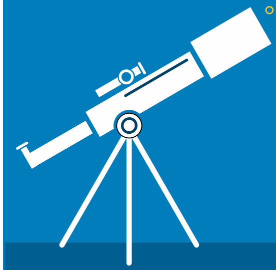
ANZ Research

September 2019

Australian Major Projects

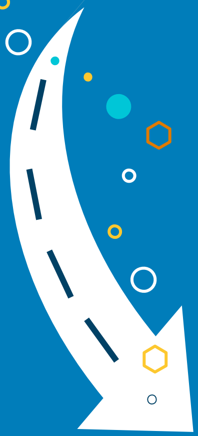
Australian Major Projects: at a glance

Major project pipeline



- Solid outlook for major projects across sectors
- Public-sector-backed projects will decline in 2019-20 before escalating again over the following three years
- Mining investment to start expanding again this year

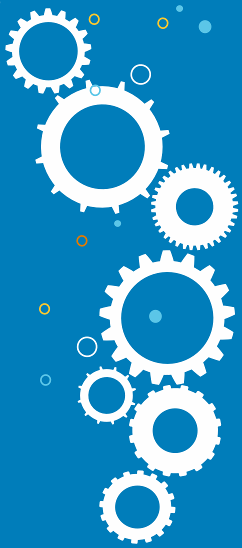
Public infrastructure



- Activity will decline in 2019-20 as the NBN and other major projects wind down before others commence or ramp up
- Road and rail mega projects underpin the pipeline of investment
- Capex will continue to be focussed in Melbourne and Sydney

Capacity constraints

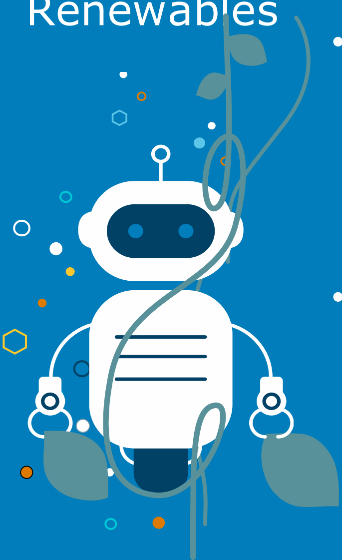
- Reports of capacity constraints are on the rise, especially in Melbourne and Sydney
- Concurrent mega projects are increasing competition for the limited pool of skilled labour and materials



Resources

- Mining firms are currently planning a 20% y/y rise in capex in 2019-20
- Higher commodity prices have changed the momentum
- The three big players in iron ore all have projects under construction or committed

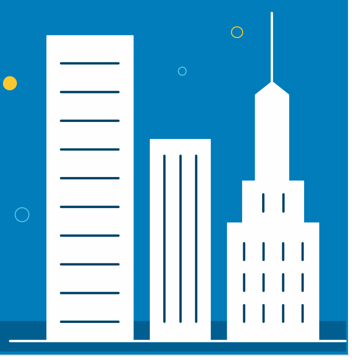
Renewables



- Spending on major renewable energy projects has boomed, supported by state government policies and technology
- Around 120 major renewable electricity-generating projects are either recently completed, under construction or could soon get underway

Non-residential

- Investment in major hospitals is on the way up again
- Offices and hotels are supporting high levels of non-residential building capex
- Bricks and mortar retail investment will continue to face challenges



Authors

Catherine Birch | **Senior Economist** |+61 3 9095 0332 | Catherine.Birch@anz.com

Cherelle Murphy | **Senior Economist** | +61 434 608 252 | Cherelle.Murphy@anz.com

Jasmine Kaur | **Senior Economist** | +61 3 86543526 | Jasmine.Kaur@anz.com

Bansi Madhavani | **Economist** | +91 80 1901 5373 | Bansi.Madhavani@anz.com

Shaurya Mishra | **Junior Economist** | +91 80 6795 3801 | Shaurya.Mishra@anz.com

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Feedback and enquiries: research@anz.com | Twitter: @ANZ_Research

Summary

Solid outlook for Australian major projects despite public sector dip

We expect **major project[1] investment** will be maintained around the $60bn[2] mark in 2019-20, where it has sat for two years, before the potential pipeline expands to a peak of almost $80bn in 2021-22.

In 2019-20, opposing forces will be at work; while road and rail investment takes a breather, electricity and hospital projects will escalate and iron ore projects will boost mining capex.

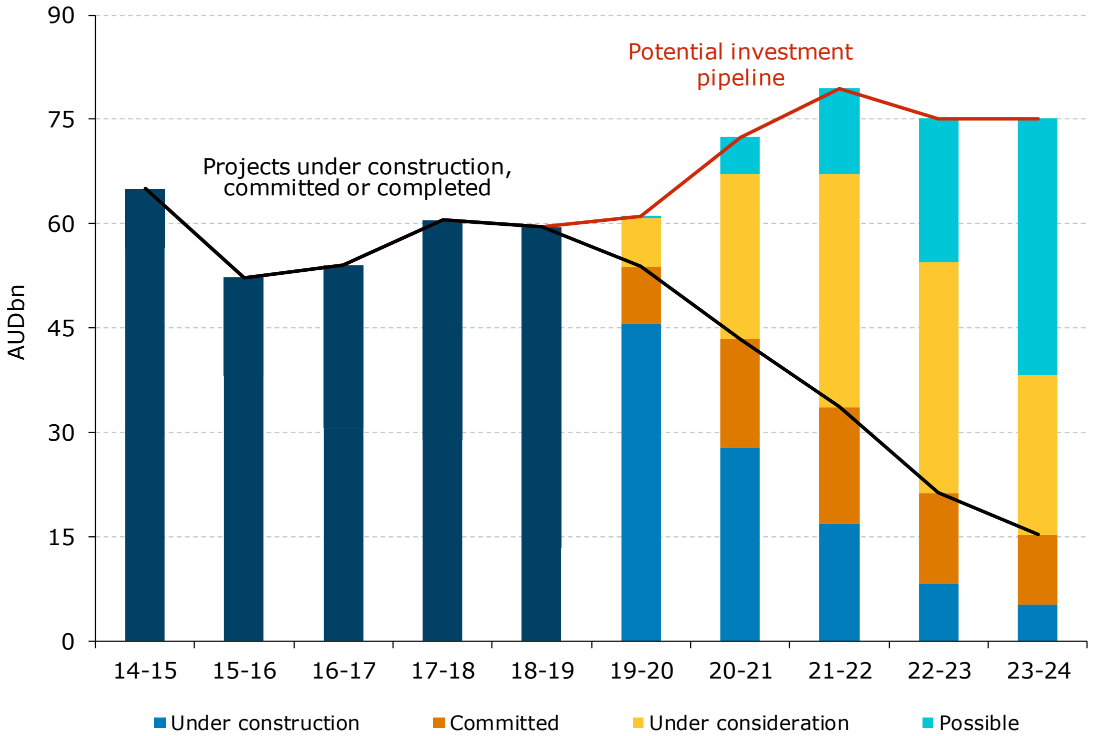
This is in contrast to the past couple of years, when increased investment in major transport projects, supported by electricity, hospital, hotel and office projects, offset the ongoing decline in mining and the steep drop in energy activity, as the Prelude and Ichthys LNG plants moved from construction to operation.

There is a dip in the pipeline of **large-scale public-sector-backed projects** in 2019-20: the $52bn NBN rollout is winding down, Sydney's Metro Northwest was completed early and under budget, and several road projects have recently been completed or are nearing completion before other sizeable projects get underway or ramp up. Consequently, we expect public investment will actually detract from economic growth during the year, at a time when additional major infrastructure investment is being called for as a form of economic stimulus.

There are limitations to using infrastructure investment as short-term economic stimulus, particularly large-scale road and rail projects, which have long lag times. In contrast, small-scale projects or maintenance works are realistic alternatives. These have the secondary benefit of being more easily distributed across the country, creating jobs and stimulating spending in smaller cities and regional areas, as well as the capitals.

Looking ahead, the $15.6bn North East Link in Melbourne and the $20bn Sydney Metro West will take up some of the slack in public sector investment. Most new and ongoing work will continue to be focussed in Melbourne and Sydney, but Cross River Rail (Brisbane), the North-South Corridor (Adelaide), and Metronet (Perth) are underway or due to start.

Figure 1. Major projects pipeline, by stage



Source: Australian Government, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

[1] Worth $100m or more
[2] Currency is Australian dollars

Summary

Capacity constraints are emerging, with several complex, large-scale projects underway and in planning. Last year we flagged this risk, based on New Zealand’s experience. Since then, reports of labour and material shortages, along with the associated delays and spikes in costs, are becoming more common. This is a risk to investment profiles and could diminish returns.

After six years of contraction, we expect major **resources** projects to start tracking upwards. The big three iron ore players all have projects underway or committed: BHP’s South Flank, Fortescue’s Iron Bridge and Eliwana, and Rio Tinto’s Koodaideri. The outlook for coal, and oil and gas investment is less certain but the pipeline for other mineral projects – including lithium, nickel, and copper – could hit new highs later in the forecast horizon. A key driver is demand for **battery metals** for use in renewables and new technologies, including electric cars.

A good news story is **renewable energy** projects, which are contributing an increasing share of major project investment. Major renewables investment is expected to grow further, reflecting pro-active state government policies, ongoing technological improvements – including in battery storage – and corporate sourcing of renewable energy.

On the **non-residential** building side, office activity is likely to be very high for another two years and hotel activity should continue to escalate, but retail’s challenges aren’t over. Following a gap in activity in 2017-18, investment in major hospitals is on the way up again.

Overall, the positive outlook for major project investment should offset some of the ongoing decline in residential activity. However, key risks remain: the impact of the US-China trade conflict and the weaker global outlook on Australia’s terms of trade, export demand, and business investment; capacity constraints; and policy uncertainty around energy.

Public infrastructure

Public-backed major project capex to fall before next wave of projects begins

Public infrastructure investment has ramped up considerably over the past few years but we expect a decline in 2019-20. Key reasons for this include: the NBN rollout nearing completion, Sydney Metro Northwest finishing early and $1bn under budget, and the Victorian Government allocating a much lower spend on the Melbourne Metro in 2019-20 in its Budget. With several road projects completed or nearing completion, there is a gap before the next wave of major road projects commences.

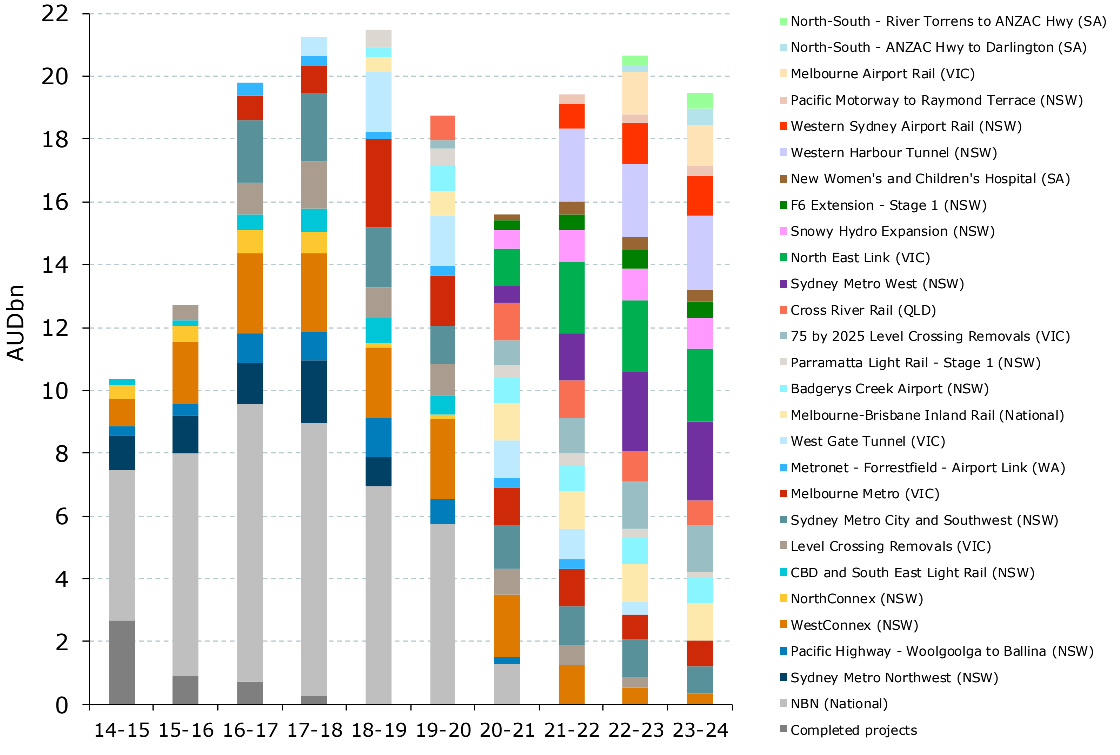
Federal, state and territory governments have been talking up their record pipelines of transport infrastructure investment. Indeed, the estimated capex of publicly-backed major[3] road and rail projects almost doubled between 2015-16 and 2017-18 and rose a further 8% in 2018-19. However, current estimates point to a 15% fall in 2019-20. 2020-21 should be more positive, as North East Link begins and work escalates on Inland Rail and Cross River Rail.

Infrastructure investment is not providing additional economic stimulus

This means that public infrastructure investment isn't providing much additional stimulus to the economy, just as growth is slowing. Although the public sector contributed 1.3ppt of the 1.4% y/y rise in GDP to June 2019, almost all was due to public consumption rather than public investment.

We do not expect governments, at either the federal or state level, to commit to bringing forward major infrastructure projects or significant additional infrastructure spending in the near term. This is despite calls from the RBA Governor, Phil Lowe, to boost infrastructure investment, providing fiscal stimulus to support easing monetary policy. Lowe cites the short-term benefits of supporting the construction industry, boosting employment, and positive flow-on effects, as well as the longer-term benefit of improving productivity.

Figure 2. Major public sector backed projects over $1.8bn



Source: Australian Government, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

[3] AUD100m or more

Public infrastructure

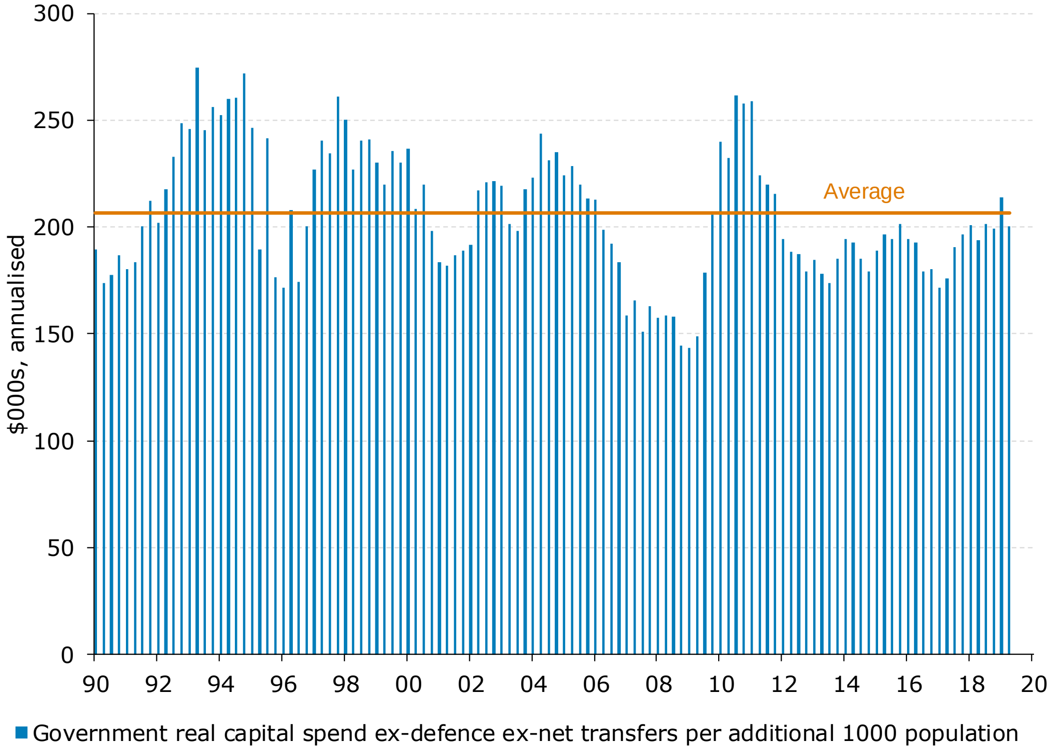
Of course, most of the infrastructure undertaken in Australia is funded by the states rather than the federal government. While it would be difficult for them to commit to any additional major projects in the short-term – especially when the dip in 2019-20 mainly reflects timing lags between the completion of projects and the ramp up of new ones – smaller projects or maintenance works are realistic alternatives. These could also be distributed more evenly across the country, creating jobs and stimulating spending in smaller cities and regional areas.

Population growth is the driving force of the infrastructure pipeline

Australia's population growth has been consistently higher than most other developed countries, with much of the gain concentrated in Melbourne and Sydney. This will continue, with the ABS estimating that around 55% of national population growth between 2019 and 2024 (1.0–1.3m more people) will be in the two cities. As such, most infrastructure spending and the largest projects are centred in Melbourne and Sydney.

Infrastructure Australia argued in its 2019 audit that record levels of infrastructure investment need to become the "new normal" to avoid increased congestion and reduced living standards and productivity. However, this need is already coming up against reports of shortages of skilled labour, material and equipment (see next article), particularly given the number of mega projects in the pipeline.

Figure 3. When adjusted for population change, real government capex has been running below average



Source: ABS, ANZ Research

Mega projects will continue to underpin capex

With much of the low-hanging fruit already picked, infrastructure projects have tended to become more complex and costlier. This has given rise to an escalating number of mega projects – costing $1bn or more – in the pipeline.

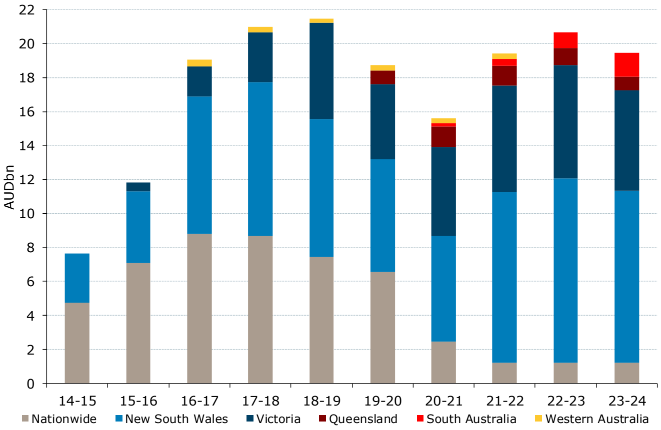
The largest public-sector-backed mega project, the $52bn NBN, is on schedule for completion in 2020. Having contributed more than $8bn per year to capex at its peak, this will clearly detract from the forward pipeline. However, other projects have lined up to fill the gap. As outlined above, though, a timing mismatch means there will be a downturn in public infrastructure in 2019-20.

Public infrastructure

The largest new public project in the forecast horizon, the Sydney Metro West, is currently costed at $20bn but some estimates are as high as $25bn. Also expected to get underway in the early-2020s are Melbourne's $15.6bn North East Link and Sydney's Western Harbour Tunnel and Beaches Link, although only $165m has been committed for planning for the latter so far. Further out, the Victorian Government's planned Suburban Rail Loop is currently estimated at around $50bn and may not be completed until 2050.

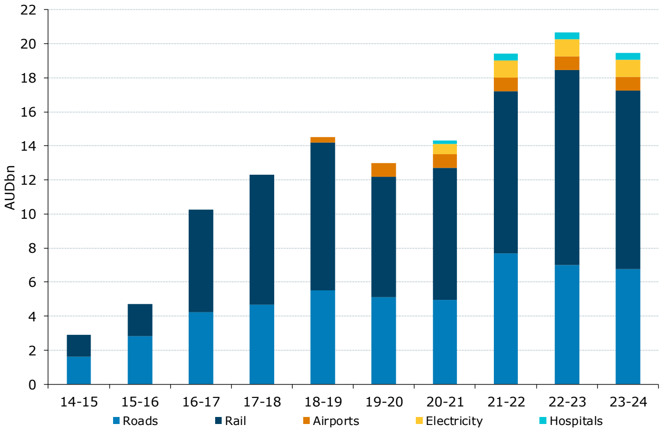
The spate of record infrastructure programs across the states raises questions over how the funding will be raised, particularly given the recent plunge in stamp duty revenue. Debt is cheap and will likely stay cheap for a long time. However, with net government debt forecast to rise across the major states, Moody's has flagged credit risks. Asset recycling appears to be one of the more likely options. New South Wales is considering possibilities including selling the remaining half of WestConnex and a long-term lease of Forestry Corporation.

Figure 4. Major public-sector-backed projects over $1.8bn, by state



Source: Company reports, Deloitte Access Economics, state government budget papers, ANZ Research

Figure 5. Major public-sector-backed projects over $1.8bn, ex-NBN, by sector



Source: Company reports, Deloitte Access Economics, state government budget papers, ANZ Research

Public infrastructure

Capex of public-sector-backed projects over $1.8bn, under construction or likely to proceed

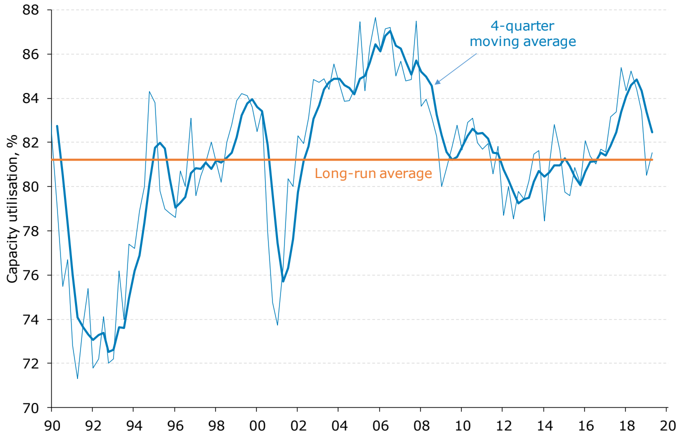
Company	Project	Cost (AUDbn)	Region	Industry	Start	End
Under construction						
NBN Co	National Broadband Network	52.1	Aust	Comms	2011-12	2020-21
Sydney Motorway Corporation	WestConnex	16.8	NSW	Road	2014-15	2023-24
Sydney Metro	Sydney Metro City & Southwest	12.0	NSW	Rail	2016-17	2023-24
VicTrack	Melbourne Metro	10.9	Vic	Rail	2017-18	2025-26
Australian Rail Track Corporation	Melbourne to Brisbane Inland Rail	10.0	Vic NSW, Qld	Rail	2019-20	2027-28
Vic Department of Transport	Level Crossing Removal Program	6.8	Vic	Rail	2015-16	2022-23
Vic Department of Transport / Transurban	West Gate Tunnel	6.7	Vic	Road	2017-18	2022-23
Transport for NSW	Pacific Highway – Woolgoolga to Ballina	4.9	NSW	Road	2016-17	2020-21
Transport for NSW / Transurban	NorthConnex	3.0	NSW	Road	2014-15	2019-20
Transport for NSW	CBD and South East Light Rail	3.0	NSW	Rail	2014-15	2019-20
Western Sydney Airport Alliance / Australian Government	Badgerys Creek Airport	5.3	NSW	Airport	2018-19	2025-26
Transport for NSW	Parramatta Light Rail: Stage 1	2.4	NSW	Rail	2018-19	2023-24
WA Public Transport Authority	Metronet: Forrestfield-Airport Link	1.9	WA	Rail	2016-17	2021-22
Committed/under consideration						
Sydney Metro	Sydney Metro West	20.0	NSW	Rail	2020-21	2028-29
Vic Department of Transport	North East Link	15.6	Vic	Road	2020-21	2027-28
Transport for NSW	Western Harbour Tunnel and Beaches Link	14.0	NSW	Road	2021-22	2026-27
VicTrack / Australian Government	Melbourne Airport Rail	12.0	VIC	Rail	2022-23	2030-31
Vic Department of Transport	75 by 2025 Level Crossing Removals	6.6	VIC	Rail	2019-20	2025-26
Western Sydney Airport Alliance / Australian Government	Western Sydney Airport Rail	5.5	NSW	Rail	2021-22	2025-26
Qld Department of Transport and Main Roads	Cross River Rail	5.4	QLD	Rail	2019-20	2024-25
Australian Government	Snowy 2.0	5.1	NSW	Electricity	2020-21	2025-26
SA Department of Planning, Transport and Infrastructure	North-South Corridor: River Torrens to Anzac Hwy	2.6	SA	Road	2022-23	2027-28
SA Department of Planning, Transport and Infrastructure	North-South Corridor: Anzac Hwy to Darlington	2.4	SA	Road	2022-23	2027-28
Transport for NSW	F6 Extension	2.2	NSW	Road	2020-21	2024-25
Transport for NSW	Pacific Motorway to Raymond Terrace	2.0	NSW	Road	2021-22	2027-28
SA Department for Health and Wellbeing	New Women's and Children's Hospital	1.8	SA	Hospital	2020-21	2025-26

Capacity constraints are a material risk to the investment pipeline

The high levels of infrastructure investment over the past few years have coincided with reports of rising costs and difficulty in sourcing labour and input materials. Much of the evidence so far is anecdotal and it is difficult to find conclusive evidence of capacity constraints in the macro-level data for several reasons:

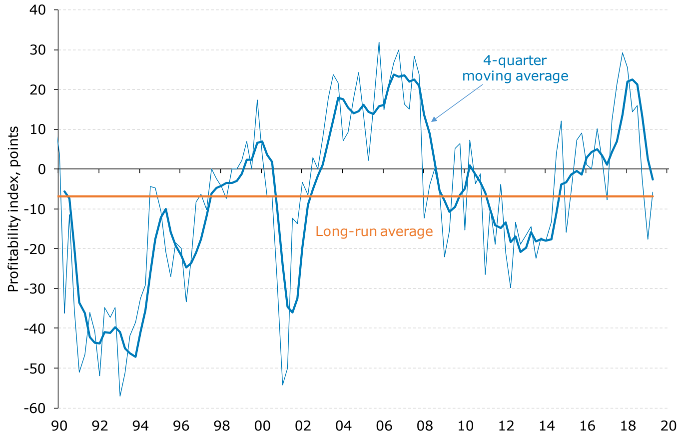
- The contraction in residential construction since late-2018 has offset some of the impact of higher infrastructure activity.
- The tightness in the labour market, despite the slowdown in economic growth, reduces the availability of suitable labour in general.
- Downturns in construction capacity utilisation and profitability have largely coincided with deteriorations in the same measures for the wider business sector.
- Reports of constraints have mainly come from Melbourne and Sydney, where the biggest projects are located.

Figure 6. Construction capacity utilisation



Source: NAB, Bloomberg, ANZ Research

Figure 7. Construction profitability index



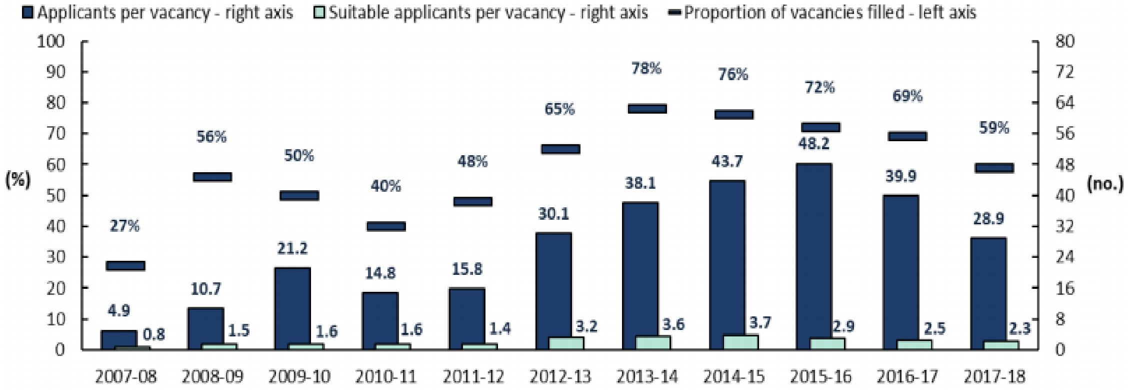
Source: NAB, Bloomberg, ANZ Research

Tight labour market contributing to difficulty in sourcing skilled labour

Data from the Department of Employment, Skills, Small and Family Business' *Survey of Employers who have Recently Advertised* supports claims of growing difficulty sourcing skilled construction labour. In 2017-18, engineering occupations saw the poorest results in six years, with 59% of vacancies filled and an average of 2.3 suitable applicants per vacancy. For construction trades in 2018, only 44% of vacancies were filled and on average there was only one suitable applicant per vacancy, which is worse than at any time during the mining boom or residential construction boom. Interestingly, though, this tightness is not being reflected in the wage data. Construction industry wage growth (excluding bonuses) was just 1.9% y/y in Q2 2019, one of the slowest rates among the industries and on par with retail wage growth.

With the unemployment rate at a historically low 5.2%, reduced availability of labour is not confined to the construction sector. We have actually seen construction employment trend downwards as residential activity contracts but skills are not always transferrable between residential and infrastructure construction, particularly at higher skill levels. As such, the level of vacancies remains relatively high.

Figure 8. Only 59% of engineering vacancies filled in 2017-18

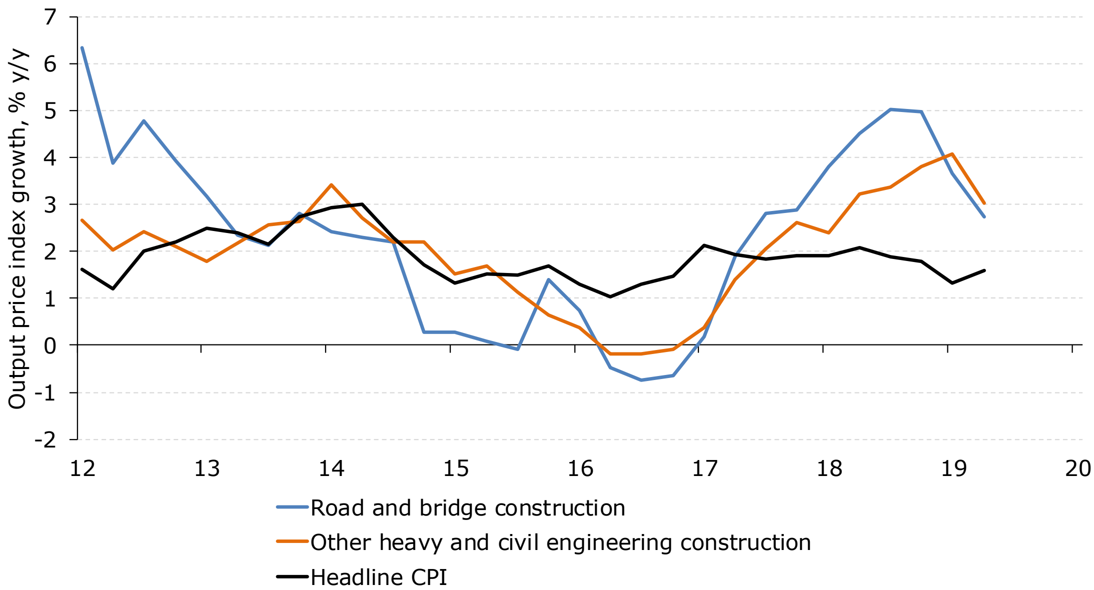


Source: Australian Department of Employment, Skills, Small and Family Business
Note: Occupational coverage varies over time

Cost growth appears to be elevated but the AUD is likely also a factor

The ABS publishes an output price index for 'road & bridge' and 'other engineering' construction, which shows that both have been running above headline inflation. However, this reflects not only the domestic demand-supply balance but also exchange rate movements. The AUD depreciated through 2018, coinciding with the strongest price growth.

Figure 9. Engineering construction output price growth has been running above CPI



Source: ABS, ANZ Research

Reports of capacity constraints appear to be on the rise

In early September 2019, the Victorian Premier, Daniel Andrews, and the Prime Minister, Scott Morrison, jointly announced a $370m cost blowout in Stage 2 of the Monash Freeway upgrade prior to major construction works commencing, with no changes to the scope or design. They cited labour shortages and material costs as the reasons.

In a 2019 survey, Allens, an international commercial law firm, found that 43% of infrastructure leaders in Australia believed the industry's biggest concern was the inability to deliver the current project pipeline. They also considered tunnels and rail to be the highest risk projects. The survey identified the large volume of projects in Sydney and Melbourne as a contributing factor. However, with the Cross River Rail in Brisbane and Stage 2 of Canberra Light Rail both expected to commence shortly, we could see constraints spread.

Capacity constraints

There are also a number of tunnelling projects underway or in planning at the same time. These require different equipment and skills from above-ground projects. In June 2019, *The Age* reported that Melbourne Metro's cost may have blown out by a further $2bn, in part due to geological issues. The sheer number of daily truck trips required to transport out the excavated soil and rock draws comparisons to some mining projects.

S&P has raised concerns about Australia's ability to deliver projects without delays or cost escalations given the simultaneous upswing in investment across a number of states. S&P also highlighted the risk of a domino effect if firms and subcontractors booked up with multiple projects face delays on even one project.

Increased risks of delays and cost escalations pose a threat to profit margins which may discourage firms from bidding on projects. In a recent example, Acciona won $576m in compensation from the New South Wales Government over the CBD and South East Light Rail project, claiming that it was misled over its complexity.

Local content requirements in Victoria also have supply and cost implications. For example, on the West Gate Tunnel, 92% of the estimated 110,000t of steel must be sourced from within Australia.

Ultimately, without effective policy action, capacity constraints pose a material risk to both public and private delivery of necessary infrastructure.

Resources

Resources-related investment expected to increase in 2019-20

Australia has seen some momentous shifts in the mining industry over the past 15 years. Investment boomed in the late 2000s and early 2010s on the back of the huge number and size of oil and gas, iron ore, coal and other mineral projects. As the investment phase wound down and the operations phase ramped up, exports began their boom. Australian exports have consistently been setting new records, driven by both volumes and prices for mining commodities, as well as tourism and education exports. Consequently, Australia recorded its first current account surplus since 1975 in Q2 2019.

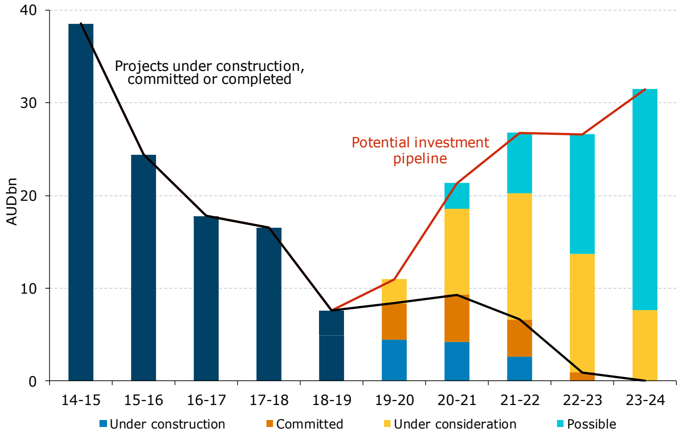
Mining investment has fallen more than two-thirds from its peak in 2012-13, detracting from economic growth, but the outlook appears to be turning. Mining firms are currently planning a 20% increase in capex in 2019-20 and exploration activity is at its highest level since 2015.

Higher commodity prices have changed the momentum

At the time of publication, LNG prices were almost double their lows of 2015 and iron ore and coking coal prices were even higher compared with their respective 2015 and 2016 lows. Supply-side issues have played their part – most notably for iron ore since the Vale disaster in early-2019 – but stronger global growth over 2017 and 2018 underpinned the recovery.

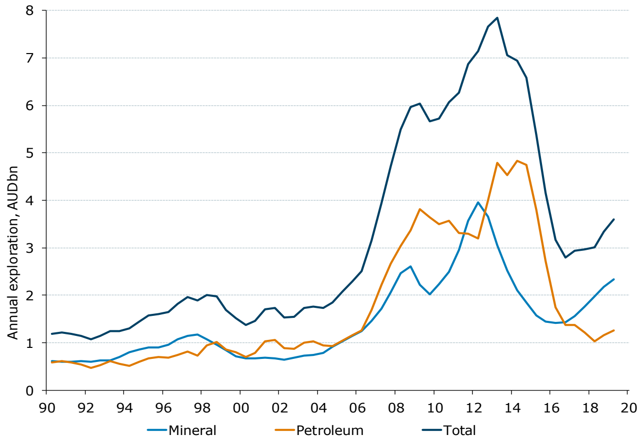
However, the deterioration in the global backdrop from late-2018 into 2019 – particularly the US-China trade dispute – has put a cloud over the outlook for commodity prices and creates some uncertainty around the investment pipeline.

Figure 10. Resources-related projects, by stage



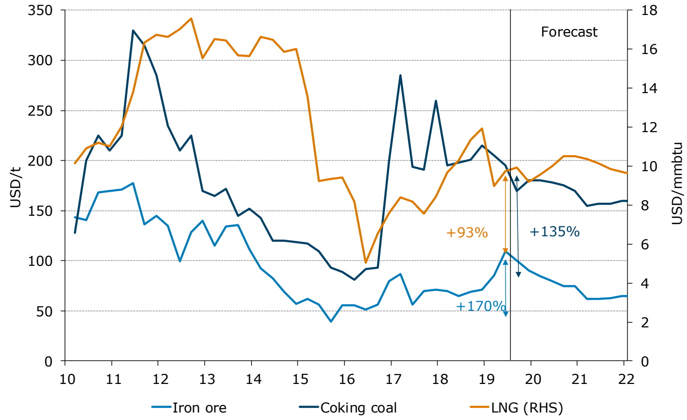
Source: Company reports, Deloitte Access Economics, ANZ Research

Figure 11. Exploration activity up 20% in a year



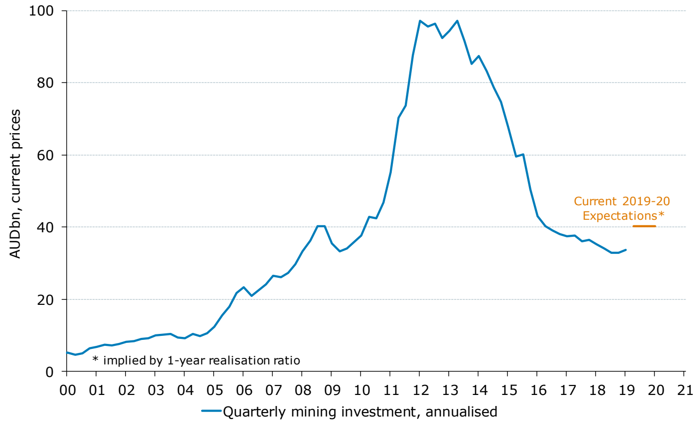
Source: ABS, ANZ Research

Figure 12. Commodity prices have been higher



Source: Bloomberg, ANZ Research

Figure 13. Miners planning 20% rise in capex



Source: ABS, ANZ Research

Big players in iron ore leading the way, but challenges in other sectors

A near-term upswing in mining investment is essentially locked in, as the big three iron ore players all have large-scale greenfield projects underway or committed: BHP's $4.6bn South Flank, Fortescue's $1.7bn Eliwana, and Rio Tinto's $3.5bn Koodaideri. Fortescue has also committed to a $3.6bn brownfield expansion at Iron Bridge.

With much of the low-hanging fruit picked during the last investment boom, there are fewer opportunities for junior miners, particularly those with single asset projects and low or non-existent cash flows. Lower risk appetite has also led to greater difficulties in raising funding.

Planned coal mines in the Galilee Basin will face a number of challenges, not only in the form of the structural shift away from coal-fired power generation as the global decarbonisation movement progresses. The lower quality coal compared with the Australian standard and significant volumes of potential supply in developed areas such as the Bowen Basin undermine the economics of these projects.

In the oil and gas sector, the $5.1bn Gorgon expansion is underway and we expect the $10bn Surat Gas Project to commence in 2019-20, but the size of these projects pales in comparison with previous projects.

An interesting development is the possibility of record levels of other minerals investment within the forecast horizon. A number of lithium, nickel, gold and copper projects are under consideration, most located in Western Australia (see next article). The more negative global economic outlook poses a downside risk in the near-term, along with policy factors such as China's subsidy cuts to the electric car market, but longer-term, this is a sector to watch.

Figure 14. Oil and gas projects, by stage

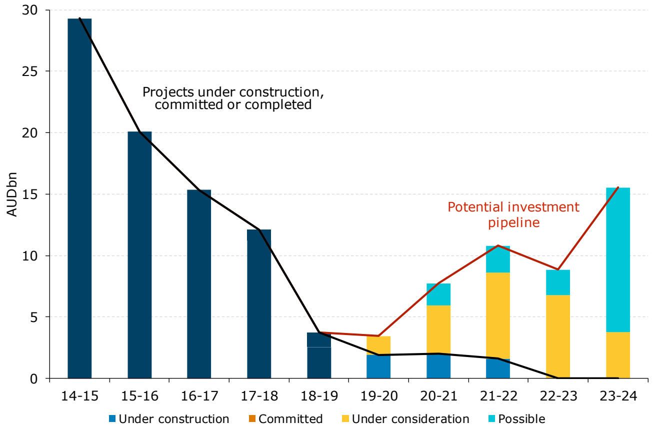


Figure 15. Iron ore projects, by stage

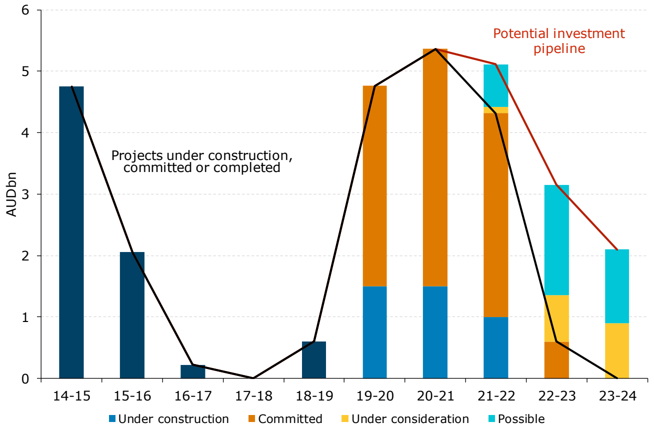


Figure 16. Coal projects, by stage

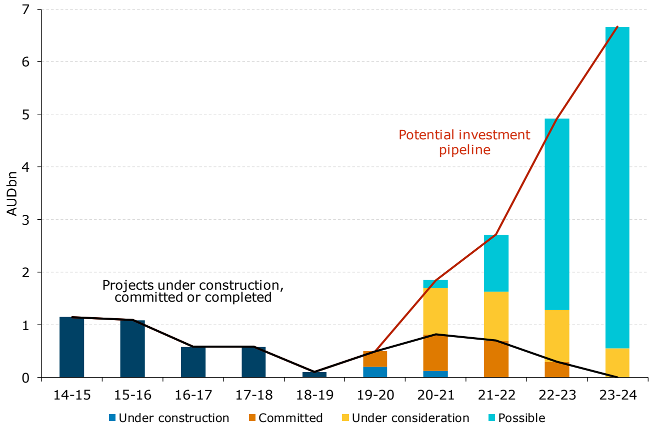
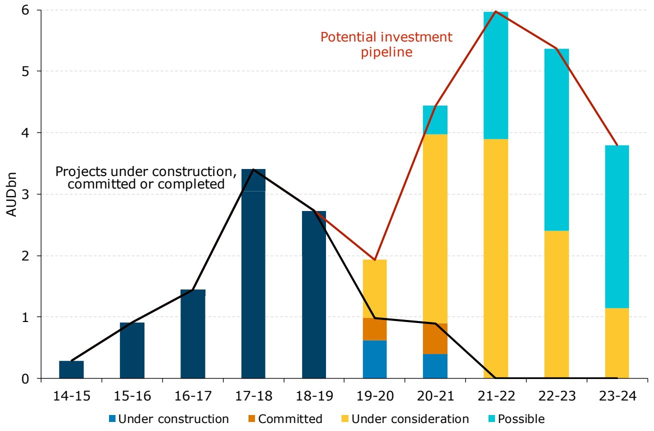


Figure 17. Other mining projects, by stage



Source: Company reports, Deloitte Access Economics, ANZ Research

The mix of mining commodities is shifting

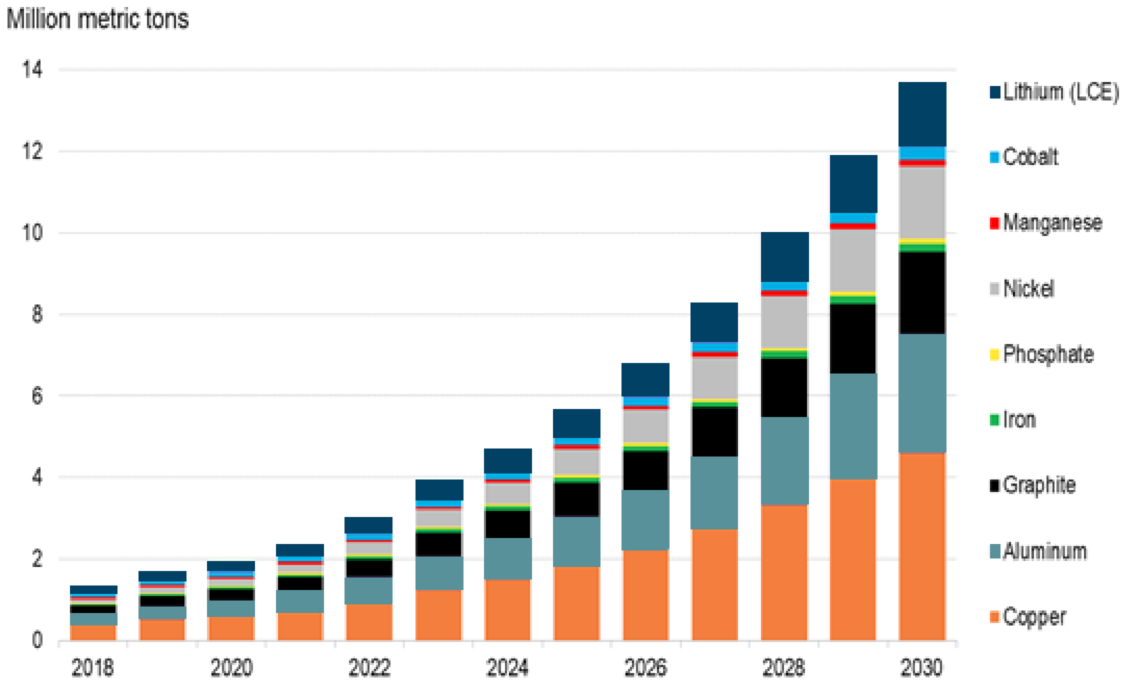
The shift towards a low-carbon economy is resulting in a changing mix of mining commodities, away from thermal coal and other hydrocarbons into materials required for renewable technologies. Stricter emission regulations, lower battery costs, more widely available charging infrastructure and increasing consumer acceptance is generating momentum for penetration of electrified vehicles (hybrid, plug-in, battery electric and fuel cell).

With continuous improvement over the next two decades in the cost and performance of batteries and charging technologies, full electric vehicles are expected to eventually command a significant percentage of new car sales. This is driving the demand to manufacture batteries for electric vehicles and solar panels to support charging capacity and provides a potential growth opportunity to mine more 'battery commodities'. Western Australia has large deposits of the battery-related minerals lithium, cobalt, nickel, alumina, manganese and vanadium. Demand for these commodities is forecast to increase almost sevenfold between 2020 and 2030.

Although the fundamentals look solid over the longer-term, demand growth has not accelerated quickly enough in the short-term to absorb expanding supply, resulting in falling prices. The deterioration in the global economic outlook and policy factors, such as cuts to Chinese subsidies for the electric car market, are having a dampening effect on demand. This has seen some Australian projects moved to the backburner, while ASX-listed lithium miner, Alita Resources, has entered voluntary administration. Tianqi and Albemarle cited slower-than-expected demand growth as a key factor in their decision to put the planned expansion of Greenbushes – already the world's largest producing lithium mine – on hold. Tianqi has also paused construction of the second stage of its lithium hydroxide processing plant in Kwinana. However, over the longer term, industry players appear confident that demand will return.

Along with battery commodities, hydrogen is a clean-burning fuel under close consideration since it produces only water when consumed in a fuel cell. It can be produced from a variety of domestic resources such as natural gas, nuclear power, biomass and renewable power like solar and wind. It can be used in a range of industries, including transport and electricity generation, and can be stored and exported. Hydrogen technologies also offer a way of reducing emissions from steel making's use of coal. This could see the steel industry shed its reputation as a climate threat. Western Australia has the potential to further develop an industry for renewable hydrogen, given its land and renewable energy resources.

Figure 18. Demand for battery commodities



Source: Bloomberg BNEF

Renewable energy investment booming

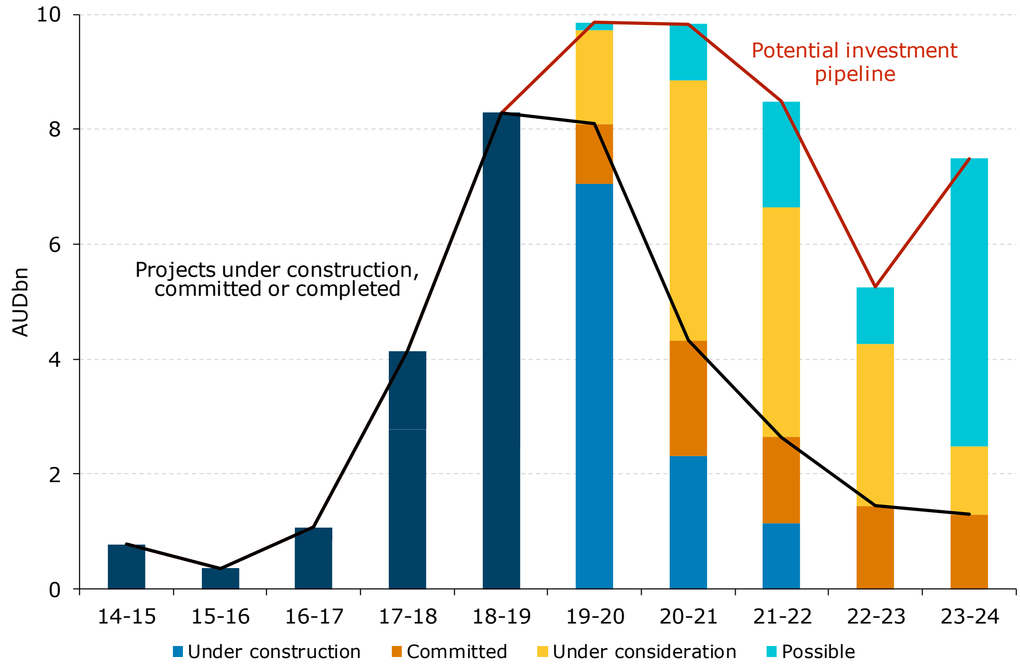
Major renewable energy project investment has reached a record level and attained increased importance this year. We estimate around 120 renewable electricity-generating projects (each worth $100m or more) are either recently completed, under construction or could soon be constructed. The total capital spend on major renewable energy projects in 2018-19 was estimated at $8.3bn. The pipeline is expected to grow to close to $10bn in 2019-20 and 2020-21[4]. Renewables projects grew from very low shares of our major projects database prior to 2017, to an estimated 16% in 2019-20.

Prior to 2017, a cut to the Large-scale Renewable Energy Target (LRET), less cost-effective technology and economic conditions were reasons for the low share of renewables in the total Major Project mix. Also, national consumption of electricity declined in 2011-12 and 2012-13, following the global financial crisis and fading resources industry construction.

Unsurprisingly, following the pick-up in renewables investment in the last two years, the share of renewables[5] in the total electricity generated in Australia has grown. The monthly Renewable Energy Index, produced by Green Energy Markets, showed a rise in the share of renewables in total electricity generation from just below 19% in July 2017 (when the index was first produced) to 21% in June 2019. This is in line with global trends, which are expected to continue. The International Energy Agency forecasts the share of renewables in the global electricity supply will grow by one-fifth to reach 12.4% in 2023.

We expect renewables investment to grow further even though the Commonwealth scheme to encourage renewables, by setting an LRET, is near its 2020 end. Our expectations are based on the current strong pipeline of projects. This, we think, reflects pent-up investment appetite from the pre-2017 lull, corporate sourcing of renewable energy, ongoing technological improvements (including battery storage) and pro-active state and territory government policies.

Figure 19. Renewables investment, by stage



Source: Clean Energy Council, Deloitte Access Economics, company reports, ANZ Research

[4] Inclusion of small scale renewable energy projects would boost this figure substantially. However, they are outside the scope of this report.

[5] This includes solar, hydroelectricity, wind power, liquid and gas biofuels and biomass.

Renewable energy

The time needed for planning and construction of renewable energy projects is short compared to major fossil fuel plants, with most under construction for months, rather than years. The pipeline for renewables projects is therefore likely to understate the capex of new projects that will be completed within the forecast horizon.

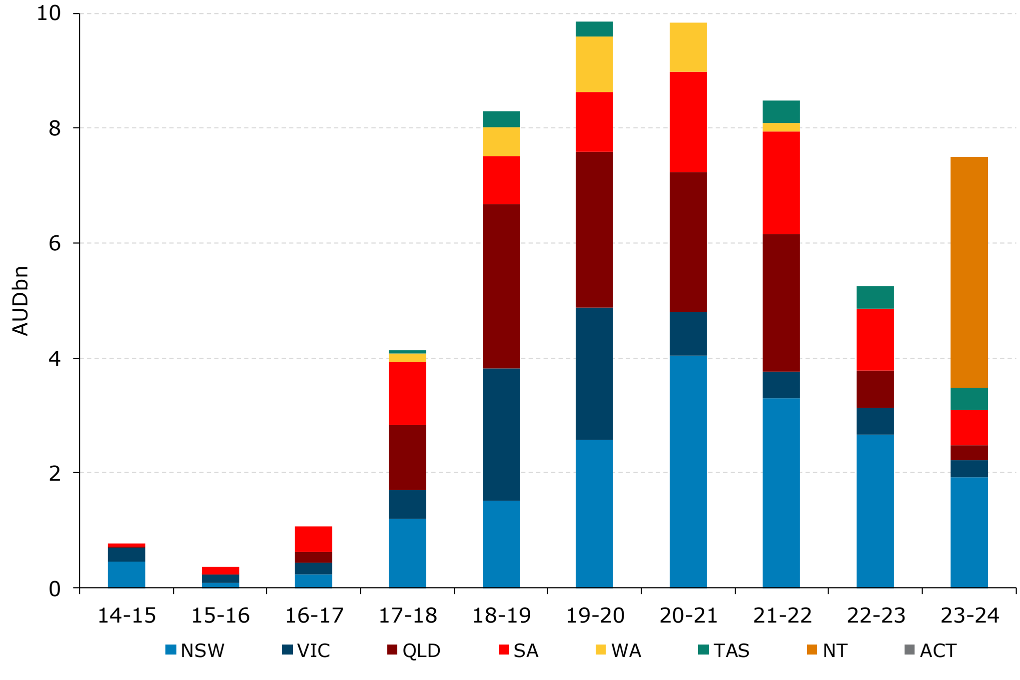
The co-location of wind and solar farms is increasingly popular as it lowers average grid connection costs. For example, the 175MW White Rock wind farm includes a 10MW solar farm. A 10MW solar farm is nearing completion at NSW's Gunning wind farm. In Queensland, the Kennedy Energy Park, which will combine 43MW of wind, 15MW of solar and 2MW/4MWh of battery storage, is currently under construction.

Much of the activity within the forecast horizon is concentrated in New South Wales – underpinned by the Snowy Hydro – but South Australia and Queensland also have particularly strong pipelines. Renewables projects inject economic activity into mainly regional and remote areas, unlike the capital city transport projects that make up the bulk of our Major Projects.

Possible mega-projects suggest the renewables sector could continue to grow substantially in the mid-2020s. One such project is the proposed $20bn, 10GW solar farm and 20-30GW storage facility that would be constructed near Tennant Creek in the Northern Territory. Another is the Asian Renewable Energy Hub, proposed by a consortium for Western Australia's Pilbara Region. The hybrid wind and solar project would generate up to 15GW of renewable energy. The capital spend is expected to be $22bn, invested over a six- to seven-year period from the mid-2020s.

As well as supplying the local market, these two projects would generate exports via sub-sea electrical cables. Although these two projects are substantial, at this stage, only the first year of construction on the Tennant Creek facility is included in our forecast horizon. The two projects represent significant upside to the renewable project pipeline.

Figure 20. Renewables investment, by state



Source: Clean Energy Council, Deloitte Access Economics, company reports, ANZ Research

Non-residential building

Offices and hotels supporting high levels of non-residential building capex

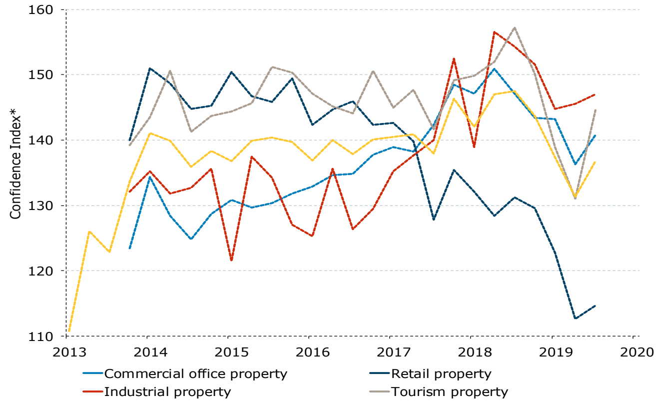
Major non-residential building project investment surged to over $10bn in 2018-19. More than half of that was offices, while hotels added over $1bn to their annual capex. Although the backlog of work in offices and short-term accommodation has come off its peak, it is still historically high, much of it concentrated in Melbourne and Sydney. This will drive activity, supported by new projects, although the latter tend to be on a smaller scale.

In the current low-rate environment, we have seen solid capital inflows for Australian property from both domestic and overseas sources. Commercial property yields are around record lows, but they still offer an attractive risk premium on government bonds. As long as the Australian economy is in reasonable shape, property demand should be resilient, supporting the pipeline of works.

There are, though, material risks to the outlook. Business conditions have deteriorated to below the long-term average, and business confidence has also slumped. Geopolitical and trade uncertainty, weakness in the household sector and credit constraints appear to be depressing business investment as firms take a 'wait and see' position.

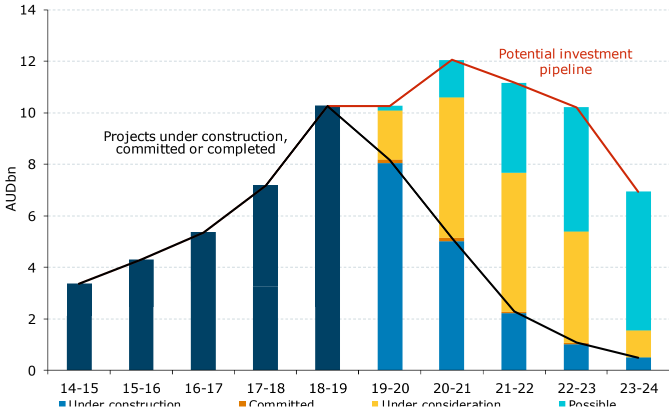
Confidence in the non-residential property market is down across most sectors compared with this time last year, according to the latest ANZ-Property Council Survey. We did see a jump in confidence in the latest quarter, though, and construction activity expectations for the year ahead remain solid for the office and tourism sectors. However, bricks and mortar retail investment faces challenges, particularly slower household spending growth and rising online retailing and international competition.

Figure 21. Commercial property confidence improves across the board in Q3 2019



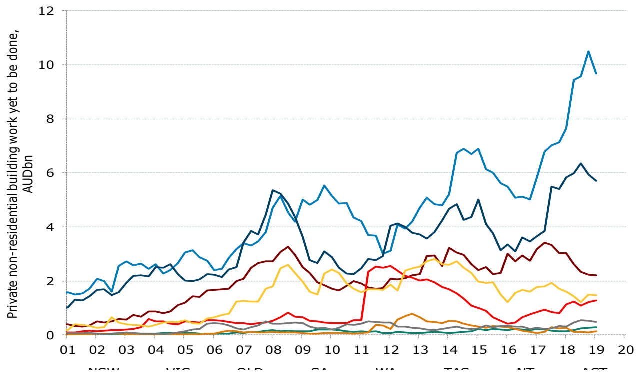
*Data post-September 2013 only includes firms' responses in their primary sector.
**Includes commercial office, retail, industrial and tourism. Excludes aged care property.
Source: ANZ-Property Council of Australia

Figure 22. Office, hotel and retail construction, by stage



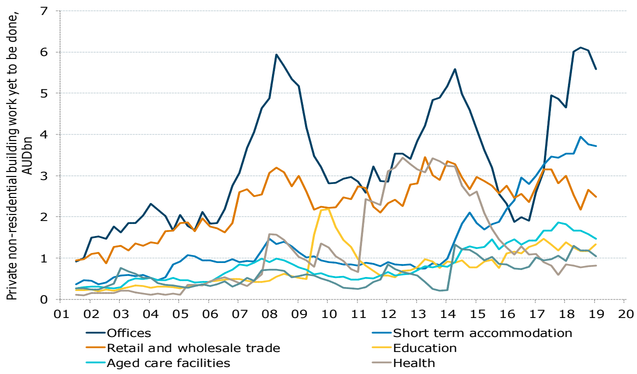
Source: Company reports, Deloitte Access Economics, ANZ Research

Figure 23. Private sector WYTBD*, by state



Source: ABS, ANZ Research
*Work yet to be done

Figure 24. Private sector WYTBD*, by sector



Source: ABS, ANZ Research

Outlook by state

New South Wales Premier, Gladys Berejiklian, has flagged further asset sales to fund the state's transport infrastructure plans, including the $20bn Sydney Metro West and the $14bn Western Harbour Tunnel and Beaches Link. Despite federal resistance to another round of the asset recycling, New South Wales is looking at options including selling the remaining half of WestConnex and a long-term lease of Forestry Corporation. $11bn worth of major hospital projects are underway or in the pipeline, and Barangaroo and other office projects will continue.

Victorian major project activity overachieved in 2018-19 and is expected to ease – at least temporarily – in 2019-20. This is partly due to the Victorian Government's lower-than-estimated spend on the Melbourne Metro during the year. Despite this, Victoria's Big Build will underpin work, and the mammoth $15.6bn North East Link is due to get underway in 2020-21. The Victorian Renewable Energy Auction Scheme has spurred wind and solar farm developments and the VRET will encourage new project announcements. Solid white collar employment growth and tourism are supporting office and hotel activity.

Queensland will add to the nation's tunnelling projects with the delayed $5.4bn Cross River Rail planned to begin construction later this year. Approvals for the development of the controversial Carmichael Coal Mine have been waved through and Adani has committed to begin work in 2019-20, but question marks remain over its viability. We see a low probability of other coal mega-projects in the Galilee Basin progressing, given the questionable economics along with environmental and climate implications. The Queensland Government has given the $10bn Surat Gas Project the go-ahead, but the final investment decision is yet to be made.

We expect a lull in South Australian roads activity as sections of the North-South Corridor are completed but this should ramp up again from 2022-23 when the final two sections – touted as the state's biggest ever infrastructure project – get underway. Renewable energy is a key focus, with an estimated $7bn worth of projects under construction, committed or under consideration. The Liberal state government plans to achieve net 100% renewable energy by 2030. A new AUS1.8bn Women's and Children's Hospital is also on the cards.

Figure 25. NSW major projects

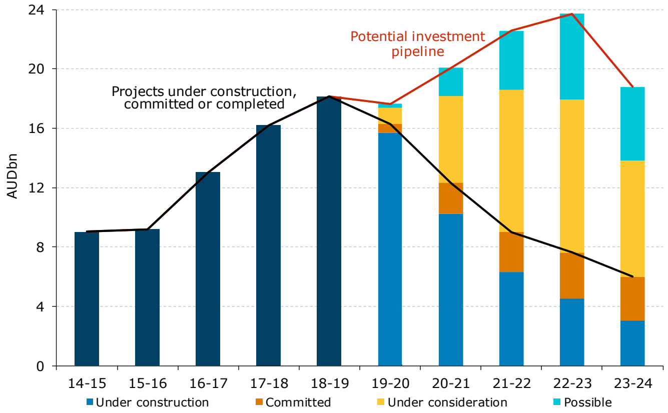


Figure 26. Vic major projects

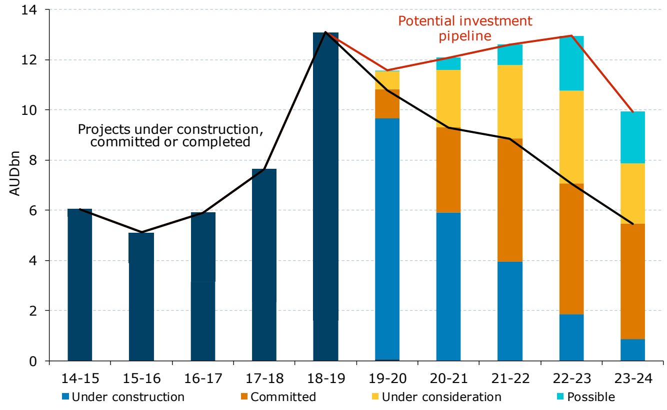


Figure 27. Qld major projects

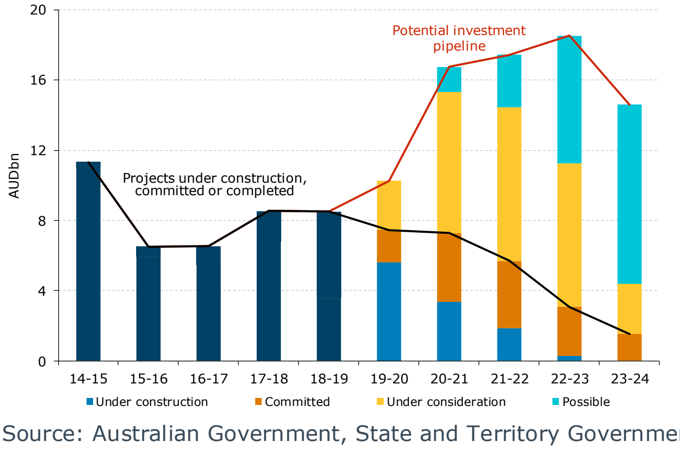
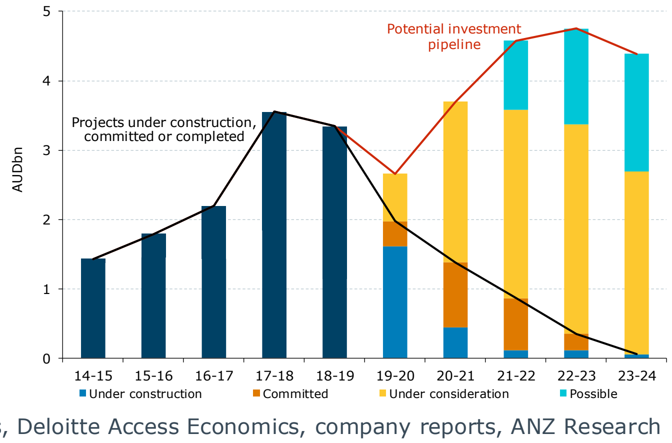


Figure 28. SA major projects



Source: Australian Government, State and Territory Governments, Deloitte Access Economics, company reports, ANZ Research

Outlook by state

Major project activity in Western Australia fell to its lowest level in around 12 years in 2018-19, but the outlook has brightened. The $5.1bn Gorgon Expansion is underway and final investment decisions are expected on the $15bn Scarborough and $30bn Browse LNG projects in 2020. The $4.6bn South Flank iron ore development is under construction and high iron ore prices are supporting plans to start the Iron Bridge, Koodaideri, and Eliwana projects in 2019-20. On the public sector side, $1.2bn worth of upgrades to the Tonkin Highway Corridor should start in 2020 and sections of Metronet will continue to roll through.

Tasmanian major project investment ramped up in 2018-19, supported by works on the Granville Harbour and Cattle Hill wind farms, Midland Highway upgrade and the $689m Royal Hobart Hospital redevelopment. The forward pipeline looks solid, with the 2019-20 Budget allocating a record $2.8bn for agency infrastructure projects over the next four years. Infrastructure Tasmania has outlined plans for the second tranche of TasRail's Freight Rail Revitalisation Program to start later in 2019. Increased tourism has spurred a $200m upgrade for Hobart International Airport to double the passenger carrying capacity by 2030. Looking ahead, there is substantial upside potential in the form of the Robbins Island Wind Farm and Project Marinus, but this is highly uncertain.

Major project activity in the Northern Territory is set to fall further in 2019-20 following completion of the Ichthys LNG project. Development along the Darwin Waterfront, including the Westin Hotel, is underway, and a handful of roads and mining projects are likely to start soon. There is significant upside potential from the mid-2020s with the proposed $20bn 10GW solar farm and 20–30GWh storage facility near Tennant Creek.

The Australian Capital Territory Government established a Major Projects Canberra agency in July 2019 to spearhead infrastructure delivery. Priorities include Stage 2 of Light Rail from the city to Woden (which could be in two sections) and SPIRE at the Canberra Hospital. A number of other mixed-use commercial property projects are planned, including redevelopment of the Woden Town Centre and the Republic development in Belconnen.

Figure 29. WA major projects, by stage

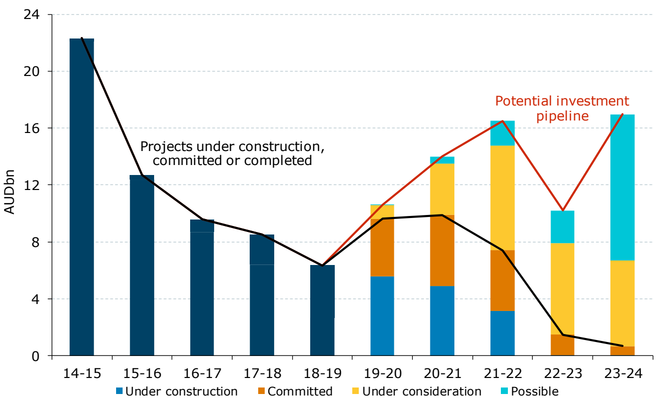


Figure 30. Tas major projects, by stage

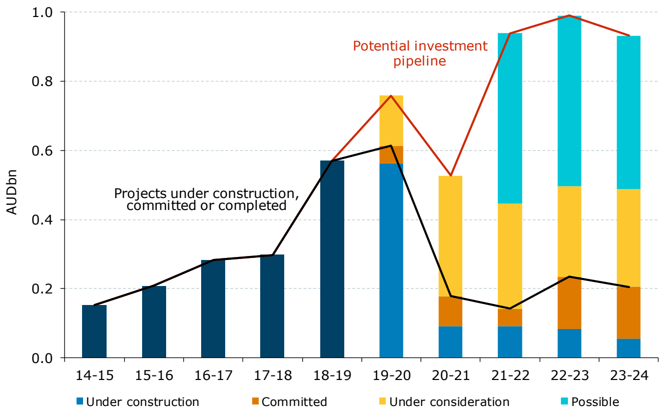


Figure 31. NT major projects, by stage

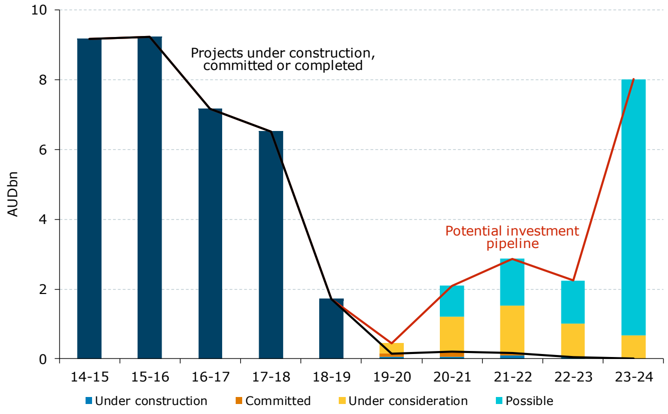
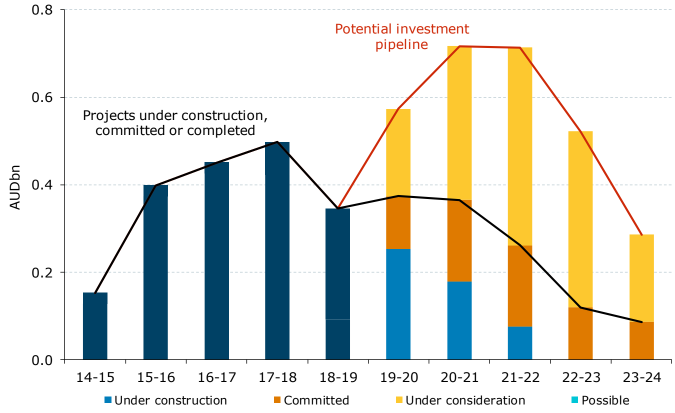


Figure 32. ACT major projects, by stage



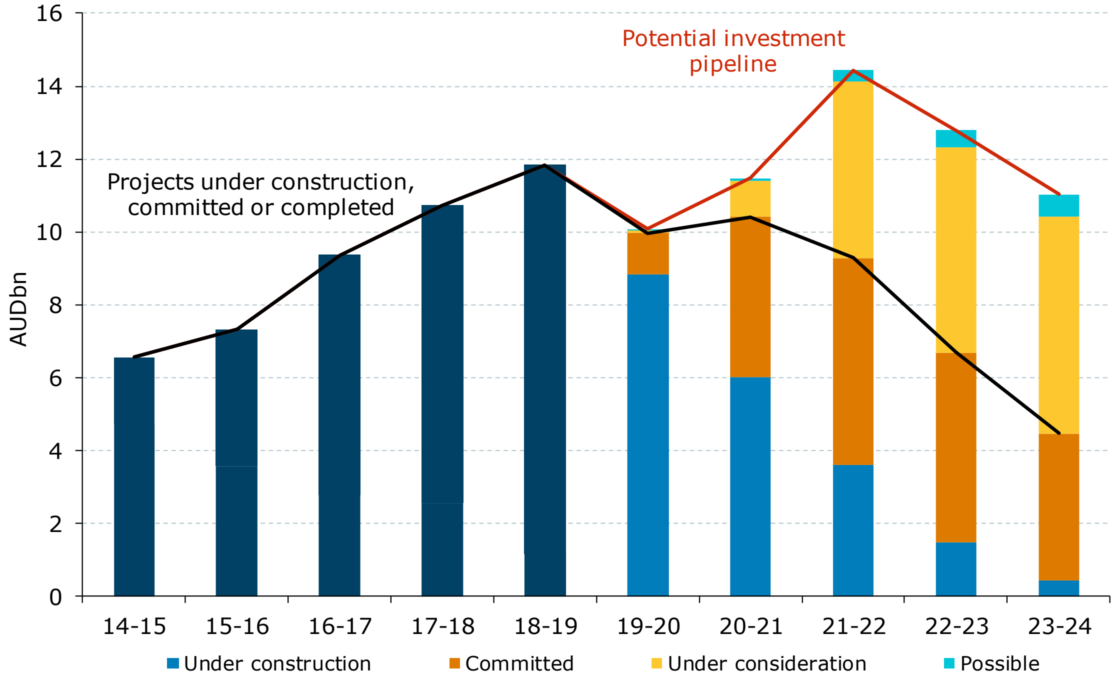
Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

Roads

Major roads investment looks like it will take a breather in 2019-20 following years of escalating activity. Several major projects were completed 2018-19 (including the Citylink upgrade in Victoria) or are winding down (including the Woolgoolga-Ballina upgrade in New South Wales and the Toowoomba Second Range Crossing in Queensland). Activity is likely to ramp up again from 2020-21, with the $15.6bn North East Link set to get underway in Victoria. The $16.8bn privatised WestConnex will continue to underpin work in New South Wales, and the $14bn Western Harbour Tunnel and Beaches Link could provide a significant boost but no funding has been committed yet. The federal and South Australian governments have announced a total of $5.4bn to complete the North-South Corridor but the final two sections are unlikely to get underway until 2022-23.

Projects currently under construction			
Project	State	Value (AUD)	Completion
WestConnex	NSW	16.8bn	2023-24
West Gate Tunnel	VIC	6.7bn	2022-23
Pacific Highway: Woolgoolga– Ballina	NSW	4.9bn	2020-21
NorthConnex	NSW	3.0bn	2019-20
Toowoomba Second Range Crossing	QLD	1.6bn	2019-20
Northern Road Upgrade	NSW	1.6bn	2022-23
North-South Corridor: Northern Connector and Darlington Interchange	SA	1.5bn	2019-20
Northlink WA	WA	1.0bn	2020-21
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
North East Link	VIC	15.6bn	2020-21
Western Harbour Tunnel and Beaches Link	NSW	14.0bn	2021-22
North-South Corridor: final two sections	SA	5.1bn	2022-23
F6 Extension	NSW	2.2bn	2020-21
Pacific Highway: extension	NSW	2.0bn	2021-22
M12 Motorway	NSW	1.8bn	2020-21
Pacific Highway: Coffs Harbour Bypass	NSW	1.2bn	2020-21
Tonkin Highway Corridor Upgrades	WA	1.2bn	2019-20
Pacific Motorway: Varsity Lakes–Tugun	QLD	1.0bn	2020-21

Figure 33. Major road projects, by stage



Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

Outlook by sector

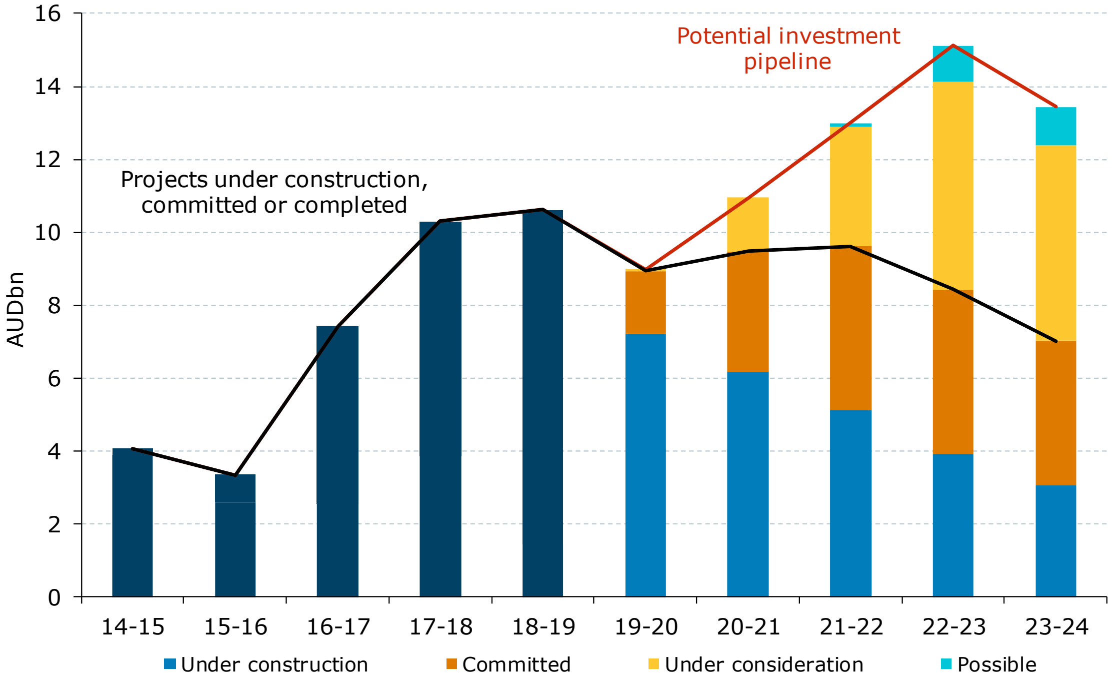
Rail

Rail construction is also expected to be lower in 2019-20. Sydney Metro Northwest was completed early and $1bn under budget while construction on the Melbourne Metro is reportedly facing delays. Capacity constraints will only worsen with several more multi-billion-dollar projects set to commence over the medium-term. The Victorian Government has almost doubled the funding for level crossing removals, while there is significant upside risk to the $20bn estimate for Sydney Metro West. The delayed Cross River Rail in Queensland should commence shortly, and Stage 2 of Canberra Light Rail is in planning.

Further out, the Victorian Government's planned Suburban Rail Loop is currently estimated at around $50bn and may not be completed until 2050. Fast rail has also resurfaced; the federal government has said it "will deliver" $2bn for fast rail between Melbourne and Geelong but this would be a very long way off, if it does eventuate.

Projects currently under construction			
Project	State	Value (AUD)	Completion
Sydney Metro City and Southwest	NSW	12.0bn	2023-24
Melbourne Metro	VIC	10.9bn	2025-26
Melbourne–Brisbane Inland Rail	AUST	10.0bn	2027-28
Level Crossing Removal program	VIC	6.8bn	2022-23
CBD and South East Light Rail	NSW	3.0bn	2019-20
Parramatta Light Rail	NSW	2.4bn	2022-23
Metronet: Forrestfield Airport rail link	WA	1.9bn	2021-22
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
Sydney Metro West	NSW	20.0bn	2020-21
Melbourne Airport Rail Link	VIC	12.0bn	2022-23
75 by 2025 Level Crossing Removal	VIC	6.6bn	2019-20
North-South Rail	NSW	5.5bn	2021-22
Cross River Rail	QLD	5.4bn	2019-20
Canberra Light Rail: Stage 2	ACT	1.3bn	2020-21
Parramatta Light Rail: Stage 2	NSW	1.2bn	2023-24

Figure 34. Major rail projects, by stage



Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

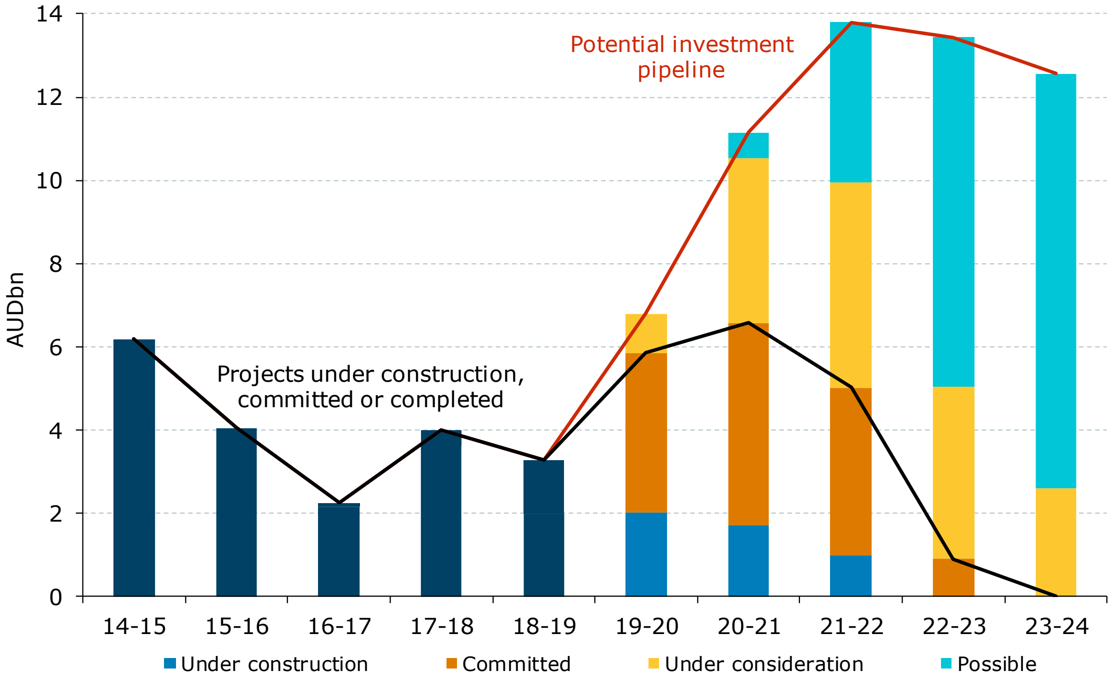
Mining

In June 2019, mining capital expenditure recorded its strongest quarterly result in five years, rising 1.7% q/q. After six years of contraction, mining firms are currently planning a 20% increase in capex in 2019-20, although the current trade conflict and slowing global economic growth puts a cloud over this outlook. The $4.6bn South Flank iron ore development is under construction in the Pilbara and a number of other multi-billion-dollar iron ore projects are expected to get underway in 2019-20, including the Iron Bridge and Koodaideri projects in Western Australia.

Environmental approvals have been granted for an expansion of Greenbushes, already the world's largest producing lithium mine. However, Tianqi and Albemarle have put the expansion on hold – along with the second stage of Tianqi's lithium hydroxide processing plant – citing slower-than-expected demand growth, but they are confident of demand returning over the longer-term. The Carmichael coal mine in Queensland could begin major construction works in the near-term, although question marks remain over its viability. Further ahead, realisation of the potential investment pipeline appears very unlikely, given the low probability of other mega coal projects in the Galilee Basin going ahead. Either way, the peak in this round of mining projects will be nowhere near that of the previous cycle.

Projects currently under construction			
Project	State	Value (AUD)	Completion
South Flank iron ore	WA	4.6bn	2021-22
Carrapateena copper	SA	900m	2019-20
Baralaba North coal	QLD	400m	2020-21
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
Iron Bridge	WA	3.6bn	2019-20
Koodaideri iron ore	WA	3.5bn	2019-20
Carmichael coal	QLD	2.0bn	2019-20
Eliwani iron ore mine	WA	1.7bn	2019-20

Figure 35. Major mining projects, by stage



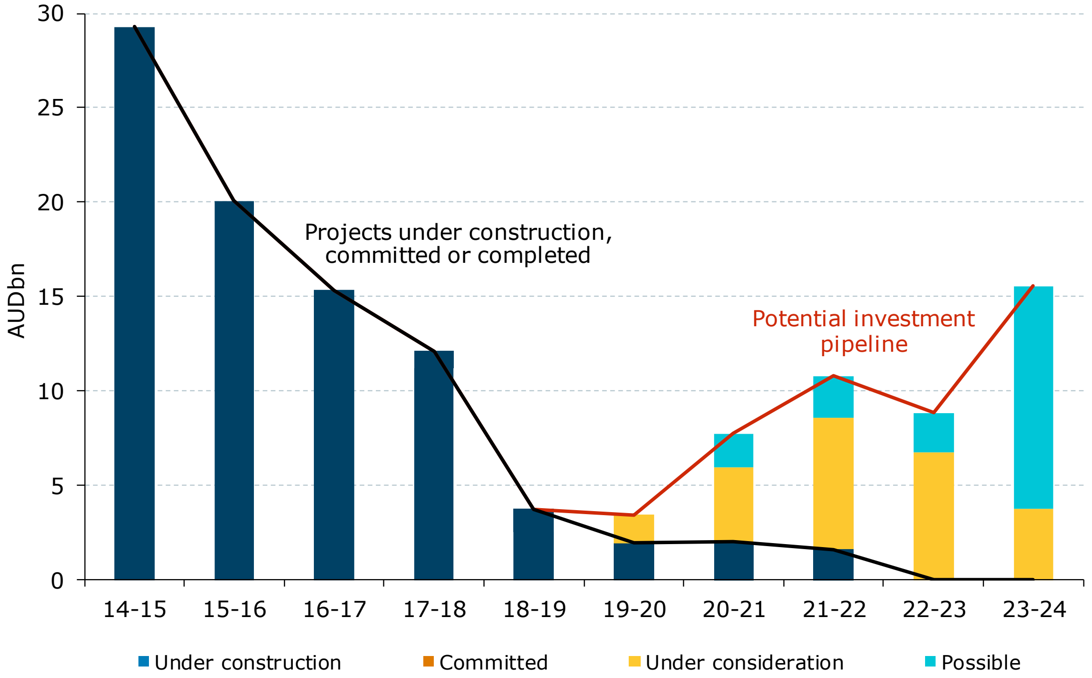
Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

Energy

Energy project capex looks to be nearing its trough following the completion of the Ichthys and Prelude LNG plants. The $5.1bn Gorgon expansion is underway and we expect the $10bn Surat Gas Project to commence in 2019-20 but the size of these projects pales in comparison with previous projects. There is upside potential in Western Australia over the longer-term, with final investment decisions expected on the Scarborough and Browse LNG projects in 2020. Considerable uncertainty remains around the Greater Sunrise LNG project in the Timor Sea.

Projects currently under construction			
Project	State	Value (AUD)	Completion
Greater Enfield	WA	2.5bn	2019-20
Gorgon expansion	WA	5.1bn	2021-22
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
Surat Gas Project	QLD	10.0bn	2019-20
Roma East	QLD	750m	2019-20

Figure 36. Major energy projects, by stage



Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

Outlook by sector

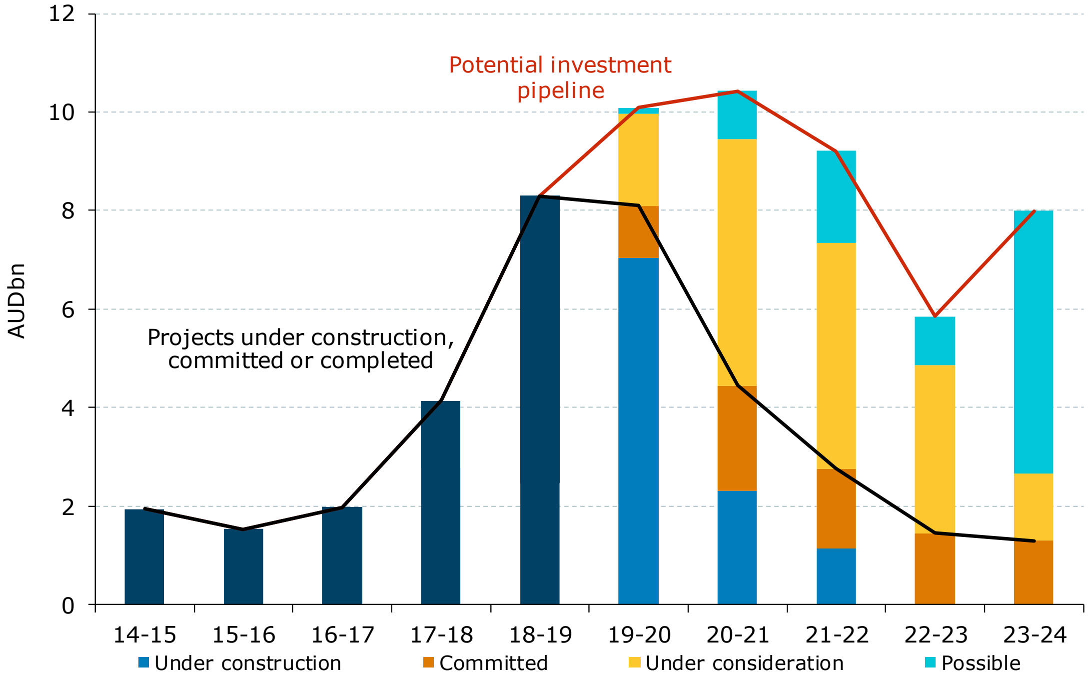
Electricity

Major electricity project investment is booming, doubling in 2017-18 and again in 2018-19, led by renewable energy projects. State and territory renewable energy policies and emissions targets are key drivers, offsetting energy policy uncertainty at the federal level. The Somerset Solar Farm currently under construction in Queensland will be Australia's largest.

The project pipeline looks strong, with a number of other projects in excess of $1bn likely to get underway over the next two years. Snowy Hydro 2.0 will underpin activity in New South Wales and the $1bn Clarke Creek Wind and Solar Project in Queensland should begin construction shortly. The $1.5bn Golden Plains Wind Farm in Victoria received state and federal approvals this year while the $1.6bn Ceres Wind Project in South Australia, which includes an underwater cable connecting it to Adelaide, was recently approved to use larger turbines. Further out, there is substantial upside potential with the proposed $20bn solar farm and storage facility near Tennant Creek and the $22bn Asian Renewable Energy Hub in the Pilbara.

Projects currently under construction			
Project	State	Value (AUD)	Completion
Somerset Solar Farm	QLD	3.5bn	2021-22
Stockyard Hill Wind Farm	VIC	900m	2019-20
Coopers Gap Wind Farm	QLD	850m	2019-20
Kwinana Waste-to-Energy plant	WA	668m	2021-22
Bulgana Green Power Hub	VIC	665m	2019-20
Moorabool Wind Farm	VIC	600m	2019-20
Dundonnell Wind Farm	VIC	560m	2019-20
Warradarge Wind Farm	WA	500m	2020-21
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
Snowy Hydro Expansion	NSW	5.1bn	2020-21
Ceres Wind Project	SA	1.6bn	2020-21
Golden Plains Wind Farm	VIC	1.5bn	2020-21
Clarke Creek Wind and Solar Project	QLD	1.0bn	2019-20

Figure 37. Major electricity projects, by stage



Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

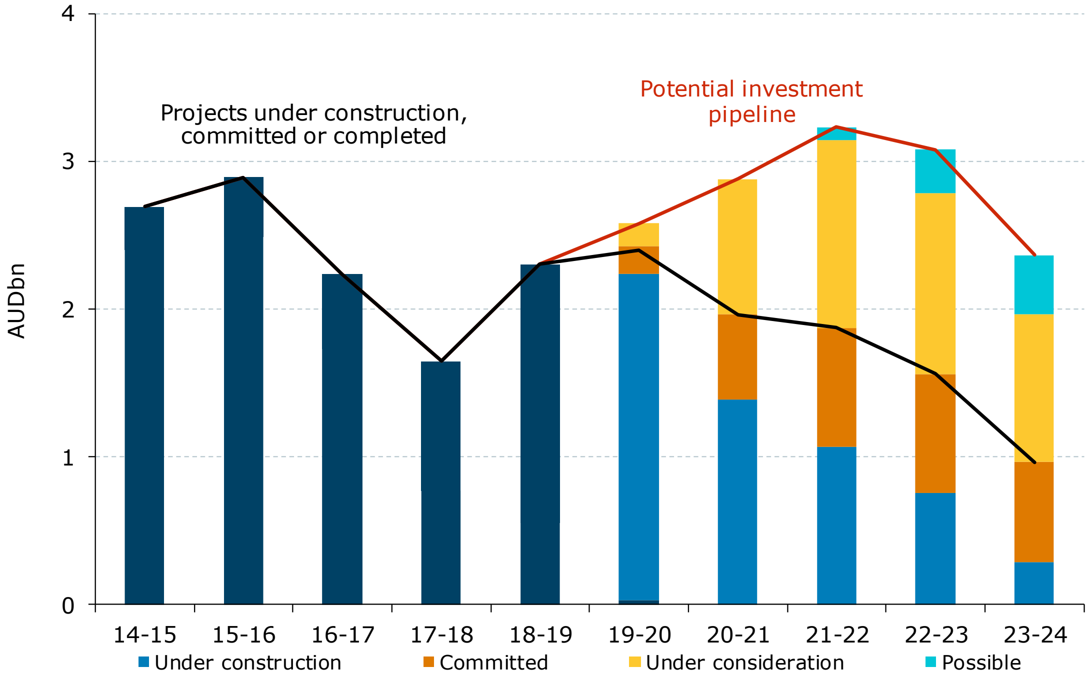
Outlook by sector

Hospitals

Following a gap in activity in 2017-18, investment in major hospitals is on the way up again. New South Wales is leading the way, with 25 major hospital projects under construction or likely to get underway over the next few years, worth more than $11bn in total. The first stage of the Westmead Hospital Redevelopment is the largest at $832m and is expected to be completed in 2021-22. The South Australian Government has committed $550m toward planning the New Women's and Children's Hospital, which at $1.8bn is the biggest project in the pipeline, and the cost could rise further. The Victorian Government is also planning a new hospital for Melbourne's Inner West, worth $1.5bn, to cater for the growing population.

Projects currently under construction			
Project	State	Value (AUD)	Completion
Westmead Hospital Redevelopment	NSW	832m	2021-22
Randwick Campus Reconfiguration	NSW	720m	2023-24
Royal Hobart Hospital Redevelopment	TAS	689m	2019-20
Blacktown/Mount Druitt Hospitals Expansion, Stages 1 and 2	NSW	655m	2020-21
Campbelltown Hospital Redevelopment (Stage 2)	NSW	632m	2023-24
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
Royal Adelaide Hospital: New Women and Children's Hospital	SA	1.8bn	2020-21
Hospital for Melbourne's Inner West	VIC	1.5bn	2020-21
John Hunter Health and Innovation Precinct	NSW	780m	2020-21
Liverpool Health and Academic Precinct	NSW	740m	2019-20

Figure 38. Major hospital projects, by stage



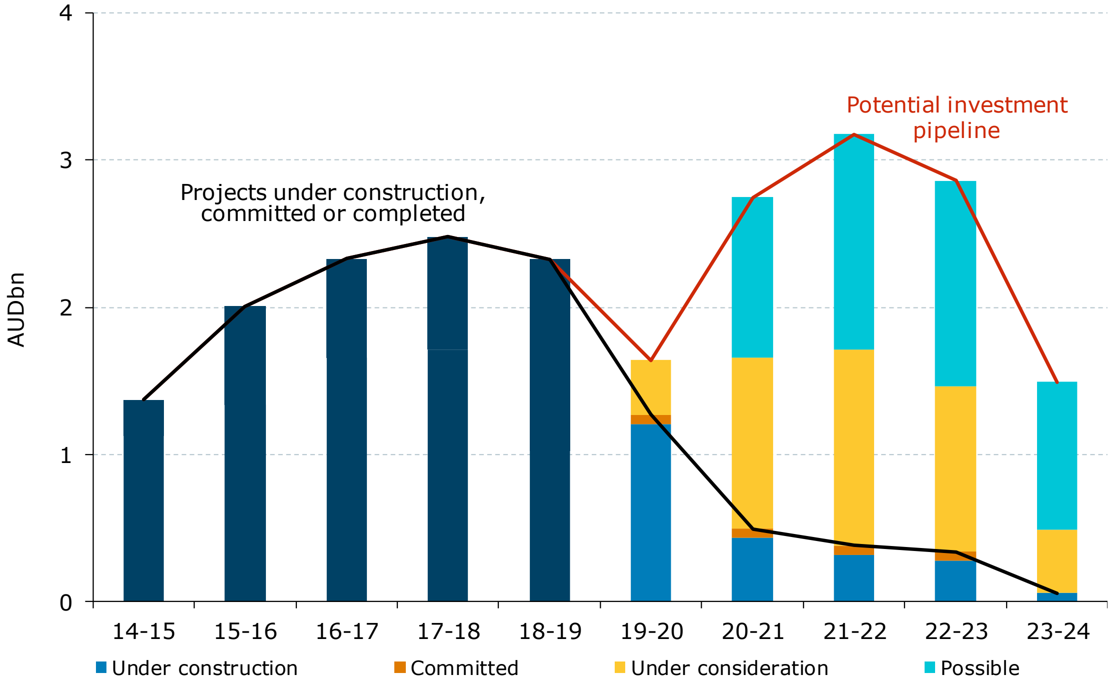
Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

Retail

The bricks and mortar retail environment in Australia has been under pressure for some time from the rise in online retailing and international competition. Furthermore, households have been reining in retail spending, faced with persistently low wage growth, high debt and escalating prices for non-discretionary goods and services. The expected slump in capex in 2019-20 may be a case of investors choosing to wait and see what longer-term impact the recent rate cuts and tax cuts have on retail spending. The $750m Garden City Shopping Centre Expansion in Perth has been put on hold indefinitely as have several other projects. The increased presence of international players in the retail space could provide some upside going forward. A number of the projects that look most likely to enter the pipeline are in Victoria, where retail spending has held up better than other states and population growth is well above the national average.

Projects currently under construction			
Project	State	Value (AUD)	Completion
Merrifield Business Park Development	VIC	1.2bn	2019-20
Castle Towers Shopping Centre Expansion	NSW	1.1bn	2022-23
ICON Ipswich: Ipswich CBD Renewal	QLD	500m	2019-20
Shoreline: First Precinct of Cockburn Urban Redevelopment	WA	490m	2024-25
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
Jam Factory Mixed Use Project	VIC	625m	2019-20
Westfield Innaloo Redevelopment	WA	600m	2020-21
Westfield Doncaster Shopping Centre Extension	VIC	500m	2020-21

Figure 39. Major retail projects, by stage



Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

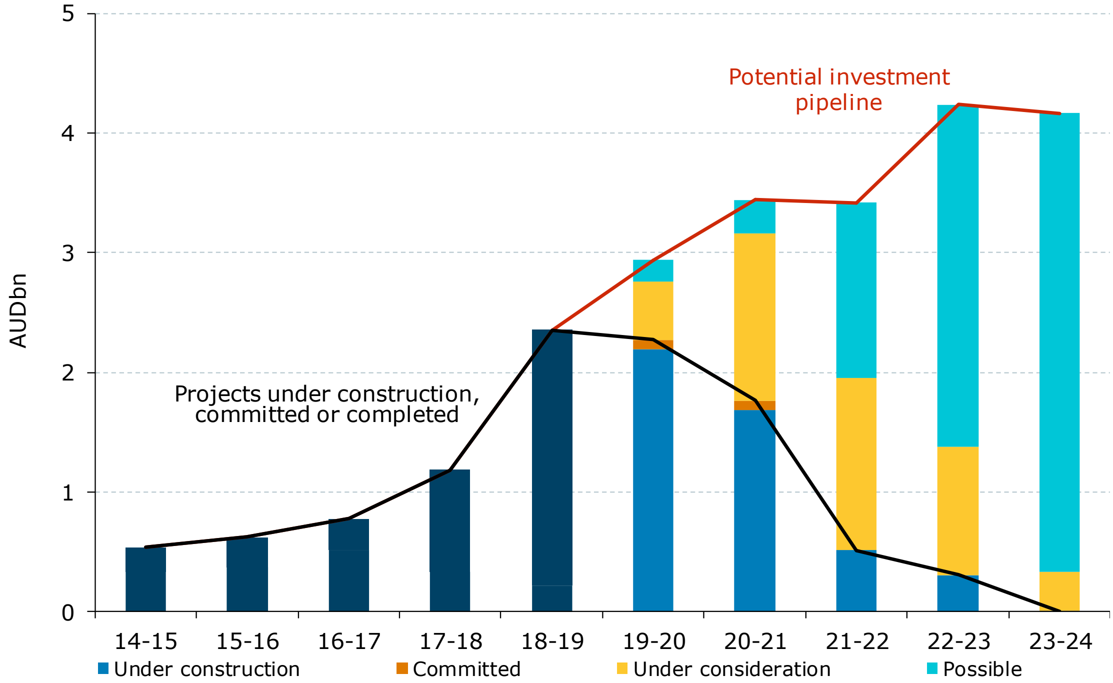
Outlook by sector

Hotels

Growth in major hotel project activity continued to accelerate in 2018-19, in response to the sustained period of strong growth in tourist arrivals since 2012-13. China has been a significant driver of tourism in Australia, currently accounting for 15% of short-term visitors. However, growth in the number of Chinese tourists (as well as students) has slowed since mid-2018. This has coincided with the escalation of the US-China trade dispute, and the trend has been seen in other countries, including New Zealand and Canada. This puts a cloud over the potential investment pipeline but it currently looks reasonable. There are sizeable developments underway or set to begin soon across all capital cities as well as in other tourism hotspots. Looking ahead, Hobart is set to get its $400m Motown hotel next to MONA by the mid-2020s. And renewed interest in Great Barrier Reef island tourism could see the redevelopment of the Lindeman Island Resort, which has been closed since Cyclone Yasi hit in 2011.

Projects currently under construction			
Project	State	Value (AUD)	Completion
Crown Sydney Hotel Resort	NSW	2.2bn	2020-21
Queens Wharf Brisbane Integrated Resort Development	QLD	1.5bn	2022-23
Shangri La, 308 Exhibition St	VIC	375m	2020-21
Ritz-Carlton Hotel, Elizabeth Quay	WA	350m	2019-20
Australia 108	VIC	300m	2020-21
Republic Mixed Use Development	ACT	300m	2021-22
Westin Hotel, Darwin Waterfront	NT	200m	2021-22
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
Lindeman Island Redevelopment	QLD	600m	2020-21
Motown	TAS	400m	2020-21
Mandarin Oriental	VIC	375m	2020-21
Hilton Parramatta	NSW	300m	2020-21

Figure 40. Major hotel projects, by stage



Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

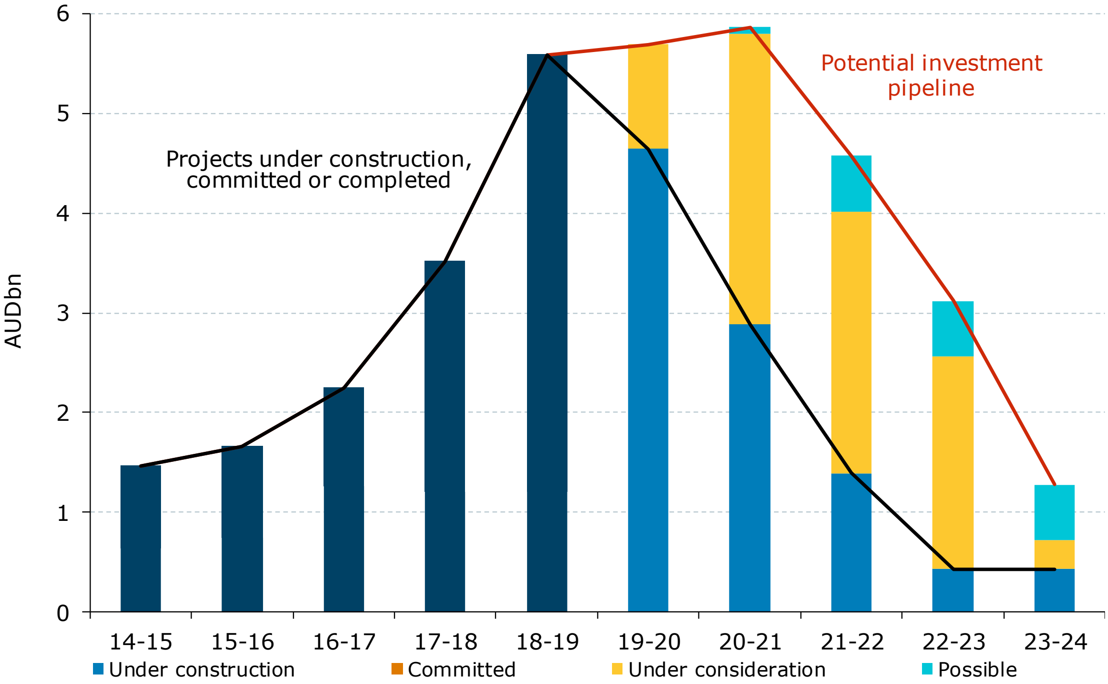
Outlook by sector

Offices

Work yet to be done in the office sector has come off slightly in early-2019 but remains around historic highs. Most of the work is concentrated in the Sydney and Melbourne CBDs, supported by solid gains in white collar employment. Commercial offices are benefitting from the low rate environment – although yields are relatively low, the risk premium remains attractive. Demand has not only been domestic-based; 2018 saw foreign capital spent on Australian commercial offices reach a record $11.9bn, more than ten times the post-GFC trough in 2010. The current level of major office project investment is unlikely to be maintained for long, as the next round of projects are smaller scale.

Projects currently under construction			
Project	State	Value (AUD)	Completion
Barangaroo development	NSW	6.0bn	2023-24
Wynyard Place	NSW	1.9bn	2020-21
Melbourne Quarter – Batman's Hill Development	VIC	1.4bn	2021-22
Victoria Harbour Mixed Development	VIC	1.4bn	2020-21
Parramatta Square Master Plan	NSW	1.3bn	2021-22
Macquarie Park Commercial Precinct	NSW	1.0bn	2019-20
1 Denison St, North Sydney Office Tower	NSW	1.0bn	2019-20
Quay Quarter Tower	NSW	1.0bn	2021-22
Projects expected to enter the pipeline			
Project	State	Value (AUD)	Commencement
Macquarie Exchange	NSW	750m	2020-21
Office Tower at 360 Queen St	QLD	650m	2019-20
Office Building at corner of 205 North Quay	QLD	600m	2019-20

Figure 41. Major office projects, by stage



Source: Federal, state and territory governments, Deloitte Access Economics, company reports, ANZ Research

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[3 July 2019]

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