SOUTH AUSTRALIAN CENTRE FOR ECONOMIC STUDIES

THE UNIVERSITY of ADELAIDE

Economic Issues

State of the Construction Industry

South Australian
Centre for Economic Studies
University of Adelaide

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Economic Issues

No. 55

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Authors:

South Australian Centre for Economic Studies
University of Adelaide

March 2022

ISSN 1445-6826

Published by: South Australian Centre for Economic Studies
University of Adelaide
SA 5005
AUSTRALIA
Telephone: (61+8) 8313 5555
Facsimile: (61+8) 8313 4916
Internet: http://www.adelaide.edu.au/saces
Email: saces@adelaide.edu.au

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Executive Director's Note

Welcome to the fifty fifth issue of *Economic Issues*, a series published by the South Australian Centre for Economic Studies as part of its Corporate Membership Program. The scope of Economic Issues is intended to be broad, limited only to topical, applied economic issues of relevance to South Australia and Australia. Within the scope, the intention is to focus on key issues – public policy issues, economic trends, economic events – and present an authoritative, expert analysis which contributes to both public understanding and debate. Papers will be published on a continuing basis, as topics present themselves and as resources allow.

In this paper we examine the current state of the construction industry in South Australia. We review a range of indicators that provide insight into the recent performance of the construction sector. Among the performance indicators considered include construction activity levels, economic footprint and contribution in terms of gross value added and employment, recent price trends for the outputs and inputs of the construction sector, business counts, and number of construction companies entering external administration. The composition of the construction sector is also considered, as are movements in the estimated demand and supply for housing over recent years.

The COVID-19 pandemic has exerted a considerable impact on the construction industry. Demand for housing rose considerably in response to people being forced to spend more time at home, while various stimulus measures were enacted to support construction activity in the face of considerable economic uncertainty. The resulting increase in demand combined with pandemic induced supply disruptions has generated considerable inflationary pressures within the construction sector over the past year, particularly within residential building. The pandemic also appears to have temporarily changed the nature of demand for new housing, generating a shift from higher density living to detached housing.

The author of this paper is Anthony Kosturjak, Senior Research Economist, SACES. The views expressed in the report are the view of the author.

Assoc Professor Michael O'Neil
Honorary Research Fellow
SA Centre for Economic Studies
March 2022

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State of the South Australian Construction Industry

1. Introduction

The construction industry is a major element of the South Australian economy. The Australian Bureau of Statistics (ABS) estimates that the construction sector accounted for 6.8 per cent ($8.0 billion) of Gross State Product in 2020/21 – a contribution exceeded only by the healthcare and social assistance sector (10 per cent).[1] With such a large footprint the construction industry is naturally a major source of employment. In 2021 it employed approximately 74,800 people, which is equivalent to 8.6 per cent of the total workforce in South Australia, making it the fourth largest employing sector.[2]

Beyond direct contributions to economic activity, the construction cycle has an important bearing on broader economic growth. Changes in activity levels within the construction sector have significant flow on effects through the supply chain to other sectors, including manufactured inputs (e.g. wood products, structural metal products, iron and steel, polymer products, cement etc.), professional and technical services, financial and insurance services, transport services, rental, hiring and real estate services, household furnishings etc. Moreover, housing investment is an important transmission mechanism for monetary policy, with changes in the cash rate flowing through to lending to the housing market.[3]

Over the last five years the construction sector has endured some considerable shifts in conditions and sentiment. Several years ago, a sense of unease had set in. A number of construction companies within South Australia had collapsed, most noticeably civil engineering firm York Civil, which entered voluntary administration in August 2018.[4] At the national level around the same time house prices were trending downwards, which combined with large additions to housing supply in some cities and a downturn in building approvals suggested that dwelling investment had peaked. The arrival of COVID-19 in early 2020 delivered a significant shock, greatly increasing uncertainty. In response, a series of policy measures were enacted to support building activity, including home building subsidies, monetary stimulus and public sector infrastructure investment. Meanwhile, demand for housing rose as people were forced to spend more time at home. This sudden increase in demand together with pandemic induced supply chain disruptions is now generating considerable inflationary pressures within segments of the construction industry, especially housing.

It light of the shock delivered by the pandemic, it is an opportune time to take stock of the state of the construction industry in South Australia. This paper presents various indicators that track the performance of the construction sector. These indicators include activity levels and composition, employment, housing demand and supply balance, forward indicators of construction activity, price movements, and corporate insolvencies. In many instances long term historical data is presented so that recent trends can be placed within their historical context.

2. Activity Levels

2.1 Construction Work Done

Total construction work done in South Australia was valued at $14.5 billion in 2021, equivalent to 6.5 per cent of all construction work done in Australia ($221.6 billion).

Figure 2.1 shows the quarterly value of construction work done in real seasonally adjusted terms for South Australia and Australia since the turn of the millennium. There have been some notable shifts in construction activity for South Australia over the period shown, with activity growing solidly through the 2000s, stabilising and then declining between 2010 and 2015, growing strongly again from mid-2016 to mid-2018, then falling moderately over the next several years before surging to a new record level in 2021. Construction activity at the Australian level has followed a similar pattern over this period, with the main differences being that construction nationally managed to grow for longer before peaking in 2013, and has not performed as strongly over recent years. The earlier upswing in construction activity was sustained for longer at the national level due primarily to the resources boom, which provided a large boost to engineering construction in the resource rich states, especially Western Australia.

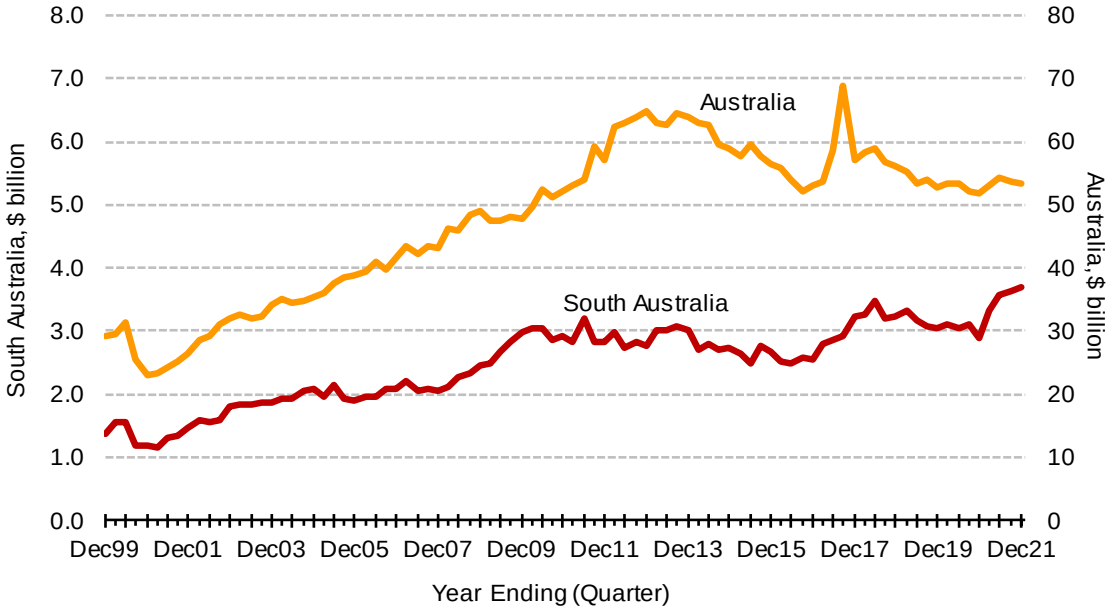
Overall construction activity in South Australia rose strongly in 2021, reaching a new record level in the December quarter – see Figure 2.1. The pace of growth did slow in the second half of the year, which suggests that construction activity may be approaching a peak. Forward indicators of activity considered later in this paper suggest that construction activity should be maintained around its recent strong level in the short term.

Inspection of Figure 2.1 shows that there is a reasonable degree of synchronicity in construction activity patterns between South Australia and Australia. This outcome reflects that construction cycles in Australia are to a significant degree driven by broad underlying factors, not only state specific factors such as differentials

in population growth, structural differences in the economy, and public sector investment plans. Such broad underlying factors would include the national business cycle, shifts in interest rates, changes to national taxation arrangements, and other national policy measures that affect demand for housing and non-residential building (e.g. First Home Owner Grant / First Home Owners Boost, Building the Education Revolution, large increase in skilled and student migration under the Howard Government).

The other notable feature to emerge from Figure 2.1 is that overall construction work done in South Australia has generally kept pace with national trends over the long term in spite of slower population and economic growth. Over the two decades to the December quarter 2021 the volume of construction work done rose by 151 per cent, whereas nationally it rose by 103 per cent over this period. This relative parity remains even when one excludes the recent large rise in construction activity for South Australia. For example, construction work done over the two decades to the December quarter 2020 – i.e. the most recent low in the construction cycle for South Australia – rose by 144 per cent compared to 125 per cent nationally.

Figure 2.1: Construction Work Done
South Australia and Australia – Chain Volume Measures, Seasonally Adjusted Series



Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

Sectoral Trends

Overall activity levels in the South Australian construction sector are particularly sensitive to shifts in engineering construction, which can fluctuate significantly over the medium term, especially with the approval of large one-off projects – see Figure 2.2. Engineering activity shifted to a higher level around the time of the Global Financial Crisis (GFC) as a series of major public sector projects were implemented to address infrastructure constraints and support economic activity (which in large part explains why construction activity has kept pace with national activity). These projects include the Adelaide Desalination Plant, Adelaide oval redevelopment and various transport infrastructure projects, especially those comprising Adelaide's North-South Corridor, which commenced with the Gallipoli Underpass in 2007 and the more substantive Northern Expressway in late 2008. The private sector also contributed to the strong growth in engineering construction in the years following the GFC through large increases in work done for 'heavy industry', principally 'mining', and 'electricity generation, transmission etc. and pipelines'.

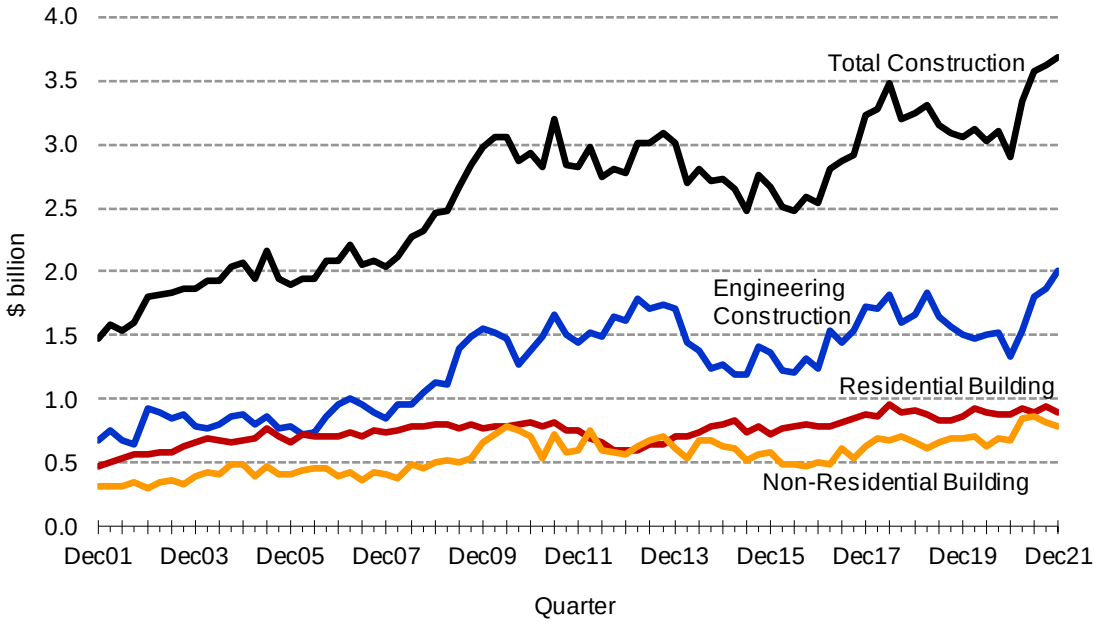
A large rebound in engineering construction emerged in early 2017 as the next major phase of public sector transport projects moved into construction (e.g. Torrens Road to River Torrens, Northern Connector and Darlington Upgrade) and private sector investment in 'electricity generation, transmission etc. and pipelines' surged in response to high energy prices. Overall activity levels within the sector then experienced a gentle decline from mid-2018 to the end of 2020, mainly in response to the boom in renewable energy projects passing through and the initial roll out of the National Broadband Network (NBN) moving toward completion. Over the last year engineering construction has picked up strongly once again in response to a sharp rise in work done for 'heavy industry' (driven, in part, by commencement of a major smelter maintenance program at BHP's Olympic Dam mine) and a rebound in investment in energy infrastructure.

South Australian residential building activity has had a modest upward trend since the early 2000s, notwithstanding a noticeable downturn in 2012. Residential building has generally been supported by modest but persistent population growth, driven primarily by overseas migration; real interest rates for housing loans remaining near historically low levels; ongoing preferential tax treatments for housing assets; and slow but steady increases in house prices, which provides home owners with increased equity to finance home modifications or even new home construction, and encourages investors to engage in home construction. In the years leading up to the pandemic some of these factors became less supportive, with population growth slowing between 2012 and 2017, residential property prices flattening off, and financial conditions becoming less accommodative as financial institutions and regulators tightened lending standards to mitigate financial risks posed around household lending (arising primarily in the eastern capitals). With the arrival of the pandemic some of these underlying forces shifted dramatically, generating an unexpected housing boom. Even though population growth slowed to a crawl as border closures cut off overseas migration, overall demand for housing increased as lockdowns forced people to spend more time at home. Meanwhile, the ability to invest in housing was supported by interest rates falling to ultra-low levels (see Figure A1 in Appendix A), provision of considerable income support, and spending being diverted from curtailed activities, while the Australian Government's temporary HomeBuilder grant program provided direct stimulus to residential building.

As shown later in this paper, the boom in residential building has so far manifest more in terms of a surge in forward work schedules and large price increases for housing construction and existing housing rather than a surge in building activity. The volume of residential building work done rose by a modest 1.7 per cent through the year to the December quarter 2021. It appears that capacity and supply constraints have restrained residential building growth amid pandemic supply disruptions and activity levels being maintained at or near record levels across the three forms of construction – see Figure 2.2.

Non-residential building has been relatively flat for most of the past decade, but has improved considerably over the past several years – see Figure 2.2. From 2011 to 2017, non-residential building was supported by the construction of the $2 billion Royal Adelaide Hospital. There was little impetus from the private sector during this period with generally weak business conditions leading to low levels of business confidence and general stagnation in business investment. Over the past year non-residential building has risen strongly (up 16 per cent in real seasonally adjusted terms), although it has eased from its record level reached in the June quarter of 2021. This recent upswing was driven by a large program of facility upgrades within the education sector as part of the State Government's policy to move Year 7 into high school from 2022.

Figure 2.2: Construction Work Done by Sector
South Australia – Chain Volume Measures, Seasonally Adjusted Series



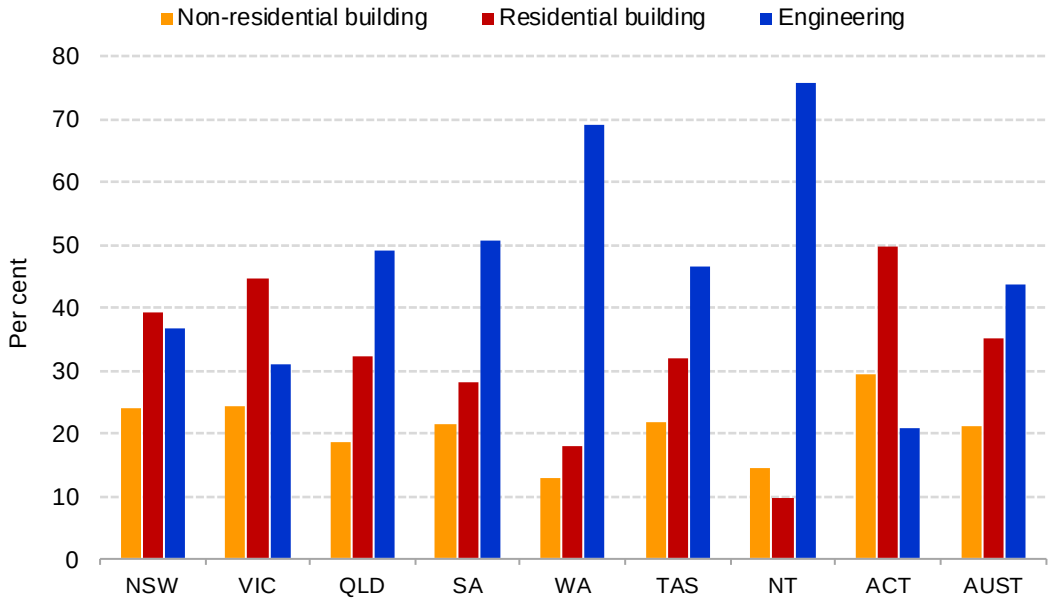
Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

Sectoral Differences Across States and Territories

Figure 2.3 shows each sector's proportional share of total construction work done in the five years to 2021 by state and territory. The sectoral pattern for South Australia is broadly similar to the national pattern. The main differences are that residential building has accounted for a relatively smaller share of total construction work done in South Australia (28 per cent compared with 35 per cent nationally), while engineering construction has accounted for a relatively larger share of activity (51 per cent compared with 44 per cent nationally). The proportion of total work done attributable to non-residential building in the five years to 2020/21 was equivalent for South Australia and Australia (21 per cent respectively).

There are more pronounced differences in the structure of the construction sector across the other states and territories. Construction activity has been skewed towards residential building in Victoria (45 per cent) and New South Wales (39 per cent), which would reflect the strong population growth experienced by these states over the past decade, but also that they largely missed out on the engineering construction boom that was enjoyed by the energy and resource rich states and territories. On this note, engineering construction has been a relatively large driver of overall construction activity in the Northern Territory (76 per cent), Western Australia (69 per cent), and to a lesser degree, Queensland (49 per cent).

Figure 2.3: Value of Construction Work Done by Type, Proportion of Total
States and Territories – 2017 to 2021, Current Prices



Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

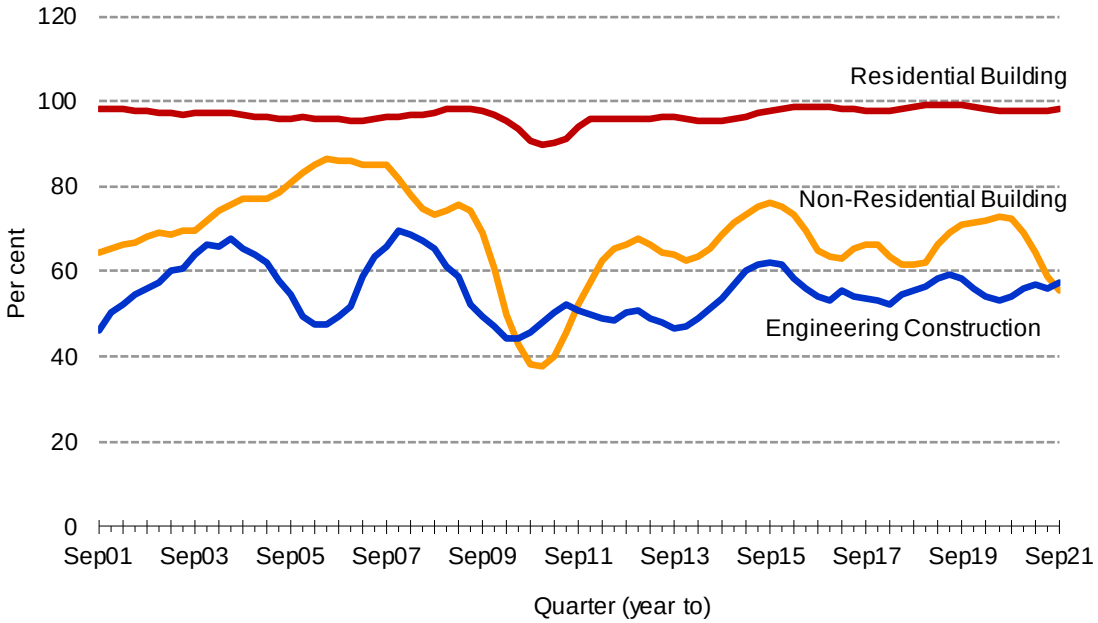
Private and Public Sector Activity

The degree of private versus public sector involvement is a significant differentiating factor in terms of driving demand across the various construction sectors. As Figure 2.4 shows, residential building is almost entirely driven by work done for the private sector, whereas non-residential building and engineering construction are heavily influenced by public sector activity. In the year to the September quarter 2021, the private sector was responsible for 98 per cent of residential building work done, 56 per cent of non-residential building work done, and 57 per cent of engineering work done. Non-residential building and engineering construction are consequently more sensitive to public sector initiatives and policy decisions, although the public sector does exert a significant influence on residential building through taxation, migration and planning policy, and the provision and withdrawal of stimulus measures.

The degree of private sector involvement has shifted significantly over the past 15 years. Prior to the GFC, the share of total construction work done for the private sector in South Australia was tracking quite closely to the national pattern – see Figure 2.5. However, this uniformity diverged after the GFC, with the private sector's share falling to a lower level, whereas it eventually rose to a higher level at the national level after the initial recovery. The decline for South Australia was brought about by reductions in the proportion of private sector work done on non-residential building and engineering construction, which both fell to lower levels compared to their pre-GFC peaks – see Figures A2 and A3 in Appendix A. It is important to note that the degree of private sector involvement in non-residential building is exaggerated to the extent that construction of the Royal

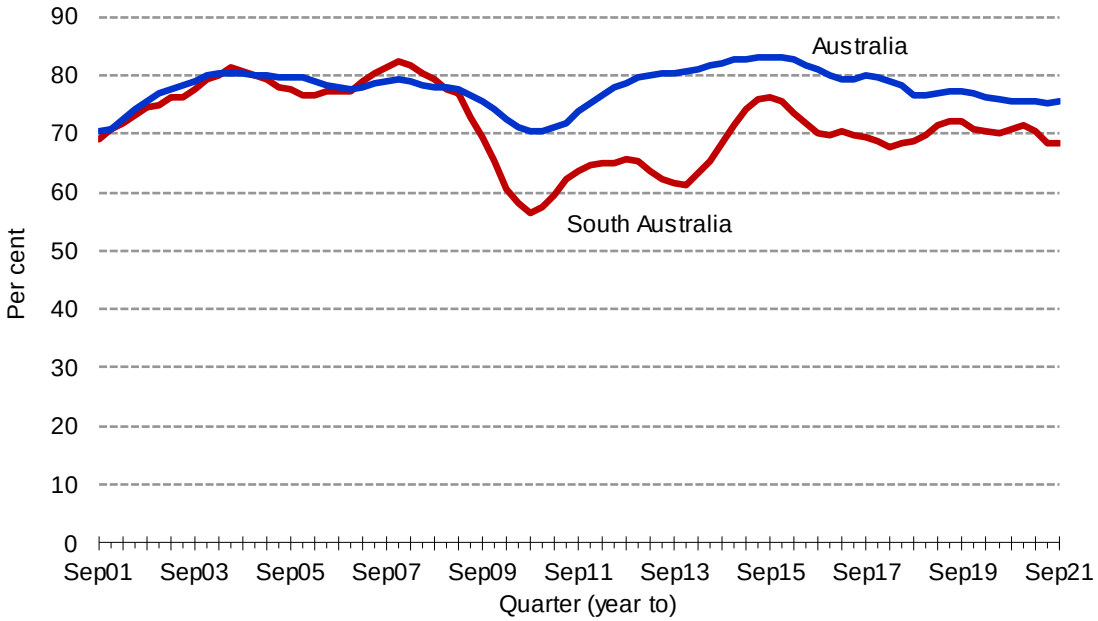
Adelaide Hospital was delivered under a Public Private Partnership model, meaning this massive project was technically classified to the private sector during the build phase.

Figure 2.4: Proportion of Residential, Non-residential and Engineering Work Done by the Private Sector[(a)]
South Australia – Current Prices



Note: [(a)] Proportions are calculated based on moving annual totals of work done.
Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

Figure 2.5: Proportion of Total Construction Work Done by the Private Sector[(a)]
South Australia and Australia – Current Prices



Note: [(a)] Proportions are calculated based on moving annual totals of work done.
Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

Several factors explain the decline in the private sector's share of overall construction activity for South Australia relative to Australia towards the end of the 2000s. Firstly, mining states enjoyed a larger ramp up in private sector engineering construction during the resources boom, whereas South Australia largely missed out on the mining investment boom, particularly once BHP Billiton cancelled its planned $30 billion expansion of Olympic Dam in 2012. Secondly, South Australia endured generally weaker business conditions in the decade post the GFC, exacerbated by the closure of local passenger vehicle manufacturing. Thirdly, partly in response to these weaknesses, the public sector has provided greater support to construction activity in the

post-GFC era, undertaking higher levels of engineering and non-residential building. The net effect of these factors is that construction activity in South Australia has been supported by increased levels of public sector investment over the past decade.

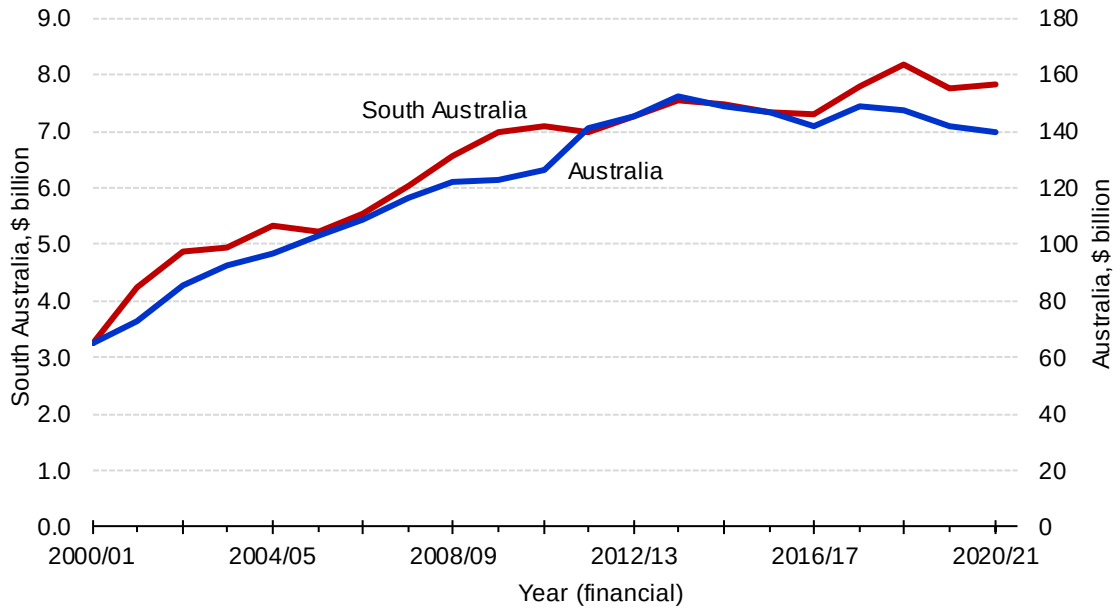
2.2 Gross Value Added

Estimates of construction work done can give a misleading picture of the contribution of construction activity to the local economy to the extent that "work done" includes imports, and there are large variations in import intensity over time or between projects. Such variations are unlikely to be of much economic significance for residential and non-residential building, but are of more import for certain forms of engineering. Such examples would include the importation of wind turbines and lithium-ion batteries as part of renewable energy projects, and from a broader national perspective, the importation of floating liquefied natural gas (LNG) facilities as part of offshore natural gas projects. Gross value added, which is a measure of the value of industry output less the value of intermediate consumption, removes the distortion caused by imports, and represents industry contributions to gross state/domestic product.

The total value added of the South Australian construction industry was $8.0 billion in 2020-21, which is equivalent to 6.8 per cent of Gross State Product. In comparison, the Australian construction industry's share of Gross Domestic Product was 7.0 per cent in 2020/21, indicating that South Australia's construction sector is marginally smaller in relative terms.

Figure 2.6 shows how industry gross value added for the construction sector has evolved for South Australia and Australia over the past 20 years. Trends in construction sector gross value added for South Australia have roughly followed the pattern of overall construction activity over this period (see earlier Figure 2.1), with gross value added rising strongly up to 2009/10, levelling off for several years thereafter, before shifting to a higher level over the two years to 2018/19.[5] Furthermore, construction gross value added for South Australia has grown in line with the corresponding national aggregate over the period considered, and held up better over recent years.

Figure 2.6: Construction Sector Gross Value Added
South Australia and Australia – Chain Volume Measures



Source: Australian Bureau of Statistics, National Accounts: www.abs.gov.au

In terms of more recent outcomes, South Australian construction industry gross value added rose modestly in 2020/21 (up 0.8 per cent in real terms), although not as robustly compared to construction work done (up 4.7 per cent). Beyond differences in scope between the two series, this differential may indicate that the recent strong rise in construction activity has partly leaked out through imports.[6] The recent rebound in activity was partly driven by engineering construction related to 'electricity generation, transmission etc. and pipelines', which would include renewable energy projects. As noted above, such energy projects can have large import components related to turbines, solar panels, generators and battery storage.

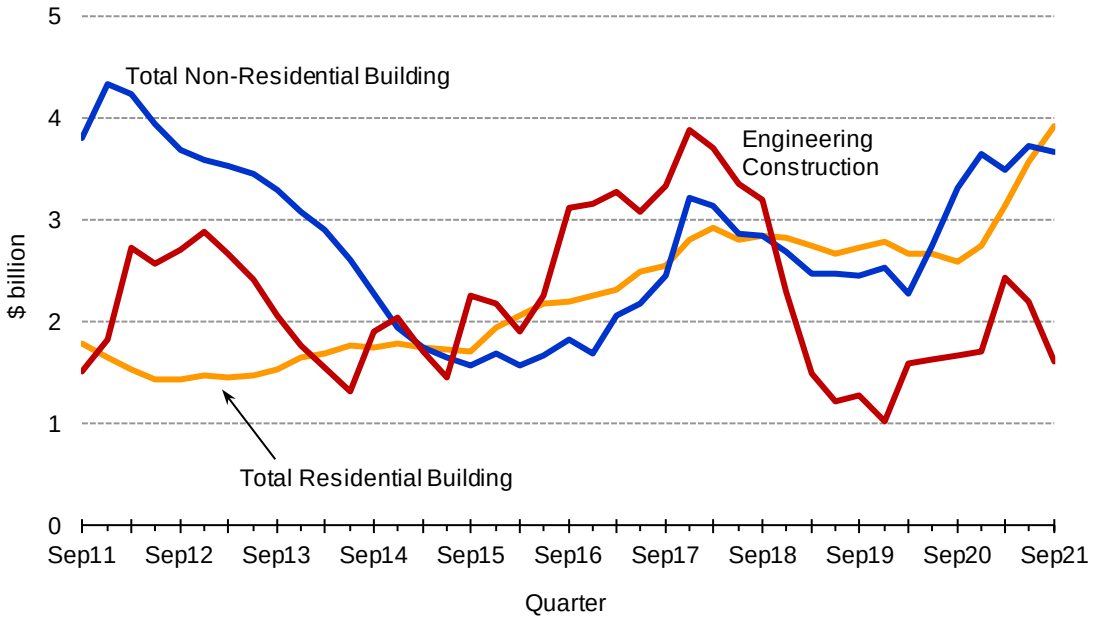
2.3 Forward indicators of activity

The ABS publishes a series of indictors which provide insight into how activity levels for key segments of the construction industry will likely evolve over the short to medium term. One key set of indicators for short-term movements are estimates of 'work in the pipeline' for building activity and 'work yet to be done' for engineering construction. Building 'work in the pipeline' comprises work still to be done for projects that have already commenced (so-called 'work yet to be done'), and work that has been approved but had not begun at the end of the survey reference period ('work not yet commenced').[7] Estimates of building 'work in the pipeline' are consequently broader in the scope than engineering 'work yet to be done'. This is an important distinction since engineering construction often comprises large scale projects, and approval of one or two such large scale projects (e.g. mine or major road transport project) can have a marked and immediate impact on the level of outstanding engineering work.

The value of residential and non-residential building work 'in the pipeline' both surged through 2020/21 and were being maintained at robust levels by the end of September 2021 (the latest data at the time of writing), while engineering construction work 'yet to be done' eased through 2021 – see Figure 2.7. Together these results suggest that overall activity levels in the South Australian construction sector will be maintained at a firm level in the near term, notwithstanding some easing in prospective engineering construction activity.

Forward work schedules for engineering construction activity have contracted through the middle of 2021, which is a concern given the importance of engineering to supporting overall construction activity levels over recent years. Following the recent decline, the total value of work 'yet to be done' in the September quarter of 2021 was down 3.6 per cent ($61 million) compared to a year earlier. This decline was driven by falls in outstanding work on 'bridges, railways and harbours' (down $146 million or 31 per cent), 'heavy industry' (down $50 million or 23 per cent), and 'water storage and supply, sewerage and drainage' (down $23 million or 11 per cent). On the other hand the value of work 'yet to be done' has risen strongly in respect of 'roads, highways and subdivisions' (up $145 million or 27 per cent).

Figure 2.7: Building Work in the Pipeline and Engineering Construction Work Yet to be Done
South Australia



Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

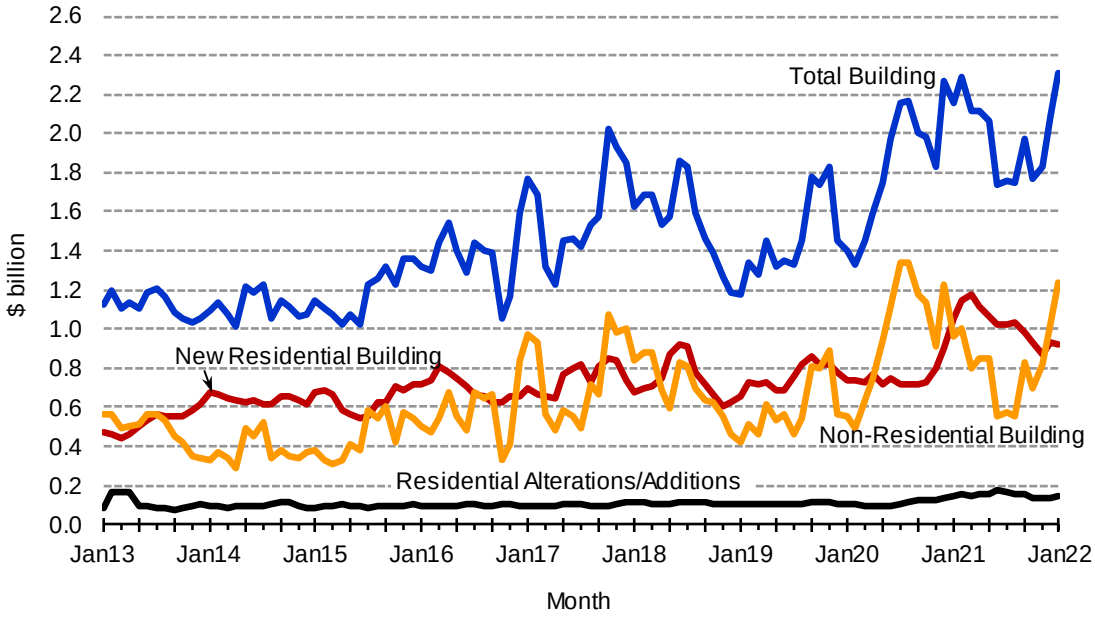
Looking ahead, commencement of the Torrens to Darlington (T2D) section of the North South Corridor will provide a sustained boost to engineering construction, with construction of the Stage One Southern Tunnel expected to commence in late 2023 (enabling works are currently in progress). There are also a range of potential private sector initiatives on the horizon, including Stage 1 of a multi-commodity deep water port at Cape Hardy, which would in turn help facilitate development of Iron Road's Central Eyre Iron Project (i.e. iron ore mine); a proposed green steel plant as part of Liberty Primary Steel's Whyalla Steelworks operations; and various renewable hydrogen projects as part of the state government's proposed Port Bonython Hydrogen Hub. While approval of one of more of these projects would provide a boost to engineering construction, there

is considerable uncertainty over if and when these projects may go ahead, with some projects being sensitive to developments in resource prices and financing.

Leading indicators indicate that non-residential building activity should remain at a healthy level in the near term. The value of non-residential building work in the pipeline was at a historically high level in the September quarter 2021, while the value of non-residential building approvals rose strongly over the summer period. The total value of approvals in the three months to January 2022 was up 28 per cent compared to a year earlier – see Figure 2.8. In addition to continued investment in education buildings (e.g. Morialta Secondary College), there are several major projects approaching that will provide support to non-residential building. Most significantly, construction of the $1.95 billion new Women's and Children's Hospital is expected to commence in late 2022, while the $400 million Central Market Arcade redevelopment will begin during the year. These initiatives follow start of construction on the new Aboriginal Art and Culture Centre in late 2021.

The outlook for residential building is quite bullish. Although the value of new residential building approved fell steadily through 2021, the level of approvals by the end of the year were still at a historically high level – Figure 2.8. Thus, while the value of residential building approved in the three months to January 2022 was down 21 per cent from their previous peak reached in the March quarter 2021, approvals were still a third higher compared to their previous decade average level. And with an existing large volume of outstanding work, these trends suggest that residential building will persist at a strong level through 2022.

Figure 2.8: Value of Building Approvals
South Australia – Moving Quarterly Totals, Seasonally Adjusted Series



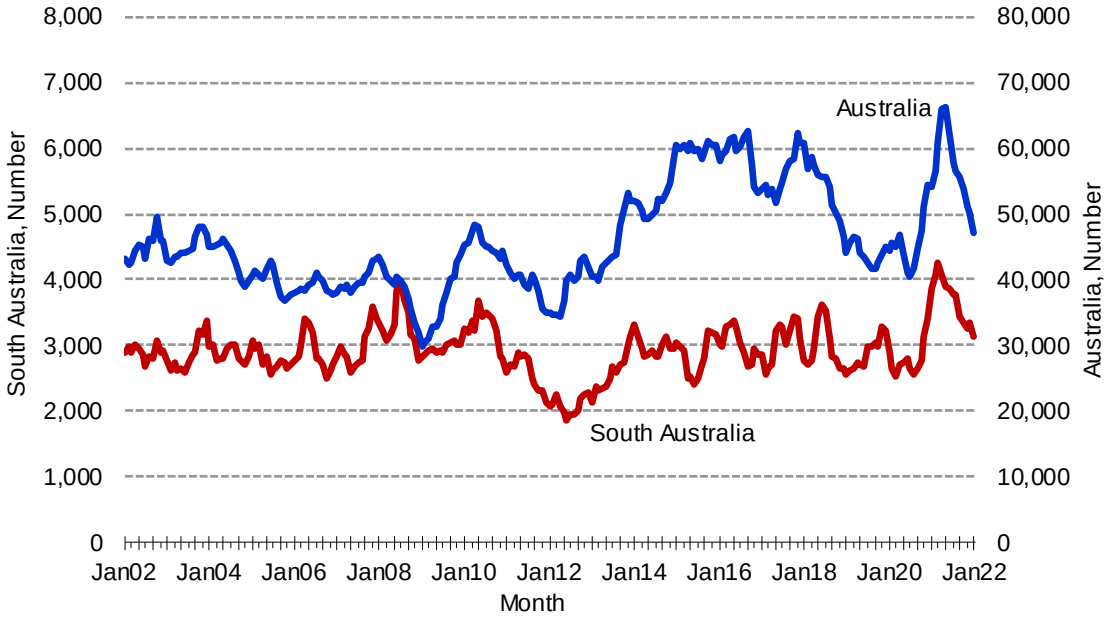
Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

The recent decline in residential building approvals is emphasised by data on the number of dwelling units approved.[8] For the three months to January 2022, the number of dwelling units approved in seasonally adjusted terms was down 26 per cent from their peak reached in the three months to March 2021. Even with this large decline the number of approvals were still at a solid level in the recent January quarter – see Figure 2.9. Moreover, the recent fall in residential approvals largely reflects a bringing forward of activity generated by the Australia Government's HomeBuilder program which expired at the end of March 2021. The provision of this temporary home construction subsidy naturally generated a mini boom–bust pattern in approval activity, and there is consequently a risk of residential building activity weakening considerably once the current backlog of work is dealt with (implications for the future demand–supply balance are discussed further in section 2.4).

One of the most notable aspects of the pattern of dwelling unit approvals during the pandemic is a shift in demand toward houses from non-house dwellings such as terrace houses, flats, units and apartments. The total number of new houses approved in 2021 was up 52 per cent (4,236 units) compared to the number approved in 2019 (i.e. prior to the pandemic). In comparison, the number of new non-house dwelling units approved were down 31 per cent (1,055 units) between these years. Drilling down further reveals that the fall

in non-house approvals has been driven by a slump in apartment approvals. The number of approvals of new apartments fell by 52 per cent or 696 units between 2019 and 2021 – see Figure 2.10. It therefore appears that the pandemic has encouraged a shift in demand towards larger housing, perhaps reflecting a need for greater working for home capacity, and/or a desire for enhanced social distancing.

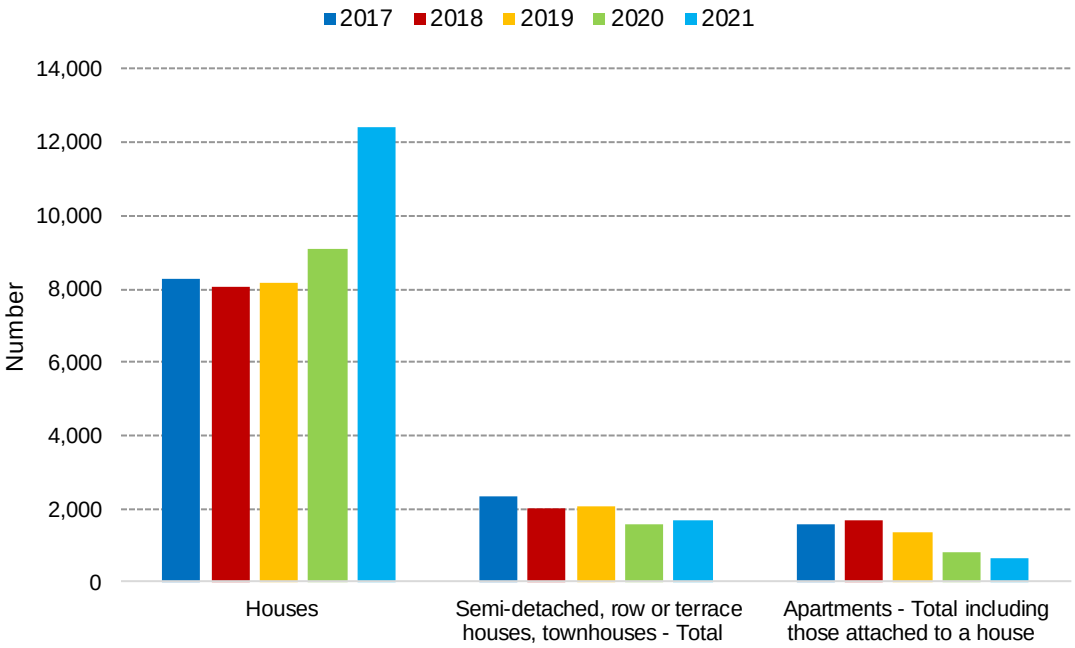
Figure 2.9: Number of Dwelling Units Approved
South Australia and Australia – Moving Quarterly Totals, Seasonally Adjusted Series



Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

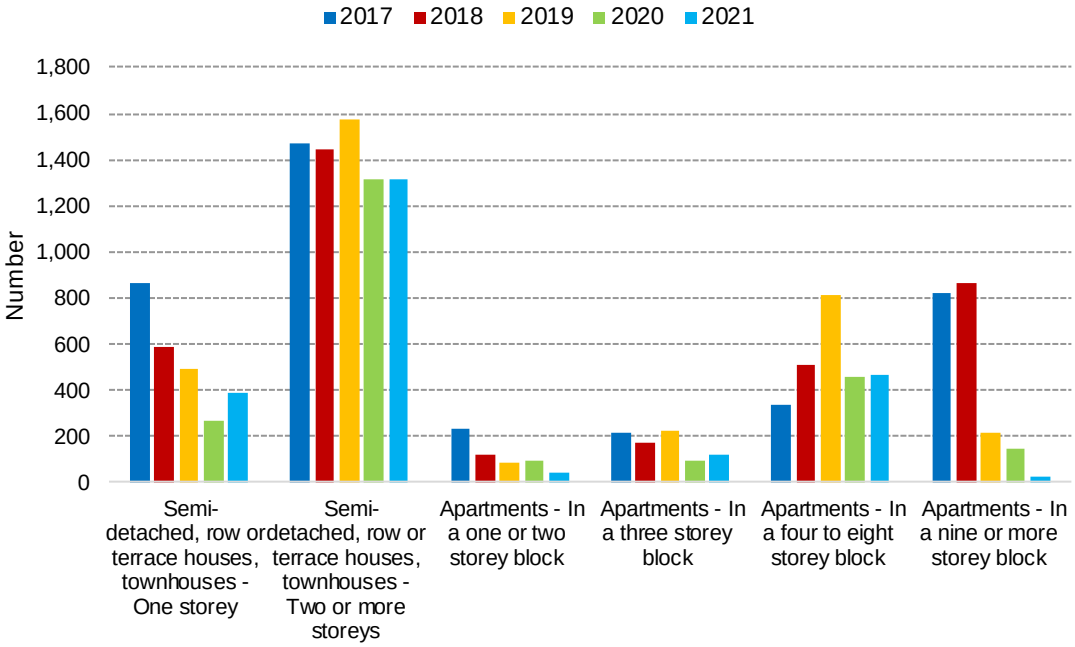
The decline in non-house approvals over recent years may also reflect some earlier oversupply within the high-rise development sector. As Figure 2.11 shows, approvals of high-rise apartments (i.e. 9 storeys or more) in South Australia were at quite strong levels in 2017 and 2018, but fell sharply over subsequent years (they were down 97 per cent in 2021 compared to 2018). A similar pattern is evident at the national level over this period although approvals of high-rise apartments have not fallen anywhere near as far (down 27 per cent). It would appear that within South Australia demand has been slow to fill existing supply capacity within high-rise living, and been insufficient to stimulate further high-rise development. The pandemic would have magnified these pressures through its role in slowing population growth and preventing entry of overseas students whose comprise an important customer base for inner city living.

Figure 2.10: Number of New Dwelling Units Approved by Type
South Australia – Annual Totals



Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

Figure 2.11: Number of New Dwelling Units Approved by Type and Storeys
South Australia – Annual Totals



Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

2.4 Housing supply–demand balance

Leading indicators reveal a surge in demand for housing in 2020/21, brought about by pandemic factors and the Australian Government's HomeBuilder program. The current boom will eventually pass, leading to a downturn in activity, whose severity will in turn depend, partly, on the extent to which there are any underlying supply and demand imbalances for housing. In order to shed further light on this issue, we have estimated the change in the stock and demand for residential dwellings based on existing published data sources. We briefly explain our methodology before analysing the results.

There are various possible approaches that can be used to estimate changes in the demand and supply of housing, which each invariably involving different trade-offs and drawbacks. For our purposes changes in the supply of housing have been estimated based on estimates of the total residential dwelling stock published by the ABS (2021) in *Residential Property Price Indexes*. One limitation with this approach is that the ABS only publishes estimates back to the September quarter 2011, limiting the historical reach of the series. Meanwhile, changes in the demand for housing have been based on ABS estimates of the change in the estimated resident population for South Australia (ABS 2021a). The population changes were converted to a household equivalent basis using the average household size as indicated by the Census of Population and Housing.[9] This assumption will be misleading to the extent that the average household size for a newly constructed home differs from the average household size for existing homes. For example, if the actual household size for a newly constructed home is smaller (larger) than indicated by the census for all existing households, then our assumption will tend to underestimate (overestimate) the demand for housing. Another limitation is that demand for housing is not solely a product of population growth; changes in household size, investor appetite and additional housing from existing home owners (e.g. holiday homes) also affect demand, especially over the short term. However, modelling such secondary factors is challenging and beyond the scope of the current paper, while population growth remains the primary determinant of demand for housing over the long term.

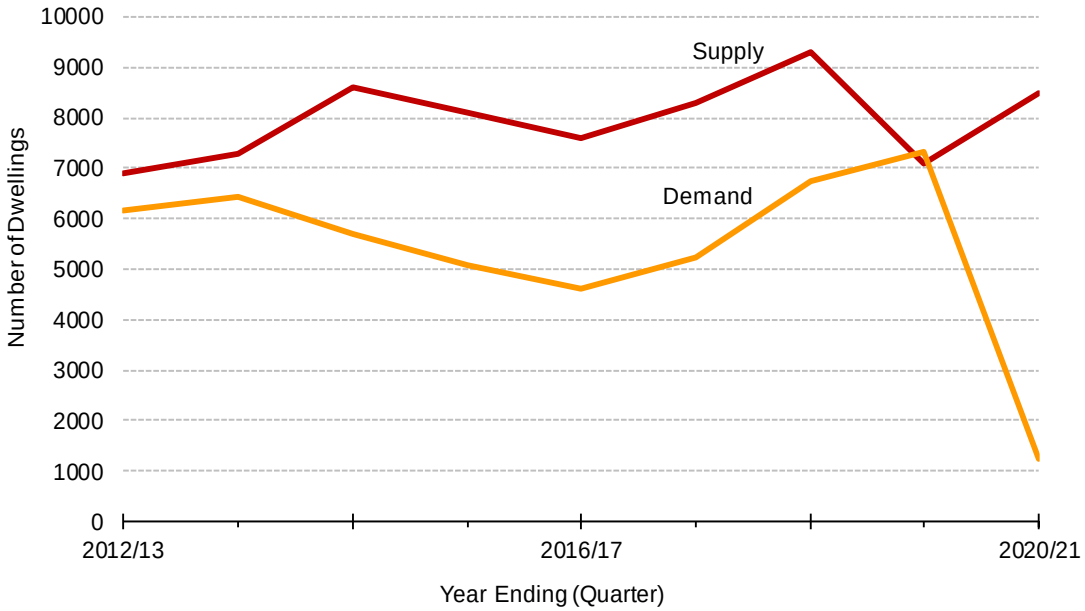
Figure 2.12 shows the estimated annual change in the supply and demand for residential dwellings in South Australia over the nine years to 2020/21 based on the approach described above. In interpreting the data, one should focus on changes in the levels of supply and demand over time rather than the initial difference since we are unable to account for any pre-existing imbalance in the demand and supply for housing. For example, it could be the case that there was a shortfall in housing supply prior to 2012/13, meaning annual supply would need to exceed annual demand for an extended period in order to bring supply and demand back into equilibrium.

Looking at the results, a divergence in demand and supply trends for residential dwellings emerged after 2013/14. While demand for new residential dwellings (based solely on change in the population) fell from around 6,400 units in 2013/14 to around 4,600 units in 2016/17, the supply of residential dwellings was maintained at a consistent level over this period, at around 8,000 units per annum. Demand for residential dwellings picked up strongly over the two years to 2019/20, completely closing the annual gap between supply and demand from an excess of 3,000 units in 2017/18 to a small shortfall of 230 units in 2020/21.

The decline in demand for residential dwellings between 2013/14 and 2016/17 was brought about by an increase in net migration outflows from South Australia to interstate which depressed population growth. Net population losses stemming from net interstate migration rose from -3,890 people in 2013/14 to -6,778 people in 2016/17. It appears a significant deterioration in labour market conditions prior to and during this period encouraged people to relocate interstate in order to find employment or progress their careers. Such interstate migration losses decreased following a substantial recovery in labour market conditions, and completely reversed course during the pandemic as lockdowns and interstate border restrictions hampered interstate migration.

In spite of the turnaround in interstate migration flows, apparent demand for housing based on population change declined sharply during the pandemic in response to the national border closure preventing inward overseas migration. After gaining around 14,900 people through net overseas migration in 2019/20, the state actually lost almost 3,300 people in 2020/21. As a consequence of these net population shifts, the demand for residential dwellings is estimated to have fallen by 83 per cent in 2020/21, from 7,332 units to 1,236 units.

Figure 2.12: Estimated Demand and Supply of Residential Dwellings[(a)]
South Australia – Number of New Units Per Year



Note: (a) Demand estimated based on the change in population only. Other potential sources of demand (e.g. investor housing, holiday homes) not considered.
Source: SA Centre for Economic Studies calculations based on Australian Bureau of Statistics, *Residential Property Price Indexes*, *Eight Capital Cities*, and *Australian Demographic Statistics*: www.abs.gov.au

Even though demand for residential dwellings emanating from population growth slumped during the pandemic, overall housing demand increased significantly, demonstrated ultimately by robust growth in actual and prospective residential building activity and surging house prices. While part of this strength reflects a pulling forward of activity driven by the Australian Government's HomeBuilder program which provided a temporary subsidy to support residential building, other factors also spurred housing demand.[10] By forcing people to spend more time living and working from home, lockdowns effectively increased demand for improved housing. And with households running up their savings balances and even cheaper borrowing emerging, their capacity and willingness to invest was enhanced, especially once the near-term economic outlook improved more quickly than expected. Meanwhile, with ultra-low interest rates supressing returns from other forms of investment such as term deposits and government bonds, investors were increasingly drawn to the housing market. ABS data indicates that the number of new loan commitments for investor housing rose by 79 per cent over the two years to the December quarter of 2021, while loans for owner-occupier housing rose by 30 per cent over this period.[11]

These supportive factors are now starting to dissipate as pandemic restrictions are unwound and a pick-up in inflation raises the prospect of official interest rates being raised sooner than expected. With additions to housing supply appearing to exceed demand from population gains over recent years, there is a risk that conditions in the residential building sector will weaken over the next several years. A sustained recovery in population growth will be needed to maintain demand for housing. While the reopening of the nation's border will enable a resumption in overseas migration, there remains a high degree of uncertainty regarding how strong the recovery in overseas migration will be given prospective changes in visitor attitudes and the potential for further COVID-19 outbreaks.

3. Employment

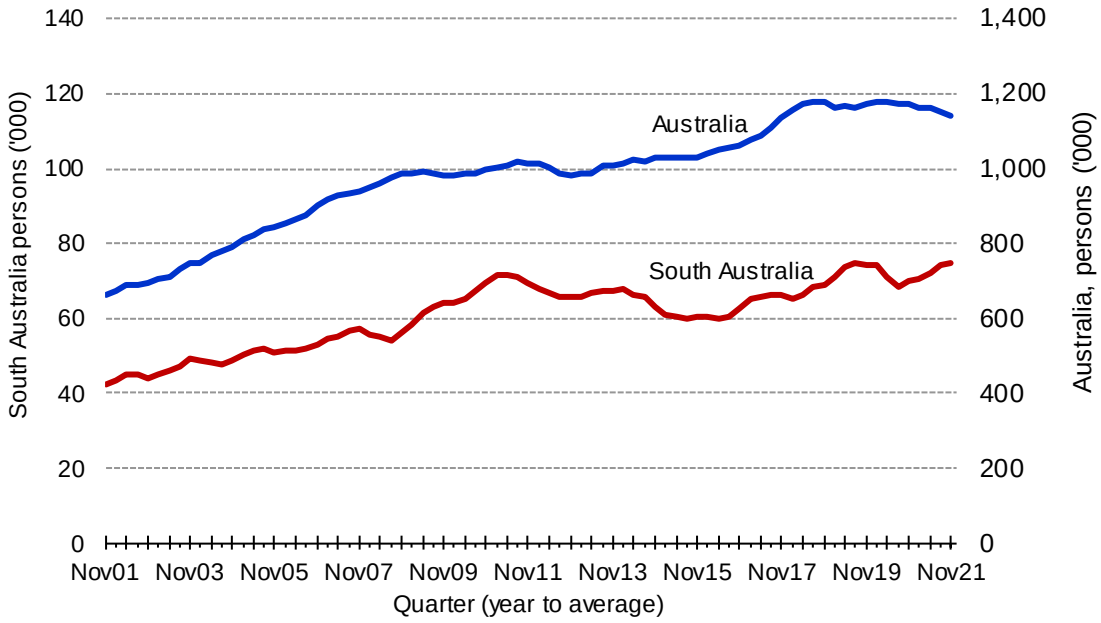
Employment levels in the construction sector are highly correlated with overall construction activity. As Figure 3.1 shows, employment in the South Australian construction sector declined between 2010 to 2015 in line with the easing in construction work done during this period, and then rose to a higher level over the three years to 2019 in response to construction activity returning to robust levels. Following a small dip in 2020 construction employment rose strongly through 2021 on the back of construction activity rising to new heights. The net effect of these movements is that total employment in construction has risen slightly over the past decade, from an earlier peak of around 71,400 in 2010/11 to a record 74,800 people in 2021. Although the construction

sector's share of total state employment has fallen slightly from 8.9 per cent to 8.6 per cent over this period, it remains at a higher level compared to pre-GFC standards.

With forward indicators pointing to a considerable volume of work still in the pipeline, especially for residential and non-residential building, it is likely that employment in the construction sector will remain at its current high level over the near term.

Given the close relationship between activity and employment levels for the construction sector, it is interesting the degree to which employment levels in the construction sector vary in response to fluctuations in construction. One can quantify this relationship in a simplistic fashion using a simple linear regression. Using quarterly data on work done and employment in the South Australian construction sector over the 20 years to the September quarter 2021, it is estimated that a $1 million change in the volume of construction work done leads to a 15.7 person change in employment within the construction sector.

Figure 3.1: Construction Sector Employment
South Australia and Australia – Moving Annual Average



Source: Australian Bureau of Statistics, *Labour force*: www.abs.gov.au

4. Business Profile and Counts

The construction sector has a similar business profile to the overall state economy in terms of employment size, with a slight skew toward smaller employment sizes. Just under two-thirds (65 per cent) of construction businesses in South Australia at the end of June 2021 were non-employing businesses, which was only marginally above the average for all businesses in the market sector in South Australia (64 per cent). Approximately 27 per cent of construction businesses employed between 1 and 4 people, which was slightly above the average of 24 per cent for all businesses. The high degree of non-employing businesses within the construction sector reflects the high degree of self-employment within the industry, with many individuals working as independent contractors, often under sub-contracting arrangements.

Movements in the number of actively trading businesses in the construction sector provides another useful gauge of the health of the construction sector.

Table 4.1 shows counts of businesses in the construction sector for South Australia and Australia as at 30 June in each of the 5 years to 2020 based on regional data published by the ABS. (Unfortunately, more recent data published as part of the Counts of Australian Businesses series does not provide comparable historical time series data, though we consider these results further below.) The number of construction businesses in South Australia has grown steadily over recent years. Between 30 June 2016 and 2020, the total number of active construction businesses in South Australia rose by 9.6 per cent or 2,057 businesses. In comparison, the number of construction businesses at the national level rose by 10 per cent over this period.

Table 4.1: Counts of Actively Trading Construction Businesses
South Australia and Australia

	Number of business		Change (%)	
Year (at 30 June)	South Australia	Australia	South Australia	Australia
2016	21,483	360,465	-	-
2017	22,219	373,599	3.4	3.6
2018	22,849	385,268	2.8	3.1
2019	23,439	394,496	2.6	2.4
2020	23,540	397,020	0.4	0.6

Notes: (a) Totals may differ from other tables and sources as some cells have been randomly adjusted or suppressed by the ABS to avoid the release of confidential data.
Source: ABS, Counts of Australian Businesses, Regional Statistics, Australia, Cat. No. 1410.1

More recent data from the *Counts of Australian Businesses* series indicates that the number of construction businesses has grown strongly during the initial stages of the pandemic. The total number of operating construction businesses in South Australia rose by 3.3 per cent or 771 businesses through the year to 30 June 2021, while the number of construction businesses at the national level rose by 4.2 per cent.

Table 4.2 shows counts of actively trading businesses by industry class and changes in the number of these businesses over the two most recent years. (Businesses are classified to sectors based on their main source of value added or income, and in practice may undertake activities across various sectors, such as residential and non-residential building.) Most sectors of the construction industry recorded increases in business numbers over the two years to 30 June 2021. The largest increases in proportional terms over this period were for ‘other residential building construction’ (up 10 per cent), ‘other construction services not elsewhere classified’ (up 8.3 per cent), ‘glazing services’ (up 7.7 per cent), ‘plastering and ceiling services’ (up 7.3 per cent), and ‘hire of construction machinery with operator’ (up 6.4 per cent). On the other hand, there have been declines in business numbers across a number of construction subsectors, including ‘other building installation services’ (down 4.8 per cent), ‘fire and security alarm installation services’ (down 4.0 per cent), ‘other heavy and civil engineering construction’ (down 3.3 per cent), and ‘bricklaying services’ (down 3.2 per cent).

One of the most notable features from Table 4.2 is that residential building contains a much larger number of businesses compared to non-residential building and especially engineering construction. There were 2,997 actively trading businesses in house construction and 1,158 in other residential building at 30 June 2021, compared to 904 businesses in non-residential building, 99 in road and bridge construction, and 415 in other heavy and civil engineering construction. The greater propensity of businesses in residential construction reflects that average project sizes tend to be smaller for residential building, especially compared to engineering projects. One consequence of this abundance of firms and small project sizes is that competitive pressures within the residential sector may be greater those in other sectors with fewer businesses.

Table 4.2: Counts of Actively Trading Construction Businesses by Sector
South Australia

ANZSIC Industry	No of businesses operating at 30 June 2021	Change over year to…	
		30 June 2020	**30 June 2021**
House Construction	2,997	74	92
Other Residential Building Construction	1,158	48	62
Non-Residential Building Construction	904	16	33
Road and Bridge Construction	99	-5	8
Other Heavy and Civil Engineering Construction	415	-10	-4
Land Development and Subdivision	849	-19	27
Site Preparation Services	1,028	-27	21
Concreting Services	796	1	1
Bricklaying Services	566	-4	-15
Roofing Services	361	3	-5
Structural Steel Erection Services	255	1	5
Plumbing Services	1,633	-35	37
Electrical Services	3,011	-27	81
Air Conditioning and Heating Services	469	-9	28
Fire and Security Alarm Installation Services	216	-8	-1
Other Building Installation Services	320	-8	-8
Plastering and Ceiling Services	1,087	43	31
Carpentry Services	2,618	-21	101
Tiling and Carpeting Services	1,329	20	36
Painting and Decorating Services	1,216	0	30
Glazing Services	196	9	5
Landscape Construction Services	1,222	6	48
Hire of Construction Machinery with Operator	100	0	6
Other Construction Services n.e.c.	1,364	56	48
Total	24,209	104	667

Notes: (a) Totals may differ from other tables and sources as some cells have been randomly adjusted or suppressed by the ABS to avoid the release of confidential data.
Source: ABS, Counts of Australian Businesses, including Entries and Exits, July 2017 to June 2021, Cat. No. 8165.0

5. Price Movements

5.1 Construction Costs

The ABS publishes producer price indices for the outputs of select sectors of the construction industry, including house construction, other residential building, non-residential building, and road and bridge construction. Trends in these price indices provide insight into potential price pressures faced by the respective construction sectors, as well as the affordability of building and construction outputs for households, business and government.

The evolution of price indices for South Australian construction sectors over the two decades to the December quarter 2021 are illustrated in Figure 5.1. One of the stark features of historical price movements for the construction sector is a marked slowdown in inflation for house construction, other residential building and non-residential building around the time of Global Financial Crisis in 2008-2009. For instance, the house price construction index for South Australia grew at an annual average rate of 4.3 per cent in the decade to the June quarter 2009, whereas over the subsequent decade it rose at an average rate of 1.0 per cent per annum. Similar slowdowns are observed for other residential construction and non-residential building indices. In

contrast, the road and bridge construction price index has maintained a relatively steady rate of expansion, although the pace did moderate after the GFC, with the annual average growth rate slowing from 4.8 per cent to 3.0 per cent between the two decades.

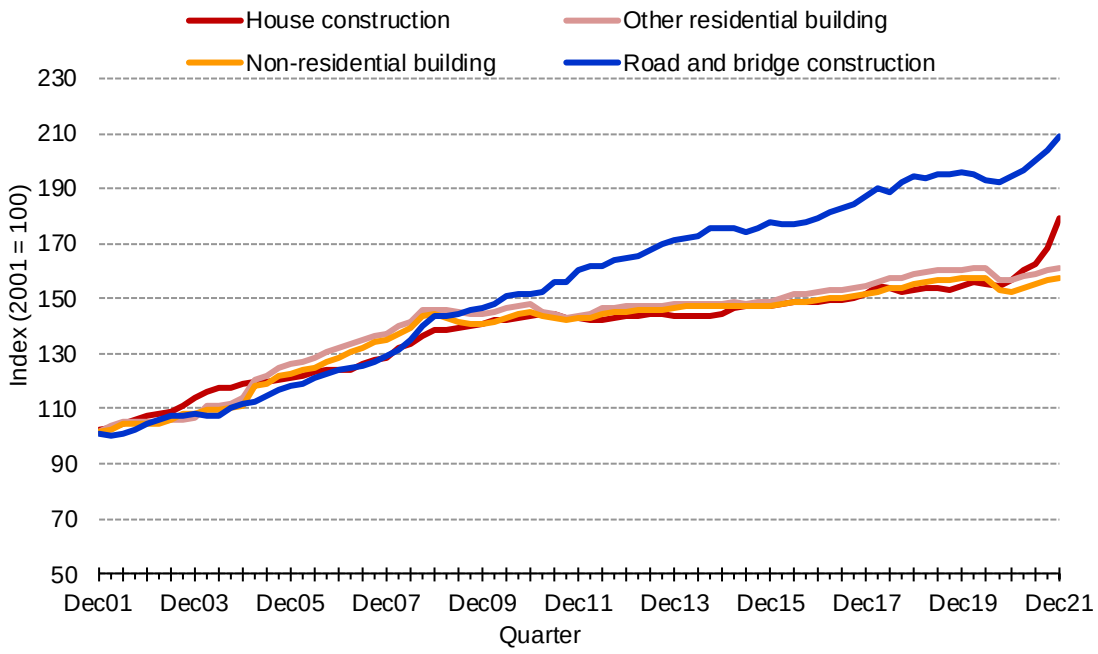
The relative differences in price movements between engineering and other forms of construction would be explained, in part, by the evolution of activity levels. As we saw earlier, activity levels for residential and non-residential building were relatively flat in the decade following the GFC, whereas engineering construction rose to buoyant levels. This would suggest that there has generally been greater space capacity in the residential and non-residential building sectors, which would put downward pressure on prices, whereas engineering construction has faced greater capacity constraints, putting upward pressure on prices. Meanwhile, the synchronicity in price movements for residential and non-residential building would in part reflect that there is a high degree of substitutability between these sectors given similarities in the nature of the work, which would in turn tend to enhance competitiveness and therefore price competition between these sectors. Further enhancing these pressures are the relatively larger number of businesses operating in residential and non-residential construction compared to engineering construction – refer section 4.

These divergent price patterns have a couple important implications. Firstly, they suggest that pressures on margins are greater within the residential and non-residential building sectors, so even a moderate downturn in building activity could be expected to have a significant impact on the financial viability of businesses within the sector. Secondly, investing in and maintaining transport infrastructure is an important source of cost pressure for state and local government in South Australia, which has implications for budgetary management. Indeed, the South Australia price index for road and bridge construction has risen at a faster rate compared to the corresponding national index over the last 15 years – see Figure 5.2. In comparison, price indices for other construction sectors have tendered to rise at a slower rate compared to the corresponding national indices, especially for residential construction.

While prices for the outputs of the various construction sectors have tended to grow at fairly stable rates over time, the pandemic has seriously disrupted normal patterns. Prior to the pandemic prices across the various construction sectors were actually showing some weakness, but subsequent supply chain disruption, stimulus measures, and increased demand for housing has generated a sharp increase in construction costs. These inflationary pressures have been most apparent in housing, with the price index for house construction in South Australia rising by 15 per cent through the year to the December quarter 2021, which is the largest annual increase recorded by the current producer price index series, and well above the previous decade average rate of inflation (0.9 per cent per annum). There was also a sharp rise in prices for road and bridge construction through 2021 (up 7.3 per cent). In comparison, there were more moderate price increases for non-residential building (up 3.2 per cent) and other residential building construction (up 3.0 per cent), although both rose by strong degrees compared to their pre-pandemic trends.

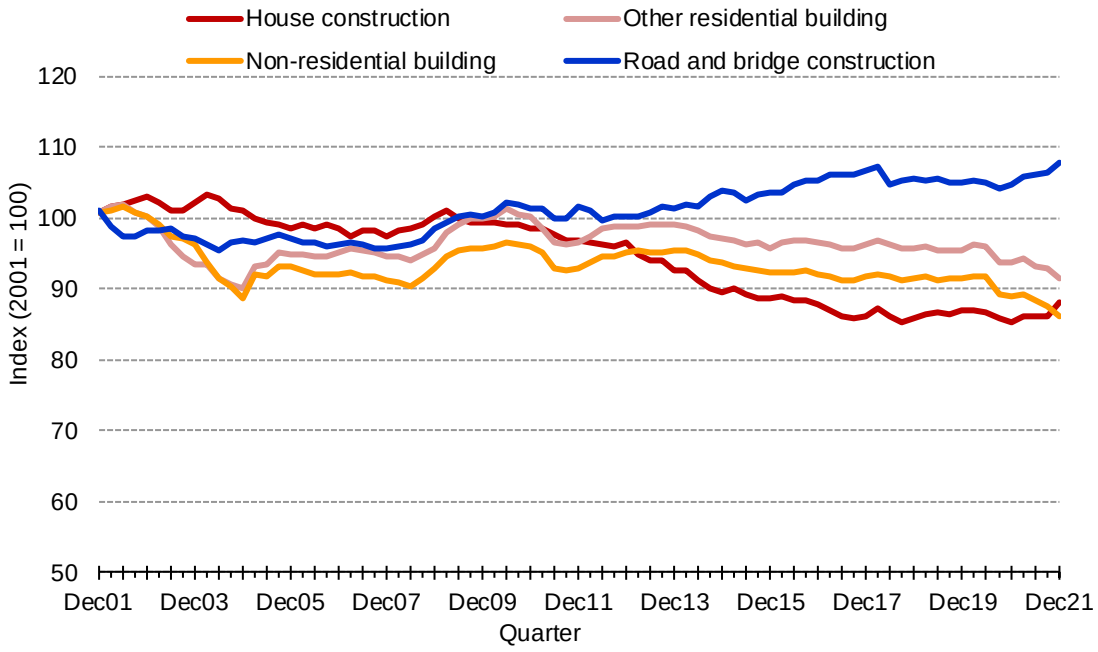
Although a surge in demand for housing has contributed to the sharp rise in house building costs, supply chain disruptions and a shortage of materials and labour have also played substantial roles. As data on price indexes for inputs to the house construction industry presented in Table 5.1 show, there were large increases in prices through the year to the December quarter 2021 for ‘steel products’ (up 23 per cent), ‘timber, board and joinery’ (up 23 per cent), ‘plumbing products’ (up 12 per cent), and ‘other metal products’ (up 11 per cent). These input price increases will present a challenge for those builders that have entered into fixed-price contracts, which is the most common form of engagement. With supply chain and labour shortages slowing the construction of new homes, the scale and speed of the input price increases may expose some home builders to financial distress.

Figure 5.1: Output Price Indexes for Construction Sectors
Adelaide



Source: Australian Bureau of Statistics, *Producer Price Indexes, Australia*: www.abs.gov.au

Figure 5.2: Relative Output Price Indexes for Construction Sectors
South Australia relative to Australia



Source: Australian Bureau of Statistics, *Producer Price Indexes, Australia*: www.abs.gov.au

Table 5.1: Change in Price Indexes for Inputs to the House Construction Industry
Adelaide

	Annual average percentage change (to December quarter)					Annual average	
	2017	**2018**	**2019**	**2020**	**2021**	**Five years to December quarter 2019**	**Two years to December quarter 2021**
Timber, board & joinery	3.0	4.4	-1.0	1.8	22.6	1.6	11.7
Ceramic products	-1.3	5.1	1.5	1.4	8.0	2.0	4.7
Concrete, cement & sand	3.3	1.1	-0.2	-1.3	0.7	1.0	-0.3
Cement products	-2.8	7.9	2.1	1.5	6.0	1.8	3.7
Steel products	4.1	3.7	-0.6	-0.4	23.3	1.4	10.8
Other metal products	7.9	3.6	1.4	0.4	10.7	4.3	5.4
Plumbing products	1.6	3.9	1.4	-0.3	11.8	2.7	5.6
Electrical equipment	9.8	3.7	4.8	12.1	9.6	4.5	10.9
Installed gas & electrical appliances	0.0	2.1	1.2	0.7	3.1	2.7	1.9
Other materials	-0.4	4.8	0.6	1.4	5.0	1.9	3.2

Source: Australian Bureau of Statistics, *Producer Price Indexes, Australia*: www.abs.gov.au

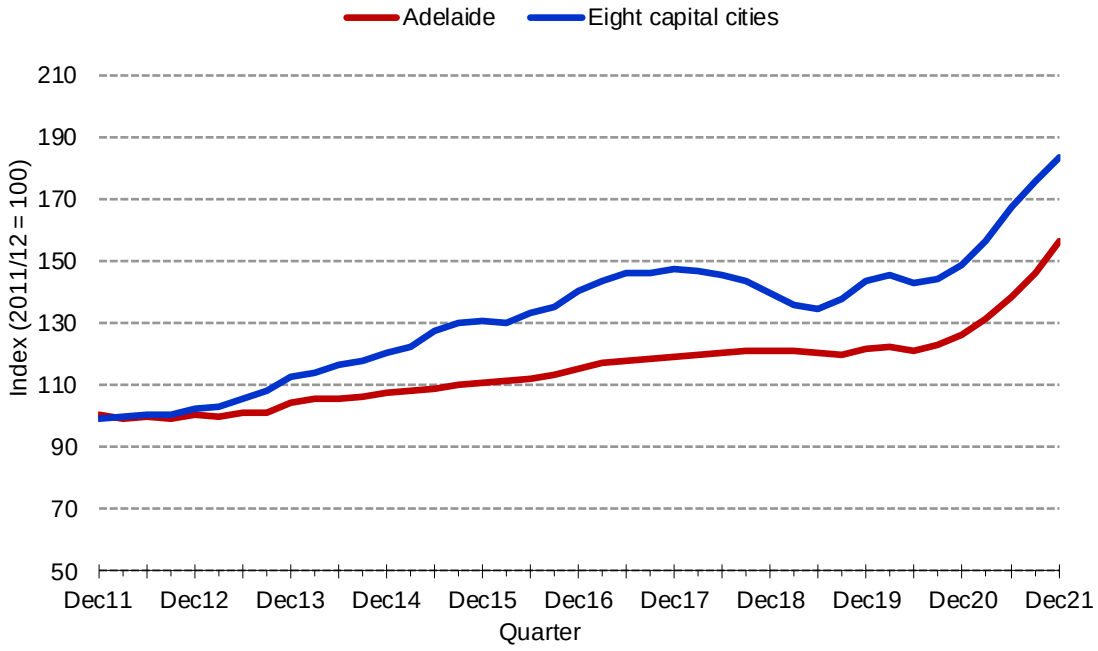
5.2 Residential Property Prices

Movements in prices for residential properties, including establishing housing, have a bearing on the construction industry in several ways. Firstly, they influence investors' willingness to invest with large price increases tending to encourage greater investor activity. Secondly, price changes directly affect existing property owners' wealth, which in turn impacts their ability to finance property investment (e.g. by enabling the building of a larger property or borrowing against the increased equity to undertake renovations). Finally, large movements in property prices can also be symptomatic of episodes of chronic oversupply or undersupply in the housing market.

Figure 5.3 shows the evolution in residential property prices for Adelaide compared to the eight capital cities over the past decade as measured by ABS residential property price indexes. Before the pandemic residential property prices in Adelaide were growing at a slow but steady rate, whereas at the national level they exhibited more of a boom-bust cycle, with prices rising strongly between 2012 and 2017, and then falling noticeably through 2018 and early 2019. These national price patterns largely reflected developments in the eastern capitals, particularly the Sydney and Melbourne markets. Prices in these markets eased in response to various factors, including a downturn in investor sentiment, decreasing housing affordability which had reduced demand in some segments (e.g. first home buyers), and the emergence of an oversupply of apartment building – particularly in Sydney – due to an earlier surge in apartment building. Conditions in South Australia were more restrained through this period, with slow population and economic growth tending to temper housing market activity. In this sense the South Australian market appeared relatively stable.

Turning to more recent developments, residential property prices in Adelaide and across the other capital cities have surged during the pandemic. The Adelaide residential property price index rose by 24 per cent through the year to the December quarter 2021, while the weighted average for the eight capital cities also rose by 24 per cent. As we noted earlier, various factors have contributed to the boom in house prices, including various policy supports provided by government, people needing to work from home, households running up their savings balances amid constraints on spending, and low interest rates.

Figure 5.3: Residential Property Prices
South Australia and weighted average of Eight Capital Cities



Source: Australian Bureau of Statistics, *Residential Property Price Indexes: Eight Capital Cities, December 2021*: www.abs.gov.au

6. Companies Entering External Administration

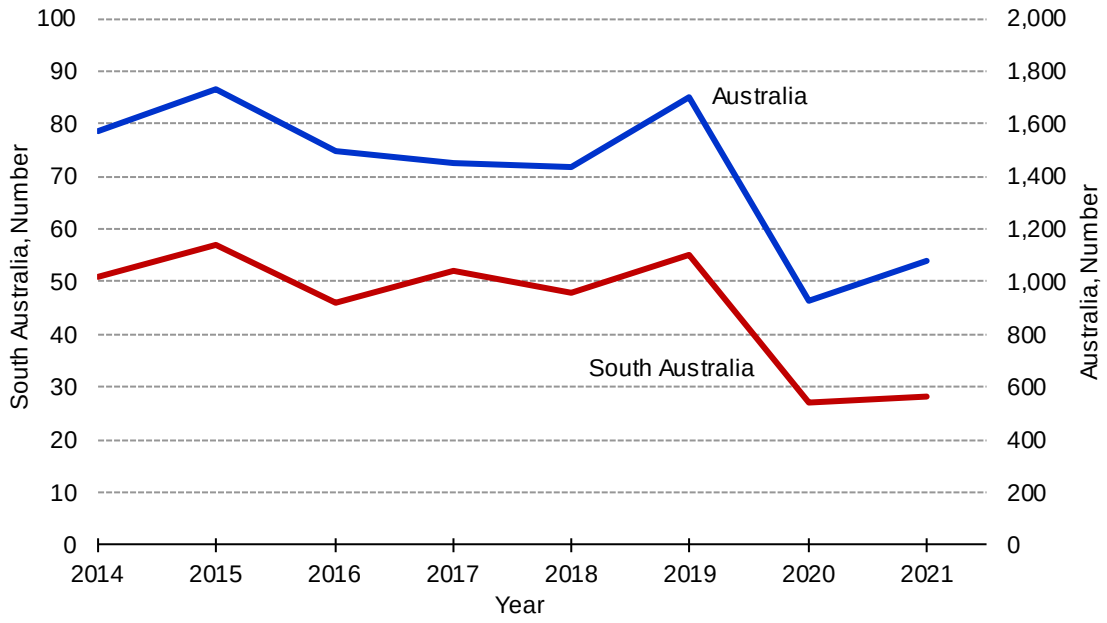
Trends in companies entering administration provides insight into the state of the construction business cycle and its impact on business and employment stability. These data can also potentially provide evidence of the entrepreneurial ability of people in the construction sector and even episodes of corporate wrongdoing. For instance, in the past attention has been given to the role of 'phoenix developers' who have potentially engaged in criminal corporate behaviour.[12] However, it can be difficult to attributes changes in these indicators to specific factors beyond swings in the economic cycle given the potential role played by other causes (e.g. loss of key staff, relationship breakdowns, ill health).

The Australian Securities and Investment Commissions publishes data on the number of companies entering into a form of external administration for the first time based on appointments documents lodged with the organisation.[13] Data on the number of construction companies that have entered into external administration by calendar year for South Australia and Australia are illustrated in Figure 6.1.

The total number of South Australian construction companies entering into external administration fell sharply with the arrival of COVID-19. The total number of construction companies entering administration fell by 51 per cent (28 companies) in 2020, and remained at this low level in 2021. In comparison, the number of companies entering administration nationally also fell sharply in 2020 (by 46 per cent), but did increase modestly in 2021 (up 17 per cent). The recent deterioration for Australia as a whole is consistent with overall construction activity growing more slowly at the national level over the past year. It could also be indicative of recent input prices increases exerting greater financial stress on some construction firms.

The downshift in the rate of construction business failures over the past two years is part of a broader trend of reduced business closures during the initial stages of the pandemic. Governments implemented various support measures to maximise the survival of businesses during the original lockdown. Notable initiatives in this respect include the Australian Government's JobKeeper and Cash Flow Boost for Employers programs, and temporary payroll and land tax relief introduced by the South Australian Government. Some of these supports were more targeted at sectors such as hospitality that were directly exposed to restrictions that severely impeded certain forms of consumer spending. Of greater relevance to construction was the HomeBuilder program to support residential construction activity and government efforts to accelerate infrastructure spending. Adverse impacts on the construction sector were also significantly mitigated by construction being considered an essential service, which has mostly shielded the sector from operating restrictions.

Figure 6.1: Number of Construction Companies Entering External Administration
South Australia and Australia



Source: Australian Securities and Investment Commission, *Australian insolvency statistics*: www.abs.gov.au

7. Conclusion

Activity has and should remain strong in the near term

Overall activity in the South Australian construction sector remained at a robust level in early summer. This strength has been broadly based, with activity levels being maintained at or near record levels for engineering, residential building, and non-residential building.

Looking ahead, forward indicators suggest that overall activity levels in the construction sector should remain at a robust level in the near term. There was a considerable volume of outstanding work for both residential and non-residential building in late 2021, while building approvals in January 2022 were at relatively high levels. On the other hand, the outlook for engineering construction is less encouraging. Forward work schedules for engineering eased through 2021 and the largest project on the horizon – the Torrens to Darlington (T2D) section of the North South Corridor – is not expected to begin major construction until late in 2023. While there are a number of private sector initiatives on the horizon that could provide a significant boost to engineering construction (e.g. deep-water port at Cape Hardy, green steel plant at Whyalla Steelworks, renewable hydrogen projects), there remains considerable uncertainty over whether these projects will ultimately proceed.

Demand for housing has surged in spite of headwinds

One of the surprises of the pandemic has been the surge in demand for housing. This surprise arises from the considerable economic uncertainty that arose during the initial stages of the pandemic and, more fundamentally, from a sharp slowdown in population growth stemming from the national border closure which impeded inward overseas migration. Demand for housing in South Australia based on changes in total estimated resident population is estimated to have fallen by 83 per cent in 2020/21, from around 7,300 units to 1,200 units. However, overall demand for housing rose strongly through the pandemic, demonstrated ultimately by strong growth in actual and planned residential building activity and a surge in house prices.

A number of factors explain this remarkable strength in demand for housing. With people being forced to spend more time living and working from home lockdowns greatly increased demand for improved and larger housing (building approvals data points to a shift in demand away from apartments towards houses). At the same time, people's ability to invest in housing was supported by interest rates falling to ultra-low levels, spending being diverted from curtailed activities such as travel, and provision of considerable income support and employment preservation measures. The low interest rate environment also encouraged investors to turn to the property

market in search of greater returns. Moreover, the Australia Government's temporary HomeBuilder grant program provided direct stimulus to home construction.

But the outlook for residential building is becoming uncertain as supportive factors unwind

These supportive factors have started to fade as pandemic restrictions and support measures have gradually unwound. Some slowdown in activity will be inevitable given the role of the HomeBuilder grant program in artificially bringing forward activity. It may also be compounded by the next monetary tightening cycle arriving sooner than expected given the recent emergence of inflationary pressures. The residential building sector consequently faces the prospect of a tricky adjustment period in the medium term. With short term supportive factors fading a sustained recovery in population growth will be needed to maintain underlying demand for housing at current levels. While the reopening of the nation's border will enable a resumption of overseas migration, there remains some uncertainty over how strong the recovery will be given the prospect of further COVID-19 outbreaks and potential changes in perceptions of Australia as a living and study destination.

Another major area of uncertainty relates to how interstate migration may affect demand for housing given the potential for positive and negative factors. Large price rises in eastern capitals which have eroded housing affordability and concerns over living in high population density cities amid a persistent infectious disease may encourage people to relocate to more affordable and less population dense areas such as regional areas and smaller capitals including Adelaide. On the other hand, reopening of state borders and a retreat from using lockdowns as a control measure could encourage a resumption of net interstate migration outflows from South Australia, the likes of which weighed on the state's population growth prior to the pandemic.

Any future policy measures should not exacerbate the boom bust construction cycle

As the data presented in this issues paper shows, the construction industry makes a sizeable contribution to the broader economy. To the extent that conditions do deteriorate within the construction sector there will arise a desire to provide some form of stimulus. In considering appropriate support measures, policy makers should steer away from policy options such as temporary first home subsidies and tax waivers that will simply pull construction activity forward and delay an inevitable decline. A more appropriate form of intervention would be to directly increase public sector building activity by increasing public investment in infrastructure, non-residential building such as hospitals and schools, and public housing. Such interventions represent one of the most effective ways that state government can directly influence economic activity in the short term, whilst delivering longer term benefits to the extent they establish long lasting infrastructure and assets with ongoing service values.

Input price increases are a major challenge for builders

One of the most immediate challenges posed by the housing boom and pandemic is considerable price inflation within the housing construction industry. The large increase in demand for housing coupled with pandemic induced supply chain disruptions has generated shortages of materials and skilled labour which have significantly raised the costs of home construction. Through 2021 the prices for key inputs to home construction in Adelaide such as timber, board and joinery and steel products rose by more than 20 per cent, while prices for inputs such as plumbing products and electrical equipment rose by around 10 per cent. Such large input increases will present a challenge for those builders who have enter into fixed price contracts for new home construction. They may also act to curb demand for housing in the short term.

A full appraisal of the state of the construction sector would consider additional factors

This paper has endeavoured to briefly assess the 'state' of the construction industry from an economic perspective in terms of general business conditions. There are various other important aspects of construction industry performance which could conceptually form part of a 'state of the industry' assessment. Relevant examples would include, but are not limited to, employment conditions, gender diversity, labour productivity, skill levels of the workforce including business management, potential skill shortages, participation in education and training, quality of building work done, customer satisfaction, and workplace health and safety. Any future state of the industry report should give consideration to exploring these aspects of construction industry performance.

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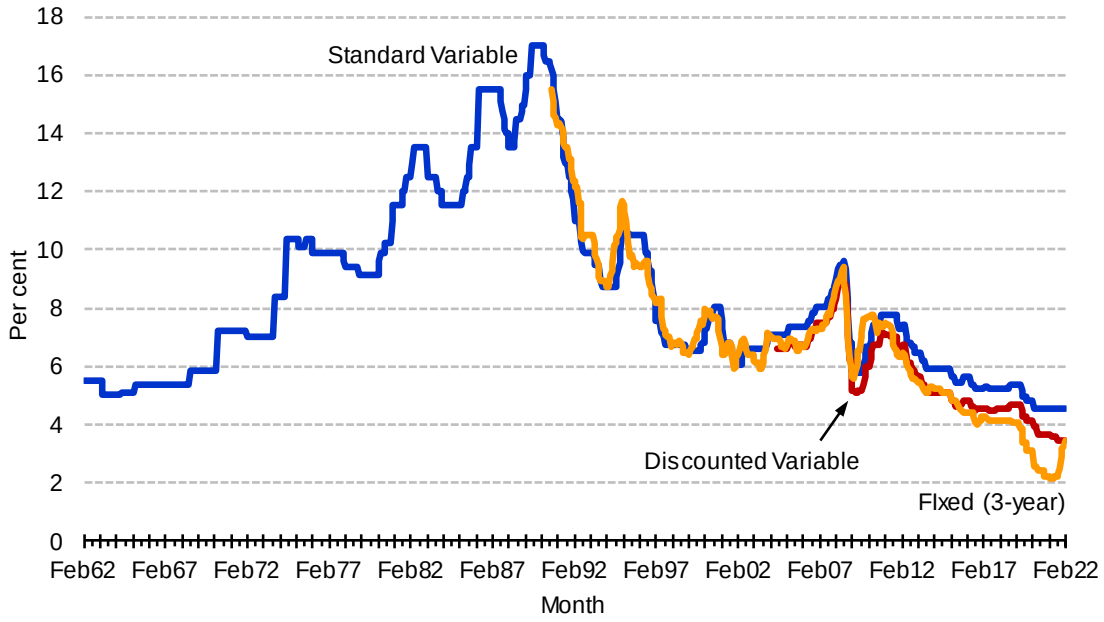
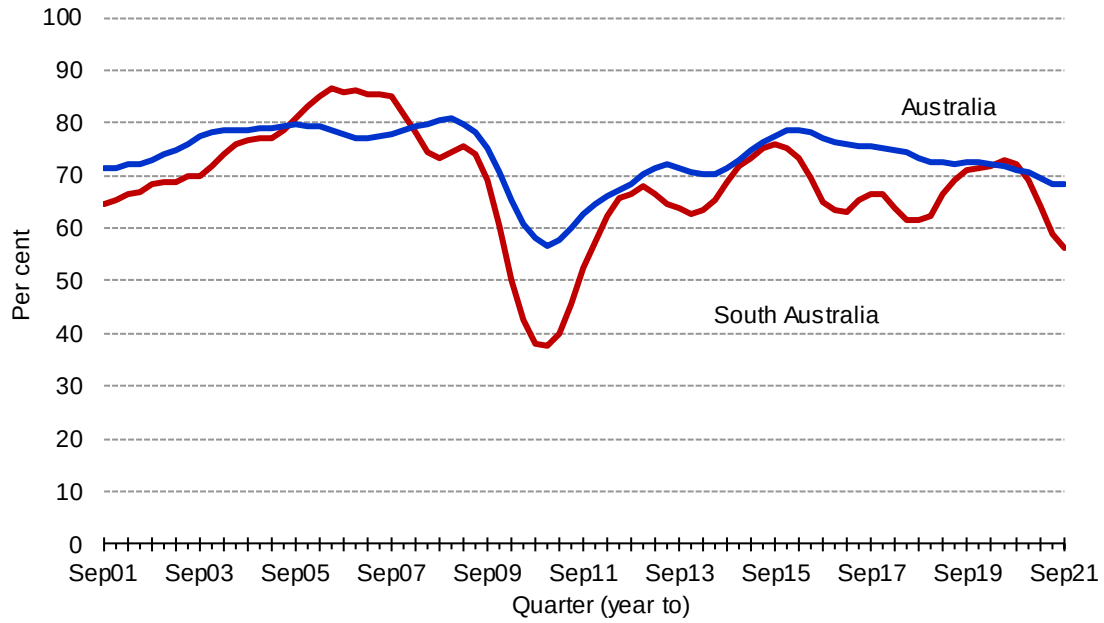
Appendix A - Supplementary Graphs

Figure A1: Australian Historical Lending Rates, Bank Housing Loans
Per cent per annum



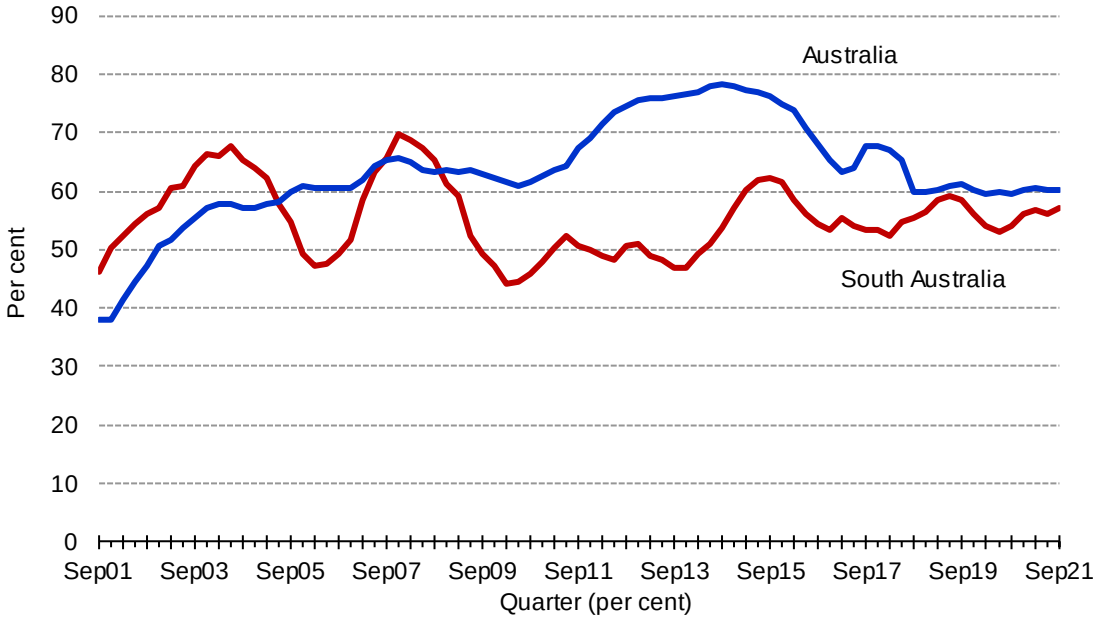
Source: Reserve Bank of Australia, Interest Rates: www.rba.gov.au

Figure A2: Proportion of Non-residential Work Done by the Private Sector[(a)]
South Australia and Australia – Current Prices



Note: [(a)] Proportions are calculated based on moving annual totals of work done.
Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

Figure A3: Proportion of Engineering Work Done by the Private Sector[(a)]
South Australia and Australia – Current Prices



Note: [(a)] Proportions are calculated based on moving annual totals of work done.
Source: Australian Bureau of Statistics, Building and Construction: www.abs.gov.au

Endnotes

1 Source: ABS, Australian National Accounts: State Accounts, 2020-21, Cat. No. 5220.0.

2 Year average employment for the four quarters to the November Quarter 2021. Source: ABS, Labour Force, Australia, Detailed. Table 05. Employed persons by State, Territory and Industry division of main job (ANZSIC), Cat. No. 6291.0.55.001.

3 In an econometric analysis of compositional responses of Australian Gross Domestic Product to domestic monetary policy, Jamaldeen (2013) finds that new dwelling investment is the most sensitive component to cash rate shocks, although changes in other forms of investment ultimately make a greater contribution to contractions in aggregate investment. More specifically, an unanticipated monetary policy increase of 34 basis points is estimated to reduce new dwelling investment by around 0.6 per cent after one year.

4 The Advertiser, 'South Australian construction and civil engineering form York Civil enters voluntary administration', August 6, 2018. Available: https://www.adelaidenow.com.au/news/south-australia/south-australian-construction-and-civil-engineering-firm-york-civil-enters-voluntary-administration/news-story/0f9fd556a8510371fec8ca845ef794de

5 It is important to note that construction sector gross value added and work done are not only not directly comparable due to differences in concept, there are also not directly comparable due to differences in scope and coverage. Estimates of construction work done, which are derived from the Building Activity Survey and Engineering Construction Survey, exclude certain forms of construction activity that are in principle captured by the estimates of gross value added derived from the National Accounts. These exclusions include building work which falls below the minimum threshold for inclusion in the Building Activity Survey, and building work done that is performed without obtaining a building permit (ABS 2018).

6 See previous endnote.

7 See ABS (2004) 'Feature Article – Work in the pipeline', *Construction Work Done*, Australia, Preliminary, June 2004, Cat. No. 8755.0.

8 A dwelling unit is defined by the ABS (2022) as a self-contained suite of rooms intended for long-term residential use, and excludes rooms contained within buildings offering institutional care or temporary accommodation.

9 An average household size of 2.4 persons was assumed based on the results of the 2011 and 2016 Censuses.

10 The HomeBuilder program initially provided a grant of $25,000 to eligible owner-occupiers for contracts signed between 4 June and 31 December 2020. The program was subsequently extended to contracts signed up to 31 March 2021, although a lower grant amount of $15,000 applied for the extension period.

11 ABS, Lending indicators, December 2021, Cat. No. 5601.0.

12 InDaily (2019), REVEALED: *Accused "phoenix developer" behind collapsed SA construction companies*. Available: https://indaily.com.au/news/business/2019/04/01/revealed-accused-phoenix-developer-behind-collapsed-sa-construction-companies/

13 A company may be recorded as entering into external administration more than once if it is taken out of external administration but subsequently re-enters external administration.