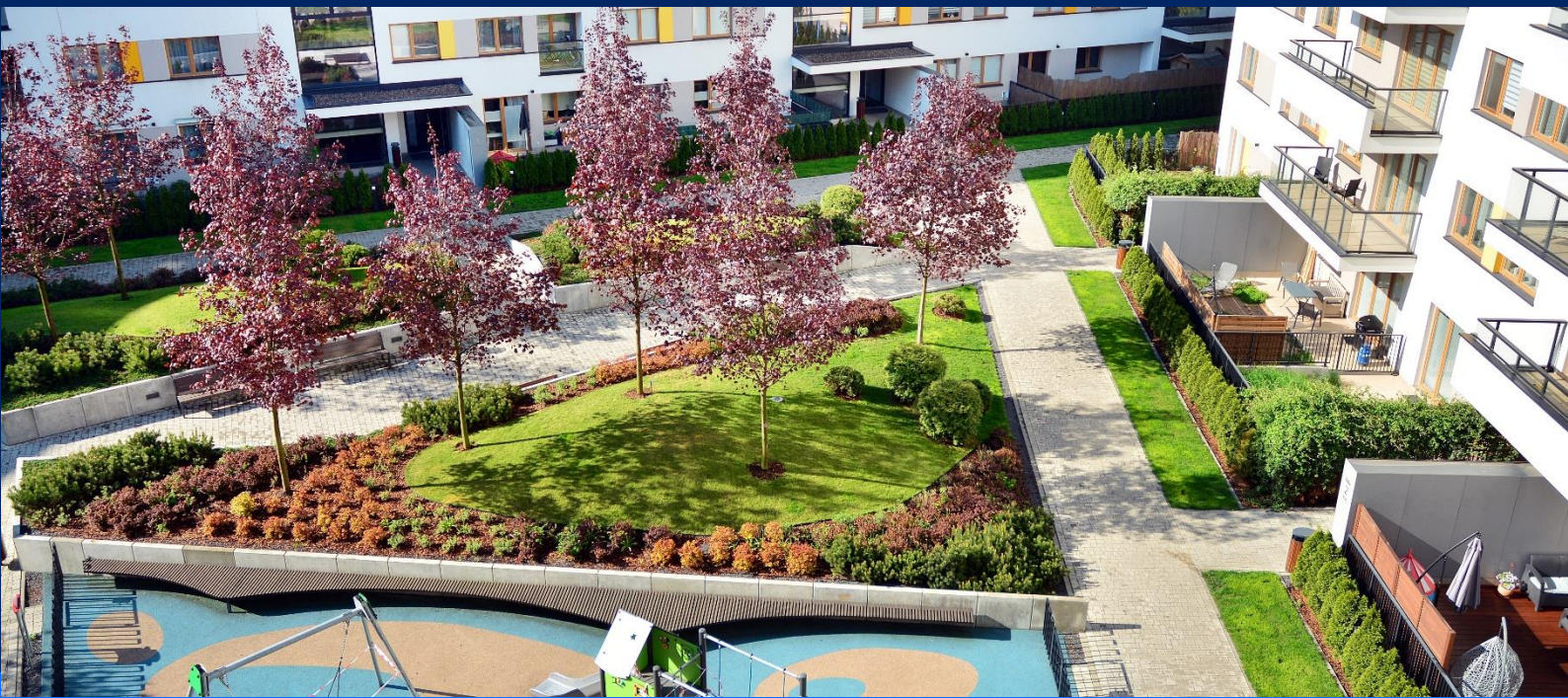


Building more homes where people want to live

May 2023



Acknowledgment of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

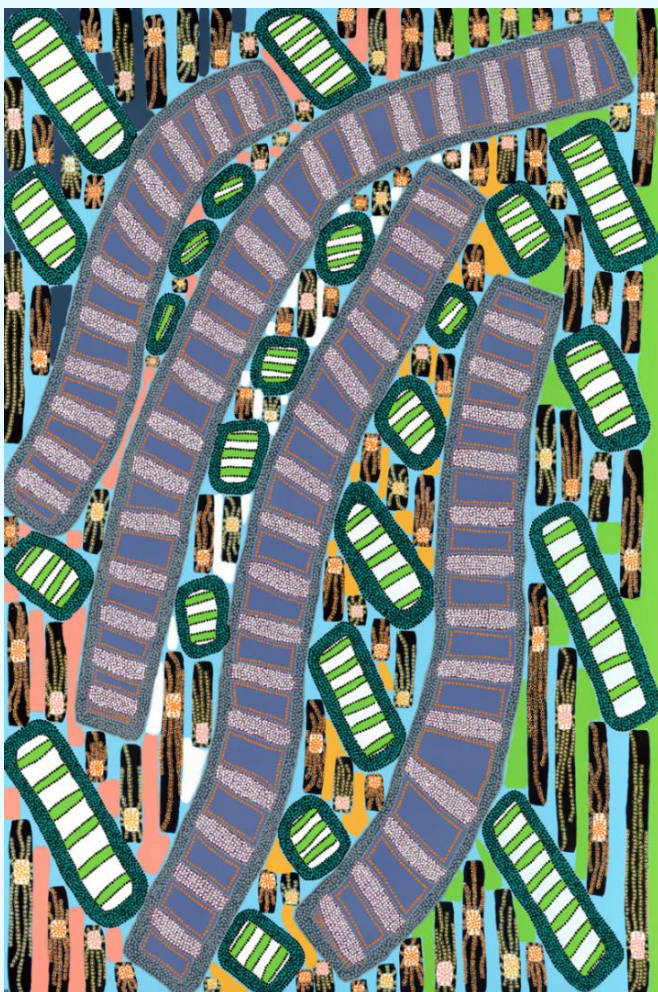
We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families, and communities, towards improved economic, social, and cultural outcomes.

Artwork:

Regeneration by Josie Rose



Productivity Commissioner's foreword

Owning your own home is the Australian dream, and for my generation and my parents', that dream was achievable for the average family. That's how it should be.

But for several decades now the price of homes has been growing faster than incomes, slowly putting the Australian dream out of reach. Many young people believe they'll never be able to own their own home. And those who do get into the market often can't buy where they grew up, or near their family, friends, or jobs. The pandemic has only made things worse, sparking rapid growth in house prices. And housing is not an issue just for potential first homebuyers – even renting has become a struggle.

This is a complex problem with many drivers, but a major one is that our state planning system makes it difficult to build enough new homes where people want to live – close to jobs, transport, schools, and other amenities. Instead, the system encourages urban sprawl, forcing people into longer and longer commutes. These policies increase inequality, especially for low- and middle-income workers in Sydney.

It shouldn't be this way, and the good news is it doesn't have to be.

In my 2021 *Productivity White Paper*, I showed how the Government can reform the planning system to increase the number of homes in NSW. I provided recommendations on how to cut down planning assessment times and make it easier for homes to be built where they're needed. Progress has been made. We've seen changes to increase the areas where businesses can set up and work, as well as progress on reforming how developers pay for public infrastructure where they build homes. But as rents and house prices rise and housing construction forecasts fall precipitously over the next few years, there is still much more to be done.

That's why I'm proud to present this paper, the first in a series by the NSW Productivity Commission, outlining a way forward for increasing housing supply and affordability in NSW. *Building more homes where people want to live* is about prioritising density in high-demand areas across Sydney. If we build homes where people want to live, near jobs and amenities, the productivity and lifestyle benefits will be enormous. It's also fairer – key workers like nurses and teachers should be able to afford to live near the hospitals and schools where they work.

Increasing density across Sydney can be controversial. Future generations have the most at stake, but they don't have a vote or a voice in the debate. To give them a chance at owning a home in the best place in the world, we must follow the advice of renowned urban economist Edward Glaeser:

"Great cities are not static, they constantly change and take the world along with them."

If you believe, as I do, that today's kids deserve the same shot at the Australian dream that my generation had, we need to change our planning system and build near existing infrastructure to make room for them.



Peter Achterstraat AM
NSW Productivity Commissioner



About the NSW Productivity Commission

The NSW Productivity Commission ('the Commission') was established by the NSW Government in 2018 under the leadership of the state's inaugural Commissioner for Productivity, Peter Achterstraat AM.

The Commission is tasked with identifying opportunities to boost productivity growth in both the private and public sectors across the state to continuously improve the regulatory policy framework and other levers the Government can pull. Productivity growth is essential to ensure a sustained growth in living standards for the people of New South Wales, by fully utilising our knowledge and capabilities, technology and research, and physical assets.

The Commission's priorities include:

- productivity and innovation
- fit-for-purpose regulation
- efficient and competitive NSW industries
- climate resilient and adaptive economic development.

Since its inception, the Commission has undertaken several reviews on productivity matters and published the landmark *Productivity Commission White Paper 2021: Rebooting the economy*.

Disclaimer

The views expressed in this paper are those of the NSW Productivity Commission alone, and do not necessarily represent the views of NSW Treasury or the NSW Government.

Regarding the recommendations in this paper, NSW Productivity Commission recommendations only become NSW Government policy if they are explicitly adopted or actioned by the NSW Government. The NSW Government may adopt or implement recommendations wholly, in part, or in a modified form.

Abbreviations

Term	Definition
ABS	Australian Bureau of Statistics
CBD	Central business district
DPE	(NSW) Department of Planning and Environment
FSR	Floor space ratio
LGA	Local Government Area

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Executive summary

To make housing cheaper and make best use of Sydney's assets, New South Wales needs to build more housing, and build it closer to jobs

The best way to do this is to enable more homes in the places where people most want to live. This will require a focus on denser, infill development closer to the city than most of our recent new homebuilding. We particularly need to build more of this housing around railway stations in suburbs closer to Sydney.

Sydney has limited opportunities to expand out geographically, but many opportunities to become a denser city without great impact on the lifestyles of those of us currently living here.

Existing housing policies make housing scarce

Expensive housing has squeezed household budgets for owners and renters alike. This has pushed families to compromise on where they live – further from family, friends, and jobs. Worse still, our lowest-income households have the least ability to absorb high housing costs – so these households make the biggest sacrifices in their quality of life.

If we fail to meet current and anticipated future demand for housing, migration out of Sydney may eventually see the NSW capital lose the position it has held for more than a century as Australia's pre-eminent city.

Housing scarcity drives up prices and rents

How much housing we have in Sydney helps to determine how much our homes cost. Studies have shown this repeatedly, even though not everyone in the public believes it. In this narrow sense, housing is just the same as other goods and services: so long as what's on the market isn't enough to meet demand, buyers will drive up its price. Couples with consulting careers will outbid teachers for run-down two-bedroom houses in Dulwich Hill.

We all know this has happened in Sydney. Figures confirm it: since 1992, New South Wales has built six dwellings per 1,000 residents on average, fewer than Queensland and Victoria (about eight to nine dwellings per 1,000 residents).

A rule of thumb is that in Australia, a 10 per cent increase in supply leads to a 25 per cent reduction in housing costs. So, Sydney needs to use every tactic it can find to get more homes built.

In recent years, Sydney has relied heavily on greenfield development. That has come at a heavy cost: it has driven up the need for expensive new infrastructure and has left many of Sydney's people too far from the city centre's facilities.

Locate more new homes in existing housing areas

In recent years, Sydney has grown outwards, especially to the west. But building on the suburban fringes is no longer the only or best path forward. To correct this problem most effectively, New South Wales should build more new homes in areas closer to Sydney's centre. These areas offer both the richest collection of job opportunities, and a supply of already-built infrastructure and other amenities whose capacity can be leveraged and expanded.

Importantly, even if new supply targets the high-end of town, building more housing closer to the CBD will improve affordability there and elsewhere. This is true even for people who can't

currently afford to live there. This is an example of what housing experts call ‘filtering’ and demonstrates how building more in expensive parts of the city can improve affordability everywhere. Realistically, new, more expensive homes around the CBD will initially be occupied by high-income families. But these families leave behind a high-quality house when they relocate that can be occupied by a middle-income family. In turn, the middle-income family leaves behind a house that can be occupied by a lower-income family. This filtering can assist with reducing the burden for social and affordable housing and so on...

We also need to make efficient use of land closer to the CBD to solve our housing affordability challenge. It’s more cost-effective to build efficiently and appropriately designed higher-density developments close to the CBD rather than only standalone houses in greenfield areas far from jobs and services.

To do this, we will need to reshape the current regulations on building houses, in ways that let more people build more homes in the right places, particularly by letting people build higher and build in their back yards.

Sydney has plenty of room to grow in these ways. Like all Australian cities, it is less dense than even cities such as Auckland and Montreal. Global cities like Paris, London, and New York benefit from much higher density still.

People should be free to live in their preferred style of housing. But many people currently cannot, because there have been too many obstacles to building the housing they most want.

Three specific changes will deliver Sydney more and better housing

To build more housing in Sydney’s existing housing areas, we should:

- raise average apartment heights in suburbs close to the CBD (and to job opportunities)
- allow more development around transport hubs so that we leverage our existing infrastructure capacity
- encourage townhouses and other medium-density development and allow more dual-occupancy uses such as granny flats where increased density is not an option.

More well-located housing will mean cheaper housing

Building homes in suitable areas of existing housing brings a triple benefit:

1. More people want to live there.
2. These areas already have infrastructure.
3. These areas bring people closer to more facilities, so they can spend more time with their families and enjoy Sydney’s assets.

By building selectively – near existing infrastructure – we can produce a richer variety of housing. Such a policy would also bring other benefits:

- Relaxing supply constraints would provide more workers with access to their best employment opportunities. US-based research suggests that supply constraints lowered economic growth there by up to one-third over several decades.
- Increasing density in targeted areas should allow us to expand with the minimum impact on the environment, both because we are sacrificing less land to housing and because we lower our transport pollution.
- These solutions also apply to regional cities.

1 Housing affordability affects us all

New South Wales is Australia's most productive, populous, and prosperous economy. But poor housing affordability – especially in metropolitan areas – limits its economic potential. High housing costs put pressure on household budgets, lower productivity, threaten environmental sustainability and erode the city's amenity – its attractiveness as a place to live.

Poor housing affordability:

- reduces household spending power because families must devote more of our income to the basic necessity of shelter
- lowers labour productivity because much of the population cannot afford to live near our best employment prospects
- threatens environmental sustainability because more workers locate farther from city centres and endure long, polluting commutes to their jobs
- lowers residents' quality of life because so much of our cities' populations end up too far from the amenities which made NSW cities such great places to live in the first place.

In Sydney's case, these amenities range from Sydney Harbour, coastal beaches, and an amenable climate.

The state's housing affordability problem has been developing for many years. But if we do not respond to it, it may eventually contribute to a decline in Sydney's status as Australia's global city.

Among the key factors in the success of global cities (Sassen, 2005), analysts have nominated both housing and the ability to create 'liveability' through access to services, culture, and the natural environment (PwC, 2010, p17).

Even Sydney's future as Australia's pre-eminent city is not assured. On one measure of population, it has already ceded to Melbourne the title of Australia's most populous city (Wade, 2023); that trend is not expected to reverse in the foreseeable future. Similarly, having ranked as high as 11th on Kearney's 2020 Global Cities Index, it slipped to 17th in 2022. (The Index 'seeks to quantify the extent to which a city can attract, retain, and generate global flows of capital, people, and ideas'.) In 2020 Melbourne rose from 18th spot to 8th (Kearney, 2022).

1.1 Housing supply is a big part of the answer

To fulfil its potential, New South Wales requires a substantial boost to its housing supply. The NSW Department of Planning and Environment estimates that New South Wales will require approximately 900,000 additional dwellings by 2041. New South Wales has also signed onto the National Housing Accord, which includes an aspiration to deliver one million well-located dwellings Australia-wide in the second half of this decade.

Although the supply task is large, it is surmountable. If we prioritise infill development where people want to live, large increases in supply should be delivered where it will be most valued, while making the best use of existing infrastructure capacity, and treading more lightly on the environment.

This paper is the first of a series that will, in turn, inform the discussion on the fiscal and economic benefits of being more responsive to demand in how we accommodate Sydney's growth. The final paper will discuss the importance of housing targets and makes the case for incentivising the delivery of housing targets to accommodate future growth.

1.2 Build more homes where people most want to live

This first paper considers how to best meet consumers' preferences — by building houses where people most want to live. It also identifies the Sydney areas where dwellings are likely to be constructed in a timely manner.

For the sake of brevity, our discussion excludes some important details. Most significantly, the locating of new houses needs to consider both consumer preferences *and* existing infrastructure capacity, especially in the short-term. It is more practical to prioritise building in high-demand suburbs with existing public transport corridors than in those without. In the long term, however, infrastructure investments can focus on unlocking more dwelling capacity where people most want to live. This paper provides some preliminary guideposts to where this might be.

The subsequent papers in the series examine the fiscal, economic, and social impacts of more responsive housing and makes the case for incentivising the delivery of housing targets to accommodate growth. The second paper considers the infrastructure task in greater detail. Accommodating development growth requires enabling infrastructure. Public infrastructure — such as roads, utilities, open space, and community facilities — provide vital support for our cities' growth and productivity. Specifically, the second paper examines how the cost of infrastructure such as roads, rail, water, and schools varies across Sydney's infill areas. We find that locating housing in the CBD, inner west, eastern suburbs, and northern suburbs would be relatively less expensive than putting it in other infill areas.

The fundamental lessons from this series will apply to New South Wales' larger regional cities too, although the focus of the analysis is on Greater Sydney.

2 The affordability challenge hits both home renters and owners

2.1 A rental crisis has hit NSW

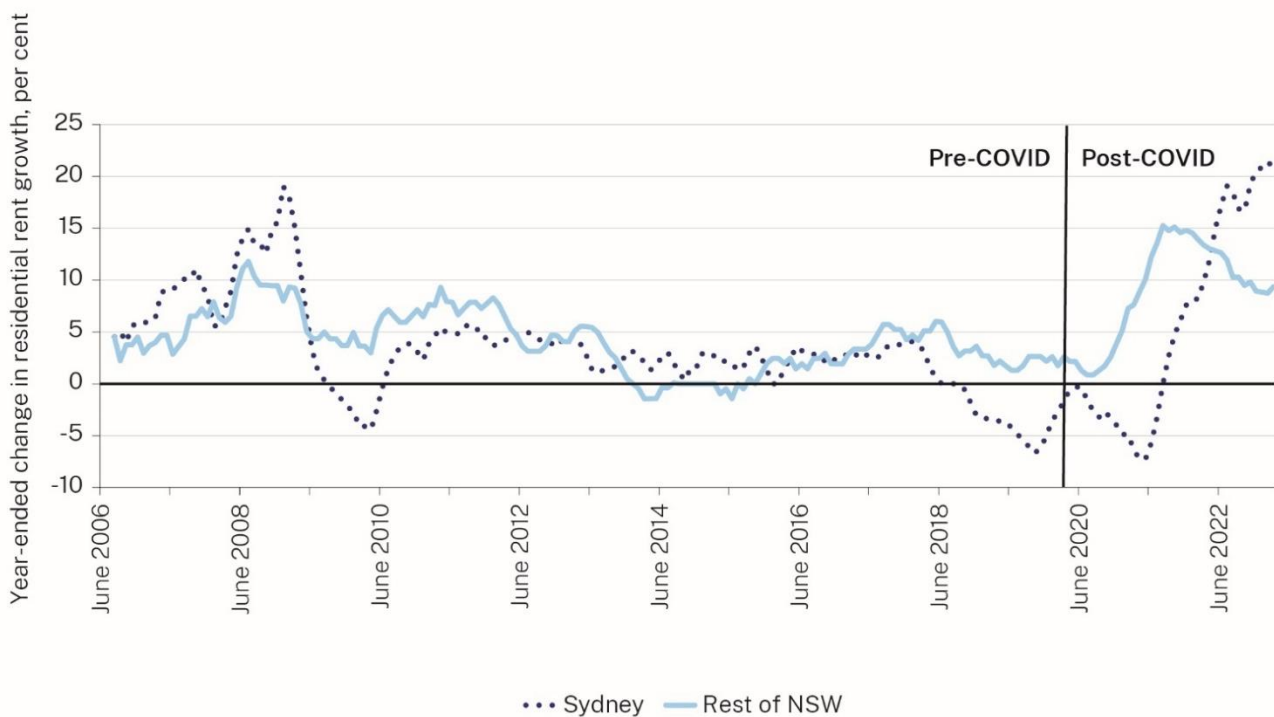
Rental affordability is deteriorating across New South Wales, with the state's rent rises outstripping wages growth since early 2020 (Figure 1).

Affordability for regional renters deteriorated first. At the height of the pandemic, rents rose because regional New South Wales bore the brunt of increasing net migration from Sydney. Bushfires and floods destroyed homes in some regional locations, which further pushed up price pressures in these regional housing markets.

The story in Sydney has been different, but the result has been the same. At first, COVID's abrupt border closures temporarily reduced rental demand in Sydney (Sweeney, [2020](#); [2021](#)). Since 2022, however, the rental market in the city has tightened substantially and growth in advertised rents has more than recovered from their mid-pandemic decline.

Figure 1: Rents surged during COVID

Advertised NSW residential rental price growth, year-ended, three-month moving average



Note: December 2022 last data point

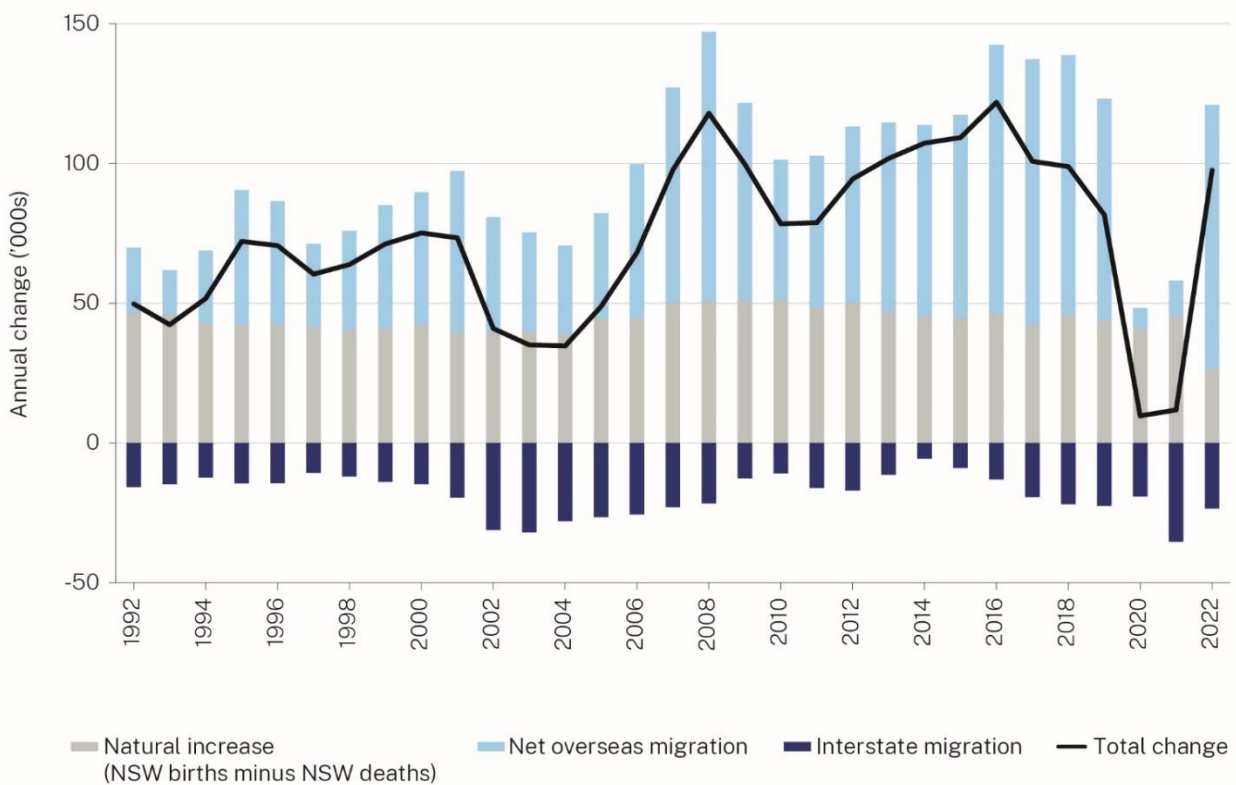
Source: CoreLogic; NSW Productivity Commission

Since 2020 Sydney median unit rents have increased by almost \$200 per week. Rising rents reflect three influences:

- Strong population growth has meant more potential renters are seeking properties since international borders reopened (Figure 2).
- Subdued residential construction has meant fewer new homes are becoming available to rent.
- A recent reduction in household size may reflect households' greater willingness to pay more for space due to work from home (Agarwal, Bishop & Day, 2023). However, household sizes may increase going forward as people adjust to rising rents.

Figure 2: More renters seek properties

NSW population growth and its components, annual



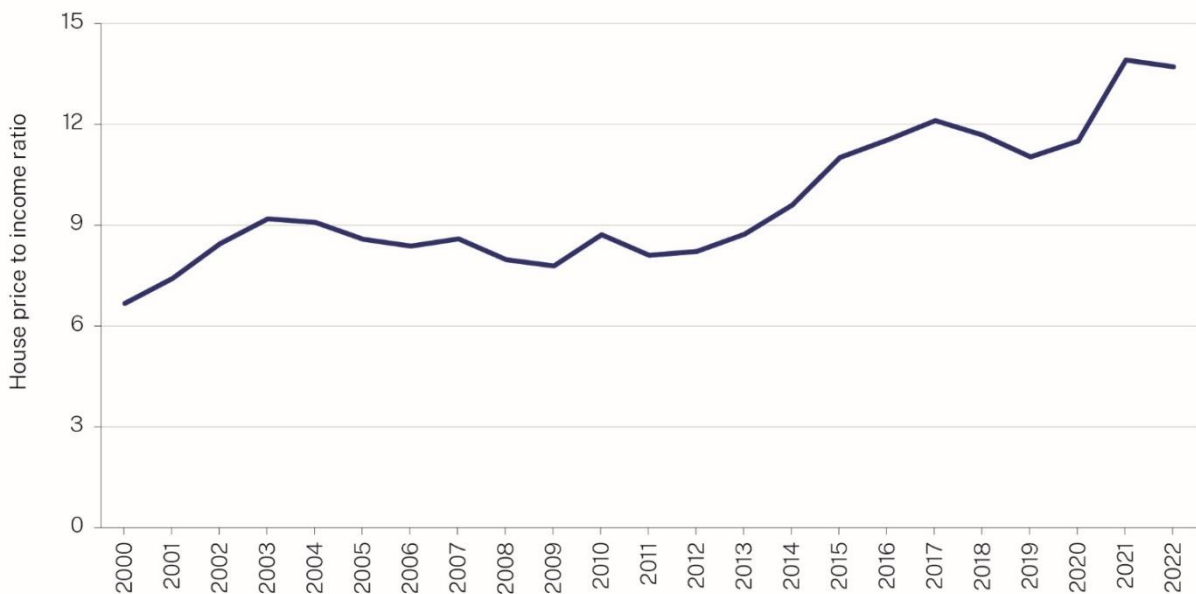
Note: Components do not sum to total due to Census benchmarking; 2022 figures are to September quarter.
Source: ABS; NSW Productivity Commission

Longer-term pressures in the housing market are also making life more difficult for renters, as well as for first-homebuyers. Demand for housing has risen along with real incomes, and a demographic trend towards smaller preferred household sizes (Coates, 2022; Grattan Institute, 2016; McDonald & Temple 2013; Gitelman & Otto, 2012). Both factors have likely increased the number of preferred households in a given population.

Unfortunately, supply has not kept up with these increases in demand. The result has been consistent upward pressure on rents and prices. One way to see this is to look at the ratio of Sydney house prices to a standardised measure of income, such as a teacher's or nurse's salary. In 2000, the median dwelling in Greater Sydney sold for around six-and-a-half times a mid-career teacher's salary; by 2022, this rose to 14 times the average teacher's salary.

Figure 3: House price to incomes

Median Sydney house price relative to gross salary of a mid-career teacher in NSW



Note: 'Mid-career' teacher is defined as a 'band 2.3' level educator.

Source: CoreLogic; NSW Teachers Federation; NSW Productivity Commission

2.2 Poor affordability hits low-income earners hardest

Deteriorating affordability hurts lower-income households the most. When rental housing is scarce, higher-income households may need to sacrifice some discretionary spending to compete for a home, but low-income households forgo other essentials. In New South Wales, more than half of low-income renting households spent more than 30 per cent of their income on housing in 2019-20, a greater share than in any other state or territory (Survey of Income and Housing, 2019-20).¹

Low-income households can also be forced into overcrowded housing or be locked out of some housing markets altogether. As of the 2021 Census, homelessness was affecting around 120,000 NSW residents (ABS Census, 2021). Around 40 per cent of this group was classified as living in 'severely' crowded dwellings. In the 36 months between June 2019 and June 2022, despite record low unemployment, New South Wales experienced a 45 per cent surge in priority applicant households on the social housing register, with 6,519 priority social housing applicants waiting for assistance as at 30 June 2022.

¹ Low income is defined as containing the 40 per cent of people at or below the 40th percentile of equivalised disposable household income, excluding Rent Assistance.

2.3 Home ownership is out of reach for many

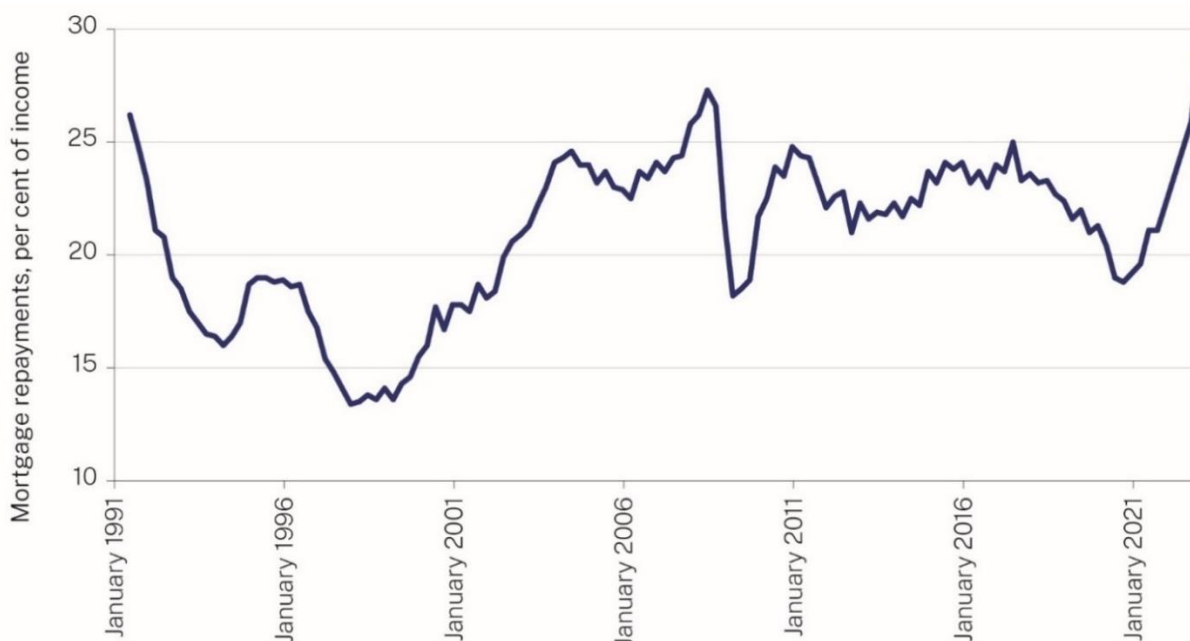
As dwelling prices have increased in recent years, public attention has focused on the challenges people face buying their first home. In particular, governments have focused on reducing the upfront barriers to home ownership by:

- reducing the size of the mortgage deposit required (through schemes such as the Commonwealth Government's Home Guarantee Scheme and NSW's Shared Equity Home Buyer Helper)
- reducing upfront taxes (for instance, in New South Wales through increased stamp duty concessions during the pandemic, and through the First Home Buyer Choice scheme)
- directly subsidising purchases (through schemes such as the First Home Owner's Grant).

Since the Reserve Bank of Australia began tightening monetary policy in late 2021, dwelling prices have fallen across New South Wales. While lower prices have helped to reduce the upfront deposit hurdle for first homebuyers, the ongoing cost of servicing a new mortgage is now at its highest level since at least the early 1990s.² Mortgage costs have increased significantly for those who already own their own home, and are the biggest drivers of cost of living pressures for many people.³ This is especially the case for those who have recently purchased homes and have large outstanding loans.

Figure 4: Spending on loan repayments has jumped

NSW mortgage servicing costs



Note: The mortgage servicing cost is calculated as the monthly cost of servicing a 30-year mortgage for 80 per cent of the median NSW dwelling price, as a per cent of the monthly disposable income of a household of two average-income earners (NSW average compensation of employees); disposable income assumed to be 80 per cent of the assumed income (based on average compensation of employees). December 2022 last data point.

Source: CoreLogic, ABS, NSW Productivity Commission

² High mortgage servicing costs reflect the relatively large size of a new mortgage on a median price home, the sharp increase in the interest rate payable on a new loan, and modest income growth.

³ Mortgage interest charges were the main contributor to the rise in the ABS Selected Cost of Living Index for Employees. Increasing rents are slower to flow through to the broader renter base as it takes times for contracts to be renewed, and not all contracts are renewed at the rates advertised on the market.

3 To improve affordability, we must build more homes

3.1 Affordability depends on supply responding to high demand

The sharp increases in NSW rents in recent years show how growing demand — from a growing population, rising incomes, or changing preferences — can drive changes in affordability.⁴ Importantly, changes in demand *only* bake in substantially higher costs when supply does not or cannot respond to changing market conditions. The alternative to higher rents and prices is to allow enough housing to be built in high-demand locations to keep costs in check. Doing so means that we both keep costs lower for current residents and their children. And it also means that we fulfil our obligation to house newcomers — from both interstate and overseas — who have been invited to contribute towards and share in New South Wales' prosperity.

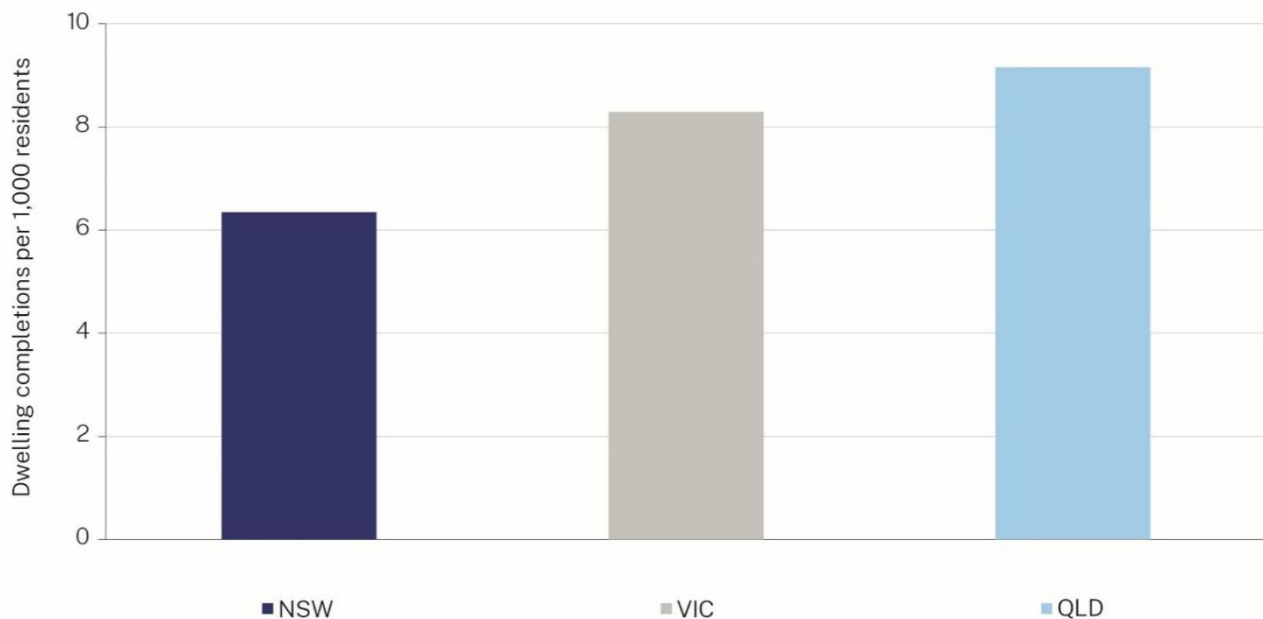
Of course, housing supply takes time to respond; the process of planning and delivering residential developments takes months or even years. If supply does not respond over time, however, the pressure on renters and first-homebuyers will continue to build.

Unfortunately, New South Wales's housing supply is particularly unresponsive, at least compared with other jurisdictions. Since 1992, New South Wales has built around six dwellings per 1,000 people each year, on average, compared with eight to nine dwellings per 1,000 people in Victoria and Queensland. This difference has likely made houses harder to afford in New South Wales relative to other parts of Australia.

⁴ In contrast, recent declines in dwelling prices largely reflect higher financing costs due to increasing mortgage interest rates.

Figure 5: NSW has trailed the nation in home-building

NSW average annual dwelling completions per 1,000 people, compared to other states, 1992-2021



Source: ABS; NSW Productivity Commission

3.2 Less supply drives up housing prices: the evidence

New South Wales' low rate of housing construction goes a long way to explaining why renting or buying a home costs more here than in the rest of the country. Indeed, we have abundant evidence that without enough housing for everyone, the housing that exists grows more and more expensive.

Despite the near-consensus among economists on this point, it is often contentious in public debate – to the point where this 'supply scepticism' in parts of the general public has itself become the subject of study (Been et al., 2018). This 'supply scepticism' appears to be specific to housing, at least overseas; members of the public typically agree that extra supply lowers the cost of other goods and services (Nall, Elmendorf & Oklobdzija, 2022). One potential explanation is that developers tend to build in fast-appreciating areas, and so it is difficult to disentangle the effect of new supply from these trends.

The available estimates suggest that a 10 per cent increase in the housing stock lowers costs by between 15 and 30 per cent at a national or sub-national level (Tulip & Saunders, 2019; Labour, Erlich & Lui, 2016; Finlay & Williams, 2022; Oxford Economics, 2016). The few available Australian estimates suggest that a 10 per cent increase in national supply cuts the cost of housing by 25 per cent (Saunders & Tulip, 2019).

More recent studies have focused on how new market rate-supply affects housing costs at a very local level. Li (2019) finds that a 10 per cent increase in the housing stock lowers rents by one per cent within 500 feet of the location of new dwellings. Importantly, the effect is shown to be the result of the additional supply, rather than construction causing harm to neighbourhood character. Other studies suggest the effects may be even larger, with new buildings lowering

nearby rents by between two and seven per cent and reducing the risk of displacement for existing residents (Pennington, 2021; Asquith, Mast & Reed, 2021).⁵

These estimates are smaller in absolute magnitude than city-level, sub-national or national-level estimates, as might be expected. A local increase in supply is a close substitute for housing nearby, whereas substitution possibilities are less for larger areas. This means, for example, that building few houses in Bondi has small effects on affordability so long as plenty of building is allowed in Clovelly, since households are happy to swap one suburb for a similar nearby location. This does not hold, however, at a city- or state-wide level. Restrictions on building in Sydney have large effects on affordability, even if plenty of construction occurs in Newcastle, Brisbane, or Melbourne, because these locations are less interchangeable for residents. This has important policy implications: to improve affordability we need a coordinated increase in supply at a city, state, and national level. The National Housing Accord currently being progressed is seeking to deliver a coordinated response to increase the supply of well-located homes.

3.3 Building where people want to live will particularly help priced-out, low-income households

Allowing more supply in high-value locations will improve affordability even for households that cannot (currently) afford to live there. This process by which building in one, typically expensive, part of a city affects affordability everywhere is known as ‘filtering’.

Downward filtering occurs when supply is responsive to demand. In a healthy housing market new, high-quality housing is occupied by high-income households. In turn, the dwellings vacated by these high-income households are then free to be occupied by middle- to high-income households at a marginally reduced cost (Rosenthal, 2014). This process continues until all the ‘moving-chains’ are exhausted, often at the bottom tail of the income distribution.

For instance, a family might ideally like to live in Newtown, but if little new housing is built there, they compromise by living in Ashfield, further from the CBD. This means another, lower-income family is squeezed out from Ashfield to Burwood, and so on. The upshot is that building more housing in Newtown improves affordability locally, in Ashfield and Burwood, and any other locations that families consider reasonable alternatives.

The filtering process is important because it means that building new housing in central, expensive areas generates improvements in affordability even for low-income households (Rosenthal, 2014; Weicher, Eggers & Moumen, 2016). This effect has been documented in New York (Li, 2019); Victoria, Australia (Hansen & Rambaldi, 2022); large US metros (Mast, 2021); and Helsinki (Bratu et al, 2021).

The converse is also true. When new housing is *not* built, higher-income households outbid middle- and lower-income families for the existing, older stock of dwellings (Lui, McManus & Yannopoulos, 2022). Sydney’s iconic terrace houses are an example of ‘upward filtering’. Originally built as affordable dwellings for workers in Balmain, Paddington, and Darlinghurst, these terraces are now some of the nation’s most expensive dwellings.

⁵ Pennington (2021) uses exogenous variation in construction caused by serious building fires. She finds that a 2 per cent reduction rents due to increased supply reduces the probability of a household moving to a poorer postcode by about 20 per cent.

3.4 We have some way to go to deliver on NSW's housing task

So what does responsive and healthy housing supply look like? And how does New South Wales compare?

A simple way to benchmark whether a growing city like Sydney builds enough high-density housing is to ask whether an apartment can be sold for close to the cost of supplying it.⁶ For apartments, extra dwellings can be supplied by adding an extra storey to future buildings, so no additional land is required.

Why is this the case? Consider that if a developer can sell an apartment for \$900,000 that costs them only an extra \$600,000 to supply (where costs are inclusive of a normal profit margin but exclude land costs), there is a strong incentive to build more housing. This is because developers can earn \$300,000 of 'excess' profit on each dwelling. Over time, as more houses are built, the extra supply will put downward pressure on prices (and potentially upward pressure on costs).⁷ Developers will continue to supply more housing until there are no more 'excess' profits to be captured, which occurs when prices and costs are roughly equal.⁸

In Sydney, however, apartment prices have remained stubbornly above costs of supply for several decades (Figure 6). Why? The main reason is that planning restrictions – particularly density limits – prevent new building. This means that existing apartments that *have already* been allowed to be built command a significant premium above costs. In contrast, in both Melbourne and Brisbane apartment prices have closely tracked supply costs over the past few decades. Looking abroad, around 75 per cent of metro areas in the US had house prices close to construction costs in 2013 (the latest available data) (Glaeser and Gyourko, 2018).

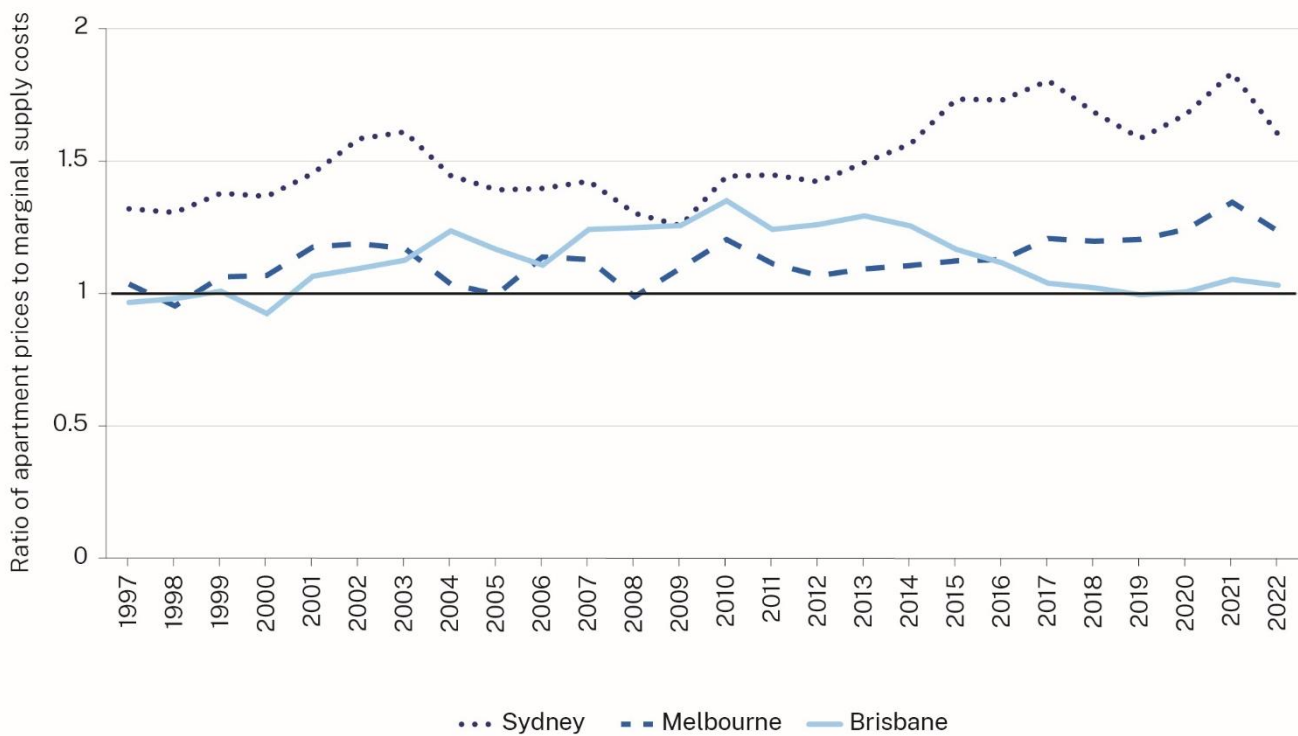
⁶ Costs include construction costs, marketing & sales costs, a builder's margin, financing costs, and developer margins, but not land costs. Land costs are excluded because additional apartments can be supplied by adding an extra storey to a building under construction.

⁷ Building costs may also increase as more marginal sites are developed and building heights increase.

⁸ This does not require any individual developer to act against their own self-interest. In a highly competitive market like construction, each developer has a strong incentive to supply more housing to bid away excess profits.

Figure 6: Sydney apartment prices have stayed above the cost of supply

Ratio of apartment prices to marginal supply costs in Australia's three largest cities



Source: ABS; CoreLogic; Jenner & Tulip (2020)

The upshot is that Sydney needs to significantly boost supply to lower prices and improve housing affordability. Importantly, this could be done without using any additional land. To illustrate, consider that between June 2017 and March 2022, about 1,500 new apartment buildings were completed in Greater Sydney. On average, these buildings were seven storeys tall and contained 70 units. If governments had permitted slightly higher densities – for example, up to an average 10 storeys and 100 units per building – housing supply could have been boosted by around 45,000 dwellings with no extra land. This represents around a typical year’s worth of new housing construction in New South Wales.

Rents move in proportion to prices, other things equal, so higher supply would also materially improve rental affordability. For example, if apartment prices fell by a hypothetical 40 per cent (the decrease necessary to equal current supply costs), we should expect a comparable fall in rents.⁹ This would mean city-wide weekly rents would fall from \$650 to \$390, all else equal. That would provide an extra \$260 per week for apartment-renting households to meet their other expenses, or to upgrade to a location that better suits their needs.¹⁰

Note that a more complicated analysis would also account for the costs of funding the infrastructure needed to accommodate additional households. This is the focus of the second paper in our series.

Figure 6 is broadly consistent with other analysis showing that a housing shortfall has built up in Sydney over several decades, with a particularly long and severe slowdown in residential

⁹ In Saunders & Tulip (2019, Figure 15) a 1 per cent exogenous increase in supply lowers **both** prices and rents by about 2.5 per cent in the long-run, with the full effect taking around 30 quarters.

¹⁰ CoreLogic median unit rents, March 2023.

construction beginning in the mid-2000s. Our 2021 Productivity White Paper estimated that the New South Wales housing undersupply decreased from around 100,000 in the 2016-17 Intergenerational Report to 50,000 in 2020; this followed a historic construction boom in the late 2010s and a sharp slowing in population growth due to border closures.

The White Paper estimate likely understated the shortage, partly because it factored in neither the pandemic-induced change in living arrangement preferences nor the rise of working from home. Indeed, the Committee For Sydney has used a similar method but factored in preference changes to arrive at an overall undersupply estimate of 96,000 for Sydney alone ([Committee for Sydney, 2022](#)). Other methods would imply a substantially larger undersupply than that used by the White Paper. Tulip (2023) estimates that an additional 82,000 apartments would be required to resolve current LGA-level apartment shortages across Sydney, in addition to 350,000 dwellings to service a growing population.

To address this shortage, the state should prioritise increasing housing supply where households want to live. To repair the existing undersupply, while accommodating population growth, New South Wales will need to sustain high levels of construction activity.

National, state, and territory governments have recognised the scale of this challenge. The National Housing Accord sets an aspirational target of building one million well-located homes between 2024 and 2029. It also commits jurisdictions to working with local governments to make supply more responsive to demand.

The rest of this paper focuses on the opportunities denser communities offer in putting downward pressure on residential rents, housing prices, and the overall cost of living in Sydney.

4 Increasing density is the best way to provide housing where people want to live

Delivering new dwellings needed to keep up with future demand (let alone catch up on the accumulated shortage) will be no small task. This is especially the case in a geography-constrained city like Sydney, with an ocean to the east, mountains and floodplains to the west, and national parks to the north and south.

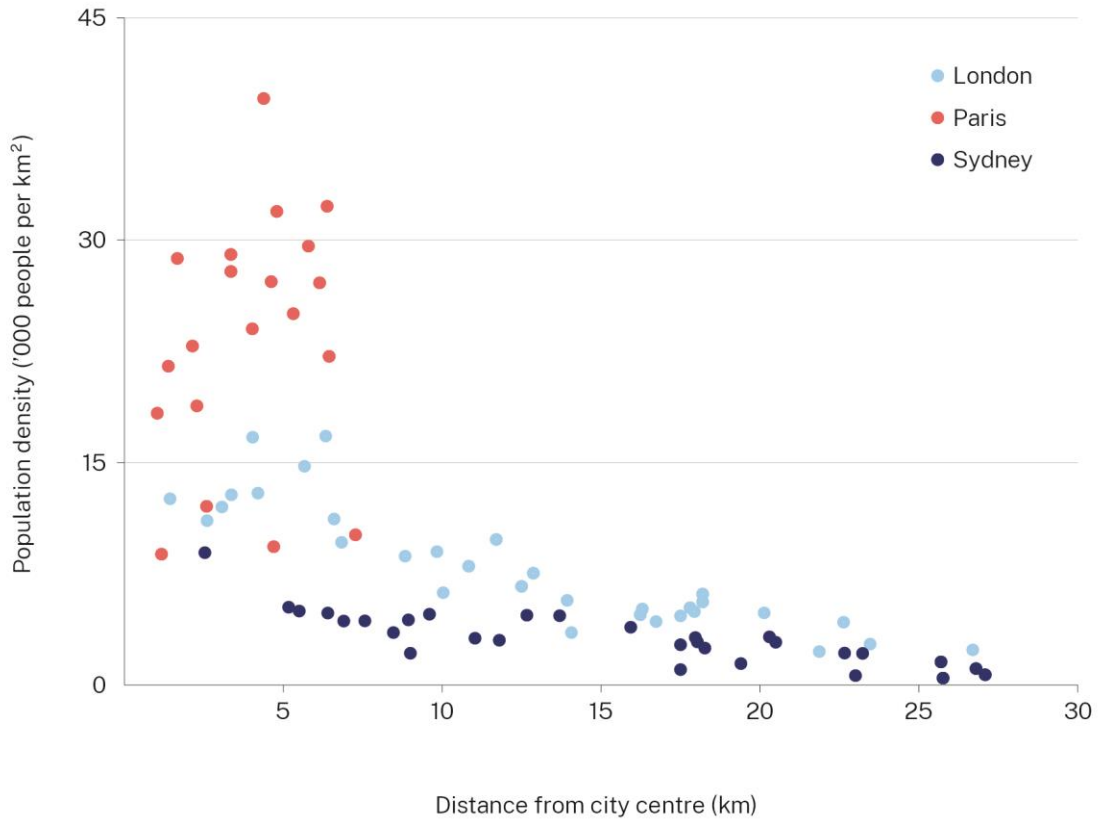
We have a choice about how we provide the additional housing. We can continue prioritising mainly freestanding houses a long way from the city, or we can adjust our strategy to embrace infill that raises densities near job centres.

The case for infill is strong: higher-density communities can increase housing supply within the city's existing footprint, and such infill make the best use of Sydney's expensive, well-located land. In addition, higher residential densities in existing suburbs can take advantage of infrastructure capacity already in place, while posing fewer coordination and fiscal challenges for local and state governments.

And Sydney has plenty of room to grow upward. Compared with other leading global cities, Sydney has low-density inner suburbs. Manhattan, the inner boroughs of London, and most districts of Paris are far denser than inner Sydney (Figure 7). Even inner areas of Melbourne and Brisbane have considerably higher population density than Sydney's inner suburbs.

Figure 7: Sydney is far less dense than other global cities

Population density of Sydney inner-middle ring SA4s compared to inner districts of Paris and inner boroughs of London



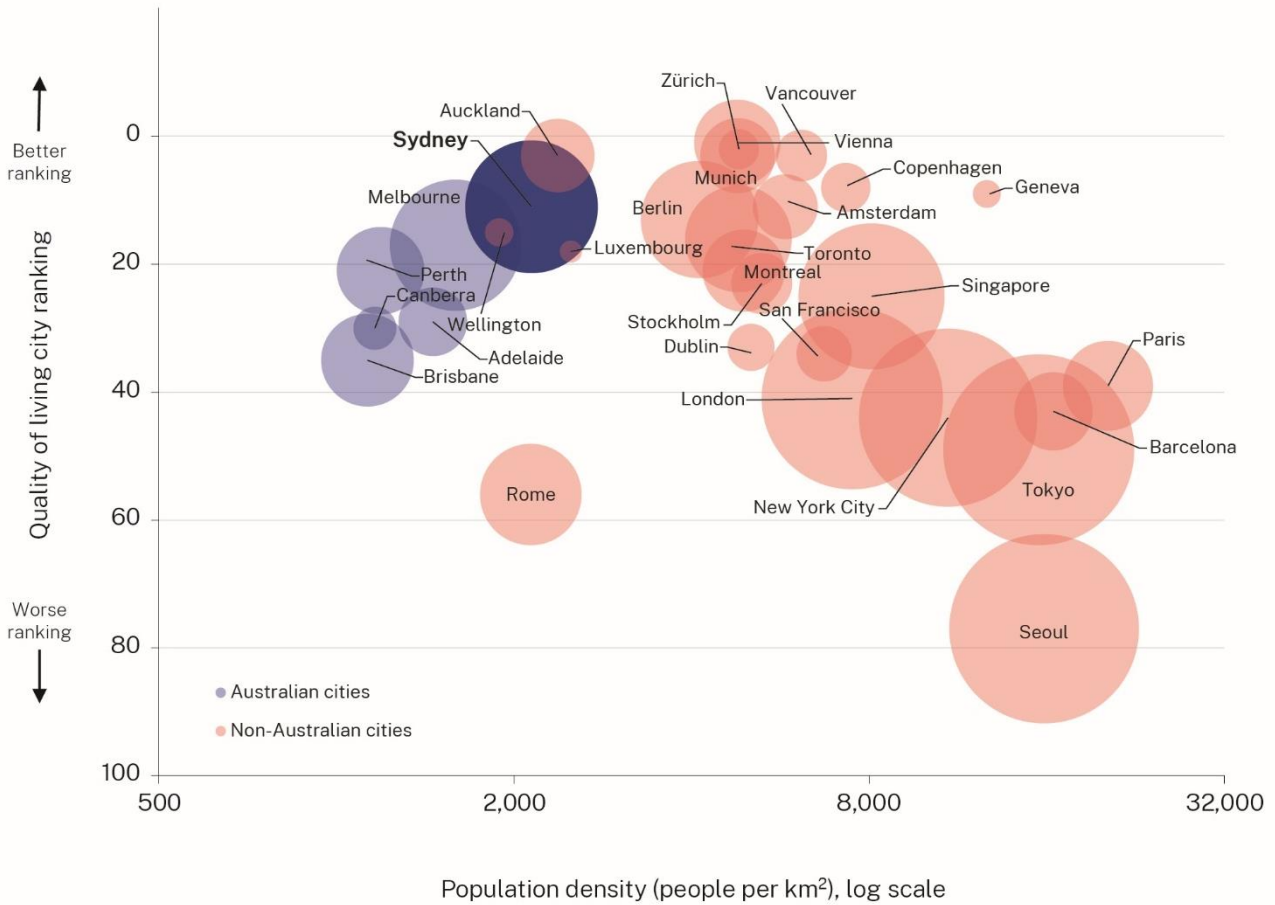
Note: Paris's 19 'arrondissements' are smaller in size and population than Sydney SA4s and London boroughs. Sydney's innermost SA4, City and Inner South, contains the city centre, but is large and therefore captured at around 5km from centre, on average.

Sources: ABS, NSW Productivity Commission, Citypopulation (2023)

Moreover, quality of life does not need to be sacrificed for more density. Several cities with similar populations to Sydney, but higher densities – such as Vancouver, Toronto, and Vienna – outrank Sydney on quality-of-life measures (Figure 8). While some aspects of density can detract from quality-of-life (such as air quality and noise levels), others may actually increase it (for instance, through improved access to services, and social and cultural amenities that increase with population).

Figure 8: Denser cities can sustain quality of life

Sydney’s population density compared to other cities, with bubble sizes proportional to city population, 2021



Note: Quality of life is measured by 39 indicators across 10 categories, including the economy, natural environment, political and social environment, crime and safety, and sanitation standards. To calculate population density, Citypopulation (2023) uses the population and land area data for major agglomerations, urban centres, and cities. These areas are defined by the National Statistical Offices of each country using the country’s latest data. Latest estimates for the cities in the figure are from 2018 onwards. The accuracy of estimates is dependent on the quality and availability of the data from each country’s National Statistical Office.
 Source: Citypopulation (2023); Mercer (2023)

4.1 Apartments can deliver housing affordability and diversity

Delivering new homes in convenient, high-amenity suburbs would be the best response to the challenges of Sydney’s growth. This is because putting new homes where households most want them – as measured by their willingness to pay relative to other locations – does the most to satisfy their unmet demand for housing.¹¹

Conveniently, the market is also most able to deliver the additional housing in these high-value locations. For example, a far higher level of density would be feasible in Woollahra than in Wilton.

¹¹ An alternative, albeit more subjective, measure is residents’ stated preferences for different dwelling types. The most comprehensive survey we are aware of for Australia comes from Grattan Institute (2011). Broadly speaking, their results showed that there was an oversupply of detached housing on the fringe of the city and an undersupply of medium and high-density dwellings.

This reflects that there are currently far fewer homes in Woollahra than people who would like to live there – and that people are willing to pay much more for the locational benefits, even if it means trading off space to live in an apartment. The low prices of apartments in more distant locations like Wilton, for example, would be unlikely to justify the cost of supplying an apartment building.

As discussed above, to jointly consider household preferences and development feasibility, economists use the ratio of prices to costs. Recall that if the price-to-cost ratio is closer to one, then a market is said to be in balance and functioning well. If the price-to-cost ratio is above one, this indicates that consumers want more housing, and the market will be willing to provide it.¹²

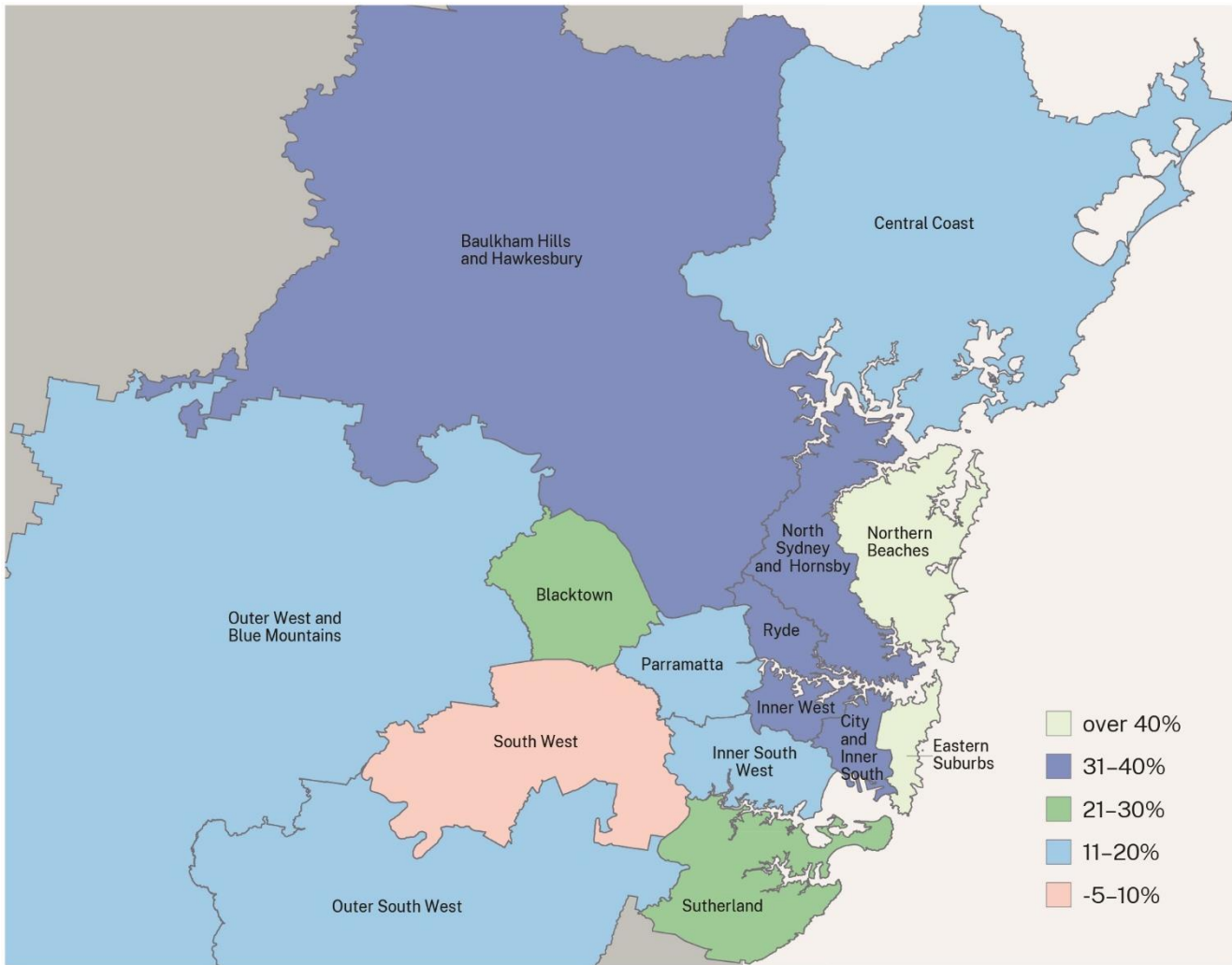
The locations with the greatest unmet demand – based on the price-to-cost ratio – are the eastern suburbs and north shore of Sydney (Figure 9). There is also substantial unmet demand in the inner city and inner west. A recent analysis of housing targets demonstrates a similar pattern (Tulip, 2023). Conversely, areas farther from the CBD, such as the ABS's South West area¹³, have a ratio close to one, indicating there is relatively little 'excess demand' for apartments in these areas. This should be a primary consideration in planning for new housing supply.

¹² If the ratio is substantially below one, it suggests that a region is likely to be in structural decline with a shrinking population.

¹³ The South West includes Liverpool, Fairfield, and Leppington.

Figure 9: Apartments sell for much more than they cost to supply close to the CBD

Apartment excess pricing, per cent of sale price, by SA4, 2023



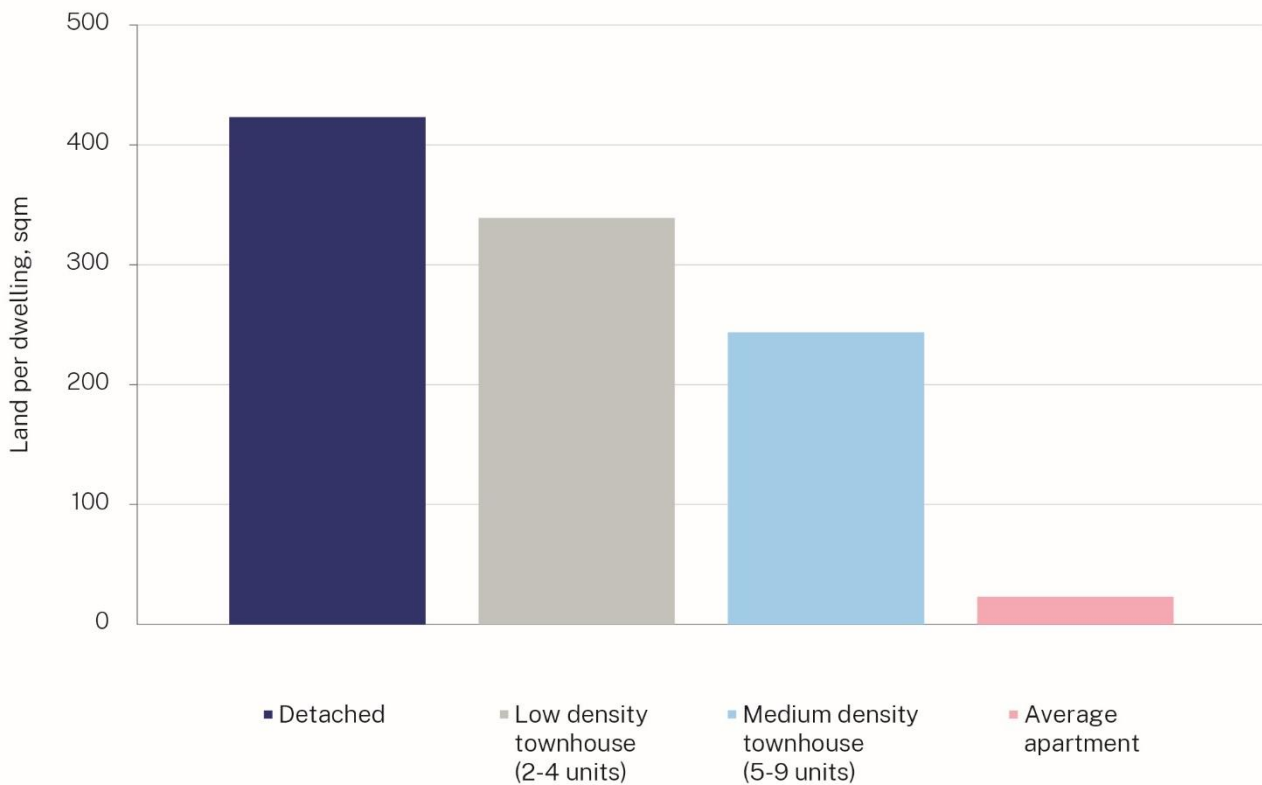
Note: Supply costs use ABS approval values, adjusted for average cost overruns (5 per cent), the difference between marginal and average construction costs (7 per cent), professional fees (2 per cent), marketing & sales costs (5 per cent), finance (9 per cent), and developer’s margins (17 per cent).

Source: ABS; CoreLogic; Jenner & Tulip (2020); NSW Productivity Commission

Apartments also makes it feasible to deliver hundreds of thousands of desirable dwellings. The major innovation of apartments, of course, is that they are less limited by the geographic scarcity of land. For instance, whereas a detached house in an inner suburb might require 425m² of land, an apartment might only require a land share of around 20m² per dwelling (e.g. an apartment building with 125 units on a 2,900m² block; Figure 10). If the scale of the task is to provide, for example, an additional 100,000 dwellings, then doing so via apartments would require five per cent the amount of land as doing so with only detached houses.

Figure 10: Houses take up *much* more land than apartments

Average land use by dwelling type, square metres per dwelling



Source: ABS; ABS (unpublished); NSW Productivity Commission calculations

An underrated benefit of apartments is their ability to provide housing diversity, with flexibility to meet the specific needs of a wide range of households. In particular, building more apartments means that households with different levels of income can mix and access the same locational benefits.

For instance, at one end of the spectrum, a luxury penthouse might substitute for a harbourside mansion. At the other, small studios might give a young single professional the ability to live within walking distance to the same public transport, restaurants, and other amenities that they value, but at a much lower price point. In the middle, more abundant and larger apartments can give families with children the opportunity to trade off space for convenience (and less housework).

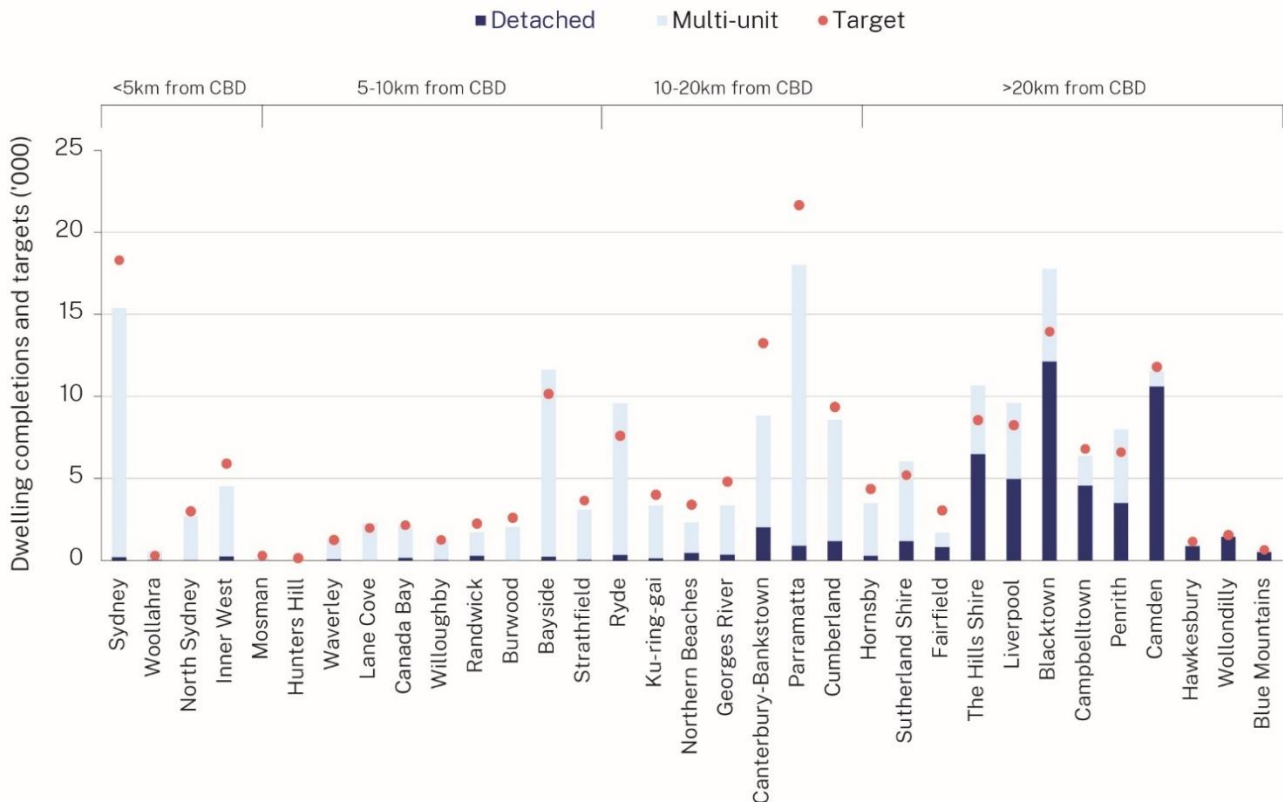
In contrast, the current approach to planning — which restricts supply in locations where people would most like to live — incentivises the same young, single professional to share living space with others to economise on costs, or a family with children to live in a detached house at the suburban fringe, farther from their jobs, in order to balance the household budget.

4.2 We aren't building where the need is greatest

So where is Sydney building? Fewer than 20 per cent of new dwellings were built within the 10 kilometres of the CBD between 2016 and 2021 (Figure 11). As shown in Figure 9, however, the inner ring of the city is where unmet demand is greatest.

Figure 11: Sydney's inner ring has added very little housing

Completions by LGA from 2016-21 as compared to Local Council Targets, ordered by distance from CBD



Note: Net dwelling completions from 2016-17 to 2020-21.
Source: DPE; Greater Cities Commission; NSW Productivity Commission

Sydney's more dispersed pattern of growth, since 2016, has been as much a matter of state, not local, government policy. Past strategic plans for Greater Sydney, including the most recent *A Metropolis of Three Cities*, have made it an explicit objective. These plans prioritised growth outside of the existing, highly productive economic centres by setting jobs and housing targets across Western Sydney, for example, rather than enabling more housing near existing jobs (or otherwise where demand and feasibility was greatest).

The long-running push to disperse Sydney's population has worked to some degree, albeit with relatively high social and fiscal costs (NSW Productivity Commission, forthcoming paper). This is because the feasibility of new dwellings on the fringe will increase if supply constraints squeeze demand (and drive up prices) further and further away from where people would prefer to live. But this largely reflects that households locked out of more exclusive suburbs are increasingly willing to make sacrifices in terms of living near their jobs (one in four in Greater Sydney are in the innermost suburbs), close to their family and friends, and near highly-valued amenities (e.g.

the beach), in return for access to relatively affordable housing.¹⁴ It seems uncontroversial, therefore, to argue that it would be better to provide access to housing options that didn't require such sharp and painful trade-offs.

Feasibility on the urban fringe can also be improved by investing in city-shaping infrastructure — motorways and train lines in particular — that cut travel times within and between sub-regions and improve accessibility across the city. Moreover, placemaking (such as upgrades to the public domain) can make it more attractive to live further away. This approach has been taken in Parramatta and is being attempted for the Western Sydney Aerotropolis. While these policies are not inherently bad, they tend to cost more to realise. A forthcoming NSW Productivity Commission paper finds that the costs of accommodating more people in inner suburbs, close to existing jobs and amenities, are substantially lower than elsewhere.

Given Sydney's struggle both to deliver enough housing, and to deliver it in the areas people most want to live, it is in some sense unsurprising that we are in the current affordability crisis. To address the crisis, dwelling targets should be adjusted to better match existing demand-supply imbalances. This would require increases in dwelling targets in inner city areas relative to the middle- and outer-rings of Greater Sydney.

¹⁴ The inner ring is defined as running from Pyrmont in the north, Surry Hills in the east, Port Botany in the south, and Petersham to the west.

5 Where and how should we increase density?

We have argued the state's housing affordability would benefit from increasing density in places where more people want to live. But what would this actually look like? Increasing density does not just mean rezoning more land for high-density development. Depending on the circumstances, it can be increased through a combination of:

- using high-value land more intensively by allowing taller buildings ('building up')
- incrementally increasing the number of dwellings in lower-density areas through dual-occupancies and medium density.

We discuss these in the remainder of this section.

5.1 Land could be used more efficiently in many places

Sydney's housing costs could be lowered by allowing apartment heights (or FSRs) above current levels, especially in inner suburbs. As highlighted in section 4.1, the major advantage of apartments is their ability to create more (and diverse) housing with the same locational benefits, without using additional land.

'Building up' is especially efficient in inner suburbs because it lets us more easily locate our homes close to jobs and amenities, or close to transport hubs that can move people there more quickly. From the taxpayers' perspective, increased density around transport hubs takes greater advantage of existing infrastructure capacity; that reduces or delays the need to expand infrastructure networks.

Accordingly, it would be cost-effective to increase average apartment heights in suburbs close to the CBD. This is because more apartments can be supplied with fewer buildings, economising on expensive land. Moreover, adding an extra storey does not add much to per-dwelling construction costs. In contrast, apartments in Sydney's middle and outer rings (for example, Liverpool and Paramatta) are already being built at close to their lowest-cost height. In those locations it would make sense to continue expanding supply with more buildings at their current levels of density.

5.2 Medium density has a role to play

Public discussions about housing often emphasise Sydney's 'missing middle' – that is, a lack of low-rise apartments, townhouses, and terraces (Daley, Coates and Wiltshire, 2018; Coates and Crowley, 2021).

'Medium density' was once a common development option. Many terrace houses and very small cottages were built in the late 19th century, and they account for one-fifth of the stock of housing in Sydney's (now) inner suburbs. In several inner LGAs, low-rise medium density is as prevalent as detached housing, and it is far more common in the City of Sydney, the local government authority that oversees central Sydney and its surrounds.

Still, there seems to be some concern among housing policymakers and the broader community that most new building is either: a) detached housing in outer suburbs or b) apartment buildings,

with little new medium density. Planners most commonly advocate using medium-density to transition suburbs from high to low density (City Plan Heritage, 2017).

The challenge of medium-density housing is that it is not an efficient use of space in central Sydney where land is increasingly scarce. It is much more expensive to produce housing for a given number of people with medium-density townhouses than with apartment buildings. That reflects townhouses' relatively less efficient land use.¹⁵ A typical townhouse development, with seven units per development, has an average cost of around \$1 million per unit. We estimate an apartment in a one- to three-storey building would cost \$840,000 to supply, on average, in Greater Sydney. These low-density options therefore represent a 60-90 per cent supply cost premium above the lowest-cost apartment height of 15 storeys, which costs around \$520,000 to supply.

Another way to look at it is that producing a sufficient volume of medium-density housing to meet Sydney's needs is more challenging: it could take 200-300 construction sites across Sydney suburbs to produce the same number of homes as just one large apartment development.¹⁶

These cost variations mean that in some locations it may be unfeasible to knock down a single dwelling to build only a small number of extra units (see Box 1). Even where it should be technically feasible, if landowners or developers believe that a site has potential for higher density than its current zoning, there is a strong financial incentive to hold onto a site and seek a rezoning.

Box 1: Low-Rise Housing Diversity Code

The NSW Government released a Low-Rise Housing Diversity Code in order to fast-track 'missing middle' developments, like dual occupancies, townhouses, and manor houses (blocks of three-to-four flats). The code faced council resistance initially, and it is widely viewed as failing to facilitate more housing. Korsanos (2022) attributes this to:

- Feasibility challenges. Yields from triplexes and fourplexes were too low to encourage redevelopment of detached housing in high-value areas.
- Site restrictions. The locations where small three-to-four-unit blocks might have been viable were often restricted by narrow street frontages.
- Councils undermined medium density. A number of councils made multi-dwelling housing non-permissible in their general residential zones.

Despite these limitations, medium-density development is still part of Sydney's long-term housing solution and may be able to play a role in incrementally increasing supply of well-located housing.

For many households, a townhouse or terrace provides improved amenity versus an apartment, for equivalent floorspace. An efficient market should provide a mix of housing forms to reflect the preferences of the community. Different property types will have different prices to reflect the market's assessment of their amenity.

¹⁵ Where land is inexpensive, medium and low-density dwellings are likely to be more profitable to supply than high-density apartments.

¹⁶ One Central Park, for example, includes 623 apartments, plus retail and open space. The average apartment building completed in Greater Sydney between June 2017 and March 2022 contained 72 units (ABS, unpublished).

There are areas where high-rise apartments should be immediately prioritised — for instance, beside new transport hubs. But some scope remains for allowing medium-density housing. There may be sites that suit specific developers (including existing owners), as we see with ‘granny flat’ and dual-occupancy development in Sydney. Greenfield developments are also incorporating denser dwellings (whether smaller detached lots or multi-unit dwellings).

A greater focus on higher-density where there is greatest unmet demand for housing could also increase the viability of medium density by lowering land values in other parts of the city.

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