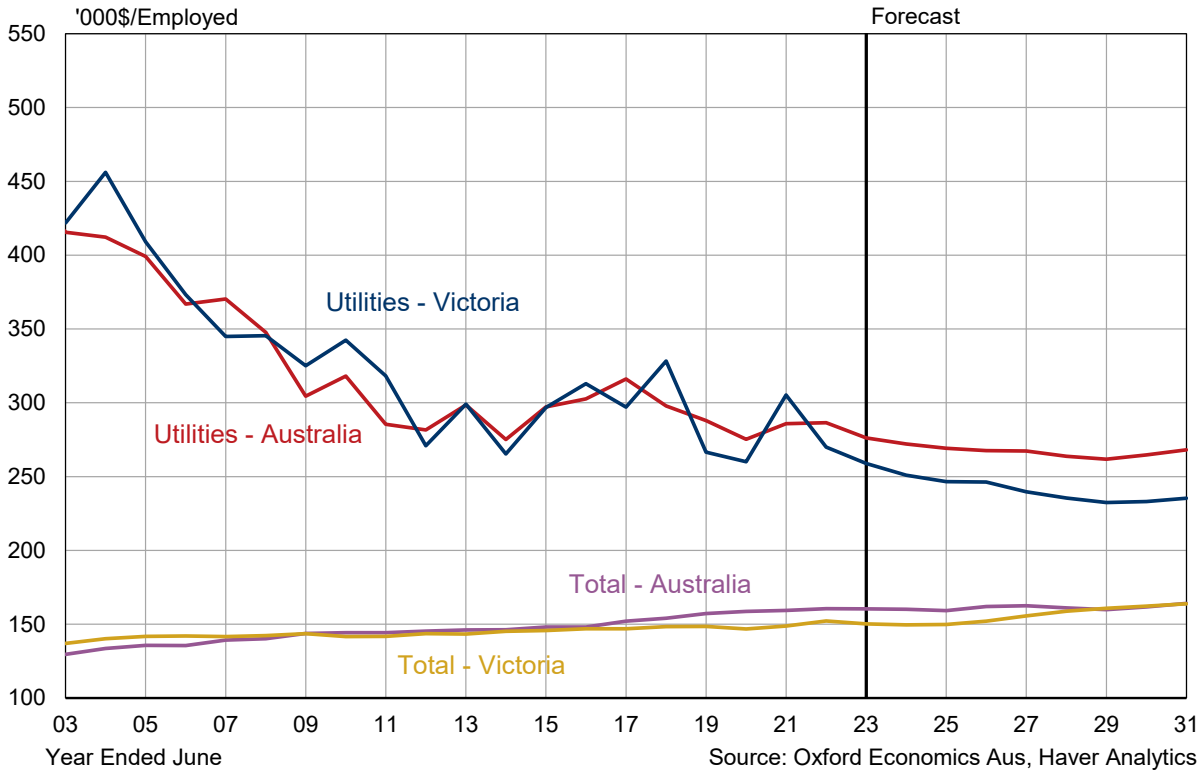


Figure 5.8 Utilities Productivity in Australia and Victoria



5.3 CONSTRUCTION WAGES

Given service providers outsourced labour is mostly supplied by firms in the construction industry, we proxy Marinus Link'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 seven years from FY25 to FY31 inclusive (Marinus Link's regulatory period) – or 1.1% per annum on average in real (inflation adjusted) terms. Both Victorian and Tasmanian Construction wages are also forecast to average 3.7%, or 1.0% in real terms (see Table 1.1). 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.

The Australian Construction WPI growth recovered over FY22 to 2.6% and further to 3.7% in FY23 (in year average terms) from 1.3% in FY21. Construction wages are forecast to keep improving over FY24 and FY25 as construction activity increases and activity levels surpass the previous highs of FY18 and FY13 (in 2024 - see figure 5.4) and serious skills shortages worsen, underpinning higher wages due to strong labour demand. Construction wages growth then eases over FY26 to FY28 as activity drops back, but then picks up again from FY29 as activity again surpasses the FY24 peak (in FY28). Higher levels of residential and non-residential building will be key drivers, while Engineering construction will be driven by higher electricity and mining investment and a plethora of publicly funded transport infrastructure projects (particularly in the eastern states of the nation).

Victorian Construction WPI growth was well above the national average in FY22, at 3.2%, 0.6% higher than the national average. Higher construction sector EBAs in the state (compared to the national average) helped drive this result. EBAs approved over the past 1 to 3 years have averaged 0.3% higher than the national average. However, despite the higher construction EBAs, Victorian construction WPI growth lagged the national average in FY23. Given that the growth in activity in the state will lag the national average over FY21 to FY26, we are forecasting Victoria's construction WPI growth lag the national average over FY24 to FY26, before matching the national increases over FY27 to FY31, as Victoria's construction activity shows similar growth.

Tasmania's Construction WPI growth is forecast to remain below the national average over FY23 to FY25, largely due to mostly weaker EBAs recently. However, wages growth in the other segments will hold up well, due to further growth in Tasmanian construction activity over the next 2-3 years, pushing well above recent record levels. Total activity then eases back over FY27 as a number of major projects are finished around mid-decade and dwelling building activity weakens, before solid growth returns in over FY28 to FY31.

6. COMMODITY PRICE AND MATERIAL COST ESCALATOR FORECASTS

6.1 COMMODITY PRICE FORECASTS & MARINE DIESEL

The AER has shown a preference for accepting a range of forecasts from different forecasters, and then taking an average. For this report, commodity price forecasts are derived by taking an average between Oxford Economics Australia's and the Department of Industry, Science and Resources' (DISR) latest global commodity price forecasts. The DISR forecasts are sourced from the December 2023 *Resource and energy quarterly* report, which contains the Office of the Chief Economist's quarterly commodity price forecasts in US$ terms out to June 2025. For DISR commodity price forecasts beyond June 2025, we employ the DISR's long term forecasts published in March 2023, which extend out to December 2028, and which are spliced onto their near-term forecasts. The average quarterly growth trend of the DISR's 2028 forecast is then applied to the remainder of the DISR forecast series (to June 2031).

These US$ forecasts were converted into A$ terms using Oxford Economics inhouse exchange rate forecasts. The Australian dollar is heavily influenced by movements in Australia's basket of commodity prices and particularly by interest rate relativities between Australian and overseas interest rates (especially US interest rates). The A$ averaged US$0.75 in FY21 and has seen two years of depreciation (sinking to an average of US$0.67 in FY23) as higher interest rates in the US relative to Australia increased demand for US Dollars relative to Australian Dollars as capital chased higher returns in the US. As interest rates globally begin to ease over the near term, the Australian Dollar is expected to appreciate relative to the US Dollar as it trends back to its long-term average of US$0.75.

Overall, the three commodities presented here – aluminium, copper and oil – have all experienced significant recoveries from the Covid-induced lows of 2020 and are currently trading near 10-year highs (see table 5.1). Although they are expected to retreat from these highs over the near term, the average prices in the seven years to FY31 (the upcoming revenue period) will be higher than the pre-Covid levels, indicating higher cost pressures on operators of electricity distribution networks in the coming period.

Aluminium prices fell to an average of US$1675/tonne in FY20 due to Covid-related demand concerns, but subsequently rebounded and experienced robust growth of 21% in FY21 to US$2029/t (+8.8% in A$ terms, to A$2715/t). Aluminium production was hampered over 2021 and into 2022 by power shortages in China, with many energy-intensive smelters shutting down. With production constrained and demand recovering, stock levels on the London Metal Exchange (LME) fell, leading on-warrant inventories to reach 14-year lows and aluminium surpassing the US$3,500/t mark in March 2022, the highest level since June 2008. FY23 then saw Chinese production improve as smelters came back online, with improved supplies and an easing of global supply chain pressures contributing to a -19% decline in aluminium prices – to average US$2,333/t for the year. Aluminium prices are expected to ease further still over FY24 given weakening global demand as higher interest rates dampens constrain economic growth, particular within the construction sector, which is a significant consumer of aluminium. Overall, prices are forecast to ease -4.2% in US$ terms.

Over the near term, strong demand from the automotive sector (EV manufactures are increasingly substituting steel components for lighter aluminium ones to reduce vehicle weight and so improve driving distance), along with a rebounding construction sector as interest rates ease globally, will see global demand for aluminium step up. This step up in demand is expected to see prices rise by 6.6% over FY25. On the supply side, global aluminium output is also set to increase, with an outlook for

Table 6.1 Materials and Commodity Price Forecasts

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Average 2025-31 (j)
	Actuals					Forecasts	Determination Period							
Nominal Commodity & Marine Diesel Prices														
Copper (A$/tonne)	8591	8438	10655	13304	12318	12309	11838	12800	13716	13726	14118	14462	15144	13686
Copper (US$/tonne) (a)	6146	5663	7962	9657	8296	8228	8446	8976	9430	9891	10447	10904	11358	9922
Aluminium (A$/tonne)	2683	2496	2715	3983	3464	3343	3339	3539	3533	3433	3570	3694	3903	3573
Aluminium (US$/tonne) (a)	1920	1675	2029	2891	2333	2235	2383	2482	2429	2474	2642	2786	2928	2589
Oil (A$/barrel)	96.1	76.9	72.5	125.7	128.8	129.2	114.0	112.9	111.0	106.7	107.5	106.5	108.2	109.5
Oil (US$/barrel) (a)	68.7	51.6	54.2	91.2	86.7	86.4	81.3	79.2	76.3	76.9	79.5	80.3	81.1	79.2
Marine diesel (A$/tonne)	1075	961	748	1271	1561	1366	1237	1274	1253	1195	1234	1224	1221	1234
Marine diesel (US$/tonne) (b)	769	645	559	923	1051	913	883	893	861	861	913	923	916	893
% ch														
Copper (A$/tonne)	-1.3	-1.8	26.3	24.9	-7.4	-0.1	-3.8	8.1	7.2	0.1	2.9	2.4	4.7	3.1
Aluminium (A$/tonne)	-2.5	-7.0	8.8	46.7	-13.0	-3.5	-0.1	6.0	-0.2	-2.8	4.0	3.5	5.7	2.3
Oil (A$/barrel)	16.9	-19.9	-5.8	73.4	2.5	0.3	-11.8	-0.9	-1.7	-3.9	0.8	-0.9	1.6	-2.4
Marine diesel (A$/tonne)	22.0	-10.6	-22.2	70.0	22.8	-12.5	-9.4	3.0	-1.7	-4.6	3.2	-0.8	-0.2	-1.5
Exchange rate ($USD/$AUD) (c)	0.72	0.67	0.75	0.73	0.67	0.67	0.71	0.70	0.69	0.72	0.74	0.75	0.75	0.72
Exchange rate (Euro/$AUD) (c)	0.63	0.61	0.63	0.64	0.64	0.61	0.60	0.57	0.58	0.61	0.62	0.62	0.62	0.60
Exchange rate (Kronor/$AUD) (c)	6.66	6.47	6.35	6.74	7.38	6.92	6.70	6.16	5.97	6.11	6.16	6.19	6.13	6.20
Nominal Material Producer Price Indices (PPI)														
Steel Beams and Sections PPI (Australia) (d)	112.7	112.9	118.7	155.2	162.7	143.5	142.9	142.1	146.2	151.3	159.2	167.1	173.0	154.6
Concrete, Cement & Sand PPI (Vic) (d)	108.2	109.1	109.7	111.6	132.8	139.0	140.0	140.6	143.1	147.3	152.6	157.8	161.7	149.0
Concrete, Cement & Sand PPI (Tas) (d)	117.3	120.4	117.8	125.8	136.5	141.5	147.3	152.5	158.2	164.8	171.7	178.5	184.9	165.4
Electrical Equipment Manufacturing PPI (d)	107.2	105.7	109.0	114.9	129.9	135.9	133.7	133.9	136.7	140.9	145.4	149.7	153.6	142.0
Fibre Optic cable (A$ index)	113.5	119.3	104.1	113.5	143.6									
Fibre Optic cable (US$ index) (e)	81.2	80.1	77.8	82.4	96.7									
% ch														
Steel Beams and Sections PPI (Australia) (d)	5.0	0.2	5.1	30.8	4.8	-11.8	-0.4	-0.6	2.9	3.5	5.2	4.9	3.6	2.7
Concrete, Cement & Sand PPI (Vic) (d)	5.3	0.8	0.6	1.7	19.0	4.7	0.7	0.5	1.8	2.9	3.6	3.4	2.4	2.2
Concrete, Cement & Sand PPI (Tas) (d)	1.9	2.6	-2.1	6.7	8.5	3.7	4.1	3.6	3.7	4.1	4.2	3.9	3.6	3.9
Electrical Equipment Manufacturing PPI (d)	3.9	-1.4	3.1	5.5	13.1	4.6	-1.6	0.2	2.0	3.1	3.2	3.0	2.6	1.8
Fibre Optic cable (A$ index)	8.6	5.1	-12.7	9.0	26.5									
Nominal Broad Construction Price Indice														
Non-hydro Electricity Engineering Construction IPD (f)	115.2	118.2	120.5	127.9	136.7	140.0	142.5	146.1	150.8	155.9	162.0	168.0	173.5	157.0
% ch														
Non-hydro Electricity Engineering Construction IPD (f)	4.0	2.6	1.9	6.2	6.9	2.4	1.8	2.5	3.3	3.4	3.9	3.7	3.3	3.1
HVDC Indicators (nominal %ch) (g)														
US HVDC - overall indicative escalation														
Aluminium (US$/tonne)	-10.0	-12.7	21.1	42.5	-19.3	-4.2	6.6	4.2	-2.1	1.9	6.8	5.4	5.1	4.0
Steel - hot rolled coil (US$/tonne)	5.0	-28.3	82.3	56.0	-43.5	0.4	-13.4	0.2	2.0	2.0	2.0	2.0	2.0	-0.4
Manufacturing wages - USA	3.1	7.1	1.2	3.0	5.9	5.2	3.5	2.8	2.5	2.1	2.1	1.7	1.8	2.4
Electricity costs - USA	5.4	-13.6	8.5	49.7	3.6	-18.4	3.1	1.7	0.8	1.5	1.7	1.5	1.5	1.7
Transport costs - USA	4.3	1.7	-1.0	16.8	7.7	1.2	2.4	2.1	2.0	2.2	2.2	2.1	2.1	2.2
Other cable maunufacturing costs - USA														
European HVDC - overall indicative escalation														
Aluminium (Euro/tonne)	-5.9	-10.0	12.2	50.9	-13.1	-8.8	-1.1	0.5	1.3	3.0	4.7	4.0	4.6	2.4
Steel - hot rolled coil (Euro/tonne)	-5.0	-14.8	56.0	56.8	-31.4	-9.1	-3.8	1.7	2.0	2.0	2.0	2.0	2.0	1.1
Manufacturing wages - Italy	1.6	5.0	-0.2	-1.1	4.5	3.2	2.4	1.8	1.9	2.1	2.1	2.1	1.9	2.0
Electricity costs - Italy	9.0	-2.6	-2.2	82.1	26.5	-18.2	1.1	-7.5	-6.2	1.1	-0.7	-0.8	0.5	-1.8
Transport costs - Italy	1.0	1.7	-0.4	0.6	5.1	6.0	3.2	2.8	2.4	2.2	2.2	2.2	2.2	2.5
Other cable maunufacturing costs - Italy														
Consumer Price Index - headline (h)	1.6	1.3	1.6	4.4	7.0	4.0	3.2	2.7	2.5	2.5	2.5	2.5	2.5	2.6
Real Commodity Price Changes (i)														
Copper (A$/tonne)	-2.9	-3.1	24.6	20.4	-14.4	-4.1	-7.0	5.4	4.7	-2.4	0.4	-0.1	2.2	0.4
Aluminium (A$/tonne)	-4.1	-8.3	7.2	42.3	-20.1	-7.5	-3.3	3.2	-2.7	-5.3	1.5	1.0	3.2	-0.3
Oil (A$/barrel)	15.3	-21.3	-7.4	68.9	-4.5	-3.7	-15.0	-3.7	-4.2	-6.4	-1.7	-3.4	-0.9	-5.0
Marine diesel (A$/tonne)	20.4	-11.9	-23.8	65.5	15.8	-16.5	-12.6	0.3	-4.2	-7.1	0.7	-3.3	-2.7	-4.1
Real Material Producer Price Indices (PPI) (i)														
Steel Beams and Sections PPI (Australia) (d)	3.4	-1.2	3.5	26.4	-2.2	-15.8	-3.5	-3.3	0.4	1.0	2.7	2.4	1.1	0.6
Concrete, Cement & Sand PPI (Vic) (d)	3.6	-0.5	-1.1	-2.7	12.0	0.7	-2.5	-2.3	-0.7	0.4	1.1	0.9	-0.1	-0.1
Concrete, Cement & Sand PPI (Tas) (d)	0.2	1.3	-3.7	2.3	1.5	-0.4	0.9	0.9	1.2	1.6	1.7	1.4	1.1	1.4
Electrical Equipment Manufacturing PPI (d)	2.3	-2.7	1.4	1.0	6.0	0.6	-4.8	-2.6	-0.5	0.6	0.7	0.5	0.1	-0.3
Fibre Optic cable (A$ index)	6.9	3.7	-14.3	4.6	19.5									
Real Broad Construction Price Indice														
Non-hydro Electricity Engineering Construction IPD (f)	2.3	1.3	0.3	1.7	-0.2	-1.6	-1.4	-0.2	0.7	0.9	1.4	1.2	0.8	0.5
Real HVDC Indicators %ch														
US HVDC - overall indicative escalation														
Aluminium (US$/tonne)	-11.7	-14.1	19.5	38.0	-26.4	-8.2	3.5	1.4	-4.6	-0.6	4.3	2.9	2.6	1.3
Steel (US$/tonne)	3.3	-29.6	80.7	51.6	-50.5	-3.6	-16.5	-2.5	-0.5	-0.5	-0.5	-0.5	-0.5	-3.1
Manufacturing wages - USA	1.5	5.8	-0.5	-1.4	-1.2	1.2	0.3	0.1	0.0	-0.4	-0.4	-0.8	-0.7	-0.3
Electricity costs - USA	3.7	-14.9	6.8	45.3	-3.4	-22.5	-0.1	-1.0	-1.7	-1.0	-0.8	-1.0	-1.0	-0.9
Transport costs - USA	2.6	0.4	-2.6	12.3	0.7	-2.8	-0.8	-0.6	-0.5	-0.3	-0.3	-0.4	-0.4	-0.5
Other cable maunufacturing costs - USA														
European HVDC - overall indicative escalation														
Aluminium (Euro/tonne)	-7.6	-11.3	10.6	46.5	-20.2	-12.8	-4.3	-2.2	-1.2	0.5	2.2	1.5	2.1	-0.2
Steel (Euro/tonne)	-6.6	-16.1	54.4	52.4	-38.4	-13.2	-6.9	-1.0	-0.5	-0.5	-0.5	-0.5	-0.5	-1.5
Manufacturing wages - Italy	-0.1	3.6	-1.8	-5.6	-2.5	-0.8	-0.8	-0.9	-0.6	-0.4	-0.4	-0.4	-0.6	-0.6
Electricity costs - Italy	7.3	-4.0	-3.9	77.6	19.5	-22.2	-2.1	-10.2	-8.7	-1.4	-3.2	-3.3	-2.0	-4.4
Transport costs - Italy	-0.6	0.4	-2.1	-3.8	-1.9	1.9	0.0	0.0	-0.1	-0.3	-0.3	-0.3	-0.3	-0.2
Other cable maunufacturing costs - Italy														

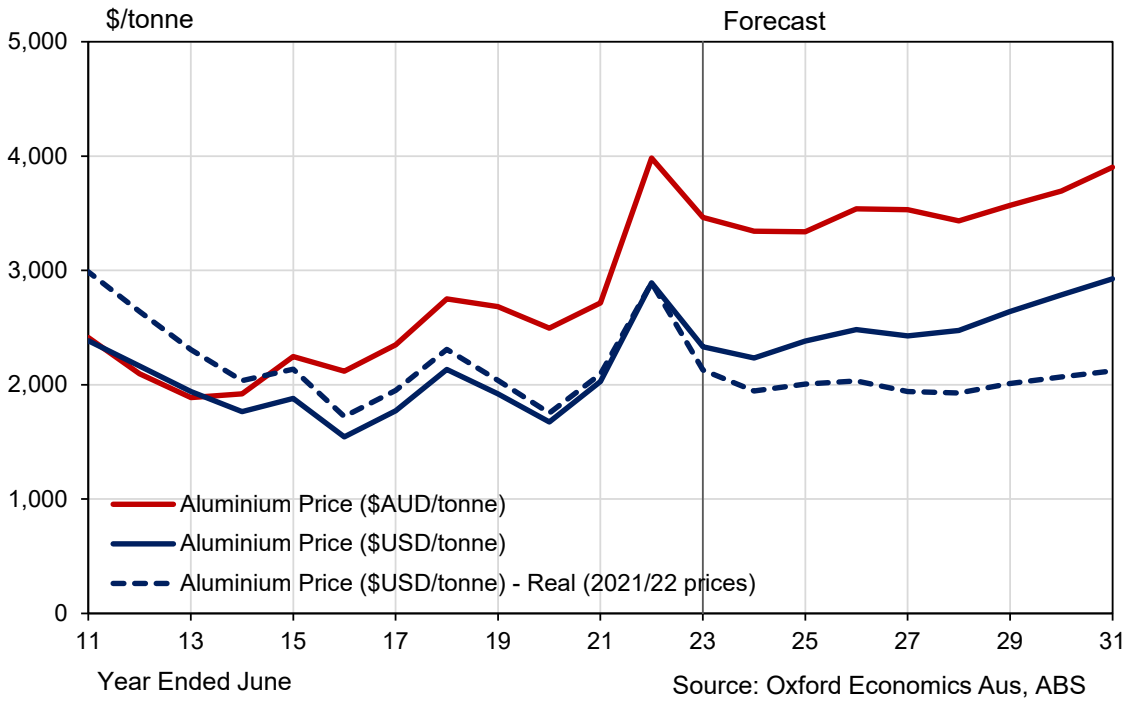
Source: ABS, RBA, Oxford Economics Australia

(a) Average of OEA and DISR forecasts. Copper and aluminium price figures use London Metal Exchange price as the benchmark price. Sourced from DISR
(b) Historical figures come from Ship and Bunker's 'Asia Pacific Marine Gas Oil Price'.
(c) OEA forecasts of exchange rate
(d) Historical figures come from tables xx,yy and 12 of ABS release 6427, Producer Price Indices.
(e) Fibre Optic data from US Federal Reserve Economic Data: producer Price Indices
(f) Historical figures come from the ABS Engineering Construction Service series, provided as an unpublished 'Special Run' series.
(g) Data from Oxford Economics databases in US andEurope. Commodity price forecasts based on OEA/DISR forecasts. All other US and European/Italian forecasts of materials sourced from OE global database.
(h) 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%).
(i) Real price changes are calculated by deducting the inflation rate from nominal price changes.
(j) Average annual values and growth rates for 2024/25 to 2030/31.

increasing primary bauxite ore production from key countries (e.g. Guinea and Australia), and new refineries coming online in China and Indonesia.

However, demand is expected to outpace supply, leading to modest upward price pressure. Aluminium prices are forecast to average 4.0% growth over the 7 years to FY31, to average US$2,589/t annually. A key factor sustaining price growth over this period is the accelerating electrification of the power grid and vehicles, which will see increasing demand for aluminium over the 2030's. Adding to this will be increased production costs, with the transition to renewable energy likely to see higher electricity prices (aluminium refining requires significant amounts of electricity) to help finance new infrastructure investment, along with the decommissioning of cheaper but more polluting aluminium smelters.

Figure 6.1 Aluminium Price Forecast



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 pandemic measures slowed down the global economy. The subsequent acute production and supply chain disruptions following the initial covid lockdowns, and the surge in goods demand (as demand for services was substituted away from) saw prices surge 40.6% in FY21. Over FY22, prices increased 21.3%, to average US$9,665/t despite signs of increased supply. FY23 has since seen a correction in prices (falling -14.1% to US$8,296/t) as global supply and demand dynamics rebalanced following normalising economic conditions post covid.

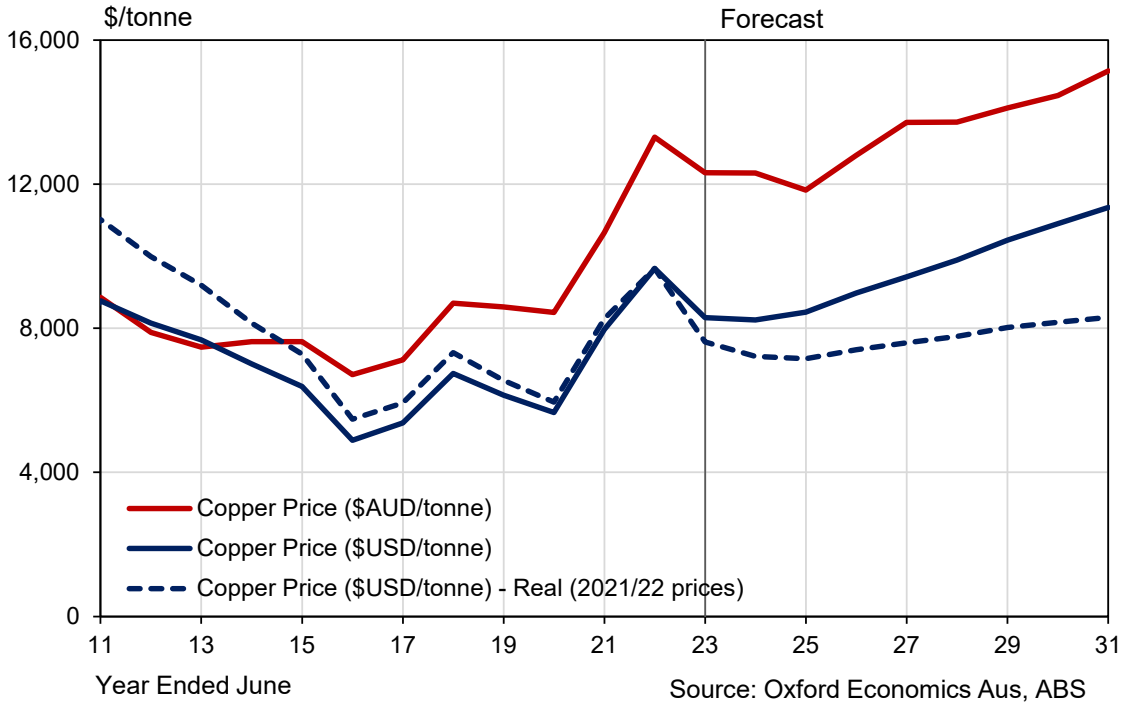
The second half of 2023 has seen a continuing easing of copper prices, with the higher inflationary and interest rate environment weighing down on key construction and manufacturing markets of North America, Europe and Asia. However, strong demand from China's civil construction sector has helped put a floor under prices, with the Chinese government pushing ahead with significant energy infrastructure investments. These trends are expected for persist over the coming year, with higher interest rates discouraging demand from the residential and commercial construction sectors, while rising energy investment (including growing electric vehicle production) will support demand. The net effect will see prices hold flat over FY24 at around US$8,228/t (-0.8% annual growth).

Over the near term, copper demand will get a boost from greater use in electric vehicles and renewable electricity generation, but 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. With this in mind, modest growth in copper prices is forecast to return in FY25 (+2.6%) as the global economy picks up steam following the easing of interest rates globally.

The back half of the 2020's will see accelerating efforts by governments and individual consumers to transition both their energy and transport needs to renewable sources of power, with the International Energy Agency expecting copper demand renewable energy generation alone to double from 2020 to 2030, and account for 36% of total demand. On the supply side, growth in mined copper output is expected to slow. As outlined in the DISR's *Resource and energy quarterly* report "Challenges facing mine operators include declining ore grades, higher production costs, aging facilities and increased environmental and social scrutiny. Declines in the quality of deposits will also mean that most new projects in the development pipeline lack the scale and cost advantages of existing mega projects".

With copper demand for electrical applications rising over the long term, and with cheaper sources of copper resources becoming scarcer, higher copper prices are seen as highly likely. Furthermore, given copper consumption for electrical purposes currently accounts for over 60% of overall demand, it will be challenging for copper supply relief via substitution from other functional uses (e.g. structural, corrosive resistance and heat transfer) given the small size of these markets. Over the seven years to FY31, copper prices are expected to see sustained upward price pressures as supply struggles to keep up with increasing demand. Copper prices are forecast to average 4.7% annual average growth over FY25 to FY31, rising from US$8,446/t to US$11,358 /t – which represents a 34% increase.

Figure 6.2 Copper Price Forecast

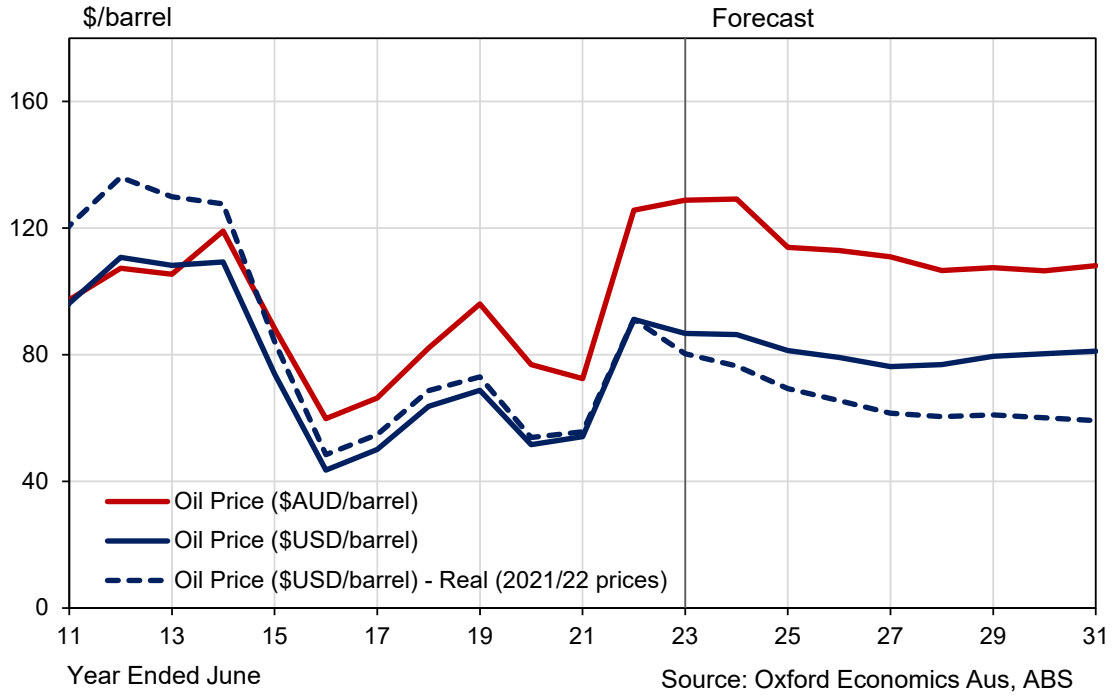


Brent Oil prices averaged US$91/barrel in FY22, with the A$ price surging 73% to A$126/brl - a record high in nominal terms. The rebound in global demand post covid and associated strong price rises over 2021 was exacerbated by a supply shock mainly due to the Russian invasion of Ukraine in early 2022 and subsequent trade restrictions and supply disruptions. Global oil supplies improved over 2023, while oil demand weaken in response to high prices and the global economic slowdown in response to higher interest rates – leading to easing oil prices, which fell -4.9% in FY23 (averaging US$87/brl).

Over the first half 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 $US86/brl (a -0.4% decrease). With a slight exchange rate appreciation forecast, the result will be a 0.3% increase in A$ oil prices in FY24. Although US$ oil prices are expected to ease back to around US$80 over FY25-26 as the global supply increases, an appreciation in the A$ will see A$ oil prices fall to around A$113/brl (A$ prices falling -12% in FY25).

Over the back half of the decade, demand will begin to soften as economies transition away from fossil fuels, although increasing demand from expanding and developing economies will offset some of the decline from developed countries. The near-term outlook for supply is expected to strengthen due to increased production from non-OPEC producers, particularly from the Americas. Over the longer term, it is likely the accelerating momentum away from fossil fuels will discourage investment in the capital-intensive oil sector, whilst the depletion of cheaper and easier to access oil (especially in the US) will constrain supply. Overall, the net effect will see brent oil prices to average around $US76-80/brl ($A107-111/brl) over the FY27 to FY321 period.

Figure 6.3 Brent Oil Price Forecast

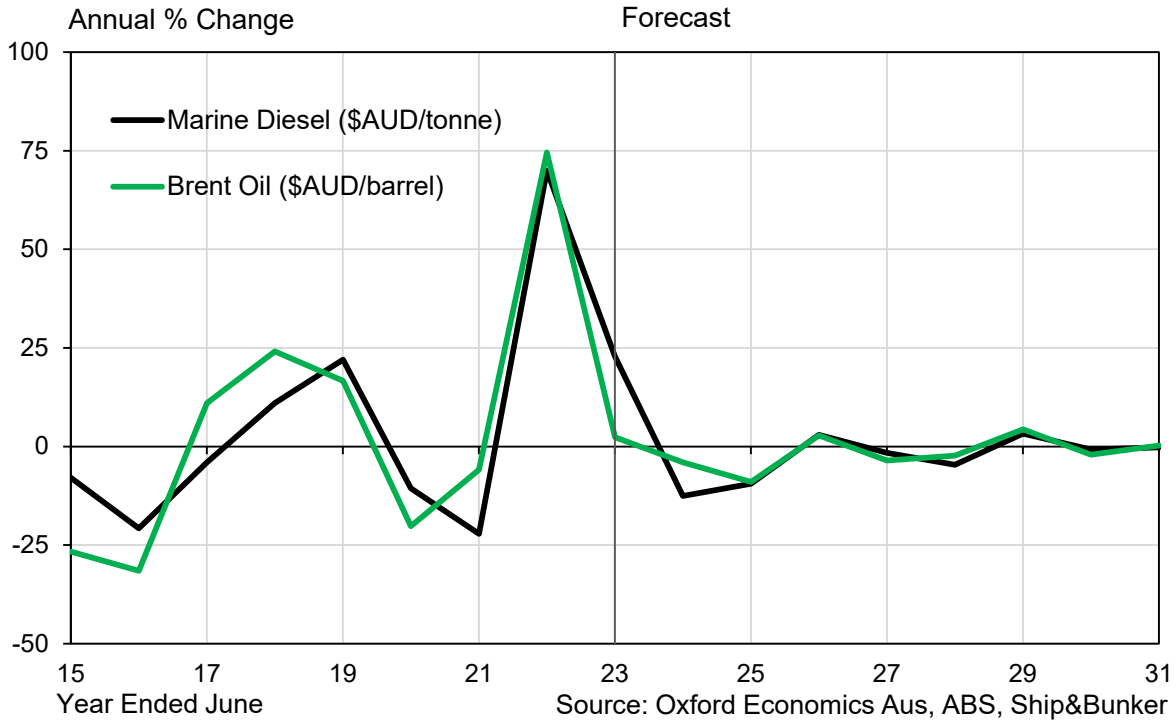


Movements in **Marine Diesel** (Marine Gas Oil) prices generally track global oil prices, but with less amplitude. This difference between marine diesel and global oil price movements are usually the

result of refiner margins, transport costs or competition within the region. The oil price shock in the first half of 2020 gave way to a corresponding dip in marine diesel prices, which fell back 22% (in AUD terms) to A$961/tonne. With the onset of the war in Ukraine and the subsequent energy crisis, oil prices shot up in early 2022. Brent crude oil prices jumped 73%, which was followed by a 70% rise in marine diesel prices in FY22.

FY23 saw a disconnect between oil and marine diesel price movements, with marine diesel seeing a further 23% increase in price (to A$1561/tonne) while Brent oil prices stabilised. The disconnect may have been due to refineries clawing back margins lost over FY20 and FY21, along with the passing through of the higher production costs to which manufacturers have been subjected over the past two years. Moving forward, marine diesel prices are forecast to ease in line with oil prices, falling -12.5% in FY24 and -9.4% in FY25. Over the remainder of the forecast period, marine diesel prices are forecast to stabilise around A$893/tonne, with annual average growth of -1.5% over the FY25 to FY31 period.

Figure 6.4 Marine Diesel Price Drivers



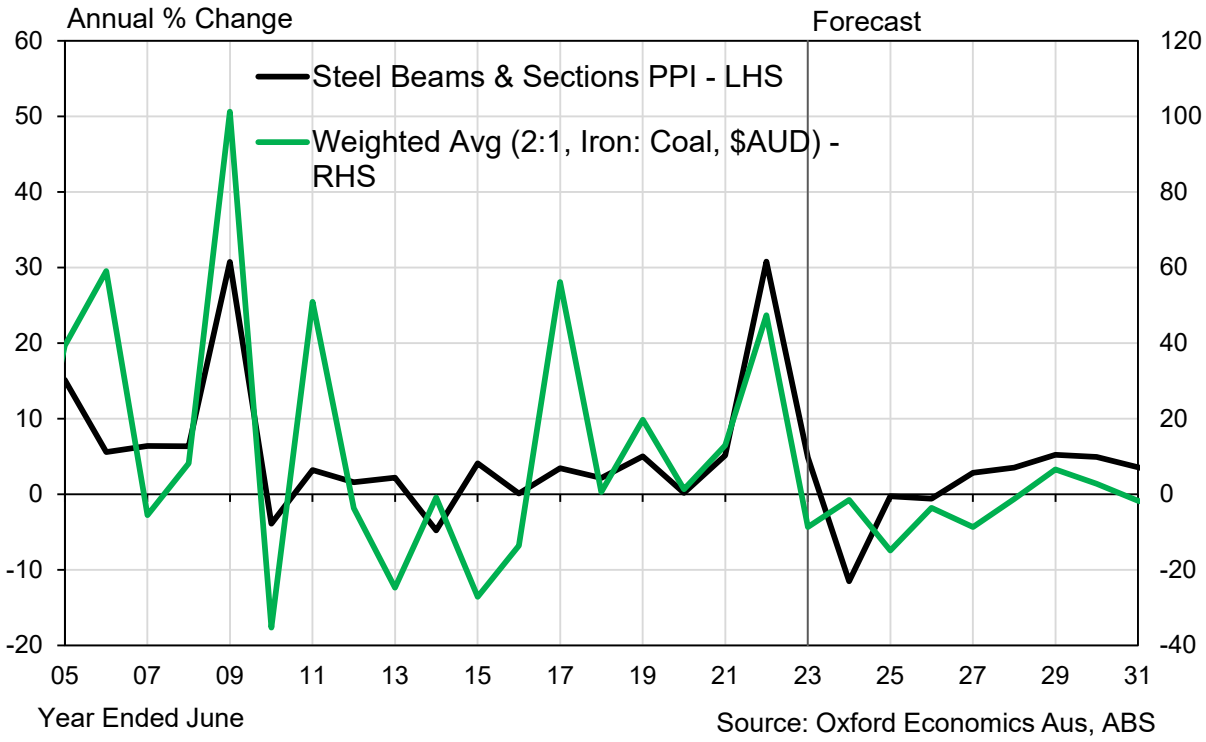
6.2 STEEL BEAMS AND SECTIONS PRICES - AUSTRALIA

The **Steel Beams & Sections (SB&S) PPI** (producer price index) 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 and coking coal prices coincided with a rise in the SB&S PPI of 30.8%. Correspondingly, falling commodity prices over the first half of FY23 saw the first quarterly price declines in the PPI in around two years. Despite the collapse in iron ore prices and falling international steel prices over 2023, higher prices over the second half of 2022 meant domestic steel prices overall sat 4.8% higher in FY23. Rising construction activity (and thus demand for steel) allowed 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.

Moving into FY24, we expect large commodity price corrections to continually feed through to steel prices. However, with continued healthy demand from domestic construction activity, prices are forecast to fall by only -11.8%. As iron and coal prices continue to ease over FY25 and FY26, and construction activity stabilises, steel prices are forecast to hold relatively flat, averaging -0.5% growth annually over the two years. As demand begin to pick up over the back half of the 2020's, driven by strengthening investment in residential and non-residential construction, and the iron ore and coking coal prices normalise, upward pressure on SB&S prices are expected to resume. Overall, SB&S prices are forecast to rise 2.9% in FY27, before strong domestic demand sees annual average price increases of 4.3% over FY28 to FY31.

We note that there may exist downside risk to steel prices over the next few years as China's economy slows, and their domestic demand for steel weakens. This scenario could result in Chinese steel produces supplying the global market with cheaper steel, and, as Australia is a readily accessible trade destination, could drive down prices paid domestically.

Figure 6.5 Steel Beams & Sections PPI Drivers



6.3 CONCRETE, CEMENT & SAND PRICES – TASMANIA & VICTORIA

Research performed by Oxford Economics Australia has found that the Concrete, Cement & Sand PPI is heavily driven by the level of construction activity in the economy.

The **Hobart Concrete, Cement and Sand PPI** (used as a proxy for state prices) declined -2.1% in FY21 as the lower construction activity presented a demand shock to the market for construction materials, while there were also some impacts from Covid-19. The Hobart Concrete, Cement and Sand PPI rebounded 6.7% in FY22 on the back of strong growth in engineering construction activity and high inflation rates. The **Melbourne Concrete, Cement and Sand PPI** saw low growth from FY20 to FY22 (averaging around 1% annually) as demand from building construction eased following several years of strong growth in activity. Prices in both jurisdictions then saw significant increases

over FY23 (8.5% in Tasmania, and 19.0% in Victoria) as input costs to cement and concrete manufacturing shot up, namely for energy and clinker. Victoria has also experienced an acute

Figure 6.6 Concrete, Cement & Sand PPI Drivers – Victoria

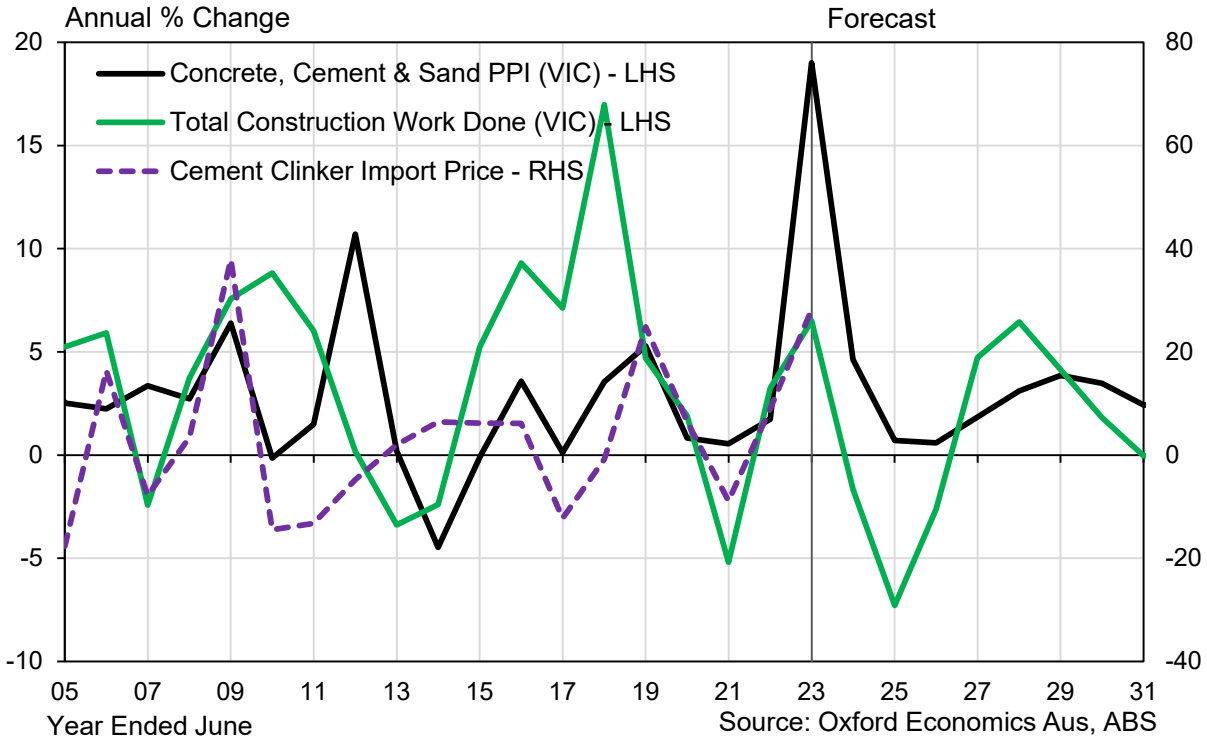
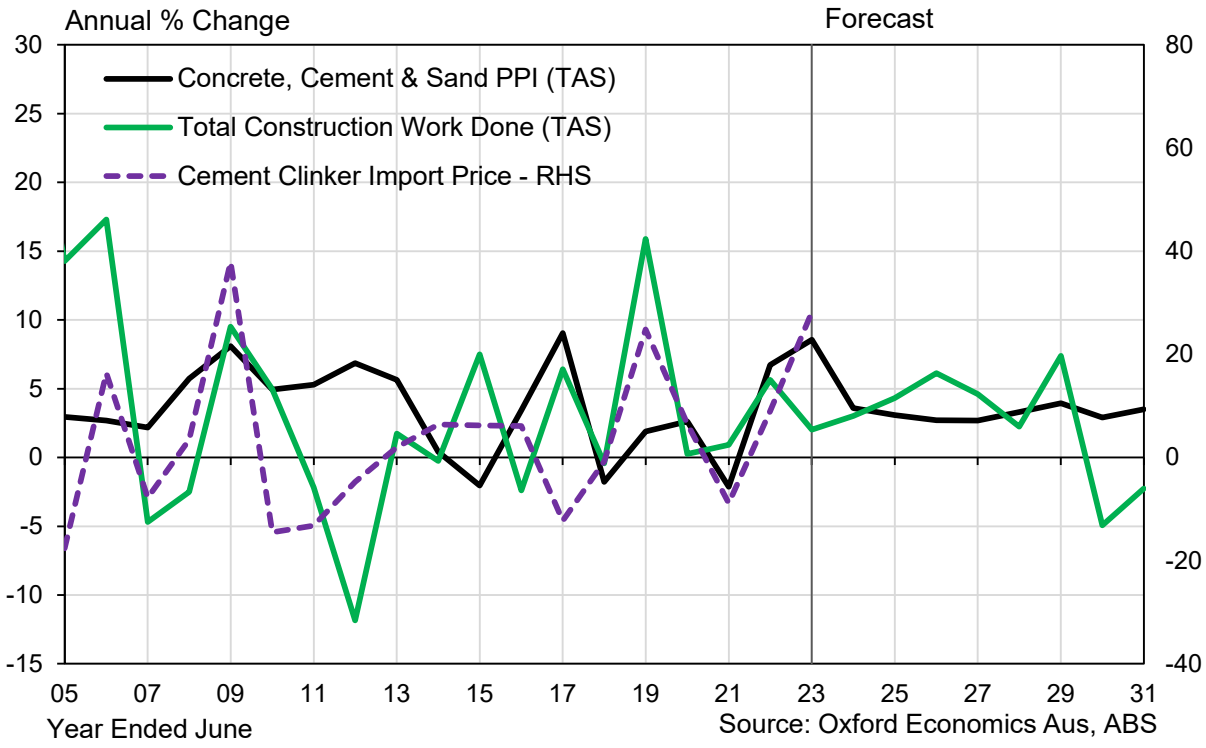


Figure 6.7 Concrete, Cement & Sand PPI Drivers – Tasmania



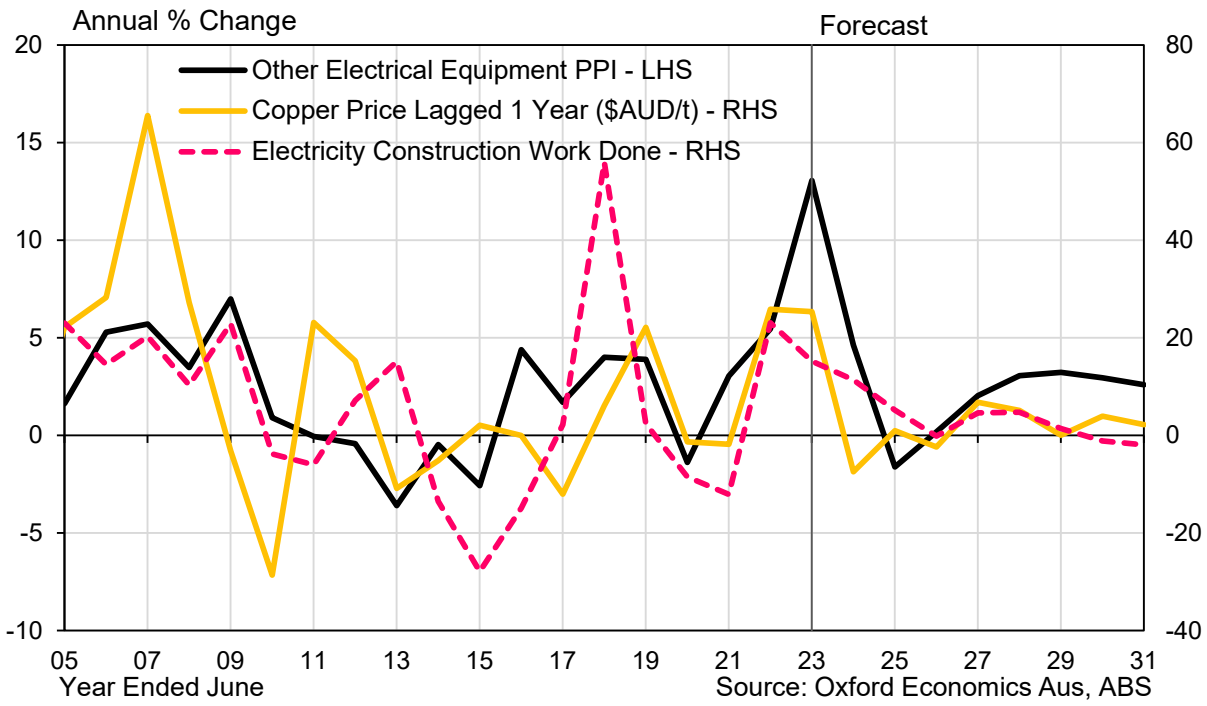
shortage of quarry materials, which is used as aggrege in concrete, contributing to the larger price rises in the state. An additional facture contributing to these significant price rises over FY23, we suspect, is the lack of competition between Australia's cement suppliers (only three manufactures), which has likely made it easier for manufacturing coast to be passed on to consumers as opposed to eating into margins.

Looking ahead, growth in the Concrete, Cement and Sand PPI for both jurisdictions is forecast to ease as general inflation softens, and, for Victoria, building construction sees a downturn in activity. Victorian price growth will ease to 4.7% in FY24, before slowing to just 0.6% over FY25 and FY27 as demand from the building sector falls back. Tasmanian prices are forecast to ease to 3.7% in FY24, and then average around 3.9% over FY25 to FY31. Stronger price growth in Tasmania is an outcome of flatlining building demand (with no major downturn expected), and a rise in engineering construction, which will result in overall construction rising continually over the next six years.

6.4 TRANSFORMERS – AUSTRALIA

The '**Other Electrical Equipment Manufacturing PPI**' has been selected as the most suitable proxy for transformer prices. The Other Electrical Equipment Manufacturing PPI tracks the price of manufacturing electrical equipment other than lighting equipment, and includes transformers, switchgear, electric motors, electricity transmission and distribution equipment, and power generating equipment, etc. 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.

Figure 6.8 Transformer Price Drivers

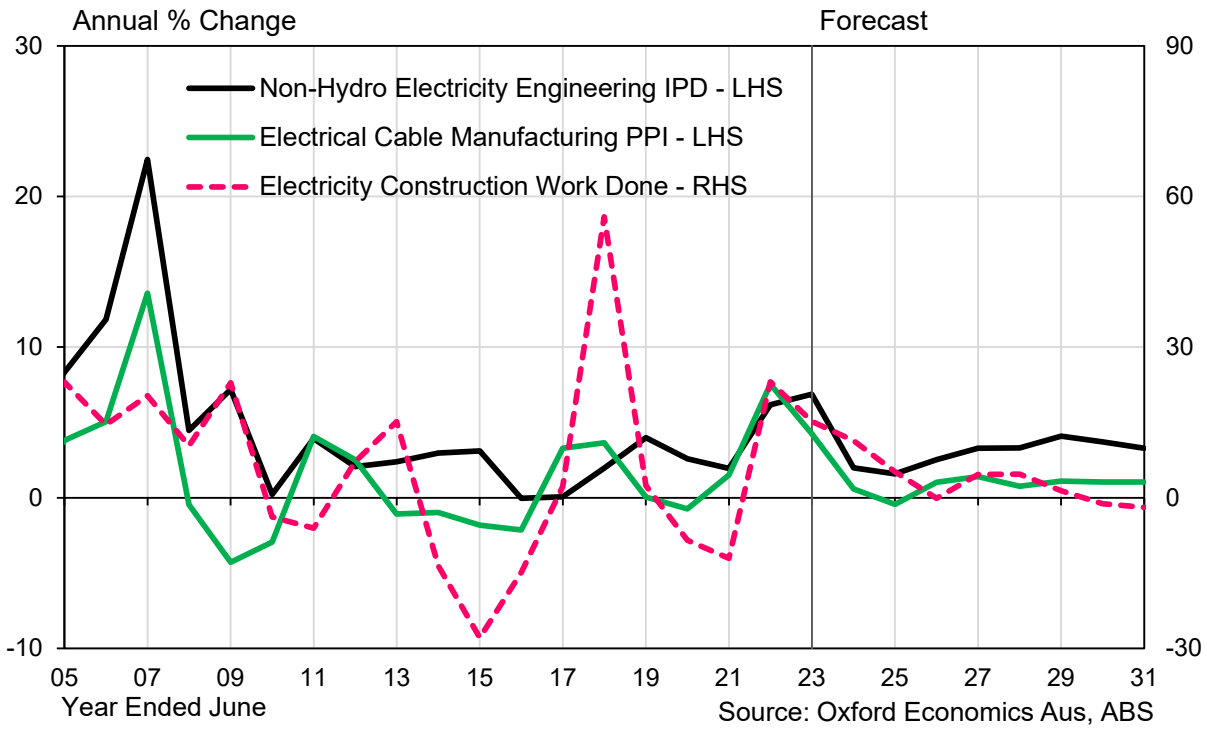


FY22 saw Other Electrical Equipment prices grow at their fastest rate since 2009, at 5.5%, on the back of two years of significant growth in copper prices, as well as a spike in electricity engineering construction work done. Wage growth, elevated levels of electricity engineering construction work done, and the lagged impact of copper prices then saw growth accelerate over FY23, with the PPI rising 13.1%. Despite easing copper prices expected over FY24, increasing demand from the construction sector and higher manufacturing costs will contribute to a further 4.6% rise in prices. The flow-on of lower copper prices over the previous two years and slowing construction growth will then see the PPI decline -1.6% in FY25. Over the remainder of the forecast horizon, other electrical equipment prices are projected to grow modestly – averaging 2.8% annual average growth over FY27 to FY31. Driving sustained price growth will be high levels of electricity construction (as the grid transitions to renewable energy), and rising copper prices.

6.5 NON-HYDRO ELECTRICAL ENGINEERING CONSTRUCTION IPD – AUSTRALIA

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).

Figure 6.9 Non-Hydro Electricity Engineering Construction Drivers



The transition to renewable energy generation will be taking a step up in coming years, with the announcement and commencement of major solar and wind projects picking up pace. Combined with the significant expansion and enhancement of transmission networks, demand for electricity engineering inputs will intensify. Pushed up by higher material input costs, namely copper and wages, the IPD is estimated to have increased 6.2% in FY22, and a further 6.9% in FY23. Construction cost are forecast to ease over FY25 to 1.8%, in part due to easing inflationary pressures across the board, with copper-based input cost inflation easing further still. Over the second half of the decade (FY26 to FY31), we are forecasting price growth to remain elevated, averaging 3.3% 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 help support solid growth in the PPI over the forecast period.

6.6 HIGH-VOLTAGE DIRECT CURRENT CABLE

High-voltage direct current (HVDC) cable is used for long distance electricity transmission and will make up the largest single material component of the Marinus Link infrastructure. The key price drivers for the type of HVDC cable chosen for this project will consist of aluminium (the conductor), steel (for encasing the cable), manufacturing costs (manufacturing wages and industrial electricity prcies) and transportation costs given the HVDC cable will be manufactured overseas and shipper to Australia. Two potential manufacturing countries have been identified as the likely origin for the cable, Italy, and the US. As no publicly available data is available on HVDC cable, and Marinus Link was unable to provide OEA with the weighting of each individual component listed above, we have here only provided forecasts of individual components, rather an overall weighted index. For the steel component, hot rolled coil has been chosen as a suitable proxy for the steel wire encasement.

ITALY

Aluminium prices, in Euro's, will follow a similar trend over the forecast period as outlined in section 6.1. However, an appreciating Euro against the US Dollar over the near term will result in lower price growth over FY24 to FY26.

European Hot rolled coil (HRC) prices are tightly linked the prices of iron ore and coking coal**.** With significant global supply disruptions for both commodities over FY22 and FY23, European HRC prices jumped around 56% annually in both years. FY23 has since seen prices correct as commodity supplies normalised, with HRC prices falling 31%. Further corrections and slowing economic activity in Europe will see prices fall a further -8.8% in FY24 and -1.1% in FY25. As interest rates begin reverting back toward pre-covid levels over 2025, demand for steel from both the European construction sector and manufacturing will pick up and upward price pressures will build. Overall, European HRC prices are forecast to average 1.1% annual average growth over FY25 to FY31.

Italian manufacturing wages saw notable growth over FY23, with the 4.5% increase driven by employee having stronger wage bargaining power in the high inflationary environment of FY22. As higher interest rates began curtailing inflation over FY23, lower inflation and a high unemployment rate of ~7.8% in FY24 is expected to soften wage growth to 3.2%. Over the FY25 to FY31 period, Italy's persistently high unemployment rate will help see subdued wage growth to an average of 2.0% annually.

Italian industrial electricity costs skyrocketed over the past two years following the Russian-Ukraine conflict and the resulting supply shortages of gas and coal into the European market. Prices are expected to correct somewhat over FY24 (falling -18%). However, the price level is expected to remain high, and not return to pre FY22 levels. Over the long run, electricity prices are forecast to ease as gas and coal prices fall back and renewable energy capacity increases.

Movements in **Italian Transport** costs are primarily driven fluctuations in global oil prices, which flow through to fuel costs. Transport costs rose 5.1% in FY23 as oil prices skyrocketed over FY22, and costs were gradually passed onto consumers. Transport costs are expected to rise 6% in FY24 as high oil prices (in Euro terms) continue to pass through, and price growth will subsequently ease over the FY25 to FY31 period.

USA

Aluminium prices – see section 6.1.

For the most part, **American Hot rolled coil (HRC)** prices are driven in a similar nature to European HRC prices, with large price movements driven by commodity prices. Local demand pressures from the construction sector has been responsible for stronger price growth over the past five years as activity has been on a strong upward trajectory since the early 2010's.

American manufacturing wages have historically seen solid annual growth, averaging 3.4% over the past 10 years. Strong wage growth is forecast for the near term, driven by the USA's tight labour market and the push by both the government and private industry to 'reshore' certain manufacturing jobs (thus increasing the demand for labour). Over the FY25 to FY31 period, manufacturing wages are forecast to rise by an average of 2.4% annually.

American industrial electricity prices are more insulated from swings in international energy commodity prices due to high levels of local gas and coal production, and as such, price growth over the past two years were less pronounced compared to Europe's. Over the forecast period, America electricity prices are expected to see modest growth as some of the significant investment required to transition the US energy grid to renewable sources is passed through to consumers. Overall,

industrial electricity prices are forecast to average 1.7% annual average growth over the FY25 to FY31 period.

American Transport costs, like European costs, fluctuate in line with oil prices although American transport costs price movements tend to be more volatile. Price growth is expected to stabilise around local inflation over the forecast period.

7. ADDITIONAL COST ESCALATION INDICE FORECASTS

OEA was engaged by Marinus Link in June to extend the scope of the original report which was finalised in February 2024. This extension includes the provision of forecasts in an Excel spreadsheet for eight separate price indices and additional text in the report which explains our outlook for these series. The extension of the report did not include an update of the forecasts for the original indices in February 2024. The forecasts in this section are based on the latest available data as at late June 2024.

We note that discussion of the forecasts is based on the percentage change in the price indices through the year – e.g., the percentage change in the index from June quarter 2023 to June quarter 2024. This is referred to as y/y% throughout this section. This is also distinct from the discussion of the indices in the rest of the report, which is based on moving annual average annual percentage change – e.g., the percentage change in the index from financial year 2023 (September quarter to June quarter) to financial year 2024.

The indices in this section include:

1. Paper PPI (average of UK and German Paper and Cardboard PPI)
2. Grain Oriented Electrical Steel (GOES)
3. Hot Steel
4. Harmonised Index of Consumer Prices – Germany
5. Labour Cost Index for Germany (All Industries)
6. Labour Cost Index for Sweden (All Industries)
7. Australia All Industries WPI (including bonuses, excluding overtime)
8. Lead Prices (London Metal Exchange)

We note that the labour cost index for Sweden is titled ‘industry, construction and services’ – this is actually a reference to All Industries.

Table 7.1 Materials and Commodity Price Forecasts (Additional)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Average 2025-31 (i)
	Actuals					Estimate	Forecast							
Nominal Index Prices														
Paper (Insulation Components) Index (a)	115	115	120	144	153	151	152	152	152	153	154	156	157	154
Hot Steel Index (a)	125	119	230	270	196	188	183	188	188	194	199	203	208	195
Grain Oriented Steel - Super High Grade Index (a)	99	99	105	182	215	168	162	167	166	172	177	180	184	173
Harmonised Index of Consumper Prices - Germany (b)	106	106	109	118	126	129	130	132	135	137	140	143	146	138
Labour Cost Index Germany: IC&S (c)	97.4	99.4	99.2	106.4	110.4	115.0	118.0	121.6	125.2	129.2	133.4	137.8	142.4	129.7
Labour Cost Index Sweden: IC&S (c)	99	96	103	106	112	114	118	121	125	129	133	137	141	129
Labour Cost Index Australia: Ordinary Time Hourly Rates of	132	134	137	141	147	153	159	164	170	175	182	189	195	176
Lead (LME) (A$/tonne) (e)	2691	2548	2763	3070	3166	3137	3026	3144	3073	2998	2998	3024	3061	3046
Lead (LME) (US$/tonne) (e)	1884	1673	2128	2198	2117	2060	2085	2114	2144	2174	2204	2235	2265	2174
Lead (LME) (EU€/tonne) (e)	1682	1521	1759	2074	1942	1907	1930	1922	1914	1907	1900	1910	1904	1912
% ch														
Paper (Insulation Components) Index (a)	1.8	-0.3	4.5	20.2	6.2	-1.7	1.0	0.0	0.1	0.6	0.8	0.9	1.0	0.6
Hot Steel Index (a)	-4.2	-5.1	93.7	17.3	-27.4	-4.3	-2.3	2.6	-0.2	3.2	2.9	1.9	2.1	1.5
Grain Oriented Steel - Super High Grade Index (a)	-1.3	0.0	6.3	72.7	18.6	-21.8	-3.6	2.6	-0.2	3.2	2.9	1.9	2.1	1.3
Harmonised Index of Consumper Prices - Germany (b)	1.7	0.7	2.2	8.3	6.9	2.6	0.6	1.6	2.0	2.0	2.0	2.0	2.0	1.8
Labour Cost Index Germany: IC&S (c)	3.9	2.1	-0.2	7.3	3.8	4.2	2.6	3.0	3.0	3.1	3.3	3.3	3.3	3.1
Labour Cost Index Sweden: IC&S (c)	2.7	-2.7	7.8	2.9	4.8	2.6	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Labour Cost Index Australia: Ordinary Time Hourly Rates of	2.5	1.5	2.0	3.4	3.8	4.6	3.6	3.4	3.3	3.3	3.6	3.8	3.7	3.5
Lead (LME) (A$/tonne) (e)	-14.6	-5.3	8.4	11.1	3.1	-0.9	-3.6	3.9	-2.2	-2.4	0.0	0.9	1.2	-0.3
Exchange rate ($USD/$AUD) (f)	0.70	0.66	0.77	0.72	0.67	0.66	0.69	0.67	0.70	0.73	0.74	0.74	0.74	0.71
Exchange rate (€EUR/$AUD) (f)	0.63	0.60	0.64	0.68	0.61	0.61	0.64	0.61	0.62	0.64	0.63	0.63	0.62	0.63
Exchange rate ($USD/€EUR) (f)	1.12	1.10	1.21	1.06	1.09	1.08	1.08	1.10	1.12	1.14	1.16	1.17	1.19	1.14
Consumer Price Index - headline (g)	1.6	1.3	1.6	4.4	7.0	4.2	3.4	2.7	2.3	2.4	2.7	2.7	2.6	2.7
Real Index Price Changes (h)														
Paper (Insulation Components) Index (a)	0.1	-1.7	2.8	15.8	-0.8	-5.9	-2.5	-2.7	-2.2	-1.8	-1.8	-1.7	-1.6	-2.1
Hot Steel Index (a)	-5.8	-6.4	92.1	12.8	-34.4	-8.4	-5.7	-0.1	-2.5	0.8	0.2	-0.8	-0.5	-1.2
Grain Oriented Steel - Super High Grade Index (a)	-2.9	-1.4	4.7	68.3	11.5	-26.0	-7.0	-0.1	-2.5	0.8	0.2	-0.8	-0.5	-1.4
Harmonised Index of Consumper Prices - Germany (b)	0.0	-0.6	0.5	3.8	-0.1	-1.6	-2.8	-1.1	-0.3	-0.4	-0.7	-0.6	-0.6	-0.9
Labour Cost Index Germany: IC&S (c)	2.3	0.7	-1.8	2.8	-3.3	0.0	-0.8	0.3	0.7	0.7	0.6	0.7	0.7	0.4
Labour Cost Index Sweden: IC&S (c)	1.1	-4.1	6.2	-1.5	-2.2	-1.6	-0.3	0.4	0.7	0.6	0.3	0.4	0.4	0.4
Labour Cost Index Australia: Ordinary Time Hourly Rates of	0.8	0.2	0.4	-1.1	-3.2	0.4	0.2	0.7	1.0	0.9	0.9	1.1	1.1	0.8
Lead (LME) (A$/tonne) (e)	-16.3	-6.7	6.8	6.7	-3.9	-5.1	-7.0	1.2	-4.5	-4.9	-2.7	-1.8	-1.4	-3.0

Source: RBA, Oxford Economics Australia, T&D Europe, Destatis, ONS, INSEE

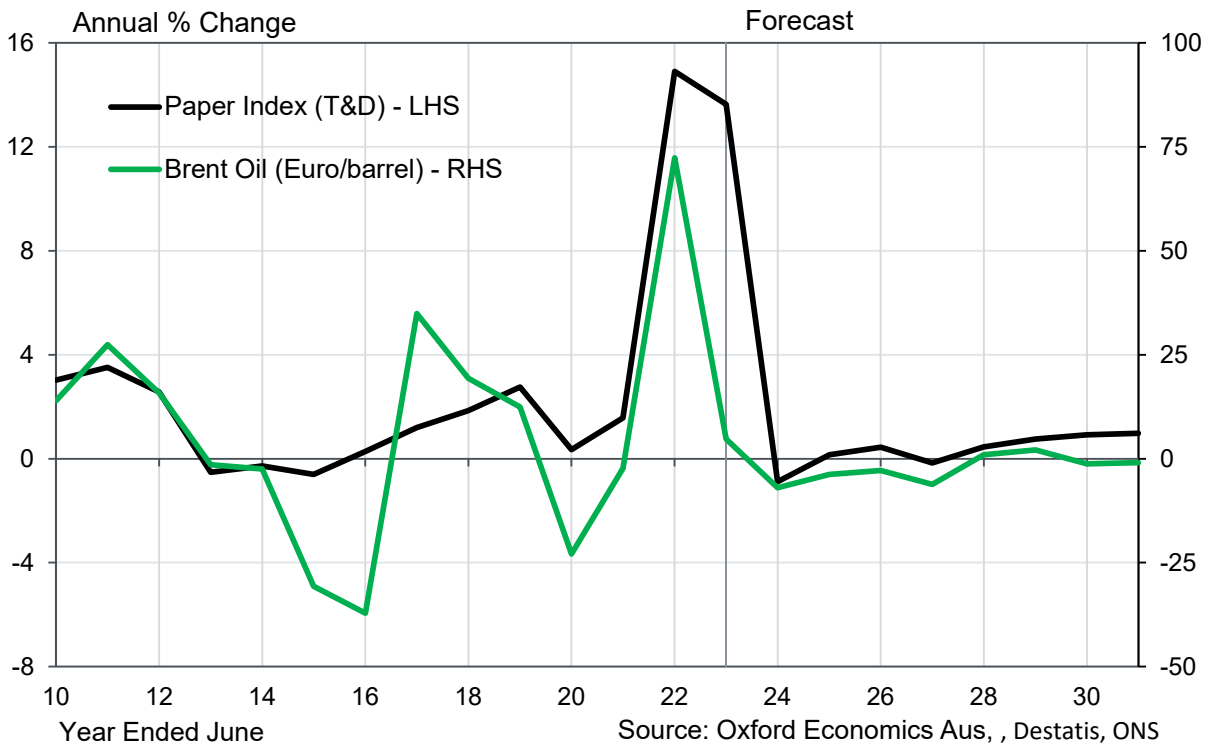
(a) Historical figures come from T&D Europe
(b) Data from Oxford Economics databases in Europe
(c) Historical figures come from Eurostat
(d) Historical figures come from table 7b of ABS release 6345, Wage Price Index
(e) OEA forecasts of Lead
(f) OEA forecasts of exchange rate
(g) Inflation forecasts 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%).
(h) Real price changes are calculated by deducting the inflation rate from nominal price changes.
(i) Average annual values and growth rates for 2024/25 to 2030/31.

7.1 PAPER (INSULATION COMPONENTS)

Growth for the European insulating paper index peaked far above historic norms in FY22 at 20.2% y/y (June quarter 2022 on June quarter 2021) in line with the sharp rise in energy costs and the rebound of global demand for paper products. This demand was driven by the return of consumer spending with paper-based packaging seeing significant growth on the back of the pandemic era e-commerce boom. Growth then moderated in FY23 to a still elevated 6.2% y/y as these effects continued to play through.

The index is forecast correction somewhat in FY24, contracting -1.7% as vast inventory backlogs are addressed, and energy prices continue to fall. A steep reversion to previous levels of the index is unlikely as producers are forced to adapt to a new normal of elevated energy costs across Europe, putting into question their competitiveness in the medium-term. As such, growth in the index is forecast to average a positive albeit mild 0.6% y/y from FY25 to FY31.

Figure 7.1 Insulating Paper Index

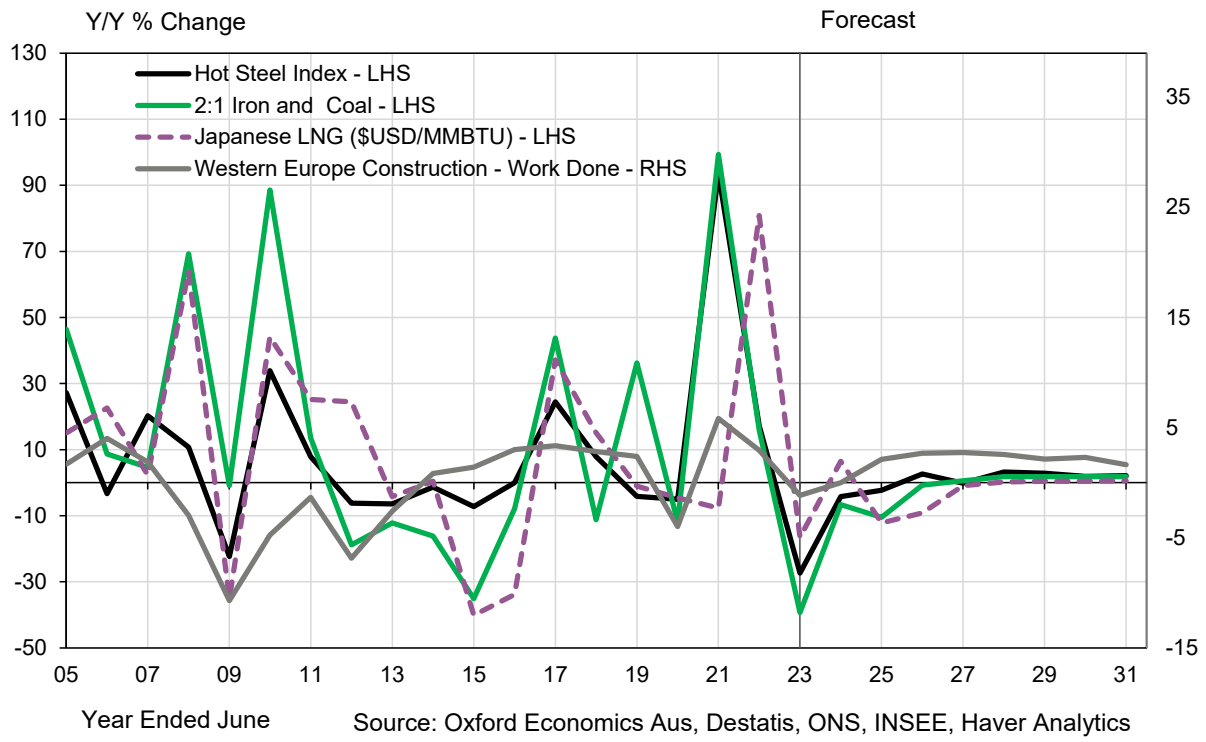


7.2 HOT STEEL

Given the tight relationship between coking coal and iron ore prices, and the European Hot Steel index, the index saw growth of 17.3% y/y in FY22 after an unprecedented 93.7% y/y growth in FY21 in line with soaring commodity prices. Falling commodity prices in the first half of 2023 alongside a reduction of total construction work done across Western Europe (and therefore a reduction in steel demand) prompted the index to fall steeply in y/y terms by -27.4% in FY23.

Ongoing commodity price corrections and falling energy costs will drive most of the continued fall in the index with negative growth of -4.3% y/y forecast for FY24, although EU import restrictions will provide some support for steel prices. Subdued levels of construction activity given the tighter monetary environment across the eurozone alongside ongoing commodity price corrections, particularly for coking coal, will result in an additional fall in the index of -2.3% y/y in FY25. The following two years will see more mixed performance with a return to growth in FY26 (+2.6%) buoyed by growing construction work done, soon reversed once more in FY27 (-0.2%) as falling commodity prices flow through to the index. We anticipate some catch up growth in the latter half of the decade as sustained growth in demand for steel feeds through, alongside lessening volatility in energy costs.

Figure 7.2 Hot Steel Index



7.3 GRAIN ORIENTED ELECTRICAL STEEL – SUPER HIGH GRADE

The European Grain Oriented Electrical Steel ('GOES') index is based on a limited data series which commenced in 2017 – this indicates that the first quarterly percentage change data is from September 2017 and the first annual percentage change data is in March quarter 2019.

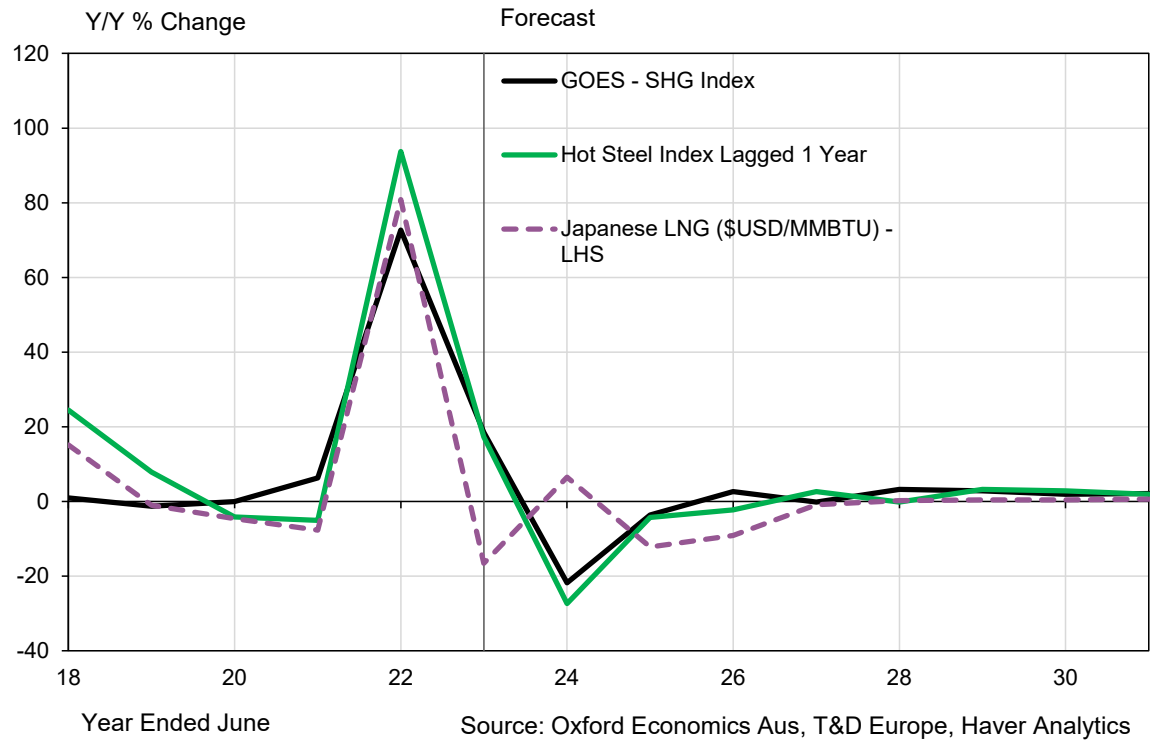
The limited data series does not allow for enough historical variability to accurately forecast the key drivers of GOES prices – if forecasting in annual terms (which is preferred as it removes the underlying volatility) then there is five datapoints (June 2019 to June 2023). If forecasting in quarterly terms, this indicates 27 datapoints. Further complicating the forecasting of this series is that it saw low volatility in price growth in FY19, FY20 and FY21 (-0.2%, -0.3% and 0.8%) which then rose to +55.7% and +39% in FY22 and FY23.

Based on the recent price movements in GOES prices and our understanding of the manufacturing process, we would suggest that movements in the index are tied into similar key drivers as broader steel manufacturing. However, statistical regression forecasting is not fit-for-purpose to provide long-term forecasts of this series given the aforementioned lack of historic volatility in the index.

Through modelling, we have found that GOES prices are correlated with similar key drivers as broader steel manufacturing – i.e., energy costs, iron ore and coking coal. To provide a forecast of the series, we have modelled the near-term price cycle (extending through to June quarter 2025) and then set the long-term forecasts equal to the forecasts for hot steel.

Overall, we forecast the index to decline -21.8% y/y in FY24, which will then feed through to a further decline of -3.6% y/y in FY25. Beyond this, we forecast the GOES price series to grow at an average annual rate of 2.1% between FY26 and FY31.

Figure 7.3 Grain Oriented Electrical Steel (Super High Grade) Index

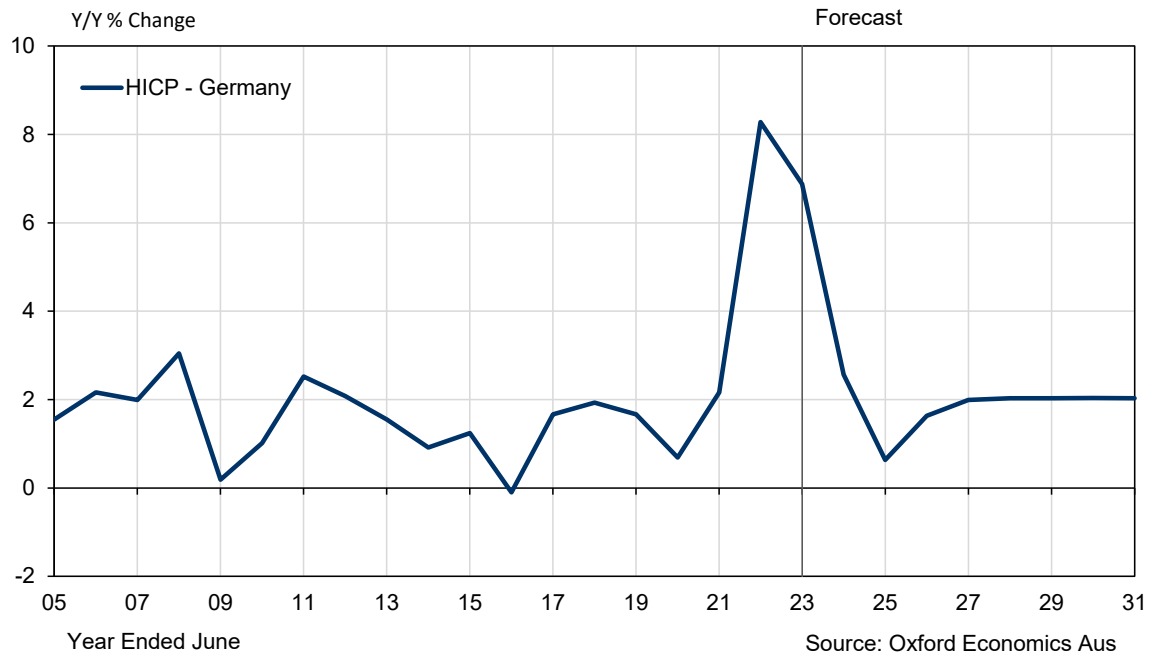


7.4 HARMONISED INDEX OF CONSUMER PRICES – GERMANY

Growth in the German Harmonised Index of Consumer Prices (HICP) peaked in FY22 in y/y terms at 8.3% following years of growth below the European Central Banks target of 2%. This historic high was driven by supply chain constraints on the back of the strong rebound in household spending post the Covid-induced lockdowns, alongside the concurrent European energy-crisis triggered by Russia's invasion of Ukraine. Ongoing energy market uncertainty and a resilient labour market left Germany's HICP elevated with y/y growth of 6.9% recorded for FY23.

Growth in the German HICP is forecast to fall sharply to 2.6% y/y in FY24 with falling energy prices driving most of the fall and further assisted by a softening labour market. While energy prices have fallen from their elevated base, higher than expected oil prices due to Houthi attacks on Red Sea shipping lanes and a weaker Euro will stall disinflation above the ECBs target of 2%. Ongoing reductions in core inflation and a lagged recovery in real income growth will cause growth in the index to reach a low of 0.6% y/y in FY25. Growth will then begin to recover in FY26 reaching 1.6% as real income growth returns and flows through to services inflation, with growth in the index of 2% y/y forecast for the remainder of the outlook.

Figure 7.4 German Harmonised Index of Consumer Prices



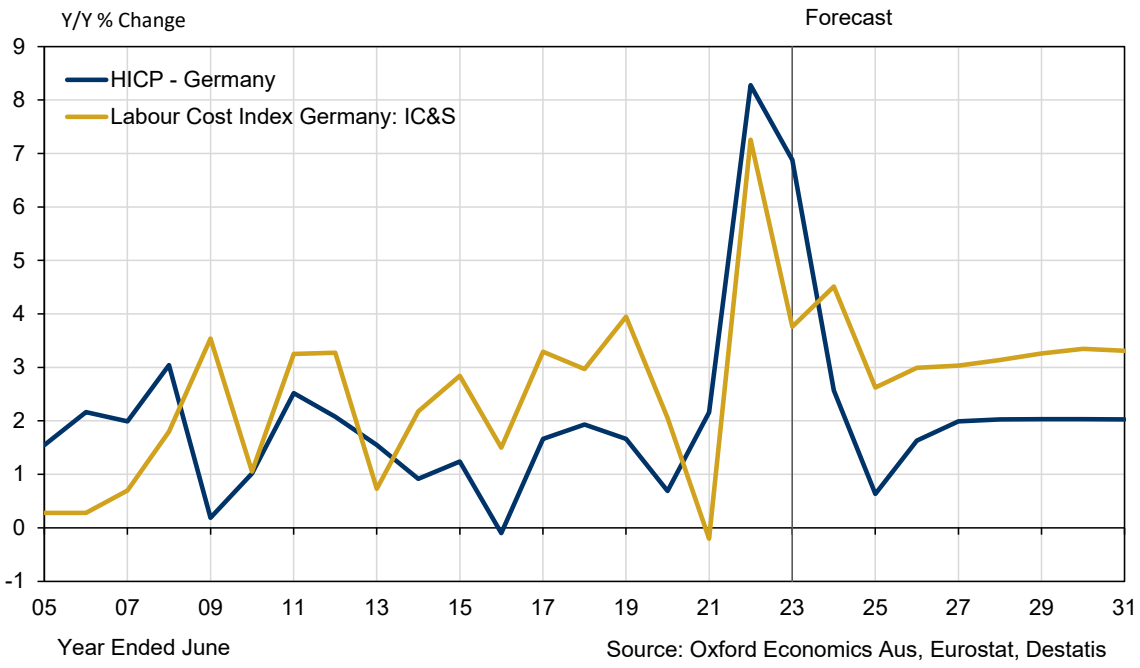
7.5 LABOUR COST INDEX GERMANY: INDUSTRY, CONSTRUCTION, AND SERVICES

The German labour cost index across industry, construction, and services grew at a historic pace y/y in FY22 to reach 7.3%. This represented a strong rebound following an unprecedented contraction in the index of -0.2% y/y in FY21 attributable to the Covid lockdowns and associated fall in gross wages paid to employees. The index saw a further period of elevated growth of 3.8% y/y in FY23 as the German economy faced higher inflation post the pandemic and workers demanded increased wages.

The ongoing stability of the German labour market paired with a lagged rise in real wages (especially for service-based roles) has resulted in a forecast growth y/y for FY24 of 4.2%, slightly higher than the previous financial year. A slight weakening in the German labour market expected in the second half of 2024 will drive labour cost growth downwards for FY25 with y/y growth forecast to reach 2.6%.

Increases in growth are expected towards FY29, with labour cost growth settling at 3.3% to the end of the forecast period. This level of growth exceeds the 10-year average to 2023 (3%), and 10-year average to 2019 (2.5%) given the expected reduction in the size of the German labour force from 2024, placing upward pressure on wages. Heightened levels of immigration and growth in the participation rate provide downside risk to the forecast growth.

Figure 7.5 German Labour Cost Index: Industry, Construction and Services

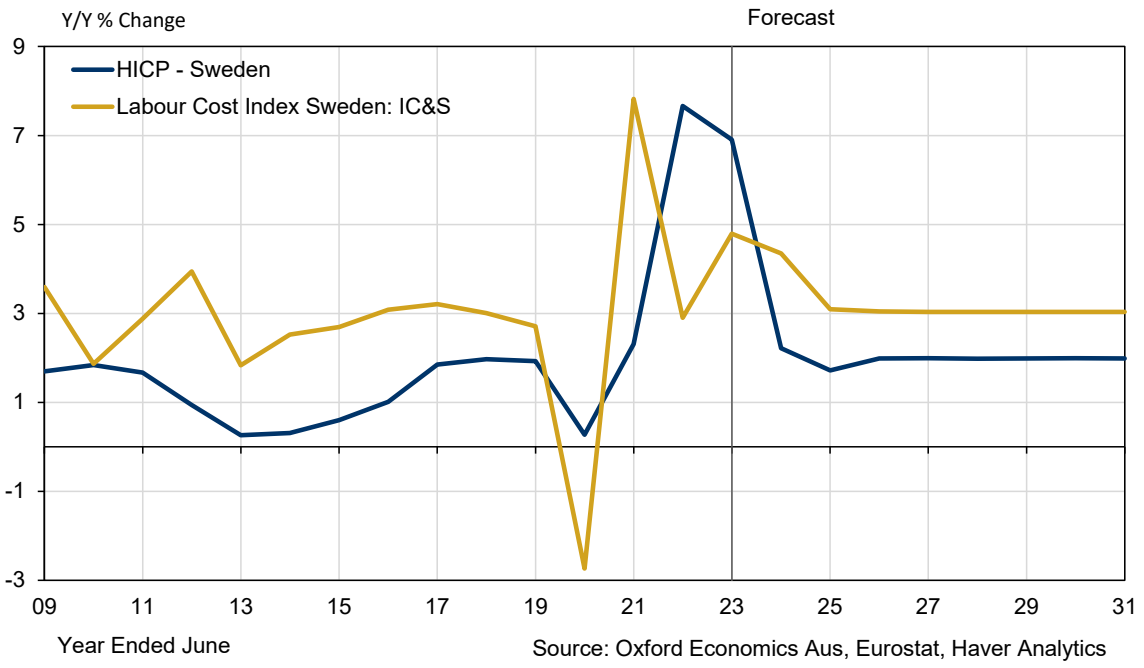


7.6 LABOUR COST INDEX SWEDEN: INDUSTRY, CONSTRUCTION, AND SERVICES

The Swedish labour cost index across industry, construction and services grew at a subdued pace y/y in FY22 reaching 2.9%. This follows the high base of 7.8% y/y in FY21 post the acute -2.7% contraction in FY20 as Sweden faced strong headwinds from the pandemic earlier than most economies. The advanced timeline under which Sweden experienced the pandemic had resulted in labour market shortages being resolved comparatively earlier with consequent lower wage cost growth being recorded for FY22. Labour cost growth rose sharply y/y for FY23 to 4.8% as inflation took hold and workers demanded higher wages.

Despite a weakening labour market with increasing unemployment and fewer job vacancies, Sweden's labour cost index is forecast an additional period of strong growth in y/y terms for FY24, reaching 4.3% as wage rises continue to flow through. The remainder of the forecast period will see the Swedish labour cost index for industry, construction and services grow at a more subdued pace around 3% y/y, broadly matching historic averages.

Figure 7.6 Swedish Labour Cost Index: Industry, Construction and Services



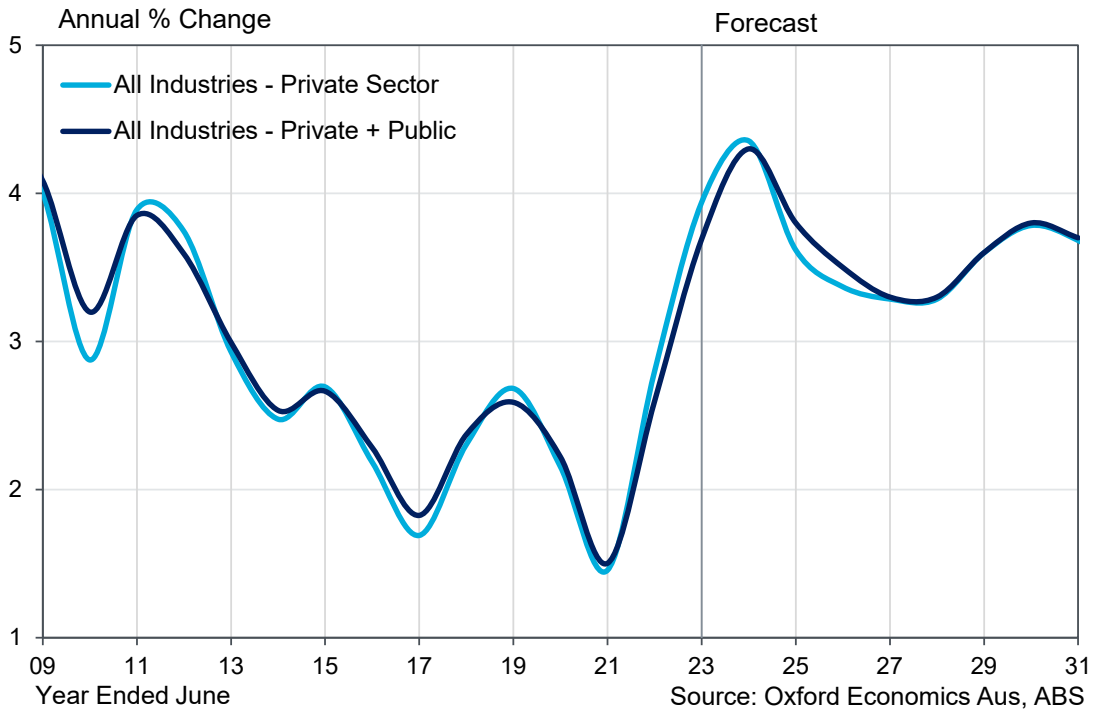
Source: Oxford Economics Aus, Eurostat, Haver Analytics

7.7 LABOUR COST INDEX AUSTRALIA: ORDINARY TIME HOURLY RATES OF PAY (PRIVATE ALL INDUSTRIES)

All Industries private sector wage growth has outperformed the All Industries average (private + public) over the past two years. With a lower rate of collective bargaining, which typically locks in wage growth over a three-year period, wage setting in the private sector has been more responsive to the combined effect of record low unemployment and high inflation, which favoured labour bargaining power. Overall, the All Industries private sector wage growth averaged around +0.22 percentage points higher over both FY22 and FY23, and hit 3.8% growth in FY23.

Private sector wages are expected to have strengthen again over FY24 at 4.6%, which will sit +0.05 percentage points above total sector wage growth. Wage growth is forecast to decelerate over FY25 (3.6%) through to FY29 (3.3%) as inflation eases and pressures in the labour market begins normalise. However, with the unemployment rate expected to remain at a low level, private sector wage growth will remain above levels seen over the 10 years to FY23. Towards the end of the decade, rising private sector investment, namely from in construction sector, is expected to place upward pressure on wages as demand for labour strengthens. All Industries wage growth is forecast to average 3.7% over the three years to FY31.

Figure 7.7 Australia Labour Cost Index: Ordinary Time Hourly Rates of Pay (Private all Industries)

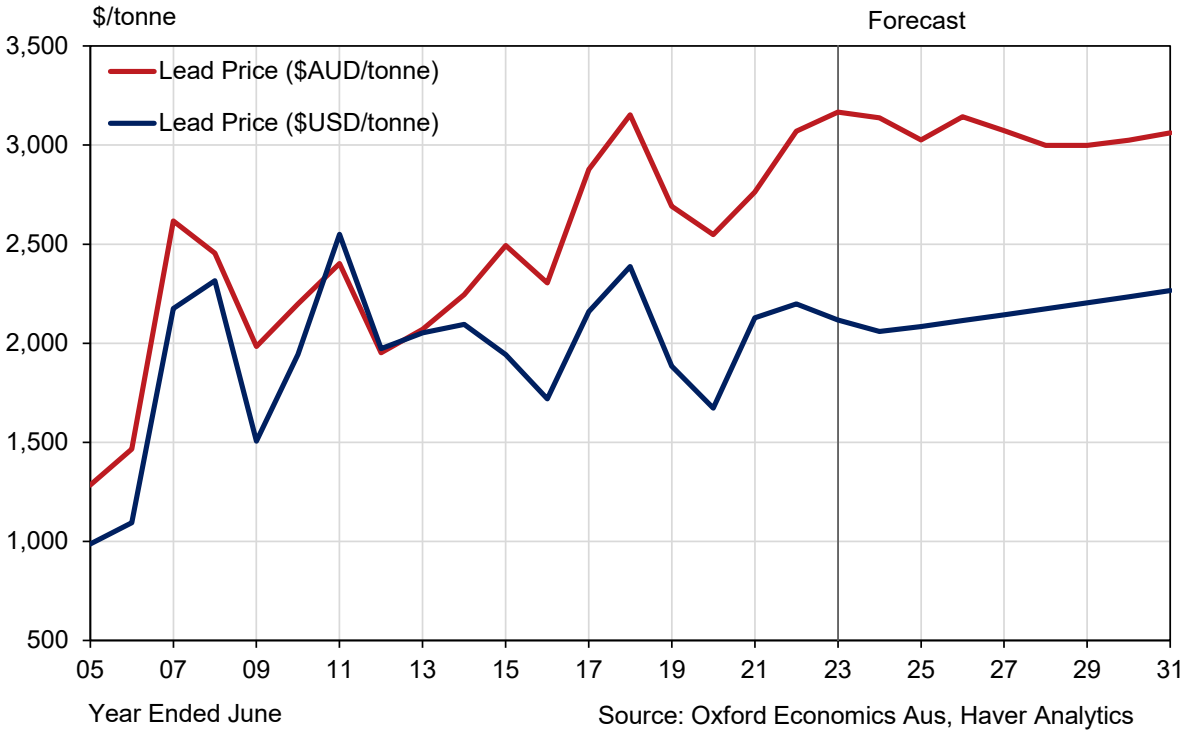


7.8 LEAD

Global lead prices ($USD) growth eased in FY22 y/y to reach 3.3%, down from a recent high of 27.2% in FY21. As global economies cooled across FY23, lead prices fell -3.7% y/y to US$2,117/t (AU$3,143/t) as demand weakened leading to an oversupply of the metal.

Given lead demand is less diversified than other metals, with 80% being used in car batteries, the continuing global economic slowdown and tighter monetary policy environment is forecast to result in a fall in lead prices by a further -2.7% to US$2,060/t (AU$3,082/t) in FY24. As global economies begin to recover, we expect a small rebound in the world lead price, growing 1.2% y/y in FY25, and matching the 10 year average to FY23 of 1.4% from FY26 to the end of the forecast period. This remains well below the 22.2% average growth rate seen in the 10 years to FY13, as the rise of new EV batteries which use different chemistries, proves a structural headwind to future lead demand.

Figure 7.8 Lead



8. SECOND ADDITIONAL COST ESCALATION INDICE FORECASTS

OEA was engaged by Marinus Link in August to provide a further extension to the scope. This extension includes the provision of forecasts in an Excel spreadsheet for two separate price indices and additional text in the report which explains our outlook for these series. The extension of the report did not include an update of the forecasts for the original indices in February 2024. The forecasts in this section are based on the latest available data as at mid August 2024.

We note that discussion of the forecasts is based on the percentage change in the price indices through the year – e.g., the percentage change in the index from June quarter 2023 to June quarter 2024. This is referred to as y/y% throughout this section. This is also distinct from the discussion of the indices in the rest of the report, which is based on moving annual average annual percentage change – e.g., the percentage change in the index from financial year 2023 (September quarter to June quarter) to financial year 2024.

The indices in this section include:

1. Bentonite (USA)
2. Plastic Water Pipe (USA)

Table8.1 Materials and Commodity Price Forecasts (Second Additional)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Average 2025-31 (e)
	Actuals						Forecast							
Nominal Index Prices														
Bentonite (a)	181	184	186	201	227	232	240	244	251	257	264	271	278	258
Plastic Water pipe (b)	187	183	253	432	428	398	380	379	385	391	397	403	410	392
% ch														
Bentonite (a)	4.2	1.6	1.0	8.1	13.4	2.1	3.4	1.8	2.6	2.6	2.7	2.6	2.5	2.6
Plastic Water pipe (b)	1.1	-2.2	38.2	70.7	-0.7	-7.2	-4.5	-0.2	1.5	1.6	1.6	1.6	1.7	0.5
Consumer Price Index - headline (c)	1.6	1.3	1.6	4.4	7.0	4.2	3.4	2.7	2.3	2.4	2.7	2.7	2.6	2.7
Real Index Price Changes (d)														
Bentonite (a)	2.6	0.2	-0.6	3.6	6.3	-2.0	-0.1	-0.9	0.3	0.2	0.0	-0.1	-0.1	-0.1
Plastic Water pipe (b)	-0.6	-3.5	36.6	66.3	-7.8	-11.4	-7.9	-2.9	-0.8	-0.8	-1.1	-1.0	-0.9	-2.2

Source: US BLS, Oxford Economics Australia

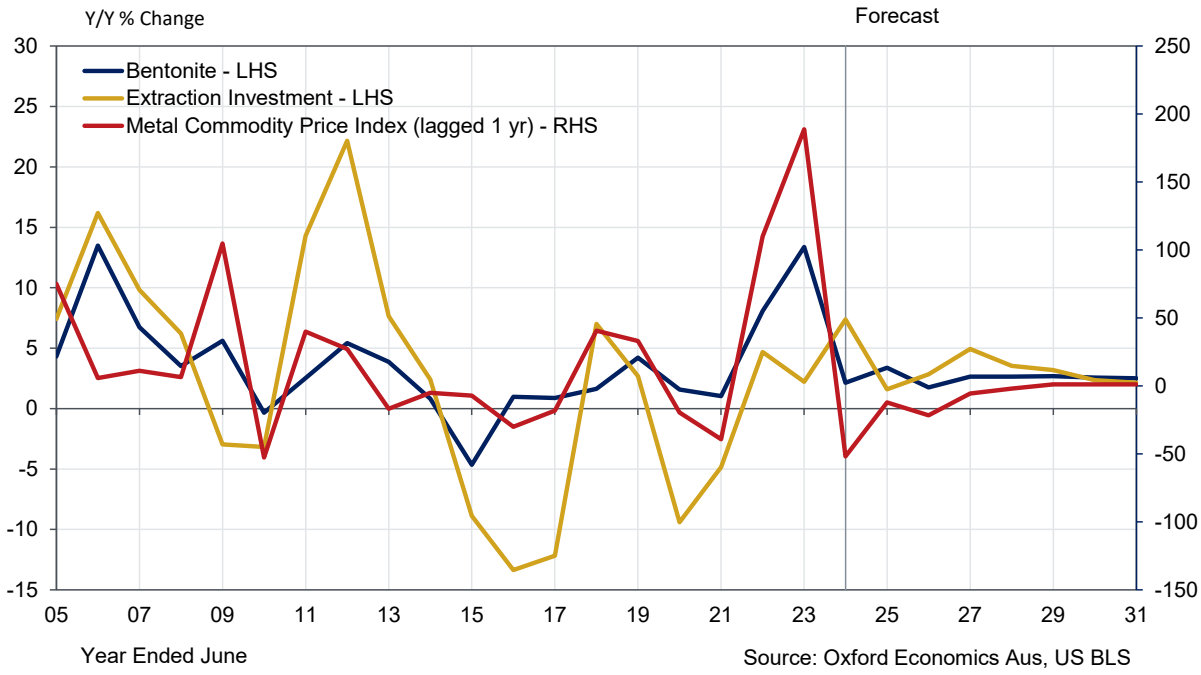
(a) Historical figures come from U.S. Bureau of Labour Statisitcs (US BLS), Producer Price Index by Commodity, WPU13990214C
(b) Historical figures come from U.S. Bureau of Labour Statisitcs (US BLS), Producer Price Index by Industry, PCU32612232612213
(c) Inflation forecasts are RBA forecasts for the 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%).
(d) Real price changes are calculated by deducting the inflation rate from nominal price changes.
(e) Average annual values and growth rates for 2024/25 to 2030/31.

8.1 BENTONITE

Bentonite is a clay mineral used predominantly for drilling. As such, bentonite prices are strongly correlated with mining and exploration investment, which in turn is influenced by fluctuation in energy and metal commodity prices. Periods of rising mineral extraction investment (2006, 2012 and 2018) saw bentonite price average above inflation increases. However, the most recent price surge over FY22 and FY23 was primarily the consequence of pandemic related capacity constraints and higher operating costs, with bentonite prices increasing a cumulative 23% over the two years.

Moving forward, rising mining and exploration investment globally will see continued upward price pressures for bentonite. With global investment having averaged around 4.8% annual growth since FY22, pressure on bentonite supplies is expected to flow through to a 3.4% increase in prices over FY25. Price growth is then forecasted to slow down in FY26 (+1.8%) as investment eases. Over the longer run, bentonite prices are expected to maintain solid growth, average 2.6% annually over the forecast period. Driving this will be the sustained increases in exploration and mining activity required to supply both ongoing economic growth and the large material demands of the global decarbonisation efforts.

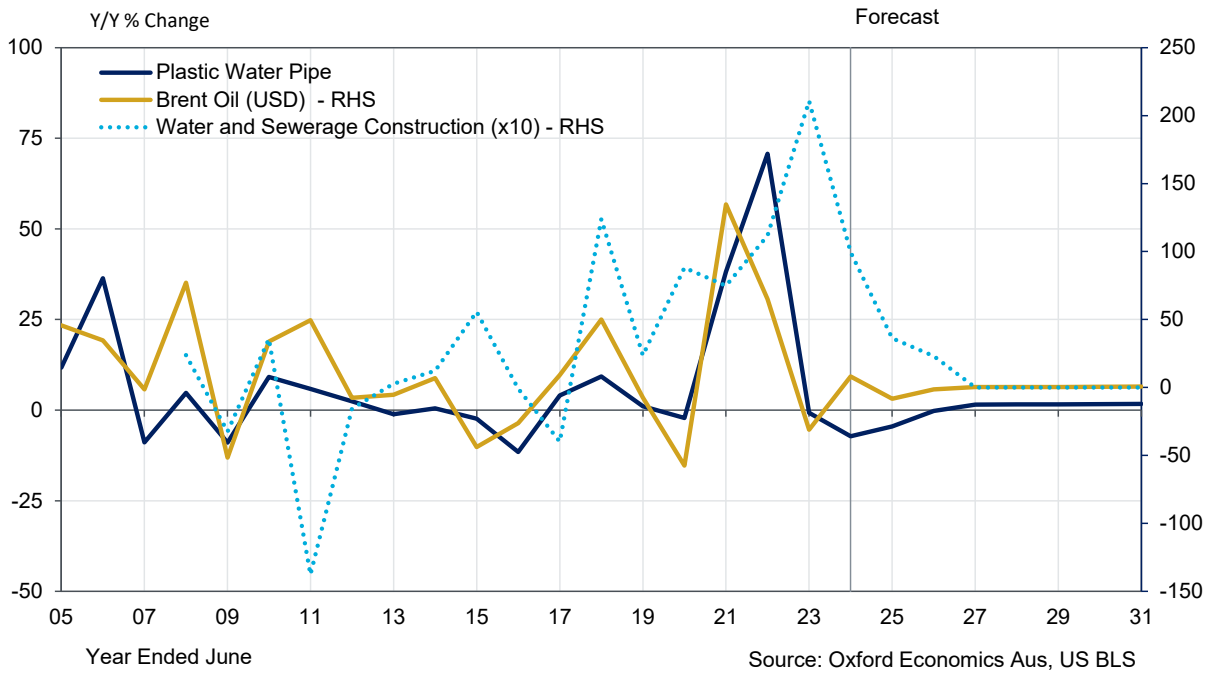
Figure 8.1 Bentonite Index



8.2 PLASTIC WATER PIPES

The key drivers of plastic water pipe prices are the costs of the primary input material, oil, and demand from water infrastructure construction. Water pipe price skyrocketed over FY21 and FY2. This was a result of both sharp increases in oil prices and general manufacturing costs, which was then compounded when record levels of water and sewerage related construction activity across the USA placed significant strain on supply. With oil prices having rose around 80%, and construction activity 30% over the two years to FY22, water pipe prices jumped 136%. Prices have since eased back somewhat over FY23 and FY24, but still remain over double their pre-covid levels as demand from the construction sector has held firm. Prices are forecast to ease -4.5% over FY25 as oil prices fall back. Moving forward, we do not anticipate any significant price decreases in water pipe given the forecast for continued record levels of water related construction activity in the US. However, given the already significant surge in prices over the past several years, there's likely little room for supplies to continue hiking up prices. Coupled with easing or plateauing oil prices, water pipe prices are forecast to average 1.6% annual growth over the FY27 to FY31 period.

Figure 8.2 Plastic Water Pipe Index



APPENDIX 1: 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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