OXFORD ECONOMICS

ELECTRICITY-RELATED MATERIALS & LAND INPUT ESCALATION FORECASTS TO 2028/29

PREPARED BY BIS OXFORD ECONOMICS
FOR AUSGRID

FINAL REPORT

NOVEMBER 2022

BIS Oxford Economics

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November 2022

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1. EXECUTIVE SUMMARY

In response to the Terms of Reference (TOR): 'Provision of Real Cost Escalation Calculations and Advice', BIS Oxford Economics (BISOE) has prepared a discrete set of materials and land price indices relevant to electricity transmission networks in New South Wales. We understand these forecasts will be used by Ausgrid to develop their operating and capital expenditure forecasts. The materials and land forecasts will be used to inform Ausgrid's regulatory proposal to the Australian Energy Regulator (AER), with the next reset period covering the five-year period from 2024/25 to 2028/29 inclusive.

1.1 COMMODITY PRICE FORECASTS AND MATERIAL COST ESCALATORS

Commodity Price Forecasts

Commodity price forecasts are global price forecasts, sourced from the latest Consensus Economics 'Energy & Metals Consensus Forecasts' (E&MCF) publication. This publication provides commodity price forecasts measured in US$ terms from a range of forecasters. The latest available publication is August 2022, where around 30 separate forecasters supplied price forecasts out to 2031 – the average of all the forecasters is used here. The AER has shown a preference for accepting a range of forecasts from different forecasters, and then taking an average.

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 at near 10-year highs (see table 1.1). Although they are expected to retreat from these highs over the period to 2028/29, the average prices in the five years to 2028/29 (the upcoming revenue period) will be moderately higher than the current revenue period (2019/20 to 2023/24) as costs rose considerably over the last two years and are expected to stay elevated throughout the remainder of the decade, indicating the onset of cost pressures on operators of electricity distribution networks in the coming period. Aluminium, Copper and Brent Oil are all expected to experience slight declines over the revenue determination period. However, this is primarily the product of the spike in all three commodities over 2021/22 (as well as strong growth in Aluminium and Copper prices over 2020/21).

Aluminium prices are generally tied to global economic growth and electricity prices. Prices rose 21% in 2020/21 (all prices expressed in in nominal terms, unless specified otherwise) and jumped a further 43% in 2021/22 to US$2,903/tonne (in A$ terms A$3,999/t, a 47% increase) as production was hampered by power shortages in China, with many energy-intensive smelters shutting down. Given the aggressive expansion in Chinese coal production acting to remove constraints on power production, an increase in smelter activity is expected to see aluminium supply increase and prices start to recede. Following a correction of -10% in 2022/23, prices are forecast to remain relatively unchanged in 2023/24, before an average growth of 0.1% per annum is forecast over the next revenue determination period (2024/25 to 2028/29). In real terms, A$ prices are forecast to decline by -2.6% over the next revenue period.

Overall, Aluminium prices are expected to average US$2,633/t over the five years from 2024/25 to 2028/29 (the next revenue determination period) – 11.2% higher than the previous 5-year average of US$2,367/t in 2019/20-24 (the current revenue determination period). This will be somewhat mitigated by a slightly higher Australian dollar over the next revenue period – with A$ prices averaging A$3,593/t over 2024/25 to 2028/29, 8.7% higher than the $3,305/t of the 2019/20-24 period.

Table 1.1 Materials and Commodity Price Forecasts – NSW and Australia

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Average (o)
	Actuals					Forecasts		Next Revenue Determination Period					
Commodity Prices ($/tonne) (a)													
Copper (A$/tonne)	8702	8598	8446	10664	13316	11386	11226	11449	11339	11412	11481	11481	11432
Copper (US$/tonne)	6747	6151	5669	7969	9665	8007	8153	8391	8311	8364	8415	8415	8379
Aluminium (A$/tonne)	2751	2683	2496	2715	3999	3717	3598	3694	3571	3552	3573	3573	3593
Aluminium (US$/tonne)	2133	1920	1675	2029	2903	2614	2613	2708	2618	2603	2619	2619	2633
Oil (A$/barrel)	82.2	96.1	76.9	72.5	126.3	141.8	120.1	106.3	102.0	103.3	104.3	104.3	104
Oil (US$/barrel)	63.7	68.7	51.6	54.2	91.7	99.7	87.2	77.9	74.8	75.7	76.5	76.5	76
Exchange rate (US$/A$) (b)	0.78	0.72	0.67	0.75	0.73	0.70	0.73	0.73	0.73	0.73	0.73	0.73	0.73
% ch													
Copper (A$/tonne)	21.8	-1.2	-1.8	26.3	24.9	-14.5	-1.4	2.0	-1.0	0.6	0.6	0.0	0.5
Aluminium (A$/tonne)	17.1	-2.5	-7.0	8.8	47.3	-7.1	-3.2	2.7	-3.3	-0.5	0.6	0.0	-0.1
Oil (A$/barrel)	23.9	16.9	-19.9	-5.8	74.2	12.3	-15.3	-11.5	-4.1	1.3	1.0	0.0	-2.7
Nominal Material Producer Price Indices (PPI)													
Steel Beams and Sections PPI (Australia) (c)	107.0	112.4	112.6	118.4	154.9	160.9	143.2	145.7	149.0	151.1	156.3	163.2	153.1
Reinforcing Steel PPI (Australia) (d)	94.4	101.5	98.6	102.7	144.6	150.9	130.7	129.2	127.6	125.4	127.5	132.0	128.3
State Steel Products (NSW) (e)	94.9	99.1	100.8	113.6	144.5	155.1	134.9	135.4	136.0	135.6	139.0	144.8	138.1
Concrete, Cement & Sand PPI (NSW) (f)	120.5	123.6	124.4	122.0	120.8	128.4	136.1	141.7	145.7	149.1	153.5	158.6	149.7
Poles - Concrete (Cement Products PPI) (NSW) (g)	112.4	114.1	115.9	118.4	125.0	133.0	139.4	144.1	147.7	150.7	154.6	159.6	151.3
Poles - Wood (h)	103.3	110.8	115.7	110.9	119.4	126.0	133.1	139.3	143.6	144.1	147.2	154.6	145.8
Cable (Electrical Cable Manufacturing PPI) (i)	101.3	101.5	99.2	103.7	127.2	130.3	127.7	132.3	135.3	137.1	142.6	150.6	139.6
Communications Equipment Manufacturing PPI (j)	123.9	120.7	123.7	126.4	136.8	142.1	144.8	147.9	150.7	153.6	156.9	161.0	154.0
Switchgear (Other Electrical Equipment Manufacturing PPI) (k)	103.2	107.2	105.7	109.0	114.9	122.3	124.4	128.0	131.1	133.4	137.1	141.2	134.2
Non-hydro Electricity Engineering Construction IPD (l)	110.8	115.2	118.2	120.5	127.7	132.6	134.4	139.1	143.1	146.5	151.4	158.0	147.6
% ch													
Steel Beams and Sections PPI (Australia) (c)	2.2	5.0	0.2	5.1	30.8	3.9	-11.0	1.8	2.3	1.4	3.4	4.4	2.7
Reinforcing Steel PPI (Australia) (d)	8.6	7.4	-2.8	4.1	40.7	4.4	-13.4	-1.2	-1.2	-1.7	1.7	3.5	0.2
State Steel Products (NSW) (e)	0.7	4.5	1.6	12.7	27.3	7.3	-13.0	0.4	0.5	-0.4	2.5	4.2	1.4
Concrete, Cement & Sand PPI (NSW) (f)	3.5	2.5	0.7	-2.0	-0.9	6.3	6.0	4.2	2.8	2.3	2.9	3.3	3.1
Poles - Concrete (Cement Products PPI) (NSW) (g)	2.6	1.5	1.5	2.2	5.6	6.4	4.8	3.3	2.5	2.1	2.6	3.2	2.7
Poles - Wood (h)	3.4	7.2	4.4	-4.1	7.7	5.5	5.7	4.6	3.1	0.3	2.2	5.0	3.1
Cable (Electrical Cable Manufacturing PPI) (i)	11.0	0.1	-2.2	4.5	22.6	2.5	-2.0	3.6	2.3	1.4	4.0	5.6	3.4
Communications Equipment Manufacturing PPI (j)	-3.5	-2.5	2.5	2.2	8.2	3.9	1.9	2.2	1.9	1.9	2.2	2.6	2.1
Switchgear (Other Electrical Equipment Manufacturing PPI) (k)	4.0	3.9	-1.4	3.1	5.5	6.5	1.7	2.9	2.4	1.8	2.8	3.0	2.6
Non-hydro Electricity Engineering Construction IPD (l)	2.0	4.0	2.6	1.9	6.0	3.8	1.4	3.5	2.9	2.4	3.4	4.3	3.3
Consumer Price Index - headline (m)	1.9	1.6	1.3	1.6	4.4	7.0	4.2	2.6	2.6	2.6	2.6	2.6	2.6
Real Commodity Price Changes (n)													
Copper (A$/tonne)	19.9	-2.8	-3.1	24.6	20.4	-21.5	-5.6	-0.6	-3.5	-1.9	-2.0	-2.6	-2.1
Aluminium (A$/tonne)	15.2	-4.1	-8.3	7.2	42.9	-14.1	-7.4	0.1	-5.9	-3.1	-2.0	-2.6	-2.7
Oil (A$/barrel)	22.0	15.3	-21.3	-7.4	69.8	5.2	-19.5	-14.0	-6.6	-1.3	-1.6	-2.6	-5.2
Real Material Producer Price Indices (PPI) (n)													
Steel Beams and Sections PPI (Australia) (c)	0.2	3.4	-1.2	3.5	26.4	-3.1	-15.2	-0.8	-0.3	-1.1	0.8	1.8	0.1
Reinforcing Steel PPI (Australia) (d)	6.7	5.8	-4.1	2.5	36.3	-2.7	-17.6	-3.7	-3.8	-4.3	-0.9	1.0	-2.3
State Steel Products (NSW) (e)	-1.2	2.8	0.3	11.1	22.8	0.3	-17.2	-2.2	-2.1	-2.9	-0.1	1.6	-1.1
Concrete, Cement & Sand PPI (NSW) (f)	1.6	0.9	-0.6	-3.6	-5.4	-0.8	1.8	1.6	0.3	-0.2	0.4	0.8	0.6
Poles - Concrete (Cement Products PPI) (NSW) (g)	0.6	-0.1	0.2	0.6	1.1	-0.6	0.6	0.7	-0.1	-0.5	0.0	0.7	0.2
Poles - Wood (h)	1.5	5.6	3.1	-5.8	3.2	-1.5	1.5	2.0	0.5	-2.2	-0.4	2.5	0.5
Cable (Electrical Cable Manufacturing PPI) (i)	9.1	-1.5	-3.6	2.9	18.2	-4.5	-6.2	1.0	-0.3	-1.2	1.4	3.0	0.8
Communications Equipment Manufacturing PPI (j)	-5.5	-4.2	1.1	0.6	3.7	-3.1	-2.3	-0.4	-0.7	-0.7	-0.4	0.0	-0.4
Switchgear (Other Electrical Equipment Manufacturing PPI) (k)	2.1	2.3	-2.7	1.4	1.0	-0.6	-2.5	0.3	-0.1	-0.8	0.2	0.5	0.0
Non-hydro Electricity Engineering Construction IPD (l)	0.0	2.3	1.3	0.3	1.6	-3.2	-2.8	0.9	0.3	-0.2	0.8	1.8	0.7

Source: ABS, BIS Oxford Economics, Consensus Economics

(a) Forecasts from June quarter 2022 to FY29 come from June 2022 Consensus Economics publication, "Energy & Metals Consensus Forecasts".
(b) Forecasts from June 2022 to FY29 come from June 2022 Consensus Economics publication, "Asia Pacific Consensus Forecasts".
(c) Historical figures come from Table 18 of ABS release 6427.
(d) Historical figures come from Table 18 of ABS release 6427.
(e) Historical figures come from Table 18 of ABS release 6427.
(f) Historical figures come from Table 18 of ABS release 6427.
(g) The Cement Products PPI is the proxy for Concrete Poles. Historical figures come from Table 18 of ABS release 6427.
(h) Historical figures come from Australian Bureau of Agriculture Resources Economics and Sciences. The index of Plantation and Native Hardwood prices are used.
(i) The Electrical Cable Manufacturing PPI is the proxy for cables. Historical figures come from Table 12 of ABS release 6427.
(j) Historical figures come from Table 18 of ABS release 6427.
(k) The Other Electrical Equipment Manufacturing PPI is the proxy for Switchgears. Historical figures come from Table 12 of ABS release 6427.
(l) Historical figures come from the ABS Engineering Construction Service series, provided as an unpublished 'Special Run series.
(m) Inflation forecasts are RBA forecasts to June 2024 from latest 'Statement of Monetary Policy'. Beyond that, inflation forecasts are based on a glide-path to the mid-point of RBA inflation target (2.5%) by year 5. The overall forecasts are then calculated as a geometric mean of the 'official' RBA inflation forecasts over the next 5 years or to the end of the regulatory period, with years 3,4 and 5 CPI equal to the calculated 5-year geometric mean. This methodology is the position adopted by the Australian Energy Regulator.
(n) Real price changes are calculated by deducting the inflation rate from nominal price changes.
(o) Average for the next revenue determination period i.e. from 2024/25 to 2028/29 inclusive.

Long-term **Copper** prices are driven by global industrial activity and economic growth. Prices surged 41% (in US$ terms) in 2020/21 on the back of COVID-19 related issues impacting production levels in Latin America. The efforts of large copper producers to increase production materialised as increased stock levels as forward prices fell. Nevertheless, Copper prices still grew 21.3% in 2021/22, to US$9,665/t (A$13,316/t, a 25% increase). While copper demand will get a boost from greater use in electric vehicles and green electricity production, these sectors are currently too small to offset the strong mine supply growth currently in the pipeline. As a result, prices are projected to fall 17.2% in 2022/23, before averaging an annual increase of 0.5% (in A$ terms) over the next revenue determination period (2024/25 to 2028/29). In real terms, A$ prices are forecast to decline by -2.1% over the next revenue period. Overall, Copper prices are expected to average US$8,379/t over 2024/25 to 2028/29 (the next revenue determination period), which will be 6.2% higher than the previous 5-year average of US$7,893/t in 2019/20-24; with A$ prices to average A$11,432/t, almost 4% higher than the 2019/20-23/24 period.

Oil prices recovered from an average of US$52/barrel in 2019/20 to average US$92/brl (A$126/brl) in 2021/22. Key drivers of the 69% upswing in US$ prices in 2021/22 included falling Covid infections (helping to boost the global economy), improving transport and travel, continued supply controls implemented by the OPEC+ group as well as the Russian invasion of Ukraine, the latter driving increased growth in prices through the implementation of trade restrictions and supply disruptions. Consensus forecasts project a further increase of 8.7% in 2022/23 and a drop of 12.5% in 2023/24, followed by an average annual decline of 2.7% over the next revenue determination period (2024/25 to 2028/29) in A$ prices. In real terms, A$ prices are forecast to decline by -5.2% over the next revenue period. Brent Oil prices are expected to average US$76/brl (A$104/brl) over 2024/25 to 2028/29.

Material Price Forecasts

In terms of mostly locally determined materials prices, Steel Beams and Sections PPI (Australia), Reinforced Steel (Australia), State Steel Products, Concrete, Cement & Sand (state price), Concrete poles (proxied by Concrete Products, Lime, Cement & Plaster Manufacturing PPI – in each state), Wooden Poles (proxied by the Plantation and Native Hardwood prices index - Australia), Cables (proxied by the Electrical Cable Manufacturing PPI - Australia), Communications Equipment Manufacturing PPI (Australia), Switchgears (proxied by Other Electrical Equipment Manufacturing PPI - Australia) and the Non-hydro Electricity Engineering Construction IPD (Australia) are all expected to grow modestly over the forecast period, with higher-than-average growth over 2021/22-23 for most prices.

The **Steel Beams & Sections**, **Reinforced Steel and State Steel Products PPIs** are heavily driven by the price of the primary inputs including the price of iron ore and coking coal. As COVID-19 worked to hamper Brazilian iron ore production, the resulting spike in prices drove modest growth steel PPIs in 2020/21. Supply chain constraints, recovering demand and the impacts of the Ukraine conflict have seen coking coal prices soar over 2021/22, leading to jumps of 31% and 41% in steel beams and reinforcing steel prices in 2021/22, and further growth of around 4% expected in 2022/23, with prices also boosted by strengthening construction activity. Easing coal and iron ore prices are then projected to drive declines of 11% to 13% in 2023/24 before stabilising somewhat as the input commodity prices stabilise and show modest growth in the latter part of the decade. Annual growth rates are expected to average 2.7% in the steel beams PPI in the five years to 2028/29, while the reinforcing steel price PPI is expected to average a 0.2% annual growth over 2024/25 to 2028/29. The NSW state Steel Products PPI will follow a similar trend, averaging a growth of 1.4% per annum over 2024/25 to 2028/29. In real terms, growth will be a mere 0.1% on average in steel beams and sections over the 2024/25 to 2028/29 revenue period, while reinforcing steel will suffer an average real decline of -2.3%

over the reset period. However, prices on average will considerably higher on average over the 2024/25 to 2028/29 period than the current 2019/20-23/24 reset period.

Concrete, cement, and quarry material prices are predominantly driven by construction activity in the economy. The **NSW Concrete, Cement and Sand PPI** is expected to mostly see strong increases over 2022/23 to 2024/25, driven by a strong pipeline of publicly funded infrastructure projects and higher building activity, particularly as overall construction activity levels approach the previous peak, putting demand pressures on construction materials prices. Price increases are then expected to subsequently moderate as construction activity eases back, and are forecast to grow at an average of 3.1% per annum over the next revenue determination period (2024/25 to 2028/29), or +0.6% in real terms in NSW. Likewise, **Concrete Poles (NSW Cement Products Manufacturing PPI)** will see above-average growth over 2022/23-24 followed by an average of 2.7% per annum (+0.2% p.a. real) over the next revenue determination period (2024/25 to 2028/29).

Wooden Poles are proxied by the price index of 'Plantation and Native Hardwood', sourced from the Australian Bureau of Agricultural and Resources Economics and Sciences (ABARES). To forecast wooden poles prices, we modelled prices on residential house construction, GDP per capita and the exchange rate, with adjustments for supply problems due to the 2019/20 fires and the current global supply shortages (also due to strong global demand). Wooden poles is estimated to have experienced sizeable price increases in 2021/22, with above average price increases to persist over 2022/23 and 2023/24, before moderating over the five years to 2028/29 - growing at an annual average rate of 3.1% (+0.5% p.a. real) - as housing construction eases back and supply problems are gradually addressed.

Prices for **Electrical Cable, Communications Equipment and Other Electrical Equipment** (the latter being the proxy for switchgear – note that 'Other' is electrical equipment other than lighting equipment, and includes switchgear, transformers, power generating equipment, etc) all increased sharply in 2021/22, off the back of record high copper prices, which is a key input to these items. Other key drivers of prices are energy costs, manufacturing wages, the exchange rate and the level of construction activity in the electricity and telecommunications sectors. As copper prices ease off over 2022/23 and 2023/24 (but remain at a higher than pre-covid levels), prices will ease back, with electrical cable prices declining in 2023/24 (-2.1%). Price growth will return to cables in 2024/25 with fairly stable price growth averaging 3.4% p.a. (real +0.8% p.a.) from 2024/25 to 2028/29, while price growth in the Other Electrical and Communications equipment PPIs will average 2.6% (0 real) and 2.1% (-0.4% real) respectively over the reset period.

The **Non-hydro Electricity Engineering Construction IPD** is an aggregate measure of the change in cost of construction within the electricity construction sector (including the change in margins). The transition to renewable energies will be taking a step up in coming years, with the announcement and commencement of major solar and wind projects picking up pace, which, combined with the significant expansion and enhancement of transmission, will see the demand for electricity engineering inputs intensify. Boosted by higher copper prices, the IPD increased 6% in 2021/22, although price growth will ease back over 2022/23 and 2023/24 as copper prices ease. However, we are forecasting price growth to remain elevated over 2024/25 to 2028/29, with sustained growth averaging 3.3% in the 5 years to 2028/29, as the renewable transition accelerates and increasing electrification puts upward pressure on input prices and the costs of construction, while construction wage increase will rise strongly.

1.2 LAND PRICE FORECASTS

New South Wales is heavily reliant on overseas inflows for population growth, with restrictions on international travel due to the pandemic hitting the State particularly hard. However, as Net Overseas Migration (NOM) rebounds in 2022/23, growth is set to rise to 1.2%, before holding near 1% over the

six years to 2028/29 to see the population reach just below 8.8 million persons. An elevated net interstate migration (NIM) outflow is expected to linger out to 2028/29 as affordability issues, coupled with a shift in preferences, continues to push people away from Sydney.

Serviced **industrial** land values increased strongly in Sydney in 2021/22, fuelled by competition amongst major developers looking to restock their land banks and owner-occupiers (encouraged by low interest rates). Looking forward, with limited land available to purchase in preferred industrial precincts across Sydney, and strong demand, price pressures are likely to continue over the coming two years. However, beyond 2023/24, we forecast industrial property completions will gradually fall back closer to the long run average, crimped by moderating demand and moderately higher vacancies. In real terms, Sydney's industrial land price is forecast to decline by an annual average of -1.7% between 2024/25 and 2028/29.

Prime **commercial** capital values grew at less than 3% over the last 12 months, underpinned by a modest firming in yields but little to no change in net stated rents. Our series shows average prime values currently sit at $26,960 psm. The near-term outlook for Sydney CBD office capital values will be influenced by the combination of a forecast moderate yield softening and minimal stated rental growth in an oversupplied market. These factors point to a moderate setback in capital values over the next two years of around 8%. As rental growth gains traction, values should strengthen appreciably and we forecast the next peak to come in around 2029. In real terms, after two weaker years ahead, Sydney's commercial capital values are anticipated to rise by an annual average of 2.4% between 2024/25 and 2028/29.

Table 1.2 Land Price Forecasts – Sydney

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Average (b)
	Actuals						Forecasts		Next Revenue Determination Period					
Nominal Land Price Changes (Median Prices)														
Sydney Residential Land Price ($'000)	435	436	420	425	517	653	623	614	609	615	629	655	686	639
Sydney Industrial Land Price ($/sqm)	325	425	600	600	900	1200	1310	1380	1380	1370	1380	1410	1440	1396
Sydney Commercial Capital Values ($/sqm)	19805	23098	25109	26304	26593	26961	25593	24732	24958	25656	27467	29716	31427	27845
%ch														
Sydney Residential Land Price ($'000)	3.1	0.2	-3.7	1.2	21.6	26.3	-4.6	-1.4	-0.8	1.0	2.3	4.1	4.7	2.3
Sydney Industrial Land Price ($/sqm)	8.3	30.8	41.2	0.0	50.0	33.3	9.2	5.3	0.0	-0.7	0.7	2.2	2.1	0.9
Sydney Commercial Capital Values ($/sqm)	15.0	16.6	8.7	4.8	1.1	1.4	-5.1	-3.4	0.9	2.8	7.1	8.2	5.8	4.9
Consumer Price Index (headline) (a)	1.7	1.9	1.6	1.3	1.6	4.4	7.0	4.2	2.6	2.6	2.6	2.6	2.6	**2.6**
Real Land Price Changes (Median Prices) (c)														
Sydney Residential Land Price ($'000)	1.4	-1.7	-5.3	-0.1	20.0	21.9	-11.6	-5.6	-3.4	-1.6	-0.3	1.6	2.2	-0.3
Sydney Industrial Land Price ($/sqm)	6.6	28.8	39.5	-1.3	48.4	28.9	2.1	1.1	-2.6	-3.3	-1.8	-0.4	-0.4	-1.7
Sydney Commercial Capital Values ($/sqm)	13.3	14.7	7.1	3.4	-0.5	-3.1	-12.1	-7.6	-1.7	0.2	4.5	5.6	3.2	2.4

Source: ABS, PriceFinder, BIS Oxford Economics

(a) Inflation forecasts are RBA forecasts for the next 2 years from latest 'Statement of Monetary Policy'. Beyond that, inflation forecasts are based on a glide-path to the mid-point of RBA inflation target (2.5%) by year 5. The overall forecasts are then calculated as a geometric mean of the 'official' RBA inflation forecasts over the next 5 years or to the end of the regulatory period, with years 3,4 and 5 CPI equal to the calculated 5-year geometric mean. This methodology is the position adopted by the AER in its Final position paper "Regulatory treatment of inflation" of December 2020.
(b) Average Annual Growth Rate for 2024/25 to 2028/29 inclusive, ie for next regulatory period.
(c) Real price changes are calculated by deducting the inflation rate from nominal price changes.

The Outer Sydney median **residential** land price is estimated to have risen 26% (nominally) over the 12 months to June 2022 to $653,000. Fuelling growth has been increased demand from HomeBuilder, ultra-low interest rates, high levels of savings and squeezed inventory. However, the market now has little left to run and we forecast that land prices in Outer Sydney will fall by 5% and 1% respectively in 2022/23 and 2023/24, in nominal terms. The land price in Sydney has reset above $600,000 and, with the recent rush in housing demand soaking up much of the available stock, we expect it to remain above this level over the forecast horizon. However, the key risks surrounding the Sydney residential land market are to the downside due cost escalation and the rate of household formation. The uncertainty around future build cost inflation will inevitably limit land prices to some degree. Double-digit housing construction cost growth is assumed near term. If the cost of building

new overshoots relative to the established housing market, this is likely to drag on the rate of land development mid-decade. In real terms, Sydney's residential land price is forecast to decline by an annual average of -0.3% between 2024/25 and 2028/29.

2. INTRODUCTION

In response to the Terms of Reference (TOR): 'Provision of Real Cost Escalation Calculations and Advice', BIS Oxford Economics (BISOE) has prepared a discrete set of labour, materials, commodity and land price indices relevant to electricity transmission and distribution networks in Australia and NSW. We understand these forecasts will be used by Ausgrid to develop their operating and capital expenditure forecasts. The materials and land forecasts will be used to inform Ausgrid's regulatory proposal to the Australian Energy Regulator (AER), with the next reset period covering the five-year period from 2024/25 to 2028/29 inclusive. Over the next regulatory period forecasts of both nominal and real price growth of the relevant inputs are provided. The forecasts in this report were finalised in early September 2022.

The Australian Bureau of Statistics is the primary data source for the consumer price index, employment, real gross value added and investment (including engineering construction) data, and for a range of other economic variables. The data used in the projections is the latest available as at early September and includes the June quarter Consumer Price Index and Producer Price Indices data releases. Other inflation and interest rate data were sourced from the Reserve Bank of Australia. Historical commodity price data came from the Commonwealth Department of Industry, Science, Energy and Resources (DISER).

Forecasts of the economic variables in this report were mostly sourced from BIS Oxford Economics reports, including *Australian Macro Service*, *Long Term Forecasts: 2021 – 2036, Engineering Construction in Australia 2021-2036* and *Building in Australia 2021-2036*, along with other unpublished forecasts and from BIS Oxford Economics internal research and modelling. Forecasts of commodity prices were sourced from the latest Consensus Economics publication *Energy & Metal Consensus Forecasts* (August 2022).

The previous Summary section presents an overview of the outlook for commodity, material and land costs, including numerical forecasts presented in the summary table (and separately provided in an excel spreadsheet).

Section 3 provides a macroeconomic outlook for Australia and NSW. 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 materials and land prices outlooks. There is also a section on the Consumer Price Index forecasts, based on the latest Reserve Bank of Australia (RBA) projections.

Section 4 covers the key drivers of materials prices, and includes the construction outlook for Australia and NSW, providing commentary on the residential and non-residential building sectors as well as engineering construction activity.

Sections 5 provides forecasts of commodity prices and the materials indices.

Section 6 provides forecasts of industrial, commercial and residential land prices for Sydney, which are a proxy for NSW land price changes.

3. MACROECONOMIC OUTLOOK

3.1 AUSTRALIA MACROECONOMIC FORECASTS

Australian economy has rebounded from COVID-19, but now slowing as constraints emerge

In 2019/20, real Gross Domestic Product (GDP) was virtually flat – due to COVID-related impacts in the first half of calendar 2020. Australian domestic demand then increased by 2.6% in 2020/21, with the huge bounce-back in both farm and non-farm stocks pushing the growth in Gross National Expenditure (GNE) to 3.3%. However, with net exports detracting -1.6% from growth, GDP rose 1.6% in 2020/21. In 2021/22, a further strengthening in domestic demand to 5.1% - despite disruptions from further lockdowns and then severe flooding in the eastern states – lifted GDP growth to 3.9%, with net exports again detracting -1.6% from growth.

GDP growth in the recent June quarter (Q2) was in line with our expectations at 0.9% q/q. Growth in the quarter was driven by household consumption growth, while net exports also contributed strongly. Investment outcomes were underwhelming in Q2. Public and machinery and equipment investment increased, while private, construction-related investment fell, due both to rain, flooding and capacity constraints. There is a strong pipeline of work to be done in both dwellings and non-residential construction. But capacity constraints due to labour and materials shortages are delaying the realisation of this investment by extending construction times.

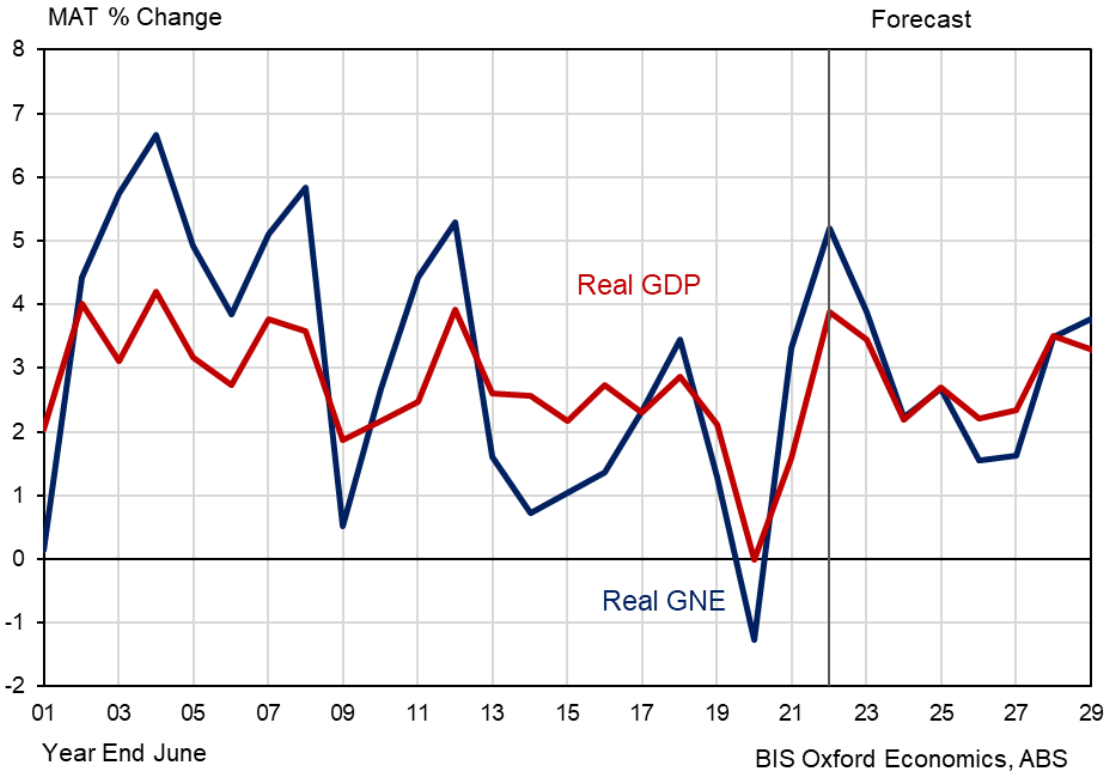
Further, the higher-cost environment is threatening the viability of future projects. Mining investment picked over 2020/21 and 2021/22. With prices for a number of commodities expected to remain at healthy levels over the medium term and strong demand for renewable energy-related minerals (such as Lithium), 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 5% in 2021/22 and is expected to grow by around 7% and 9% in 2022/23 and 2023/24 respectively, before growth eases. The recovery in business investment will not only drive near-term demand but will increase the economy's productive capacity in the long run.

Consumption growth was strong once again in June quarter 2022 (Q2) at 2.2% q/q. Jobs growth and rising wages have supported income growth, while a sharp fall in the savings rate indicates that households are fuelling spending out of accumulated savings. Q2 was free from Covid restrictions, and spending on travel and hospitality benefitted accordingly. We expect there will be a further pivot in consumption from goods to services, although catch-up growth in services components will slow from here. Further, household budgets will face greater pressure from brisk inflation in essential spending components (food and energy), while higher interest rates will restrain spending by households with mortgages. Nevertheless, the fundamentals for growth remain encouraging. Strong employment growth and a tight labour market will support income growth, while there is still scope for the savings rate to fall further. The strength in the labour market and stronger migration flows will put a floor under conditions over the second half of 2022. However, cost-of-living pressures are squeezing real incomes, and inflation concerns are prompting higher interest rates.

Strong employment growth over the first half of 2022 has seen the unemployment rate fall to a 40-year low of 3.4% in July, while underemployment has plummeted. There is still a large cohort of workers forced to take sick leave or isolate due to Covid each month, which is constraining growth in hours worked. With the labour market likely beyond capacity and the participation rate at a historically high level, jobs growth is expected to slow. With demand indicators firm, notwithstanding job ads plateauing over the past few months, we expect a recovery in wage growth over 2022 and 2023. The large 5.2% increase in the minimum wage on July 1 will underpin a lift in wage growth over 2022/23.

Fiscal policy is now moving from supportive to tightening. Nevertheless, public infrastructure spending is set to remain strong over the short-to-medium term as there is a large pipeline of transport and other projects to complete, which were brought forward as part of the COVID response. In addition, dwelling building also remains elevated due to direct grants for individuals to put towards dwelling construction or major alterations and additions (the HomeBuilder program) which have spurred activity. The 2022/23 budget delivered a considerable upgrade to the fiscal outlook; Treasury projections for the budget deficit in 2021/22 and 2022/23 have been upgraded to 3.5% and 3.4% of GDP, respectively. The strong performance of the labour market has boosted government revenue and lowered welfare payments, while the recent spike in commodity prices has also contributed to the upgrade in forecast revenue. The budget announced a temporary cut to the fuel excise, which will lower CPI inflation in Q2, before a reversion in Q4 of 2022/23. Low- and middle-income earners, along with welfare recipients, have received one-off 'cost-of-living' payments. To the extent these transfers add to demand (and are not saved), they may add to inflationary pressures over the second half of 2022, which are already mounting.

Figure 3.1 Australia – Basic Economic Indicators



Monetary policy settings are in the process of moving from ‘extremely accommodative’ to a more ‘normal’ setting. The RBA started its rate hiking phase in May 2022, with the cash rate now at 2.6% (October 2022) in response to the stronger outlook for energy prices and higher domestic inflationary pressures. More increases are possible in the near term, although the Bank may pause as it awaits the reaction to the rises over 2022. It is important to note that with many mortgages on fixed rates (which were fixed when rates were low), some impacts will stretch well into late 2023. As noted by the RBA, inflation pressures at present are primarily being caused by global and domestic supply disruptions, which are expected to abate over 2023. Higher interest rates will do little to cool inflation caused by negative supply shocks, but the recent and upcoming rate rises are about trying to control inflation expectations and signal the RBA’s tolerance for an inflation overshoot is limited. The Bank sees the labour market recovery as sufficiently well entrenched that it can withstand higher interest

rates. The RBA also wants to move away from "emergency" low rates as quickly as possible before taking pause to assess the data.

Global Economic Outlook

The near-term outlook for global growth continues to deteriorate. The recent escalation of both formal and informal sanctions against Russia, further supply chain problems, and more upside inflation surprises continue to weigh on global economic growth. Our baseline forecast for global GDP growth is 3.1% this year and 1.8% in 2023, before picking up to over 3% in 2024 and 2025. Global CPI inflation is now expected to average over 7% this year. Much of the increase reflects higher energy and food inflation triggered mainly by the war in Ukraine. But the prospect of further long-lasting supply chain disruptions and more upside surprises have prompted upward revisions to core inflation in some major economies, including the US and eurozone.

Despite the upward revisions to our near-term CPI forecasts, we still expect inflation to ease markedly over the next year. While energy and food prices may remain high over the coming quarters, the annual inflation rate should fall back sharply as we move into 2023, helping to lower the headline rate of inflation. In addition, the squeeze on households' real incomes from high inflation and tighter monetary and fiscal policies should exacerbate any downward forces on core inflation from an eventual easing of supply chain pressures. Nonetheless, the prospect of even higher inflation over the next few quarters means that we expect many central banks will continue to push ahead with more rate hikes in the near term, including the US Federal Reserve. US GDP growth is expected to slow to 1.7% in 2022 and decline by -0.5% in 2023, before recovering to 1.6% in 2024 and 2.2% in 2025. Coupled with higher energy prices and disruptions to energy supplies in Europe, Europe GDP slows to 3.1% in 2022 and 0% in 2023, before picking up to 2.3% in 2024.

Meanwhile, greater disruption in the near term – especially in China where a zero-tolerance approach to COVID-19 continues to be pursued – points to slower normalisation of supply-chain pressures and potentially a slower transition of consumer spending from goods back to services. China has stuck to its zero-tolerance approach to Covid, with widespread lockdowns weighing on consumption and, with headwinds from the real estate sector persisting, we forecast GDP growth will slow to 3.1% in 2022 (from 8.1% in 2021), before rebounding to over 4% in 2023 and 2024, and then 5.3% in 2025.

High and rising US interest rates and increased uncertainty has seen a broad-based appreciation of the US dollar. After averaging around US$0.72 in the March and June quarters, the Australian dollar has fallen sharply to around US$0.65. Our outlook is for the AUD to remain weak over 2022 and 2023, before appreciating gradually alongside further monetary tightening in Australia in the medium term, to near US$0.80 by mid-decade, before easing back to the long-term average of US$0.75.

Beyond the near-term disruptions, we expect global growth will return to its trend pace of around 3.3% by mid-decade, 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.

GDP to remain buoyant in 2022/23, with growth moderating over 2023/24 and 2024/25

Although the pace of growth will ease through 2022/23, growth is coming off a high base and is not expected to slow sharply. Australian domestic demand is forecast to slow from 5.1% in 2021/22 to 4.1% in 2022/23, with a much slower accumulation of inventories and falls in farm stocks pushing growth in GNE to 3.9%. Growth in dwelling, business and public investment is expected to pick up as bottlenecks ease. Meanwhile, private consumption expenditure holds up as households spend heavily on services, funded by the increased savings accumulated over the past year or so and the strong labour market. Net exports are expected to provide less of a drag as tourism and education boost

exports, partially offset by faster growth in imports. GDP growth is forecast to be 3.9% in 2022/23, although there is more downside risk to this outlook from a number of factors.

Housing and business investment are expected to ease over 2023/24 and 2024/25 as the government incentives finish or are reduced. However, we expect further moderate growth in business investment in 2023/24 and 2024/25 as deferred investment is undertaken, although some sectors, such as hotel construction and other tourism-related investment, will take longer to recover. Meanwhile, public investment is expected to peak in 2023/24, but remain at elevated levels in 2024/25, as a large pipeline of transport infrastructure and social and institutional building projects come through. Meanwhile, government recurrent expenditure is expected to weaken sharply as the boost from the NDIS and vaccine roll-outs finish and governments attempt budget repair. With employment growth expected to slow as investment eases and because of labour constraints, household consumption expenditure growth will also ease over 2023/24 and 2024/25, with higher inflation and higher interest rates also weighing on spending. Tax cuts slated for July 2024 will boost spending in 2024/25, although there is considerable uncertainty around these tax cuts.

The war in Ukraine has raised export and import prices substantially and has delivered a brief, but sharp, spike up in the terms of trade. Trade volumes will be a mixed bag. Mining exports have been capped by capacity, and largely haven't been able to respond quickly to higher prices, but we expect mining export volumes to pick up over the next 2-3 years as new capacity comes onstream. Rural exports bounced back over calendar 2021 and will remain strong over 2021/22 and 2022/23 with bumper seasons in the eastern states boosting grain, other crops and dairy exports. With manufacturing exports now recovering, overall merchandise export volumes will continue to strengthen over 2022/23, before moderating. Import demand will be stronger over 2022 and into 2023, in line with the improvement in domestic demand. But higher prices may still dull some of this demand, while supply disruptions will make growth in merchandise volumes sporadic and patchy.

Large increase in both service credits and debits are expected over 2022/23 and 2023/24, before moderating in 2024/25. 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'). Although still impacted, education exports should recover quicker than 'tourism' flows – partly because of online teaching 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 near term. 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 accounted for almost 50% of overall services imports. We expect a slower ramp-up in outbound tourism (compared to inbound tourism), even after travel restrictions are lifted, 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 mid-2024, while outbound tourism debits will not get back to 2018 peaks until late 2024.

With the initial rebound from the pandemic likely to be over by late 2022, the pace of growth will naturally slow, with the interest rate rises of 2022 expected to bite over the next year or so. Overall, we are forecasting both GDP and GNE to ease to 2.2% in 2023/24 and 2.7% in 2024/25, with net exports neutral.

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

Annual headline inflation jumped to 6.1% (y/y) in the June quarter 2022, while underlying inflation lifted from 2.6% (December quarter 2021) to 4.6%. Transitory components continue to drive headline inflation, including high fuel prices. However, with upward price pressure emerging from supply chain disruption, it is now apparent that inflationary pressures are broadening, with CPI to peak at over 7%

during the second half of 2022, before subsequently easing. The rise in inflationary pressures has seen the RBA lift the cash rate by 2.5% since May to 2.6% in October. The RBA may raise rates again in the near-term, but we expect a pause in rises in 2023 and into 2024.

However, large tax cuts expected in July 2024 is expected to see a further lift in rates to 3.4% (potentially higher) over 2024/25, as the RBA attempts to curtail the extra demand pressures from the tax cuts, particularly while inflationary pressures are still present with the unemployment rate below 4%. Meanwhile, the 3+% rise in the cash rate in Australia means the benchmark housing variable rate will rise toward 7.7% by early 2025, which will be enough to slow consumer spending and impact housing and business investment over 2025/26 and 2026/27. With government capital spending falling at that time and recurrent spending still constrained, the end result will see annual GDP growth easing to around 2.2% over those two years.

Table 3.1 Australia – Key Economic Indicators, Financial Years

Year Ended June							Forecasts						
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total New Private Investment (+)	**-2.0**	**3.7**	**-2.7**	**-3.3**	**2.5**	**5.4**	**3.9**	**5.0**	**1.6**	**-1.7**	**0.1**	**6.6**	**6.9**
New Public Investment (+)	**8.6**	**11.2**	**4.8**	**0.5**	**5.7**	**7.1**	**7.2**	**4.0**	**-0.6**	**-2.8**	**-2.4**	**1.1**	**3.7**
Gross National Expenditure (GNE)	**2.3**	**3.5**	**1.3**	**-1.3**	**3.3**	**5.2**	**3.9**	**2.2**	**2.7**	**1.5**	**1.6**	**3.5**	**3.8**
GDP	**2.3**	**2.9**	**2.1**	**0.0**	**1.6**	**3.9**	**3.4**	**2.2**	**2.7**	**2.2**	**2.3**	**3.5**	**3.3**
Inflation and Wages													
CPI (Yr Avg) - RBA forecasts (*)	1.7	1.9	1.6	1.3	1.6	4.4	7.0	4.2	2.6	2.6	2.6	2.6	2.6
Wage Price Index (Yr Avg)(**)	2.0	2.1	2.3	2.1	1.5	2.4	2.9	3.4	3.4	3.3	3.2	2.9	3.1
Average Weekly Earnings (Yr Avg)(^)	2.0	2.4	2.7	3.9	2.7	1.9	3.2	3.9	3.9	3.7	3.7	3.2	3.5
Employment													
– Employment Growth (Yr Avg)	1.5	3.0	2.4	0.5	0.6	3.2	3.1	2.0	1.8	1.6	0.8	1.6	2.2
– Employment Growth (May/May)	2.1	2.6	2.8	-5.6	8.3	3.0	2.0	1.9	1.8	1.3	0.9	2.0	2.1
– Unemployment Rate (May) (%)	5.5	5.4	5.2	7.0	5.1	3.9	3.6	3.7	4.0	4.1	4.3	4.0	3.8
Labour Productivity Growth													
– Total	0.8	-0.2	-0.2	-0.5	1.0	0.7	0.4	0.2	0.8	0.6	1.5	1.8	1.1
– Non-farm	0.6	0.0	0.0	-0.3	0.5	0.2	0.4	0.4	0.9	0.6	1.5	1.9	1.1

Source: BIS Oxford Economics, ABS and RBA

+Expenditure on new assets (or construction work done). Excludes sales (or purchases) of second hand assets.
*Headline CPI forecasts based on Reserve Bank of Australia's forecasts to June 2023 quarter. Beyond this, we've used the arithmetic mean the next 2 years and the the mid-point of the Reserve Bank's 2 to 3 per cent inflation target range after 2024.
** Based on Ordinary Time Hourly Rates of Pay Excluding Bonuses. Includes impact of Superannuation Guarantee increases.
^ Average Weekly Ordinary Time Earnings for Full-Time Adult Persons. Includes impact of Superannuation Guarantee increases.

The tightening of monetary policy will precipitate an overall slowing of economic growth in the mid-2020s. But as consumers and businesses re-adjust to the 'normalcy' of higher interest rates – although at much lower levels than the 2000s and 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 3.5% in 2027/28, 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 NEW SOUTH WALES

In New South Wales, State Final Demand (SFD) declined -2.0% in 2019/20, much worse than the national average of -0.9%. Meanwhile, Gross State Product (GSP) fell -0.6% - also worse than the national average where GDP declined by less than -0.1%. NSW suffered the largest contraction in output in the initial COVID-19 shock, suffering among the worst of the impacts from the COVID-19 epidemic. A key reason was that the service sectors in NSW comprised a larger share of GSP than most other states and the service sectors will suffer the largest impacts, with sectors related to travel, tourism, entertainment and real estate particularly exposed to the social distancing restrictions. In particular, NSW accounts for almost 43% of total Australian international services exports and was thus disproportionately affected by the slump in international tourism and lower education exports. It also suffered from the sharp cut-backs in interstate trade and travel, as it runs a strong interstate trade surplus with the other states. In addition, mining production and investment have been less affected than other sectors, which sees WA and NT relatively less affected.

However, over 2020/21, NSW SFD increased 3%, while GSP growth was 1.4% – close to the national equivalents. SFD growth strengthened further to 3.5% in 2021/22, despite lockdowns in the second half of 2021 and floods in the first half of 2022. However, with education and tourism impacted by domestic and international restrictions, export growth was outpaced by the strong recovery in imports, with the negative contribution from net international exports limiting GSP growth to an estimated 2.8%, despite a positive net interstate contribution.

Dwelling activity will remain elevated, driven by investors returning to the attached dwelling construction sub-sector, recovering population flows and strong levels of detached dwelling construction. Total residential building work done is forecast to grow a further 5.4% in 2022/23. Despite a large pipeline of work still to be done, activity is expected to decline -6.6% in 2023/24 and a further -8.5% in 2024/25 in the wake of higher interest rates.

Business investment is expected to show modest increases over the next three years of around 5% p.a, underpinned by higher non-residential building, engineering construction and equipment investment. Public investment is expected to show solid growth over the next 2 years, before plateauing in 2024/25. Driving this will be a strong program of public transport projects, backed by state and federal government stimulus in road and rail infrastructure, as well as increasing levels of investment in renewable energy generation assets and associated transmission network development.

With international borders opening and some degree of ‘normalization’ expected to return to much of the economy, we expect growth in NSW SFD and GSP to be closer to the national average in 2022/23. SFD is forecast to increase 4.3% in 2022/23, before easing to 1.2% and 2.2% in 2023/24 and 2024/25 respectively. A key factor in growth over 2023/24 and 2024/25 is expected to be solid business and public investment. This will sustain employment growth and consumer spending. However, we expect weak public consumption to drag on growth over 2022/23 and 2023/24 before subsequently picking up. Some key factors that will see NSW experience relatively weaker economic growth than the national average over 2021/22 to 2024/25 include:

- The recovery in mining investment now underway - and set to strengthen over the next 3-4 years - is likely to have a relatively larger benefit to other states than for NSW.

- Slower population growth than the national average with the state’s population forecast to average 1.0% p.a. over the next 7 years to June 2028 – 0.4% lower than the national average – compared to 1.5% growth of the 5 years to June 2019, when the state virtually matched national population increases. This will affect household consumption and housing demand.

On the other hand, net interstate trade in goods and services will contribute to GSP growth over 2022/23 to 2024/25 as other states grow faster than NSW. GSP is forecast to rebound to 3.5% in 2022/23, before averaging 1.7% over 2023/24 to 2024/25. Note that we expect that the strong lift in outbound international tourism in 2023/24, compared to inbound tourism and education, along with much faster growth in goods imports, will be a key contributor to weaker growth in GSP in that year. Employment growth is expected to track below the national average over each of the next 7 years, except 2022/23. However, the state's unemployment rate is still expected to remain close to, or below, the national average, as it has been for the past seven years. This will help maintain confidence and underpin household spending.

SFD and GSP growth is projected to slow over 2025/26 and 2026/27, due to rises in interest rates over 2023-25 impacting housing investment and consumer demand, with NSW suffering relative to the national average due to a higher household debt burden. Declines in public investment over 2025/26 to 2027/28 are also expected to contribute to weaker SFD and GSP growth, with public investment declining after a number of very large transport and other infrastructure projects wind down and are completed. A pickup in growth is then expected to ensue from 2027/28, as consumer spending and housing recover and strengthen, and business investment increases. On a positive note, the Australian dollar is forecast to average US$0.74 during this period, supporting trade-exposed industries. New South Wales will still derive benefits from solid economic growth in other states, given its tendency to run a positive balance on interstate trade in goods and services.

Table 3.2 New South Wales – Key Economic Indicators, Financial Years

							Forecast						
Year Ended June	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
New South Wales													
Total Construction Activity(*)	8.2	13.4	2.3	-7.8	-1.6	-1.4	5.3	0.5	-3.7	-3.0	-1.0	4.6	5.7
State Final Demand	3.6	3.3	2.0	-2.0	3.0	3.5	4.3	1.2	2.2	1.6	1.4	3.2	3.3
Gross State Product (GSP)**	**2.6**	**2.3**	**2.5**	**-0.6**	**1.4**	**2.8**	**3.5**	**1.2**	**2.2**	**1.9**	**2.2**	**3.3**	**3.1**
Employment Growth (Year Avg)	1.1	3.2	3.3	0.0	0.4	1.0	3.9	1.8	1.5	1.3	0.6	1.3	1.7
Australia													
Total Construction Activity(*)	-3.3	12.2	-9.1	-3.7	-0.7	1.5	6.4	7.2	-1.1	-4.6	0.0	5.7	6.8
Australian Domestic Demand	2.3	3.4	1.5	-0.9	2.6	5.1	4.1	2.2	2.6	1.6	1.7	3.4	3.7
Gross Domestic Product (GDP)	2.3	2.9	2.1	0.0	1.6	3.9	3.4	2.2	2.7	2.2	2.3	3.5	3.3
Employment Growth (Year Avg)	1.5	3.0	2.4	0.5	0.6	3.2	3.1	2.0	1.8	1.6	0.8	1.6	2.2

Source: BIS Oxford Economics 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.

** GSP is an estimate for FY2022

3.3 RBA CPI FORECASTS ARE USED TO CALCULATE REAL PRICES

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 uses the official near-term CPI forecasts from the Reserve Bank of Australia (RBA) and a glide path to the longer-term average, which is based on the 2.5% mid-point of the RBA's inflation target band (i.e., 2 to 3%). The RBA's August 2022 'Statement on Monetary Policy' forecast the headline CPI rate to be 7 ¾% in the December 2022 quarter, easing to 6 ¼% in the June quarter 2023 (giving a year average of 7% for 2022/23). An easing to 4 ¼% is forecast for the December quarter 2023 and then to 3 ½ % in the June quarter 2024 – giving a year average CPI rate of 4.2% for 2023/24. The RBA's CPI forecast for December 2024 is 3%, after which we have the annual rate easing to its long-run rate of 2.5% by June 2024 - giving a year average CPI

rate of 2.8% for 2023/24. Beyond the RBA's forecast from the SoMP, we assume the CPI averages 2.5% over the medium-to-long term.

The AER has adopted a changed methodology for calculating CPI inflation, according to the AER Final position paper "Regulatory Treatment of Inflation", released in December 2020. The main changes for the expected inflation projection are to reduce the length of the geometric average from 10 to 5 years and have a 'glide-path' from the end-point of the latest RBA forecast to the 2.5% mid-point by year 5 of the forecast period – with this 2.5% projection maintained until 2028/29. The average used for the five years from 2024/25 to 2028/29 is 2.6%.

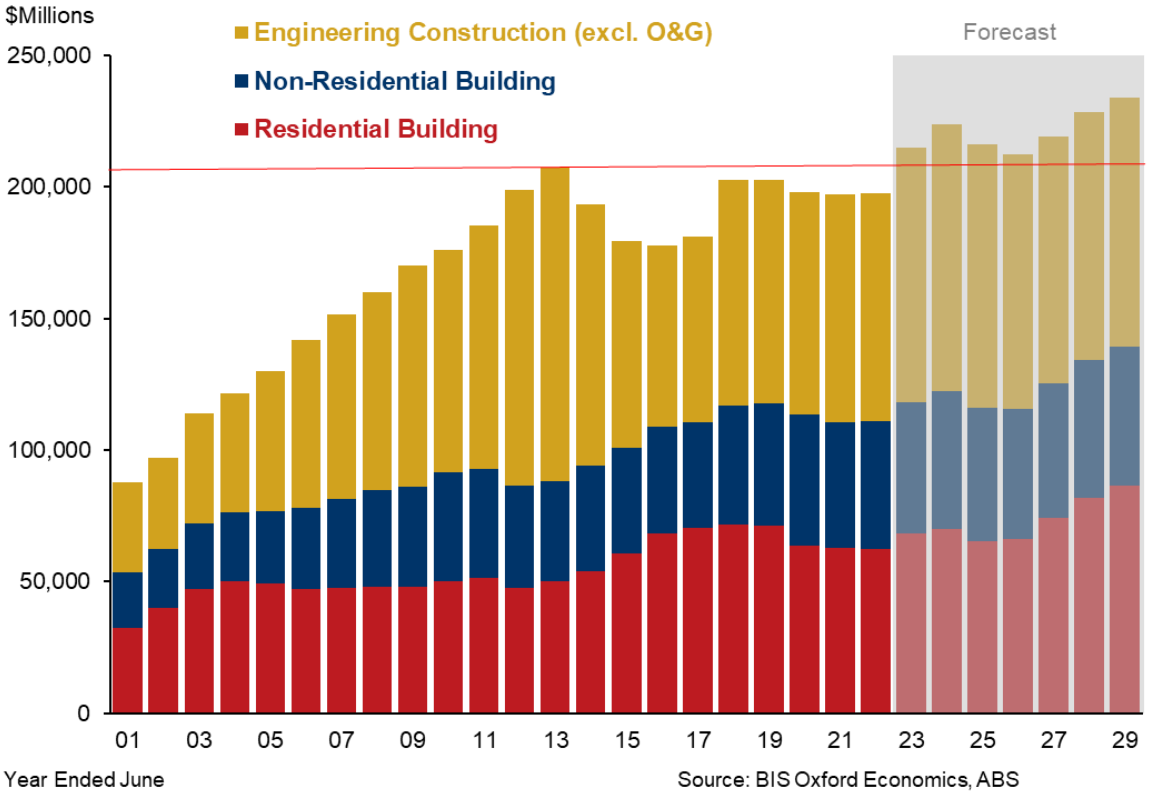
4. KEY DRIVERS OF MATERIALS PRICES

4.1 AUSTRALIA CONSTRUCTION OUTLOOK

Total construction activity is dominated by cycles in the building and engineering construction sectors. Heightened building activity (both residential and non-residential building) over 2013/14 to 2018/19 propped up the overall construction sector during a significant downturn in engineering work done (particularly oil and gas) over those years. Overall construction activity then declined over 2019/20 and 2020/21 as firstly residential building and then non-residential building declined. However, construction has been relatively shielded from the negative economic impacts of the Covid-19 outbreak, as most construction activities were allowed to continue throughout the pandemic. Additionally, federal and state governments highlighted the importance of the construction sector for supporting economic activity and building future infrastructure through various stimulus measures. Total construction activity returned to growth in 2021/22 on the back of strong growth in the roads and oil and gas engineering construction sectors, while building construction activity picked up.

Looking ahead, total construction activity is set to experience elevated levels of growth over the two years to 2023/24, as the rebound in engineering construction activity coincides with an upswing in building activity, which has been supported by the federal government's HomeBuilder stimulus. Non-oil and gas construction activity is expected to reach a record high in 2023/24, surpassing the previous peak reached during the mining boom in 2012/13. Renewed growth in residential building construction is then expected to drive total construction activity towards the end of the decade.

Figure 4.1 Australia Construction Work Done



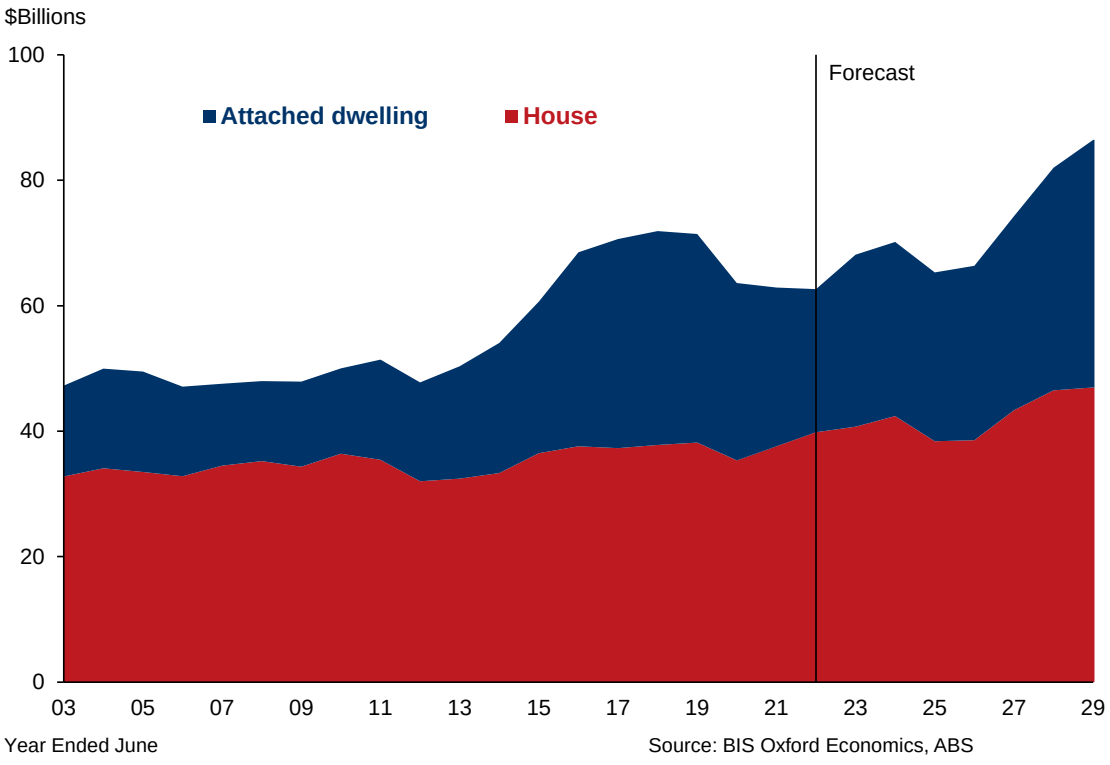
As construction activity reaches unprecedented levels, a key area of concern is that local material production capacity and labour supply (especially skilled labour) will struggle to meet this demand. As a result, higher construction material prices, which are beginning to materialise, are expected to be sustained in the near-term.

Furthermore, governments around the world have been targeting stimulus towards the construction of transportation infrastructure to help the economy recover from the coronavirus pandemic. This has seen global increases in the demand for key construction materials, such as copper and steel. These factors are also expected to support the domestically driven higher price levels over the near-term.

Residential Building

The residential sector, which was enduring a downturn that commenced in 2018, began showing signs of stabilising in the first half of 2020. Lead indicators for the property market turned positive, assisted by interest rate cuts, APRA easing its lending guidance and the First Home Loan Deposit Scheme. The onset of the pandemic halted this momentum, but only temporarily. Residential construction held firm in 2020/21, with unprecedented levels of housing stimulus, sub 2% p.a. fix rate mortgages, rising house prices boosting household confidence, and pandemic driven housing preference shifts, leading to sustained levels of activity. The extension of the HomeBuilder grant until December 31 2021 resulted in housing approvals rising for six straight months. Residential work done receded slightly to a trough in 2021/22, albeit remaining at elevated levels compared to the long-term average. Added to this are high levels of residential alterations and additions activity (which is not shown in the accompanying charts), peaking at a record high of $11.2bn in 2021/22.

Figure 4.2 Residential Building Work Done: By Sector



Moving forward, activity is positioned to step up again in 2022/23 and peak in 2023/24, with the value of work done rising a cumulative 12% over those two years to a peak of $70.1bn in 2023/24. Supply issues are expected to remain acute into 2022/23, with rising interest rates and higher construction costs set to stall the cycle. By 2024/25, activity is expected to normalise, falling by around -6.7% before stabilising in 2025/26 as rising borrowing and construction costs weigh on demand.

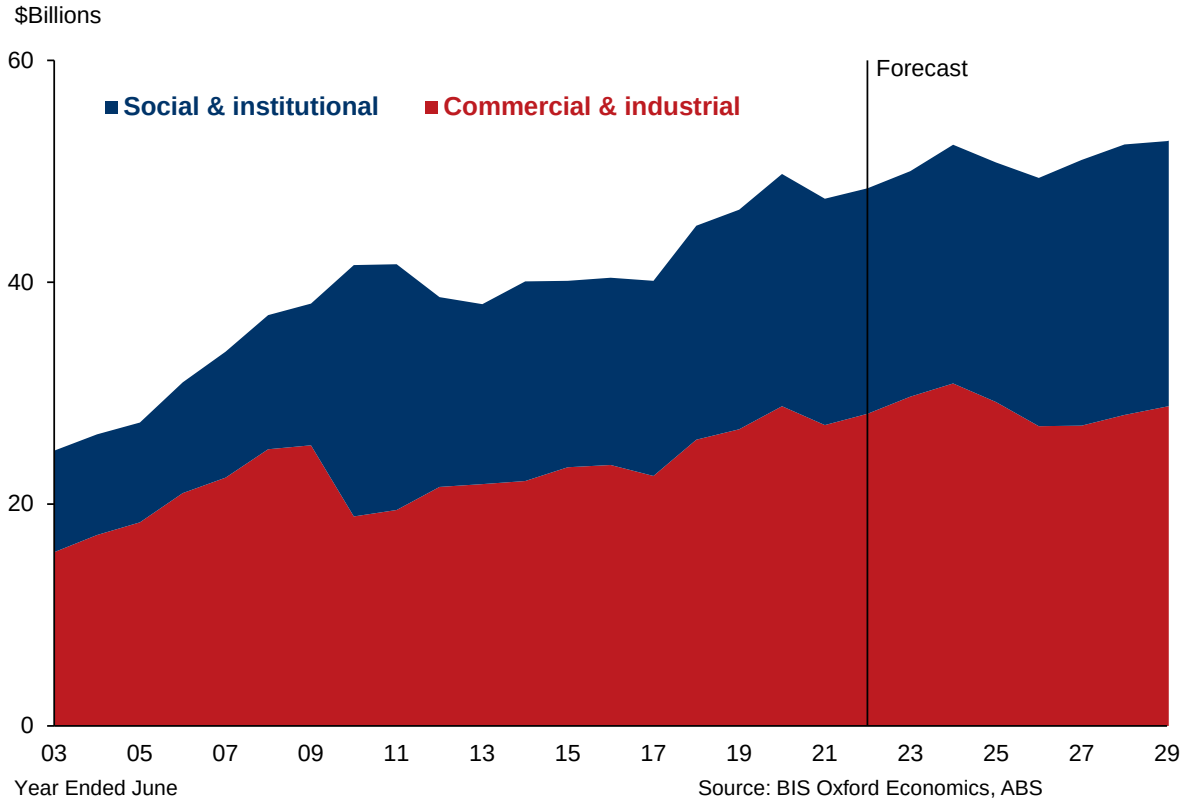
Non-Residential Building (NRB)

After non-residential building (NRB) work done held relatively stable near an average of $40bn over the decade to FY17, NRB work done shot up over 12% in FY18, and continued to grow in subsequent years to a peak of $49.8bn in in 2019/20. The vast bulk of this lift was concentrated in office building, with stronger growth in 2019/20 (despite COVID-19) was supported by health and warehouse building. After a modest decline in 2020/21, NRB construction rose slightly in 2021/22 to $48.5bn.

COVID effects continue to weigh on work, with raised levels of absenteeism arising in H1 2022 as the Omicron outbreak led to surging case numbers. Combined with severe flooding in eastern Australia and heightened supply issues, project delivery is likely to be pushed back even further.

Firms appear to be looking through these disruptions. Private investment is anticipated to continue growing in 2022/23, whilst the backlog of delayed work from 2020/21 and 2021/22 will begin to unwind. Total work done activity is forecast to lift modestly over 2022/23 and 2023/24, after which the effects of rising borrowing costs will weigh on private investment. 2024/25 will see construction activity cool off over the following two years. However, elevated levels of public investment will place a floor under total losses during this period.

Figure 4.3 Non-Residential Building Work Done: By Sector



Engineering Construction

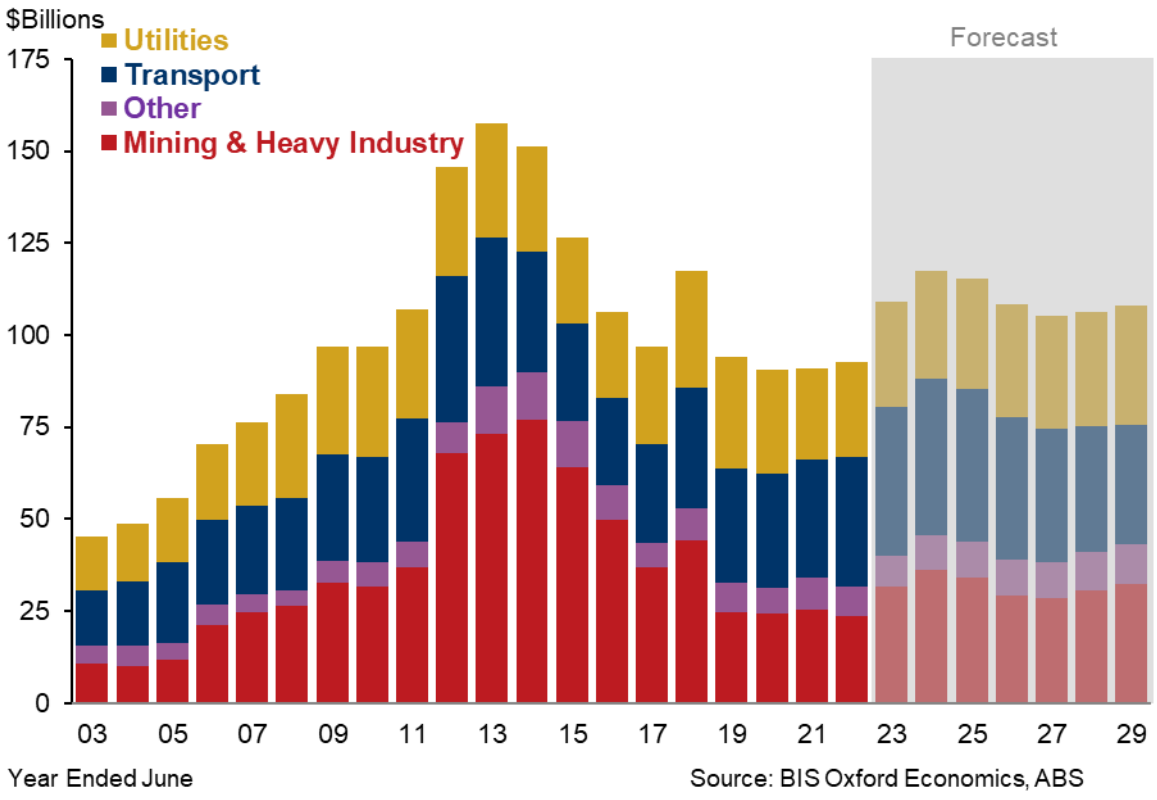
Engineering construction activity, excluding oil and gas, has experienced a cyclical upswing since FY16. The focus of the COVID-related stimulus was on the engineering sector, with the 'infrastructure-led' recovery a key component of the 2020/21 Federal Budget. During the early stages of the outbreak, a lack of restrictions targeted towards construction workers had allowed ongoing projects to progress steadily, and civil projects located outside of dense population centres were geographically shielded from any direct impacts.

Activity is forecast to grow strongly over the next two years to a peak of $117.4bn in 2023/24, driven in part by the transport infrastructure investment boom forecast to ramp up over the next few years, supported by a large pipeline of major publicly funded projects in Sydney, Melbourne and Brisbane.

Our forecasts assume delays on a number of major projects. There is a risk that these delays do not eventuate, as governments may push ahead with a large volume of work despite growing input cost inflation. There is also a risk of further delays beyond what we anticipate, and also project cancellations, as the industry grapples with capacity constraints.

Total engineering construction activity continues to be heavily influenced by oil and gas construction. The sector peaked at over $52bn in FY14, before falling back to $4bn in 2020/21. We believe that this marks the trough in activity and forecast the next upswing to peak at $16bn in 2023/24. It is noted, however, that Oil and Gas activity typically does not strain the local supply of materials and labour as other sectors do. This is because a large proportion of Oil and Gas expenditure is dedicated to prefabricated infrastructure, much of which is imported. Oil and Gas represented 6.6% of total engineering construction expenditure in 2021/22, with its share to increase to 13.7% by 2023/24.

Figure 4.4 Engineering Construction Work Done: By Sector

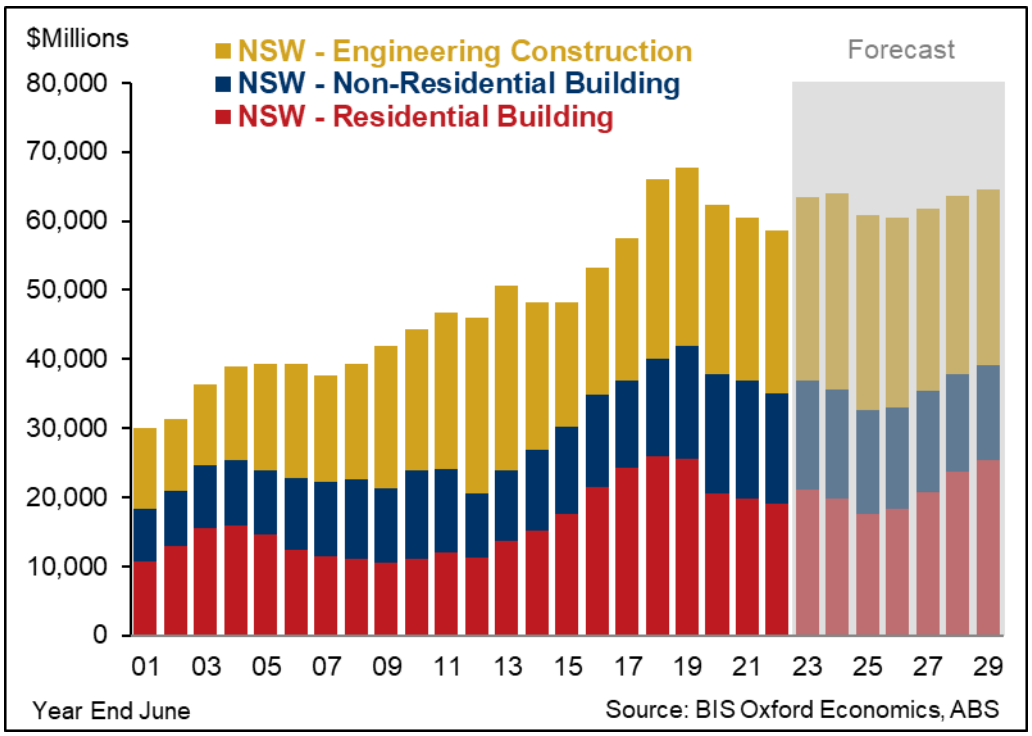


4.2 NEW SOUTH WALES CONSTRUCTION OUTLOOK

Total construction activity in New South Wales reached a record peak of $67.7bn in FY19 on the back of significant growth in residential construction. A drop in residential construction as well as falling engineering construction activity over the two years to 2020/21 dragged on total activity, with a small fall in non-residential dwelling construction in 2021/22 pushing total construction activity down to a trough of $58.6bn, 13.5% lower than the previous peak.

Looking forward, a jump in engineering construction and residential building activity is expected to drive strong growth in total construction in 2022/23, before continued growth in engineering construction activity boosts total construction activity slightly in 2023/24. Construction activity is then forecast to decline moderately over the two years to 2025/26 in NSW, before returning to modest growth rates for the remainder of the forecast horizon, boosted by strong growth in residential building construction for much of this period.

Figure 4.5 NSW Construction Work Done



Residential

Residential building work done in NSW grew substantially in the six years to FY18, reaching an unprecedented level of $26bn. This growth was particularly driven by attached dwelling construction which grew a cumulative 246% during that period. Residential building work done has since declined to a trough of $19.1bn in 2021/22 (average yearly decline of 7.2% over the four years). Worker absenteeism and inclement weather continue to weigh on activity, with their effects proving to be longer lasting than previously expected.

Lost work from this period and the Delta-related construction shutdown in 2021 is likely to be pushed back to early 2019/2023. Attached dwellings and houses are anticipated to grow strongly on the back of rising demand, supporting a surge in total activity to a peak in 2022/23.

Beyond this point, the effects of an improving economy and recovering population flows are not enough to offset rising borrowing costs, land constraints in Sydney, and the acceleration of build costs. As a result, house construction is expected to decrease sharply while attached dwelling construction also declines notably over 2023/24 and 2024/25. Total residential construction is then expected to return to growth for much of the latter half of the decade.

Non-Residential Building (NRB)

New South Wales non-residential building work done fell 6.8% to $16 billion in 2021/22. Projects have been further delayed throughout the first half of 2022, with the Omicron outbreak and inclement weather both contributing to disruption on-site.

Activity is anticipated to stabilise in 2022/23. This result is set to be broad-based, with commercial & industrial, and social & institutional activity holding steady. Aged care and health will pick up strongly, with the $330 million Nepean Hospital Redevelopment-Stage 2 getting underway. Total activity is forecast to remain mostly stable over 2023/24 before declining moderately in 2024/25 due to declining activity in warehouse and education construction.

Non-residential work done is then forecast to continue falling for the remainder of the forecast horizon as declining private investment is only partly offset by moderate growth in public spending. The largest project expected to commence over these years is the $1 billion New Bankstown-Lidcombe Hospital.

Engineering Construction

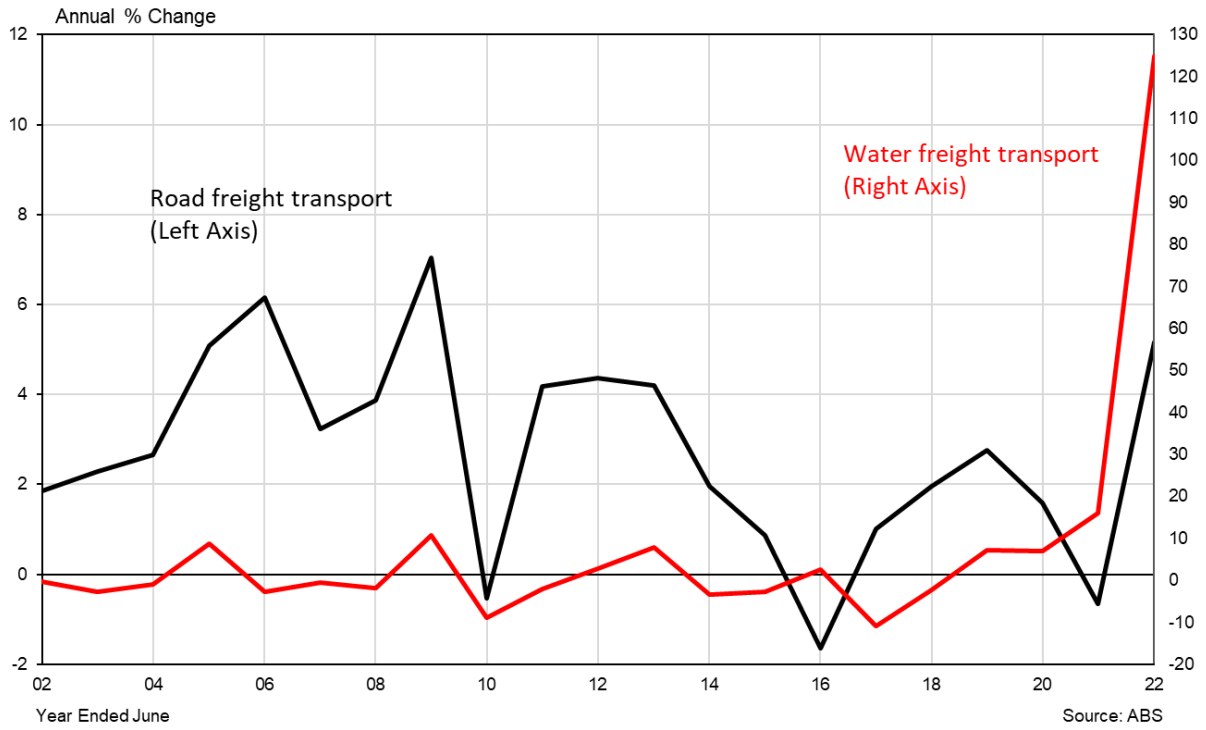
Engineering construction activity peaked at $25.9bn in FY18 with surging activity in the roads, rail, water and electricity sectors. The winding down of work on the NBN in addition to a notable decrease in roads construction work done drove total engineering construction activity down over four years to a trough of $23.5bn in 2021/22.

A ramp up in major publicly funded road and rail projects as well as elevated levels of construction activity in the water sector are anticipated to increase total engineering construction work done by around 20% over the next two years. Subsequently, declining activity in mining and heavy industry engineering construction work done and later the decrease in transportation sector construction activity are expected to lead to a tapering in total engineering construction activity for the remainder of the forecast horizon.

4.3 TRANSPORT COSTS AND OTHER INFLUENCES

Transport costs represent a further price driver for materials and inputs which are manufactured overseas as well as those which need to be transported considerable distances within Australia. Growth in the Water Freight Transport PPI, which includes international sea freight transport services surged in 2021/22 to almost eight times the previous record, corresponding to significant growth rates in the Baltic Dry Index. This growth reflects the Covid-19 related supply chain constraints in the shipping sector, which have contributed to increases in the prices of imports. The Road Freight Transport PPI has meanwhile recorded its fastest growth since FY09 in 2021/22, albeit at a much more modest rate. Additionally, oil prices, a major input into the transportation sector, spiked 69.4% in 2021/22, driving a component of this growth in transport costs (see section 5.1). Construction wages are yet another driver of materials costs. Construction wages are expected to grow at above-average rates in coming years as inflation growth accelerates and skilled labour shortages materialise.

Figure 4.6 Transport Cost Indices



5. COMMODITY PRICE AND MATERIAL COST ESCALATOR FORECASTS

5.1 COMMODITY PRICE FORECASTS

Commodity price forecasts are global price forecasts, sourced from the latest Consensus Economics '*Energy & Metals Consensus Forecasts*' (E&MCF) publication. This publication provides commodity price forecasts measured in US$ terms from a range of forecasters. The latest available publication is August 2022, where around 30 separate forecasters supplied price forecasts out to 2031 – the average of all the forecasters is used here. The AER has shown a preference for accepting a range of forecasts from different forecasters, and then taking an average. The Consensus Economics E&MCF provides that for a range of global energy and metals commodities. Quarterly forecasts are provided for two financial years, followed by calendar year forecasts for the next three years. Long-term forecasts are provided by a five-year average.

These US$ forecasts were converted into A$ terms using consensus forecasts of exchange rates. Exchange rate forecasts are only available for the next two years from the Consensus Economics *Asia Pacific Consensus Forecasts* (APCF) publication. The US$/A$ exchange rate is then held constant at the last APCF forecast point over the longer term. Overall, the exchange rate is predicted by the large range of forecasters supplying forecasts to the Consensus Economics survey. The Australian dollar is heavily influenced by movements in Australia's basket of commodity prices and interest rate relativities between Australian and overseas interest rates (particularly US interest rates). The A$ averaged US$0.75 in 2020/21, having recovered from US$0.67 in 2019/20 (see table below). The A$ averaged US$0.73 in 2021/22 and is forecast to fall to US$0.70 in 2022/23. The Consensus Economics AOCF forecasts then project an appreciation in the A$ back to US$0.73 in 2023/24.

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 at near 10-year highs (see table 5.1). Although they are expected to retreat from these highs over the period to 2028/29, the average prices in the five years to 2028/29 (the upcoming revenue period) will be higher than the current revenue period (2019/20 to 2023/24), 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 2019/20 due to Covid-related demand concerns, but subsequently rebounded and experienced robust growth of 21% in 2020/21 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 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. Prices then fell sharply in the June quarter, but averaged US$2903/t (A$3,999/t) in 2021/22. Base metals have since hit one-year lows in July, before recovering over August. Prices of the most energy-intensive metals such as aluminium and copper will be supported by high energy costs in the near-term as the 'energy crisis' approaches this winter in the northern hemisphere.

Table 5.1 Materials and Commodity Price Forecasts

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Average (o)
	Actuals					Forecasts		Next Revenue Determination Period					
Commodity Prices ($/tonne) (a)													
Copper (A$/tonne)	8702	8598	8446	10664	13316	11386	11226	11449	11339	11412	11481	11481	11432
Copper (US$/tonne)	6747	6151	5669	7969	9665	8007	8153	8391	8311	8364	8415	8415	8379
Aluminium (A$/tonne)	2751	2683	2496	2715	3999	3717	3598	3694	3571	3552	3573	3573	3593
Aluminium (US$/tonne)	2133	1920	1675	2029	2903	2614	2613	2708	2618	2603	2619	2619	2633
Oil (A$/barrel)	82.2	96.1	76.9	72.5	126.3	141.8	120.1	106.3	102.0	103.3	104.3	104.3	104
Oil (US$/barrel)	63.7	68.7	51.6	54.2	91.7	99.7	87.2	77.9	74.8	75.7	76.5	76.5	76
Exchange rate (US$/A$) (b)	0.78	0.72	0.67	0.75	0.73	0.70	0.73	0.73	0.73	0.73	0.73	0.73	0.73
% ch													
Copper (A$/tonne)	21.8	-1.2	-1.8	26.3	24.9	-14.5	-1.4	2.0	-1.0	0.6	0.6	0.0	0.5
Aluminium (A$/tonne)	17.1	-2.5	-7.0	8.8	47.3	-7.1	-3.2	2.7	-3.3	-0.5	0.6	0.0	-0.1
Oil (A$/barrel)	23.9	16.9	-19.9	-5.8	74.2	12.3	-15.3	-11.5	-4.1	1.3	1.0	0.0	-2.7
Nominal Material Producer Price Indices (PPI)													
Steel Beams and Sections PPI (Australia) (c)	107.0	112.4	112.6	118.4	154.9	160.9	143.2	145.7	149.0	151.1	156.3	163.2	153.1
Reinforcing Steel PPI (Australia) (d)	94.4	101.5	98.6	102.7	144.6	150.9	130.7	129.2	127.6	125.4	127.5	132.0	128.3
State Steel Products (NSW) (e)	94.9	99.1	100.8	113.6	144.5	155.1	134.9	135.4	136.0	135.6	139.0	144.8	138.1
Concrete, Cement & Sand PPI (NSW) (f)	120.5	123.6	124.4	122.0	120.8	128.4	136.1	141.7	145.7	149.1	153.5	158.6	149.7
Poles - Concrete (Cement Products PPI) (NSW) (g)	112.4	114.1	115.9	118.4	125.0	133.0	139.4	144.1	147.7	150.7	154.6	159.6	151.3
Poles - Wood (h)	103.3	110.8	115.7	110.9	119.4	126.0	133.1	139.3	143.6	144.1	147.2	154.6	145.8
Cable (Electrical Cable Manufacturing PPI) (i)	101.3	101.5	99.2	103.7	127.2	130.3	127.7	132.3	135.3	137.1	142.6	150.6	139.6
Communications Equipment Manufacturing PPI (j)	123.9	120.7	123.7	126.4	136.8	142.1	144.8	147.9	150.7	153.6	156.9	161.0	154.0
Switchgear (Other Electrical Equipment Manufacturing PPI) (k)	103.2	107.2	105.7	109.0	114.9	122.3	124.4	128.0	131.1	133.4	137.1	141.2	134.2
Non-hydro Electricity Engineering Construction IPD (l)	110.8	115.2	118.2	120.5	127.7	132.6	134.4	139.1	143.1	146.5	151.4	158.0	147.6
% ch													
Steel Beams and Sections PPI (Australia) (c)	2.2	5.0	0.2	5.1	30.8	3.9	-11.0	1.8	2.3	1.4	3.4	4.4	2.7
Reinforcing Steel PPI (Australia) (d)	8.6	7.4	-2.8	4.1	40.7	4.4	-13.4	-1.2	-1.2	-1.7	1.7	3.5	0.2
State Steel Products (NSW) (e)	0.7	4.5	1.6	12.7	27.3	7.3	-13.0	0.4	0.5	-0.4	2.5	4.2	1.4
Concrete, Cement & Sand PPI (NSW) (f)	3.5	2.5	0.7	-2.0	-0.9	6.3	6.0	4.2	2.8	2.3	2.9	3.3	3.1
Poles - Concrete (Cement Products PPI) (NSW) (g)	2.6	1.5	1.5	2.2	5.6	6.4	4.8	3.3	2.5	2.1	2.6	3.2	2.7
Poles - Wood (h)	3.4	7.2	4.4	-4.1	7.7	5.5	5.7	4.6	3.1	0.3	2.2	5.0	3.1
Cable (Electrical Cable Manufacturing PPI) (i)	11.0	0.1	-2.2	4.5	22.6	2.5	-2.0	3.6	2.3	1.4	4.0	5.6	3.4
Communications Equipment Manufacturing PPI (j)	-3.5	-2.5	2.5	2.2	8.2	3.9	1.9	2.2	1.9	1.9	2.2	2.6	2.1
Switchgear (Other Electrical Equipment Manufacturing PPI) (k)	4.0	3.9	-1.4	3.1	5.5	6.5	1.7	2.9	2.4	1.8	2.8	3.0	2.6
Non-hydro Electricity Engineering Construction IPD (l)	2.0	4.0	2.6	1.9	6.0	3.8	1.4	3.5	2.9	2.4	3.4	4.3	3.3
Consumer Price Index - headline (m)	1.9	1.6	1.3	1.6	4.4	7.0	4.2	2.6	2.6	2.6	2.6	2.6	2.6
Real Commodity Price Changes (n)													
Copper (A$/tonne)	19.9	-2.8	-3.1	24.6	20.4	-21.5	-5.6	-0.6	-3.5	-1.9	-2.0	-2.6	-2.1
Aluminium (A$/tonne)	15.2	-4.1	-8.3	7.2	42.9	-14.1	-7.4	0.1	-5.9	-3.1	-2.0	-2.6	-2.7
Oil (A$/barrel)	22.0	15.3	-21.3	-7.4	69.8	5.2	-19.5	-14.0	-6.6	-1.3	-1.6	-2.6	-5.2
Real Material Producer Price Indices (PPI) (n)													
Steel Beams and Sections PPI (Australia) (c)	0.2	3.4	-1.2	3.5	26.4	-3.1	-15.2	-0.8	-0.3	-1.1	0.8	1.8	0.1
Reinforcing Steel PPI (Australia) (d)	6.7	5.8	-4.1	2.5	36.3	-2.7	-17.6	-3.7	-3.8	-4.3	-0.9	1.0	-2.3
State Steel Products (NSW) (e)	-1.2	2.8	0.3	11.1	22.8	0.3	-17.2	-2.2	-2.1	-2.9	-0.1	1.6	-1.1
Concrete, Cement & Sand PPI (NSW) (f)	1.6	0.9	-0.6	-3.6	-5.4	-0.8	1.8	1.6	0.3	-0.2	0.4	0.8	0.6
Poles - Concrete (Cement Products PPI) (NSW) (g)	0.6	-0.1	0.2	0.6	1.1	-0.6	0.6	0.7	-0.1	-0.5	0.0	0.7	0.2
Poles - Wood (h)	1.5	5.6	3.1	-5.8	3.2	-1.5	1.5	2.0	0.5	-2.2	-0.4	2.5	0.5
Cable (Electrical Cable Manufacturing PPI) (i)	9.1	-1.5	-3.6	2.9	18.2	-4.5	-6.2	1.0	-0.3	-1.2	1.4	3.0	0.8
Communications Equipment Manufacturing PPI (j)	-5.5	-4.2	1.1	0.6	3.7	-3.1	-2.3	-0.4	-0.7	-0.7	-0.4	0.0	-0.4
Switchgear (Other Electrical Equipment Manufacturing PPI) (k)	2.1	2.3	-2.7	1.4	1.0	-0.6	-2.5	0.3	-0.1	-0.8	0.2	0.5	0.0
Non-hydro Electricity Engineering Construction IPD (l)	0.0	2.3	1.3	0.3	1.6	-3.2	-2.8	0.9	0.3	-0.2	0.8	1.8	0.7

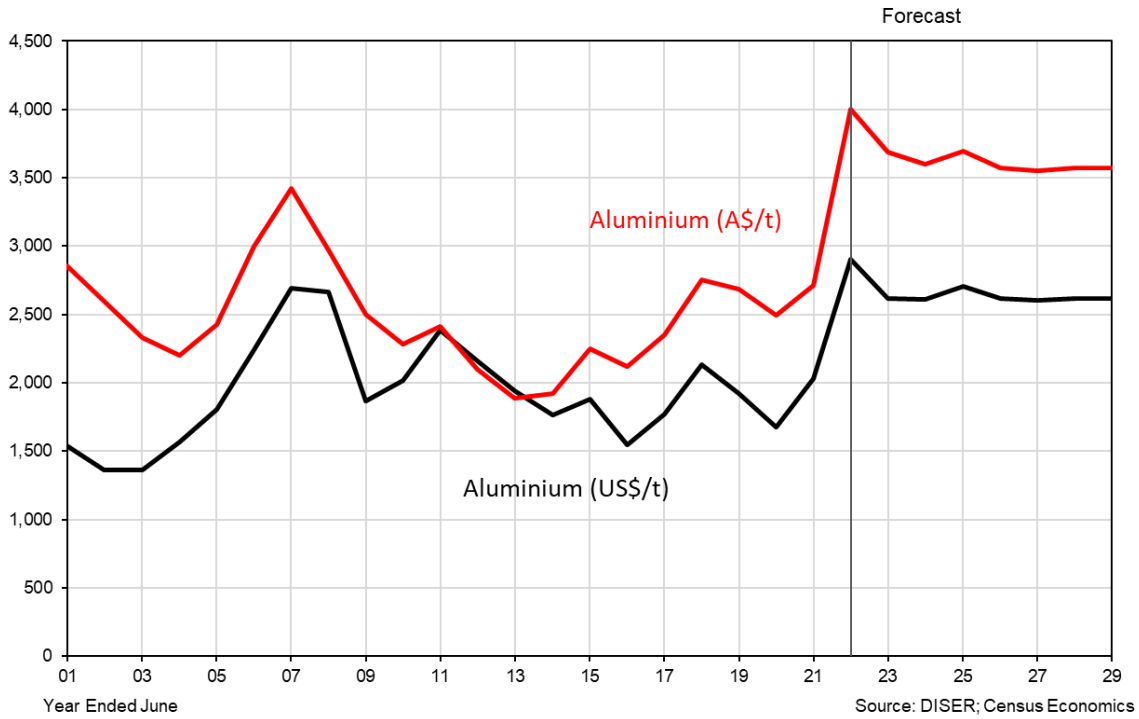
Source: ABS, BIS Oxford Economics, Consensus Economics

(a) Forecasts from June quarter 2022 to FY29 come from June 2022 Consensus Economics publication, "Energy & Metals Consensus Forecasts".
(b) Forecasts from June 2022 to FY29 come from June 2022 Consensus Economics publication, "Asia Pacific Consensus Forecasts".
(c) Historical figures come from Table 18 of ABS release 6427.
(d) Historical figures come from Table 18 of ABS release 6427.
(e) Historical figures come from Table 18 of ABS release 6427.
(f) Historical figures come from Table 18 of ABS release 6427.
(g) The Cement Products PPI is the proxy for Concrete Poles. Historical figures come from Table 18 of ABS release 6427.
(h) Historical figures come from Australian Bureau of Agriculture Resources Economics and Sciences. The index of Plantation and Native Hardwood prices are used.
(i) The Electrical Cable Manufacturing PPI is the proxy for cables. Historical figures come from Table 12 of ABS release 6427.
(j) Historical figures come from Table 18 of ABS release 6427.
(k) The Other Electrical Equipment Manufacturing PPI is the proxy for Switchgears. Historical figures come from Table 12 of ABS release 6427.
(l) Historical figures come from the ABS Engineering Construction Service series, provided as an unpublished 'Special Run series.
(m) Inflation forecasts are RBA forecasts to June 2024 from latest 'Statement of Monetary Policy'. Beyond that, inflation forecasts are based on a glide-path to the mid-point of RBA inflation target (2.5%) by year 5. The overall forecasts are then calculated as a geometric mean of the 'official' RBA inflation forecasts over the next 5 years or to the end of the regulatory period, with years 3,4 and 5 CPI equal to the calculated 5-year geometric mean. This methodology is the position adopted by the Australian Energy Regulator.
(n) Real price changes are calculated by deducting the inflation rate from nominal price changes.
(o) Average for the next revenue determination period i.e. from 2024/25 to 2028/29 inclusive.

We note that aluminium forecasts from September quarter 2022 to 2028/29 come from the August 2022 Consensus Economics publication, "Energy & Metals Consensus Forecasts". A total of 26 participants were included in the August survey data. Although risks of further increases in energy prices persist, aluminium prices are expected to fall 10% to just over US$2,600/t in 2022/23, before stabilising in 2023/24. A 3.6% rebound is forecast for 2024/25, after which prices are expected to fall back to around US$2,600/t over the two years to 2026/27. As base metal demand is heavily tied to global economic growth, any cyclical downturn will drag commodity prices alongside it. Therefore, we expect prices to rise gradually over the long term. A key factor pushing up prices over the long term will be higher electricity prices, a significant input into aluminium (and often alumina) production.

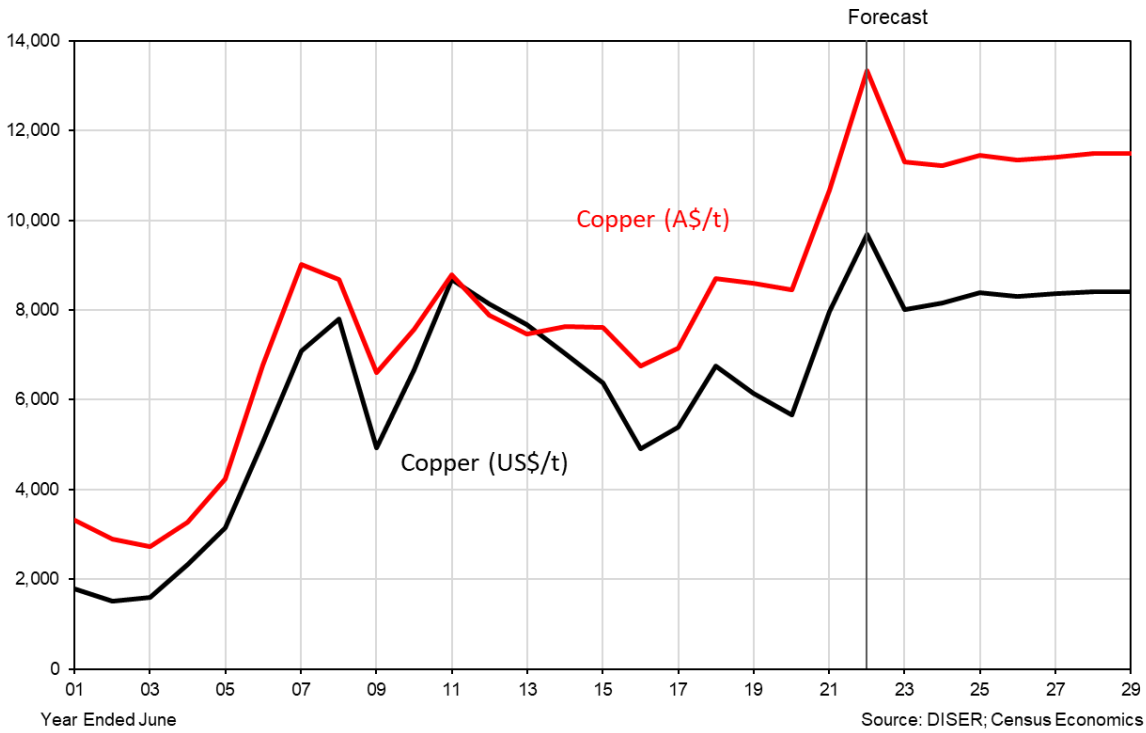
Overall, Aluminium prices are expected to average US$2,633/t over the five years from 2024/25 to 2028/29 (the next revenue determination period) – 11.3% higher than the previous 5-year average of US$2,367/t in 2024/25 to 2028/29 compared to 2019/20-24 (the current revenue determination period); although this will be somewhat mitigated by a slightly higher Australian dollar – to average 2.5% higher than the 2019/20-23/24 period.

Figure 5.1 Aluminium Price Forecast to 2028/29



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 2019/20 to an annual average below US$5,700/t. Subsequently, acute production problems due to covid disruptions and the recovery in demand saw prices surge 40.6% in 2020/21 to an annual average of just under US$8,000/t. While the Big 4 copper producers (BHP Billiton, Coldelco, Freeport McMoran and Glencore) aimed to increase copper production over 2021, reduced investment activity throughout the pandemic has thinned the pipeline of project development. Over 2021/22, signs of increased supply began to appear, despite continued production issues in Chile (due to strikes and water shortages). However, prices increased 21.3% in 2021/22, averaging US$9665/t (a 25% increase in A$ terms to A$13,386/t).

Figure 5.2 Copper Price Forecast to 2028/29



While copper demand will get a boost from greater use in electric vehicles and green electricity production, 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. Copper is particularly sensitive to global economic activity, and prices have consequently fallen by more than 20% m/m, to an 18-month low on 8 July 2022.

We note that copper forecasts from September quarter 2022 to 2028/29 come from August 2022 Consensus Economics publication, "Energy & Metals Consensus Forecasts". A total of 29 participants were included in the August survey data. The amount of survey participants providing forecasts gradually declines to 10 for the long term 2027-2031 forecasts. Prices are expected to fall -17.2% in 2022/23 to around US$8,000, given the deterioration in market sentiment amidst recession fears and a darkening demand outlook. Copper prices are then expected to register a modest growth over the two years to 2024/25 (average annual growth of 2.4%). After a slight drop in 2025/26, minimal growth rates are projected over the remainder of the forecast horizon, with prices surpassing US$8,400 in 2027/28.

Overall, Copper prices are expected to average US$8,379/t over 2024/25 to 2028/29 (the next revenue determination period), which will be 6.2% higher than the previous 5-year average of US$7893/t in 2019/20-23/24.

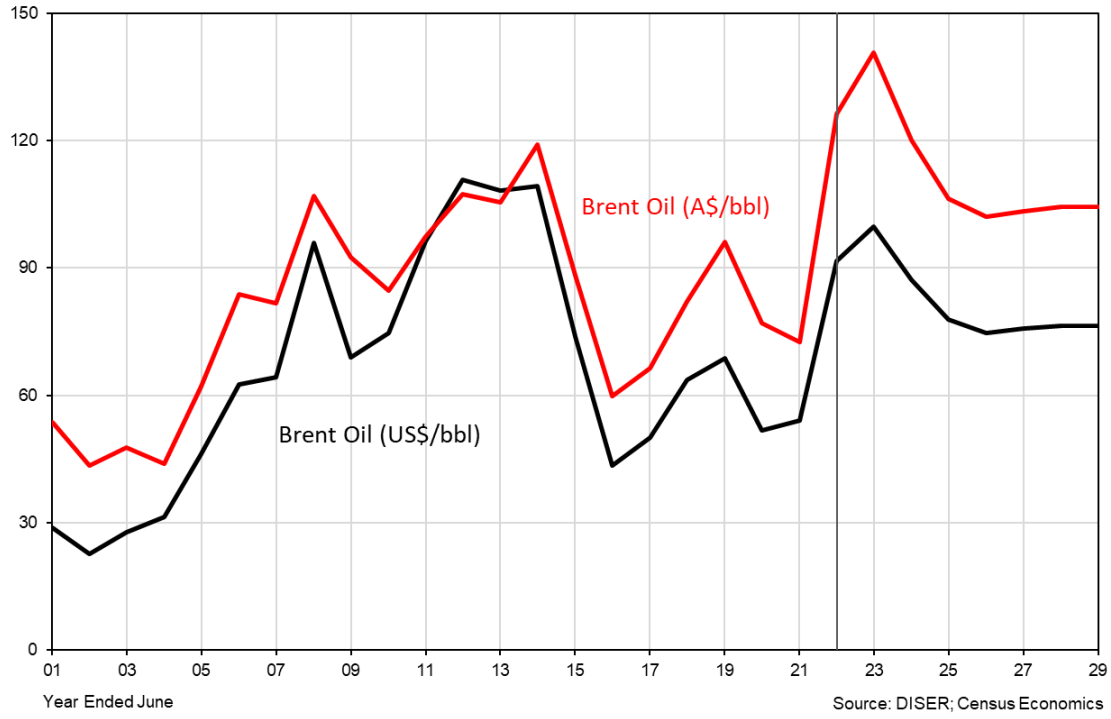
Oil markets were decimated in the first four months of 2020, with opposing demand and supply shocks sending prices into a freefall. **Brent Oil** spot prices were around US$20pb in April 2020 (an almost 60% drop for the year to 20 April 2020) reflecting a massive industry glut, with producers struggling to find buyers for their crude oil. On average Brent Oil prices fell 24.9% from FY19 to 2019/20 (an annual average of US$51.6pb in 2019/20). On the demand side, the activity restrictions in place due to the COVID-19 outbreak has led to a dramatic reduction in the usage of oil, with sharp drops in all transport fuels and falls in petrochemicals used in the automotive industry.

The lifting of COVID-19 lockdowns corresponded to a sharp rebound in oil demand, but with production remaining low throughout 2020/21, upward pressure was placed on prices, leading to a 4.9% increase in 2020/21. Brent oil prices continued to grow for the remainder of 2021 with the upswing in the global economy and improving transport and travel boosting demand, while supply disruptions continued to persist amid tight control by the OPEC+ group.

Prices spiked upon Russia's invasion of Ukraine in February 2022 as supply side risks emerged. As oil prices began to subside, a partial EU ban on Russian oil placed further upward pressure on prices. By mid-2022, OPEC had largely ignored the disruption to Russian supply, with OPEC+ sticking to its production schedule of an increase of 432,000 barrels per day. But data from April suggest OPEC+ is still falling well short of that target, even leaving out Russian production. Production in the US, in contrast, is responding to higher prices, albeit more slowly than in previous price upturns. Nonetheless we are beginning to see the impact of higher prices weighing on consumption in advanced economies.

Brent Oil prices averaged US$91.7pb over 2021/22 (a 69.2% year on year increase). Brent Oil forecasts from the September quarter 2022 to 2029 come from the August 2022 Consensus Economics publication, "Energy & Metals Consensus Forecasts". A total of 29 participants were included in the August survey data. The amount of survey participants providing forecasts gradually declines to 11 for the long-term 2027-2031 forecasts. Prices are projected to grow a further 8.8% to US$99.7pb in 2022/23, before returning to market fundamentals with an average annual decline of -9.1% between 2023/24 and 2025/26, reaching a trough of US$74.8pb. Subsequent years are forecast to see modest growth rates of 1.3% in 2026/27 and 1% in 2027/28. Brent Oil prices are expected to average US$76.3pb over 2024/25 to 2028/29 (the next revenue determination period), which will be 0.8% lower than the previous 5-year average of US$76.9pb over 2019/20-24.

Figure 5.3 Oil Price Forecast to 2028/29

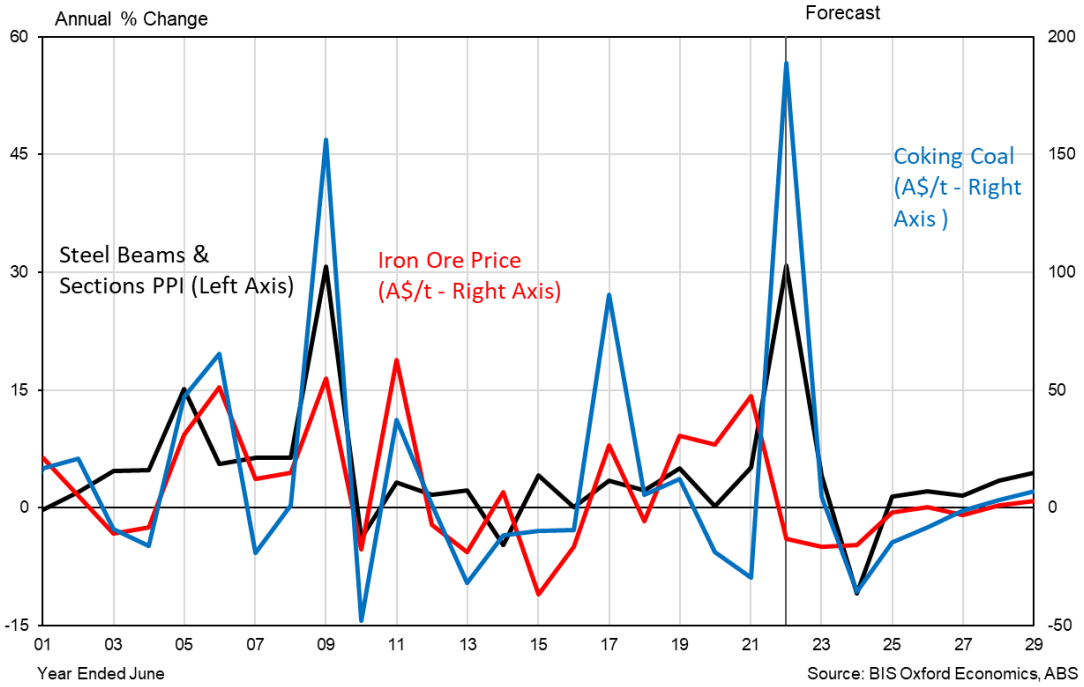


5.2 STEEL BEAMS AND SECTIONS PRICES - AUSTRALIA

The Steel Beams & Sections PPI is heavily driven by the price of the primary inputs – i.e. the price for iron ore and coking coal. This was particularly apparent in FY09, where the leap in coking coal prices was followed by significant growth in both structural steel producer price indices. Further, we find a relationship between steel and the total level of construction activity (albeit more muted relative to primary material prices) which reflects the price squeeze on construction inputs at the peak of each cycle.

The **Steel Beam & Sections PPI** grew 5.1% in 2020/21. Supply chain constraints and recovering demand saw coking coal prices soar in 2021/22, with a further boost from supply concerns due to the Russian-Ukraine conflict, which had seen thermal coal prices more than double. Thermal coal prices can influence coking coal prices, particularly in the lower priced semi-soft and PCI (pulverised coal injection) segments. Russia also supplies some coking coal to the international market (mostly Europe). In addition, the construction boom added to local steel price pressures, leading to a spike of 30.8% in the Steel Beam & Sections PPI in 2021/22 (the highest on record). Further growth in coking coal prices and elevated levels of construction activity are projected to see the Steel Beam & Sections PPI rise a modest 3.9% in 2022/23. A dip of -11% is forecast in 2023/24 on the back of easing iron ore and coking coal prices. A relatively restrained outlook for iron ore and coking coal prices over the longer term should constrain any large upwards movements in the price index. In total, average growth over the next revenue determination period (from 2024/25 to 2028/29) sits at 2.7% per annum. This is lower than the previous 5-year period over 2019/20-23/24 of 5.8% growth per annum, due to the major spike seen in 2021/22. In real terms, growth is expected to be a 0.1% on average over 2024/25 to 2028/29 (see table 5.1).

Figure 5.4 Steel Beams & Sections PPI – Drivers



5.3 REINFORCING STEEL PRICES - AUSTRALIA

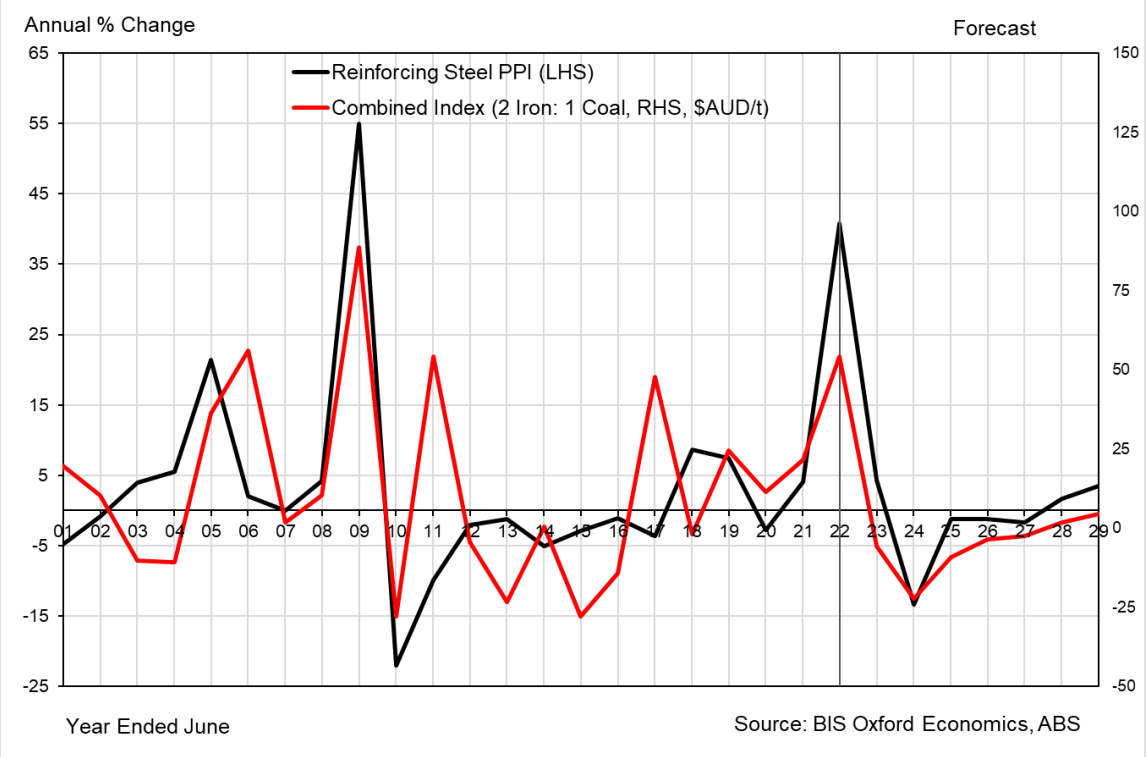
This producer price index tracks the price change in reinforcing steel, mainly used as rebar (reinforcing bar) to support load-bearing concrete products. However, local Australian construction

activity – particularly the more concrete-intensive sectors of buildings and roads & bridges – can also have an influence on prices. Note that there is usually much more volatility in the price of reinforcing steel than steel beams and sections. The price of steel and related products has consistently had a tight relationship with the primary input prices – i.e. the prices for iron ore and metallurgical coking coal. This was particularly apparent in FY09 and currently, where the leap in both coking coal and iron ore prices shifted up manufacturing costs and led to significant growth in the PPI.

2019/20 saw a -2.8% decline in the index, with a majority of the losses coming through before the outbreak. The Reinforcing Steel PPI increased 4.1% in 2020/21, due mainly to higher iron ore prices. Prices then lifted 40.7% in 2021/22 as coking coal prices almost tripled, iron prices remained high and local steel demand increased as construction increased, while Chinese steel production and exports were impacted by their zero tolerance Covid policy.

As with steel beams and sections, mentioned above, the easing in prices lagging the declines in input prices, but reinforcing steel price growth is forecast to hold up due to strong local demand from the construction sector, with growth of 4.4% in 2022/23. Beyond 2022/23, reinforced steel prices will see prices fall by -13.4% in 2023/24 due to the fall in input prices, although strong local construction demand will help mute the price declines relative to input price falls. Thereafter, prices will remain flat, averaging 0.2% p.a. over 2024/25 to 2028/29.

Figure 5.5 Reinforcing Steel Price Drivers



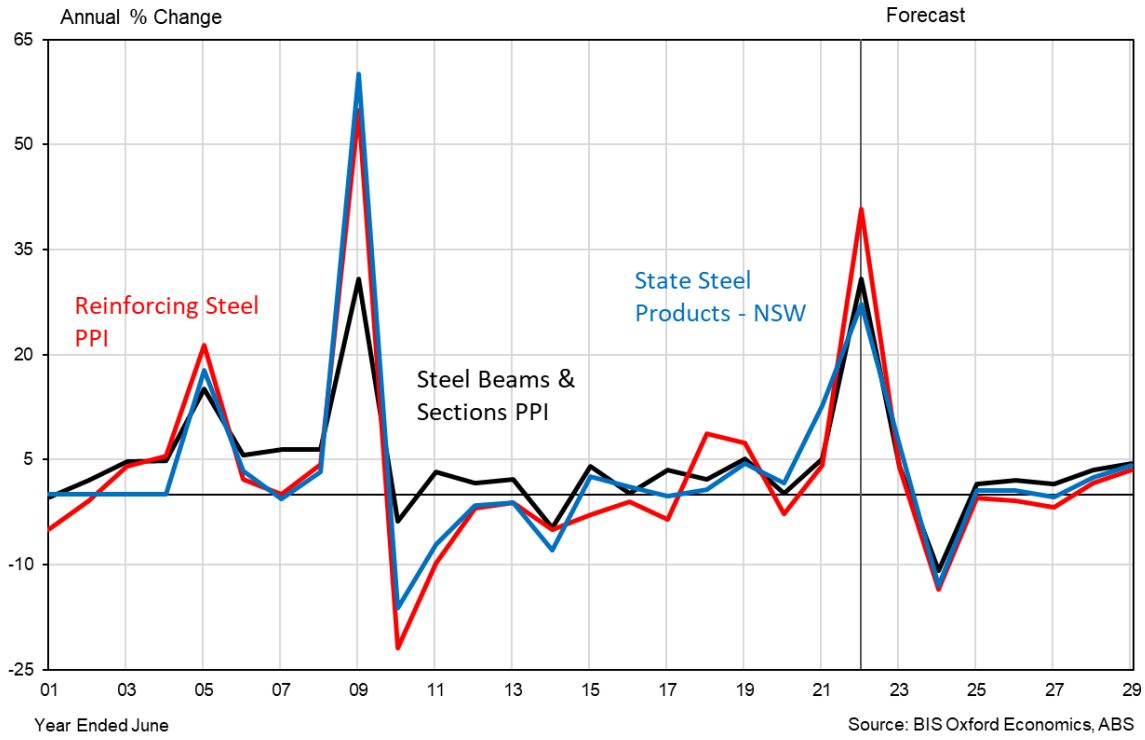
5.4 STATE STEEL PRODUCTS – NEW SOUTH WALES

The Sydney Steel Products PPI makes up part of the ABS's Input to the House Construction Industry index. This index measures the price change for selected inputs used in the construction of detached houses. This PPI is composed of both structural steel and milled steel products (sheeting, rods, pipe and tubing and t-sections), and follows a similar trend to the previously outlined construction industry materials Steel Beams and Sections and Reinforcing Steel.

The price of Sydney steel products has a tight relationship with primary input prices (iron ore and coking coal) and the supply/demand dynamics that influence structural steel products. As such, we employ a weighted average of Steel Beams and Sections and Reinforcing Steel to derive the price movements for state steel products.

A combination of local and international price pressures saw the Sydney Steel Products PPI spike 27.3% in 2021/22 (the highest since 2009). State steel products are expected to record a further growth of 7.3% in 2022/23 before a 13% market correction in 2023/24. In total, the average growth over the next revenue determination period (from 2024/25 to 2028/29) sits at 1.4% per annum. This is lower than the previous 5-year period over 2019/20-23/24 of 7.2% growth per annum, due to the strong growth seen in 2020/21 and 2021/22. In real terms, the Sydney Steel Products PPI is expected to decline at -1.1% on average over 2024/25 to 2028/29 (see table 5.1).

Figure 5.6 Steel Beams & Sections PPI – Drivers



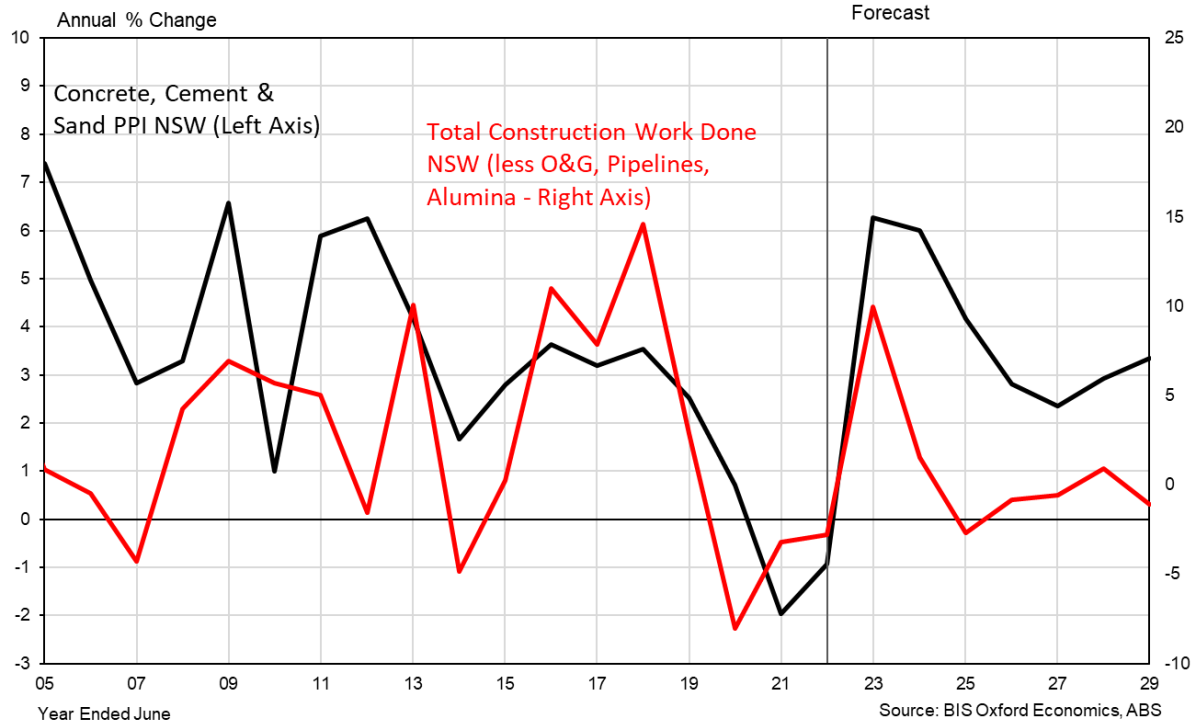
5.5 CONCRETE, CEMENT & SAND PRICES – NEW SOUTH WALES

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

The **Sydney Concrete, Cement and Sand PPI** (used as a proxy for state prices) declined -2% in 2020/21 and a further -0.9% in 2021/22, driven by the sharp falls in construction activity, particularly residential building and engineering construction (see figure 4.5 in section 4.2). The lower construction activity presented a demand shock to the market for construction materials, while there were also some impacts from Covid-19.

A 6.3% rebound in the New South Wales Concrete, Cement and Sand PPI is forecast in 2022/23 (the highest growth since FY09). Continued growth is expected to be driven by a surge in construction activity, particularly in dwelling building and publicly funded transport infrastructure in New South Wales. Importantly, growth in the PPI is expected to remain strong over 2023/24 and 2024/25 (6% and 4.2%), largely due to the level of construction activity in 2023/24 and 2024/25 approaching the previous peak, which will see very strong demand pressures on construction materials prices. As these mega-projects begin to finish over the medium term, growth in the New South Wales Concrete, Cement and Sand PPI will also slow. Overall, an average annual increase of 3.1% is forecast for the next revenue determination period (between 2024/25 and 2028/29), with the real increase expected to average 0.6% p.a. (see table 5.1).

Figure 5.7 Concrete, Cement & Sand PPI – Drivers

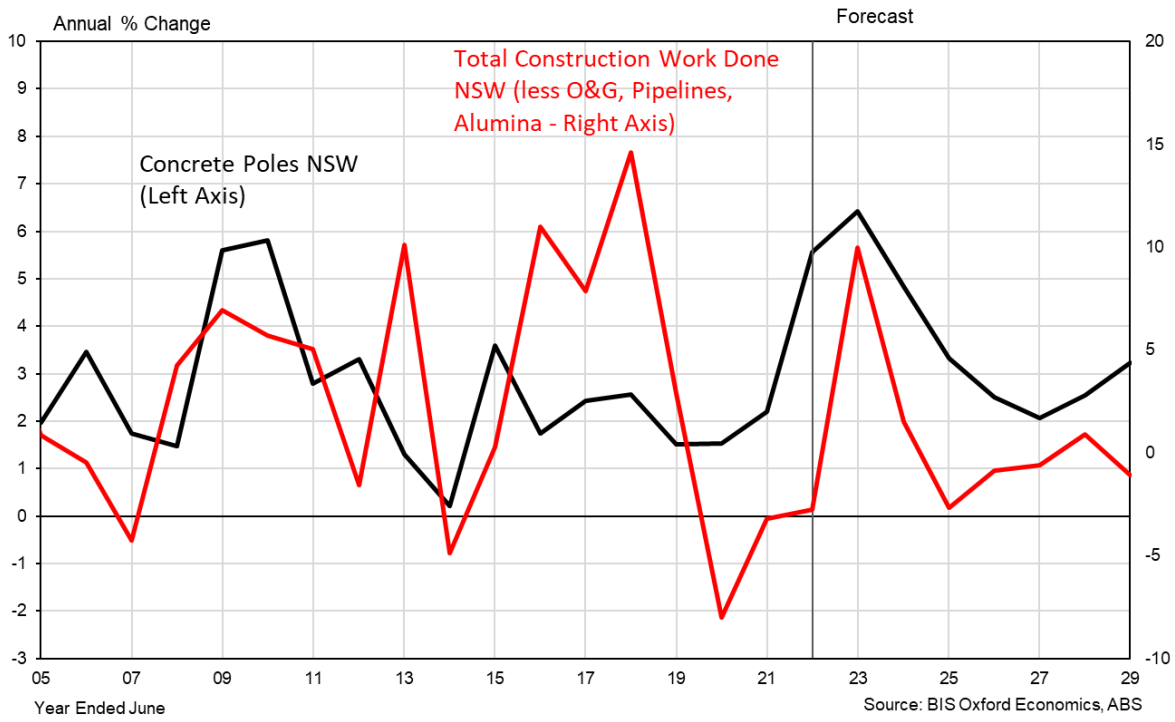


5.6 CONCRETE POLES – NEW SOUTH WALES

As no direct price series for concrete poles is available, the ABS's 'Cement Products PPI (Sydney)' has been selected as a suitable proxy. This is a capital city-based measure of the price change in manufactured cement products as inputs to the house construction industry. Movements in the Cement products PPI (Sydney), similar to the Concrete, Cement & Sand PPI are largely driven by levels of construction activity in the economy.

Concrete Pole prices grew 5.6% in 2021/22 (the fastest rate since FY10). Growth is then expected to accelerate in 2022/23 to a record 6.4% on the back of strong growth in building construction and engineering construction (excluding oil & gas, pipelines and alumina) activity. Above-average growth is expected to continue into 2023/24 as total construction work done in NSW peaks. Overall, an average annual increase of 2.7% is forecast for the next revenue determination period (between 2024/25 and 2028/29), with the real increase expected to average 0.2% p.a. (see table 5.1).

Figure 5.8 Concrete Poles – Drivers

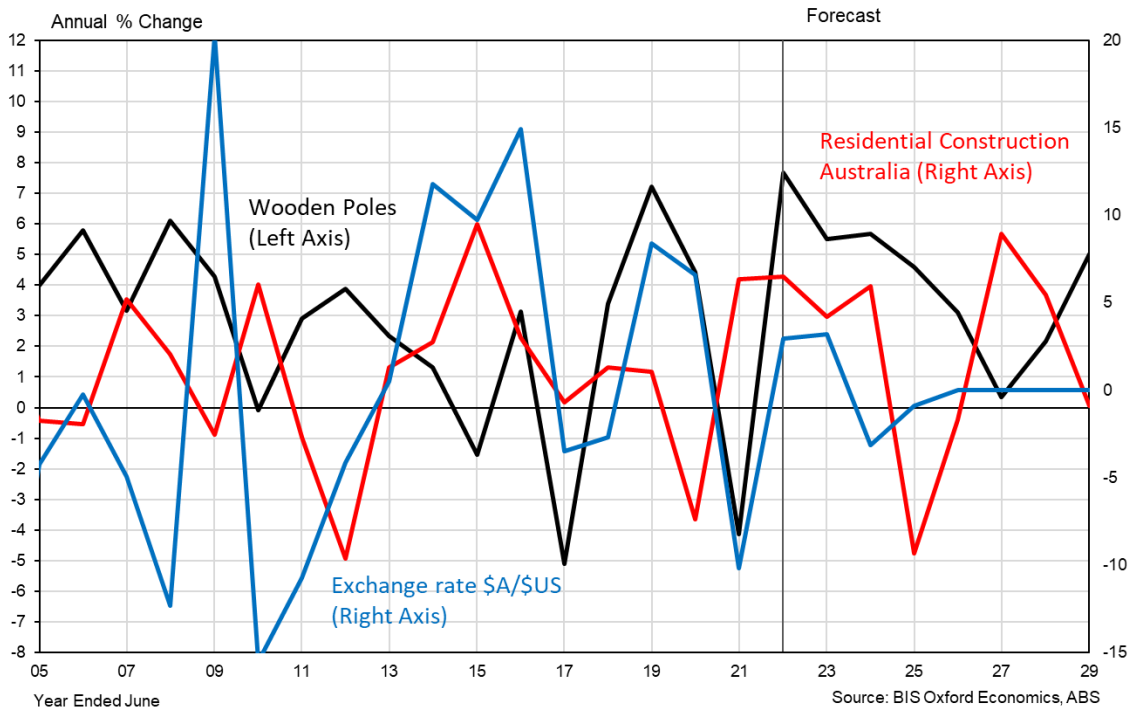


5.7 WOODEN POLES – AUSTRALIA

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

We estimate there has been a significant increase in prices in 2021/22 resulting from local supply shortages. Above-average price increases are projected to persist over 2022/23 and 2023/24, driven by heightened levels of residential construction activity, before moderating over the five years to 2028/29 as housing construction eases back and supply problems are gradually addressed. Overall, an average annual increase of 3.1% is forecast for the next revenue determination period (between 2024/25 and 2028/29), with the real increase expected to average 0.5% p.a. (see table 5.1).

Figure 5.9 Wooden Poles – Drivers



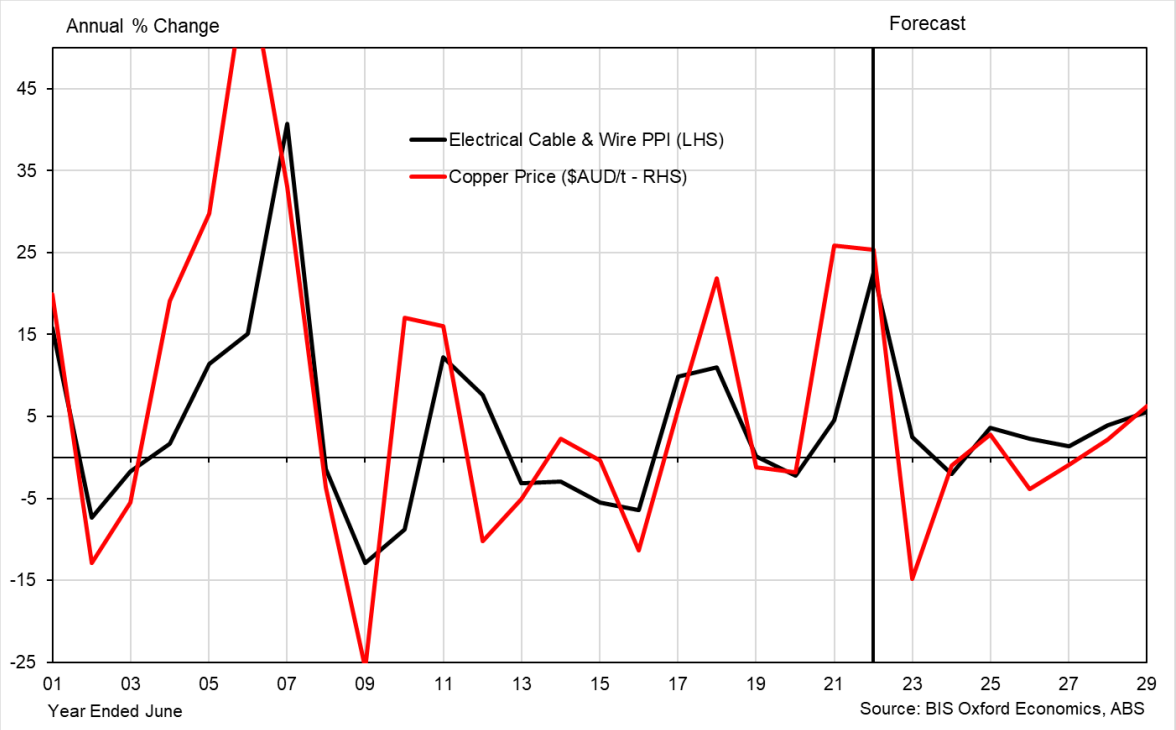
5.8 ELECTRICAL CABLE MANUFACTURING PPI – AUSTRALIA

The installation of electrical cable is ubiquitous across the construction industry, and we employ the ABS producer price index, '**Electric Cable and Wire Manufacturing**' to measure price changes over time. This index tracks the changing price of optical fibre, telecommunications cable, fuse wire and other conductive cable & wire as an output of this sub-sector of the manufacturing industry.

There is a clear and direct link between the index and the price of copper, as it is a key input into the manufacturing process of electric cable and wire, along with wages and energy. The index exhibited solid growth over the three years to FY19, in line with the sharp rise in copper prices in FY17 and FY18, although the price increases eased in FY19 due to the falling copper price. With the onset of covid, and copper supply disruptions taking hold in Latin America, copper prices soared upwards in 2020/21. Subsequently, with around a 12-month lag, copper prices fed through into manufacturing margins, and the Electric Cable and Wire Manufacturing PPI shot up accordingly, growing 22.6% in 2021/22.

Coming in into 2022/23, and through to 2028/29, copper prices are forecast to somewhat stabilise, but at a higher average level than before the pandemic, as global supply adjusts, but demand holds strong with the anticipated electrification of vehicles and continuing transition to renewable energy generation. Subsequently, the Electric Cable and Wire Manufacturing PPI will see only a minor correction in 2023/24, with a 2% decline, with modest yearly average growth thereafter of 3.4%, from 2024/25 to 2028/29.

Figure 5.10 Electrical Cable & Wire Price Drivers

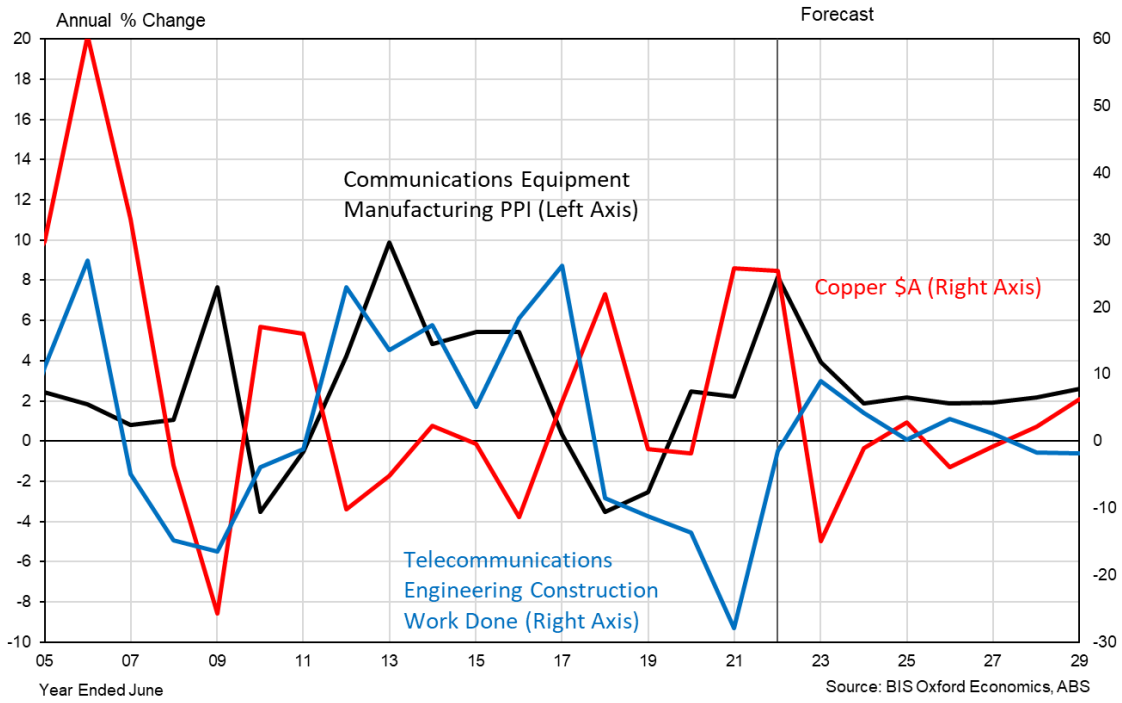


5.9 COMMUNICATIONS EQUIPMENT MANUFACTURING PPI – AUSTRALIA

The **Communications Equipment Manufacturing PPI** is an index which measures price changes in the manufacturing of electronic and studio broadcasting equipment, data transmission equipment, telecommunication data equipment, receiver and transceiver equipment. To forecast the Communications Equipment Manufacturing PPI, we modelled the index on CPI, copper prices, engineering construction work done in the telecommunications sector as well as exchange rates, with adjustments for construction of the NBN and the Covid-19 related semiconductor shortage.

The Communications Equipment Manufacturing PPI saw strong growth in 2021/22 off the back of record high copper prices and semi-conductor shortages. Despite the expected correction in copper prices in 2022/23, surging telecommunications engineering construction work done is predicted to drive a moderate level of growth. Subsequent years are expected to see lower growth rates as copper prices stabilise relative to prior years and semiconductor supply shortages ease. Overall, an average annual increase of 2.1% is forecast for the next revenue determination period (between 2024/25 and 2028/29).

Figure 5.11 Communications Equipment Manufacturing Drivers

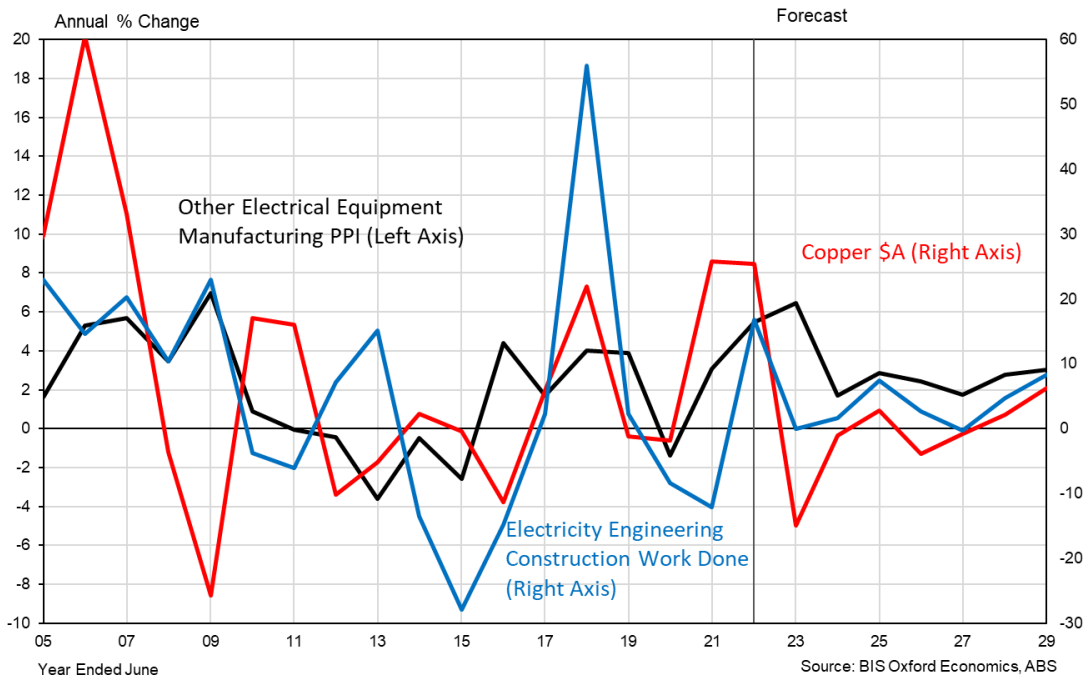


5.10 SWITCHGEARS – AUSTRALIA

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

2021/22 saw switchgear prices grow at their fastest rate since 2009 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 are then expected to accelerate growth marginally over 2022/23 before growth rates ease with a correction in copper prices. As copper prices remain elevated and electricity engineering construction work done continues growing towards the forecast horizon, switchgear prices are projected to grow modestly in the second half of the decade. Overall, an average annual increase of 2.6% is forecast for the next revenue determination period (between 2024/25 and 2028/29).

Figure 5.12 Switchgear Drivers

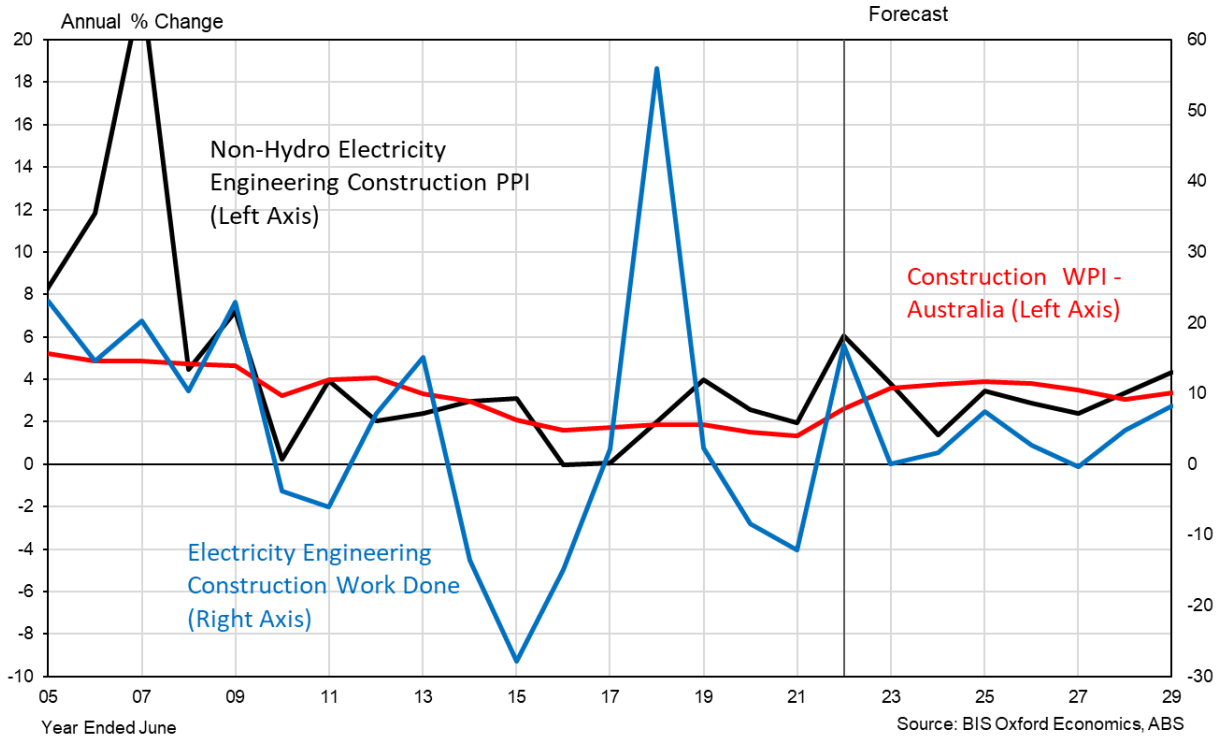


5.11 NON-HYDRO ELECTRICAL ENGINEERING CONSTRUCTION IPD – AUSTRALIA

Most aggregated cost indices are implicit price deflators (IPDs) — that is they have been calculated implicitly by dividing current price estimates of activity by a constant price series generated by the Australian Bureau of Statistics. The **Non-hydro Electricity Engineering Construction IPD** is an aggregate measure of the change in cost of construction within the electricity construction sector (including the change in margins). We build the forecast for the index from individual components – i.e., an average price growth is computed across a basket of relevant construction inputs which will then provide a general indicator for broad cost movements across the sector. Given use of similar materials and labour inputs, costs for electrical engineering construction are linked to broader cost trends in the building and construction industry – albeit, with key differences over time due to shifts in market tightness and varying importance of certain inputs specific to electrical engineering (e.g., copper and other electrical components).

The transition to renewable energy sources will be taking a step up in coming years (particularly with the passing of the federal climate bill 8th September 2022, which legislates a 43% reduction in greenhouse gas emissions by 2030), with the announcement and commencement of major solar and wind projects picking up pace, which, combined with the significant expansion and enhancement of transmission, will see the demand for electricity engineering inputs intensify. Aided by higher copper prices, the IPD increased 6% in 2021/22, although price growth will ease back over 2022/23 and 2023/24 as copper prices ease. However, we are forecasting price growth to remain elevated over 2024/25 to 2028/29, with sustained growth averaging 3.3% in the 5 years to 2028/29, as the renewable transition accelerates and increasing electrification puts upward pressure on input prices and the costs of construction.

Figure 5.13 Non-Hydro Electricity Engineering Construction Drivers



6. LAND PRICE FORECASTS

6.1 NSW POPULATION CONTEXT

Heavily reliant on overseas inflows for growth, restrictions on international travel hit New South Wales particularly hard. As these effects unwind, net overseas migration is set to return to a firm inflow in 2021/22, before returning to the pre-pandemic level at 88,600 in 2022/23.

An elevated net interstate migration (NIM) outflow of 41,900 is expected for 2021/22 as affordability issues, coupled with a shift in preferences, continues to push people away from Sydney. This outflow is forecast to remain elevated to 2028/29. Despite steady natural increase, sustained NIM outflows will continue to weigh on New South Wales' population growth, reaching just 0.5% in 2021/22. As Net Overseas Migration (NOM) rebounds in 2022/23, growth is set to rise to 1.2%, before holding near 1% over the six years to 2028/29 to see the population reach just below 8.8 million persons.

Interstate migration from Sydney to regional New South Wales has rebased higher with the pandemic. This shift is expected to only partially unwind, resulting in a more even geographical distribution of population growth to 2028/29.

Figure 6.1 Population Growth Rate Trends, NSW, 2013-2029

6.2 INDUSTRIAL LAND

Feedback from developers and agents shows serviced industrial land values have risen strongly in **Sydney** in 2021/22, fuelled by competition amongst major developers looking to restock their land banks and owner-occupiers (encouraged by low interest rates). However, there have been only a handful of major land sales reported and limited englobo lots offered to the market. Average land values for 1 ha lots in the Outer West sit at around $1,200 psm, representing almost a quadrupling in value since 2017.

Looking forward, with limited land available to purchase in preferred industrial precincts across Sydney, and strong demand as noted, price pressures are likely to continue. Much of the circa 850 ha released along Mamre Road is controlled by major developers who have a preference to feed their

development arms and funds management operations, reducing options for other developers and owner-occupiers.

Over the medium to longer term, price pressures will also be influenced by the release of ready to build on land surrounding the Western Sydney Airport. Even here, major developers own large tracts of land. However, any sizeable wave of development is unlikely to occur before the airport is completed in 2026. However, beyond 2023/24, we forecast industrial property completions will gradually fall back closer to the long run average, crimped by moderating demand and moderately higher vacancies.

Notwithstanding the land releases above, Sydney's geography means that land will always remain in limited supply, particularly for well-located sites with good access to infrastructure. Accordingly, overall land values are likely to continue to rise over time and remain higher than those of Melbourne.

Recent (and likely future) rises in land values will have an impact on development feasibilities and pre-lease rents as developers roll out new buildings on higher value land. Rising pre-lease rents will subsequently filter through to rents for existing space.

Table 6.1 Industrial Land Price Trends, Sydney, 2002-2029

Quarter Ended June	Sydney Industrial Land Price	
	$ / sqm	% Var. vs. Previous Year
2002	177	
2003	190	7%
2004	213	12%
2005	231	9%
2006	239	3%
2007	272	14%
2008	272	0%
2009	272	0%
2010	225	-17%
2011	225	0%
2012	225	0%
2013	225	0%
2014	225	0%
2015	275	22%
2016	300	9%
2017	325	8%
2018	425	31%
2019	600	41%
2020	600	0%
2021	900	50%
Forecast		
2022	1,200	33%
2023	1,310	9%
2024	1,380	5%
2025	1,380	0%
2026	1,370	-1%
2027	1,380	1%
2028	1,410	2%
2029	1,440	2%

Source: BIS Oxford Economics

6.3 COMMERCIAL VALUES

Vacancy rates in the **Sydney** office market look like they have reached their peak, with CBD effective rents now at their trough. The recovery will take time, held in check by the shift to hybrid/remote working and a pipeline of committed new office buildings until 2026. As oversupply is gradually absorbed, we expect effective rents to rebound – increasing by close to 50% by 2029. We estimate prime capital values grew at less than 3% over the last 12 months, underpinned by a modest firming in yields but little to no change in net stated rents. Our series shows average prime values currently sit at $26,960 psm.

The near-term outlook for Sydney CBD office capital values will be influenced by the combination of a forecast moderate yield softening and minimal stated rental growth in an oversupplied market. These factors point to a moderate setback in capital values over the next two years of around 8%. As rental growth gains traction, values should strengthen appreciably and we forecast the next peak to come in around 2029.

Table 6.2 Commercial Capital Value Trends, Sydney, 2002-2029

Quarter Ended June	Sydney Commercial Capital Values	
	$ / sqm	% Var. vs. Previous Year
2002	8,838	
2003	8,954	1%
2004	9,070	1%
2005	9,355	3%
2006	10,290	10%
2007	11,566	12%
2008	12,406	7%
2009	10,065	-19%
2010	10,040	0%
2011	10,764	7%
2012	11,287	5%
2013	11,773	4%
2014	12,810	9%
2015	14,168	11%
2016	17,223	22%
2017	19,805	15%
2018	23,098	17%
2019	25,109	9%
2020	26,304	5%
2021	26,593	1%
Forecast		
2022	26,961	1%
2023	25,593	-5%
2024	24,732	-3%
2025	24,958	1%
2026	25,656	3%
2027	27,467	7%
2028	29,716	8%
2029	31,427	6%

Source: BIS Oxford Economics

6.4 RESIDENTIAL LAND

The performance of land values broadly reflect the underlying performance of their respective local housing market.

Land price growth in Outer **Sydney** picked up in the latter half of 2021 after lagging house price growth. The Outer Sydney median land price is estimated to have risen 26% over the 12 months to June 2022 to $653,000. Fuelling growth has been increased demand from HomeBuilder, ultra low interest rates, high levels of savings and squeezed inventory. The market has little left to run though and we forecast that land prices in Outer Sydney will fall by 5% and 1% respectively in 2022/23 and 2023/24.

Worsening housing affordability, absence of housing stimulus, and rising borrowing costs are set to weigh on house price growth in Greater Sydney and we expect the median house price to begin falling from the June quarter 2022. As has played out in previous cycles, a softer fall is expected in the outer areas of Sydney relative to the broader Greater Sydney, while a correction in Outer Sydney land price is also expected as increased lot supply reduces price pressure. Land and housing prices are integrated in the long-term, however, land values are often sticky downwards with landowners holding land rather than selling at much reduced prices. In Sydney the land price has reset above $600,000 and we expect it to remain above this level over the forecast horizon.

The HomeBuilder program provided a strong footing for house approvals to rise through much of 2020/21, reaching 11,375 in Outer Sydney. Coming off this stimulus jump, house approvals are estimated to have fallen 9% in 2021/22 but to a still healthy level. The number of lots produced has begun to come off its lowest level since 2014 in December 2021, as the recent rush in housing demand has soaked up most of the available stock. We forecast lot production to continue rising through to 2022/23, before lot production begins to broadly decline over the six years to 2028/29.

The key risks surrounding the Sydney residential land market are to the downside; cost escalation and the rate of household formation. The uncertainty around future build cost inflation will inevitably limit land prices to some degree. Double-digit housing construction cost growth is assumed near term. If the cost of building new overshoots relative to the established housing market, this is likely to drag on the rate of land development mid-decade.

Table 6.3 Residential Land Price Trends, Sydney, 2002-2029

Quarter Ended June	Sydney Res. Land Price	
	$'000	% Var. vs. Previous Year
2002	167	
2003	194	16%
2004	207	7%
2005	209	1%
2006	207	-1%
2007	212	2%
2008	214	1%
2009	217	1%
2010	250	15%
2011	249	0%
2012	248	0%
2013	268	8%
2014	309	15%
2015	360	17%
2016	422	17%
2017	435	3%
2018	436	0%
2019	420	-4%
2020	425	1%
2021	517	22%
Forecast		
2022	653	26%
2023	623	-5%
2024	614	-1%
2025	609	-1%
2026	615	1%
2027	629	2%
2028	655	4%
2029	686	5%

Source: BIS Oxford Economics, PriceFinder, ABS

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