APPENDIX

Demand

Persons by family and household groups

TOTAL: Persons by family and household groups (millions)	2019	2020	2021	2022	2023	2024	2025	% change (2019–2025)
Couple Family with Children	12.3	12.4	12.4	12.4	12.5	12.6	12.7	3%
Couple Family without Children	5.5	5.6	5.6	5.7	5.8	5.9	5.9	9%
Lone Parent Family	3.0	3.0	3.0	3.0	3.0	3.1	3.1	4%
Other Family Household	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1%
Group Household	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0%
Lone Household								
• Under 70 years	1.7	1.7	1.7	1.7	1.7	1.7	1.8	5%
• 70 or older	0.8	0.8	0.8	0.9	0.9	0.9	1.0	23%
Total Persons in Private Dwellings	**24.8**	**25.1**	**25.2**	**25.3**	**25.5**	**25.8**	**26.1**	**5%**
Persons in Non-private Dwellings	0.5	0.5	0.5	0.5	0.5	0.6	0.6	11%
Total Estimated Resident Population	**25.4**	**25.7**	**25.7**	**25.8**	**26.0**	**26.4**	**26.7**	**5%**

Economics parameters

	2019–20	2020–21	2021–22	2022–23	2023–24	2024–25
Unemployment rate (%)	7	7.3	6.5	6	5.5	5.3
Consumer price index (% change)	-0.3	1.8	1.5	1.8	2	2.3
Wage price index (% growth)	1.8	1.3	1.5	2	2.3	2.8
Wage Price Index (% growth real)	2.1	-0.5	0	0.3	0.3	0.5
Average Weekly Earnings (% growth real)	4.7	-1.1	-1.7	0.8	0.8	1.1
Rents (% growth real)	-0.1	-2.1	-1.8	-0.7	0	0.4

Impacts of economic variables on adjusted underlying dwelling demand

	2020	2021	2022	2023	2024	2025	2020–2025
Unemployment rate (%)[c]	7	7.3	6.5	6	5.5	5.3	
Impact on Household formation (change in Persons per 1,000 Households)	14.2	2.2	-6.1	-4.0	-4.0	-2.0	0.2
Impact on Demand ('000 dwellings)	-55.5	-9.1	24.0	16.0	16.4	8.7	0.6[d]
Average Weekly Earnings (% growth real)	4.7	-1.1	-1.7	0.8	0.8	1.1	
Impact on Household formation (change in Persons per 1,000 Households)	-12.7	2.9	4.7	-2.3	-2.3	-2.9	-12.5
Impact on Demand ('000 dwellings)	50.1	-10.8	-18.2	9.8	10.3	13.5	54.6
Rents (% growth real)	-0.1	-2.1	-1.8	-0.7	0	0.4	
Impact on Household formation (change in Persons per 1,000 Households)	0.1	-4.2	-3.7	-1.2	0.2	0.9	-7.9
Impact on Demand ('000 dwellings)	-0.3	16.7	14.9	5.3	-0.4	-3.4	32.7
Aggregate impact of economic factors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2020–2025**
Impact on Household formation (change in Persons per 1,000 Households)	1.6	0.9	-5.1	-7.5	-6.1	-4.0	-20.2
Impact on Demand ('000 dwellings)	-5.7	-3.2	20.6	31.2	26.4	18.7	87.9

Notes:

a: 'Impact on demand' is relative to underlying dwelling demand.

b: Estimates of impact is based on summation of impacts on capital cities and rest of state/territory. The actual economic parameters for the individual areas vary from, but are consistent with the national average.

c: Change in unemployment rate is determinant of impact on demand.

d: Aggregate impact 2020-2025 of unemployment on demand is positive despite also being positive for household formation. This reflects timing with positive effects in later years off a higher base.

Supply

Supply-side data quality

The ABS provides an extensive amount of relatively high frequency time series data on new dwelling construction covering the evolution of the supply process from finance approval, building approval, and commencement all the way through to completion. The construction data is available at the national and state level for all dwelling types. Building approvals are available in a time series format at the SA2 level.

Dwelling Completions

An estimate of dwelling completions by dwelling type on either a monthly or quarterly basis at the SA2 level would provide a major improvement in the usefulness of the data. This would complement the SA2 building approvals data and allow a more detailed estimate of new dwelling supply at this level.

Demolitions

The ABS recently released a preliminary series on small area dwelling demolitions for the 2016 to 2019 period in NSW, VIC and QLD. However, there is currently now no data available on dwelling demolitions. Most analysts estimate the number of demolitions using Census data, which is reported every five years. The housing stock is reported at each Census and when this data is released, demolitions are then calculated as the difference between the housing stock at each Census less the number of completions.

The shortcomings with this approach are the following:

- The estimate is not timely because the data is released around 10 months after Census night.
- It is not possible to accurately estimate demolitions on either a monthly, quarterly or even yearly basis between Census surveys, leaving analysts to approximate high frequency estimates by calculating a trend.

In more positive news, the ABS is currently developing data that will be able to provide a more timely estimate of demolitions, but that this won't be available until 2022.

Geocoded National Address File (G-NAF)

The G-NAF provides a record of the spatial location of each address in Australia and where an address is within a strata complex, it provides information on the classification of the dwelling type.

The address data provides general information about where a subdivision has been constructed and where additional dwellings could be built. New addresses are registered, and this provides a guide about the distribution of strata dwellings, particularly where there is a control total of strata in a region (e.g. ABS Mesh Block, LGA etc).

The data can also be useful because it can be used to provide an indication of the number of dwellings in a strata complex and when new dwellings are built.

However, there are shortcomings with this data:

- It merely shows the number of addresses per property regardless of whether there is a dwelling on the site, or not. The data doesn't reveal whether there is a separate house on the site or if one existed before being demolished.
- In strata-titled developments, the number of addresses is just recorded as one unit regardless of whether it is residential or non-residential and provides no information about the number of dwellings.
- In some situations, multiple addresses are registered on the same site because the data is provided from different agencies that no longer exist. This problem can be sometimes addressed by using broad assumptions about dwelling concentration in regions.
- The data may not indicate dwellings that have been demolished. Most demolitions are detached dwellings and a property may keep the same address if it is demolished and replaced with an apartment building.

Data quality

The availability of data from state government planning agencies on recently completed and forecasted housing supply varies significantly. NSW and Victoria provide detailed forecasts of housing supply in their respective capital cities even at the ABS Mesh Block level. Forecasts for regional housing supply is generally only available from local government and is calibrated from population projections.

Table 1 shows a qualitative assessment of data quality in each state. Developing a most consistent housing supply data collection between state jurisdictions would greatly assist the policymakers and research analysts.

Land availability

Another area where data is seemingly limited is land availability. Land availability sometimes does not just reflect the quantity of land that is zoned residential. Indeed, it is important to understand the infrastructure (water, power, roads etc.) required before land is considered ready for development. A better understanding of this aspect of the data would help in assessing potential longer term supply.

Table 1: Data quality and availability

	Stock and recent acitivity			Future Pipeline		
State	Greenfield	Small scale infill	Major infill	State	Greenfield	Major infill
NSW						
Vic						
Qld						
WA						
SA						
Tas						
NT						
ACT						

Source: SGS Economics. ☐ = data available and good quality/coverage. ☐ = data available, poorer quality/coverage. ☐ = no data available. The assessment has been done only where ABS data is available.

Methodology

We broadly follow the methodology used by Saunders and Tulip in their model of the Australian housing market.[80] Instead of modelling the value of building approvals, we model the number of completions and adjust the lag structure to account for the lag between our independent variables and dwelling completions. Furthermore, modelling the number of completions rather than the value of building approvals means real household disposable income didn't show significant long-term explanatory power. Our model will be further refined in our research.

The model is detailed in Equation 1.

Equation 1

$$\Delta Comp_t = \alpha + \beta 1(\Delta Comp_{t-1}) + \beta 2(\Delta Comp_{t-12}) + \beta 3(\Delta P_{t-3}) + \beta 4(\Delta R_{t-4}) + \beta 4(\Delta GST_{t-1}) + e_t$$

Comp = private sector dwelling completions (ABS Cat No. 8752.0)

R = real average standard variable mortgage rate for owner-occupiers (RBA Table F5).

P = real weighted established house price for Australia (ABS Cat No. 6416.0)

GST = dummy variable equal to 1 in the September quarter 2000 to account for the introduction of the GST.

e_t = error

α = constant

Real variables have been deflated by the trimmed mean measure of underlying inflation (ABS Cat No. 6401.0 and RBA Table G1).

Table 2: Private sector dwelling completions key coefficients (Q3 1988: Q2 2020 sample period)

Variable	Coefficient	t statistic
Δ $Comp_{t-1}$	-0.2195 (0.0788)	-2.786 **
Δ $Comp_{t-12}$	-0.1429 (0.0659)	-1.895 *
Δ R_{t-4}	-0.039 (0.0096)	-4.077 **
Δ P_{t-3}	0.9017 (0.2175)	4.146 **
GST_{ti-1}	-0.1480 (0.0502)	-2.946**
GST_t	-0.1761 (0.0494)	-3.564 **
GST_{t+1}	0.1923 (0.0482)	3.989 **
GST_{t+2}	0.1167 (0.0477)	2.448 **
R^2 = 0.53	**Obs = 123 after adjustments F = 9.45**	**DW =1.94**

Comp and P are in natural logs.

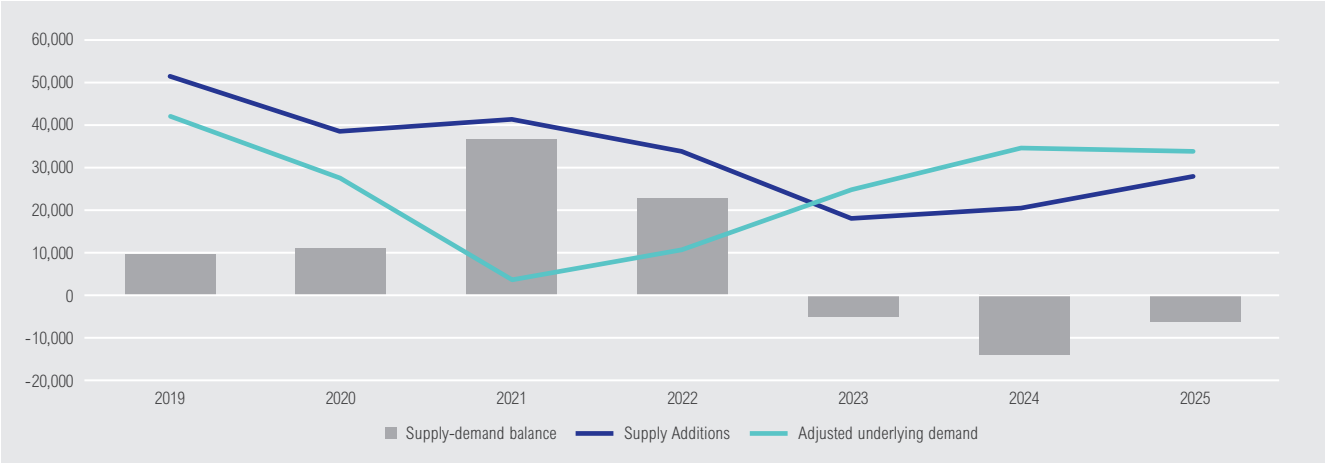
* indicates significant at the 10% level.
** indicates significant at the 5% level.

80 Saunders T and Tulip P (2019) A Model of the Australian Housing Market, Reserve Bank of Australia.

Supply-demand balance

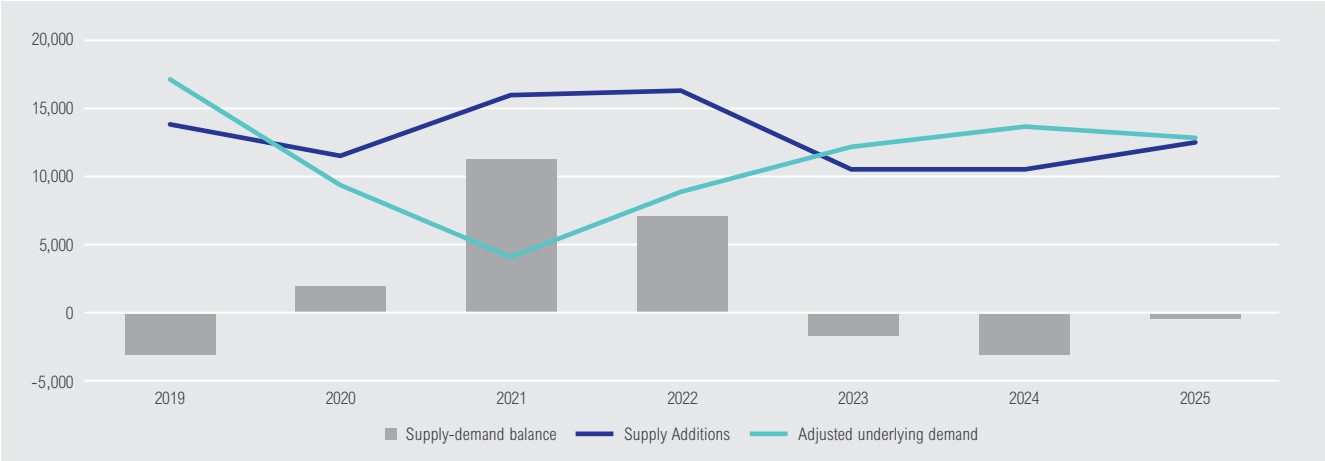
New South Wales

Greater Sydney



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	42,100	27,600	3,500	10,800	24,600	34,500	34,000
Change in annual underlying demand	36,600	25,300	2,600	4,500	16,600	28,200	29,500
New net annual dwelling supply	51,400	38,500	40,200	33,700	19,400	20,500	27,800
Supply-demand balance	9,300	10,900	36,700	22,900	-5,200	-14,000	-6,200

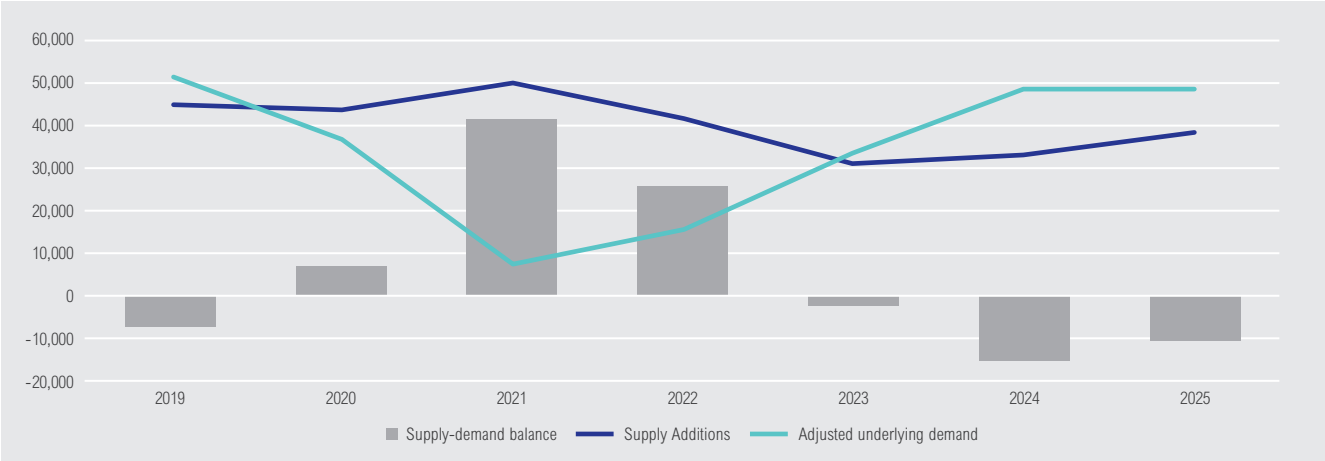
Rest of New South Wales



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	16,400	9,200	4,200	8,700	11,800	13,200	12,400
Change in annual underlying demand	12,600	10,700	7,800	8,000	9,300	10,700	10,800
New net annual dwelling supply	13,400	11,100	15,400	15,700	10,200	10,200	12,100
Supply-demand balance	-3,000	1,900	11,200	7,000	-1,600	-3,000	-300

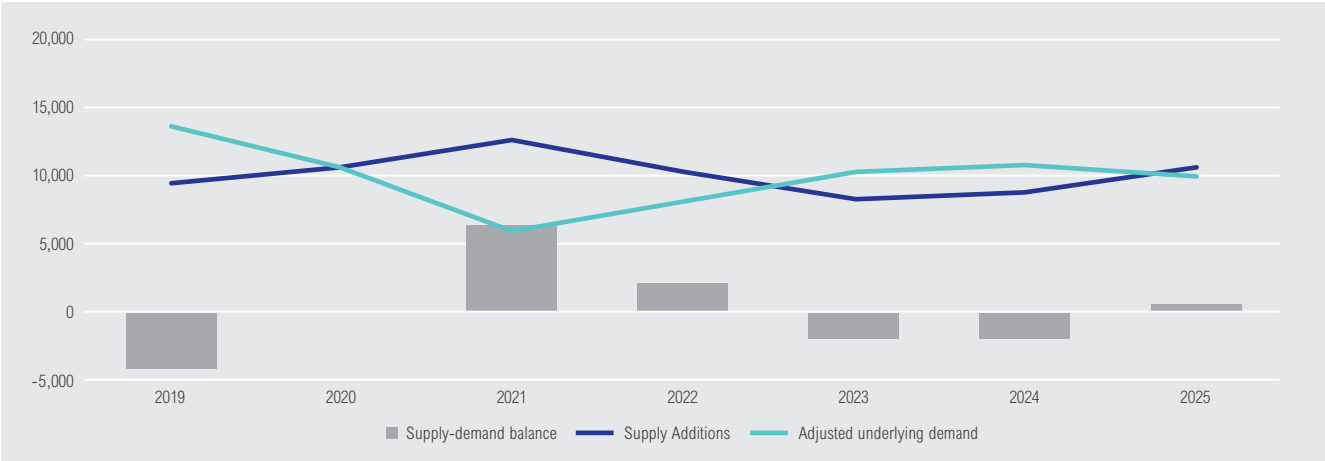
Victoria

Greater Melbourne



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	52,300	37,500	7,700	15,900	33,900	49,200	49,300
Change in annual underlying demand	47,800	38,400	6,000	11,000	25,700	42,800	44,400
New net annual dwelling supply	45,400	44,300	50,100	42,200	31,400	33,700	39,100
Supply-demand balance	-6,900	6,800	42,400	26,300	-2,500	-15,500	-10,200

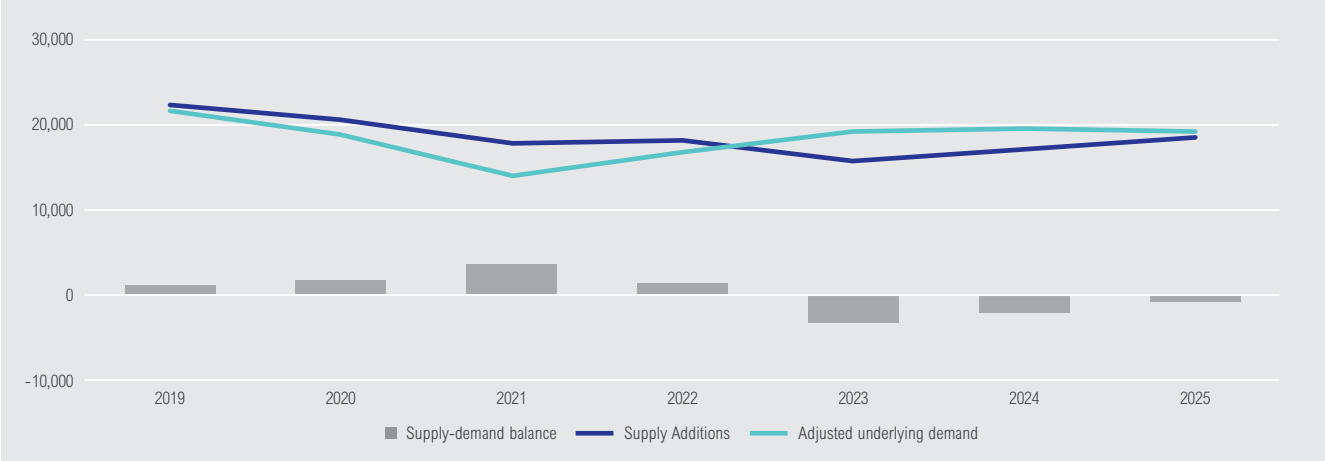
Rest of Victoria



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	13,500	10,600	6,200	8,200	10,300	10,700	10,000
Change in annual underlying demand	11,100	10,700	8,000	8,400	8,800	9,100	9,000
New net annual dwelling supply	9,500	10,600	12,500	10,300	8,400	8,900	10,600
Supply-demand balance	-4,000	0	6,300	2,100	-1,900	-1,800	600

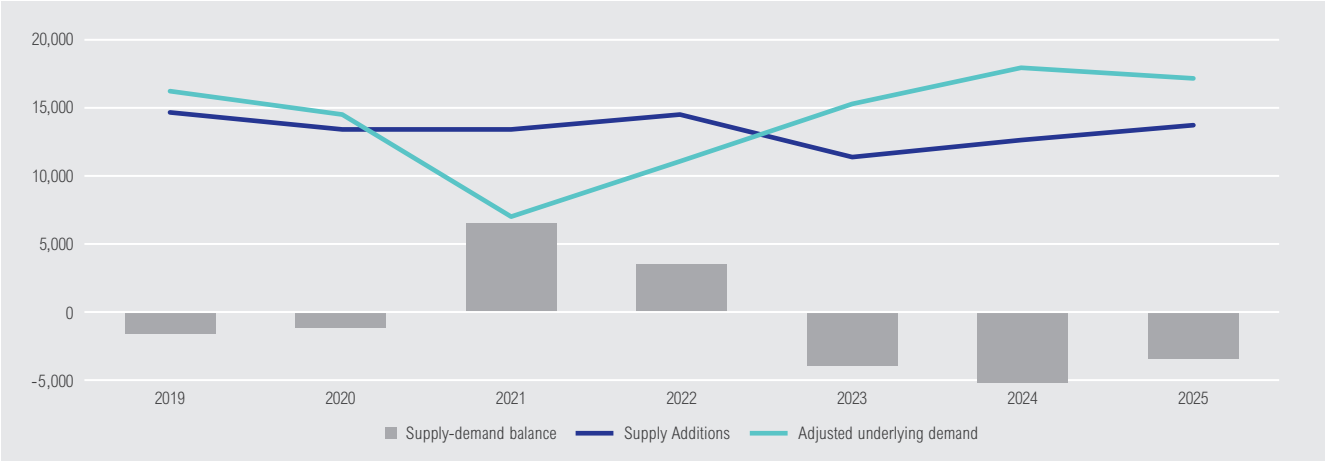
Queensland

Greater Brisbane



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	22,000	18,800	13,200	16,600	19,300	19,500	19,100
Change in annual underlying demand	22,700	18,800	11,900	13,200	15,300	16,400	16,800
New net annual dwelling supply	23,000	20,900	17,500	18,100	15,100	17,000	18,400
Supply-demand balance	1,000	2,100	4,300	1,500	-4,200	-2,500	-700

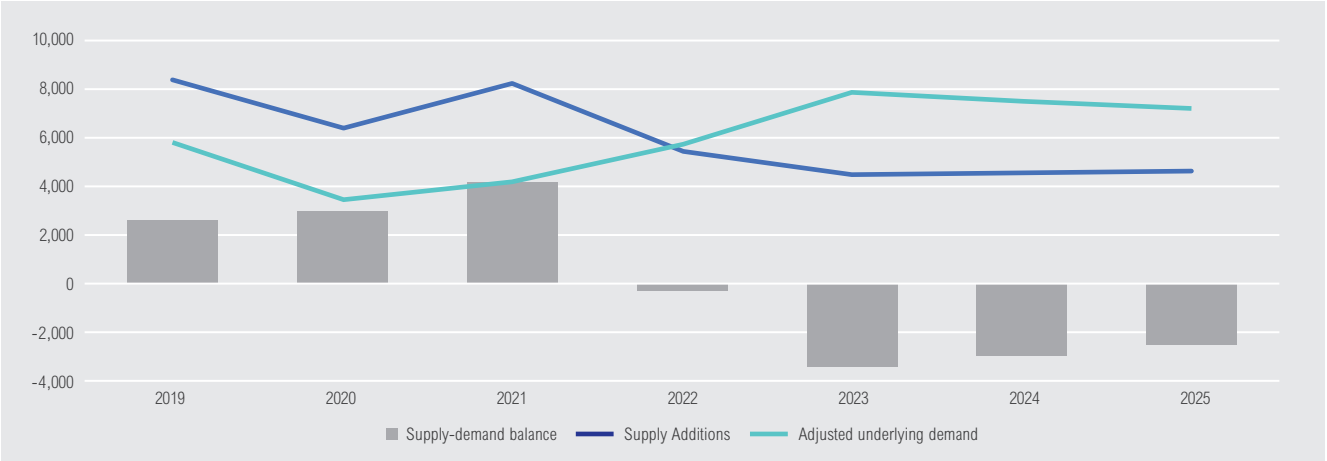
Rest of Queensland



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	16,500	14,800	7,200	11,300	15,600	18,200	17,500
Change in annual underlying demand	17,100	14,600	9,400	10,400	13,400	15,900	16,100
New net annual dwelling supply	14,900	13,700	13,700	14,800	11,600	12,900	13,900
Supply-demand balance	-1,600	-1,100	6,500	3,500	-4,000	-5,300	-3,600

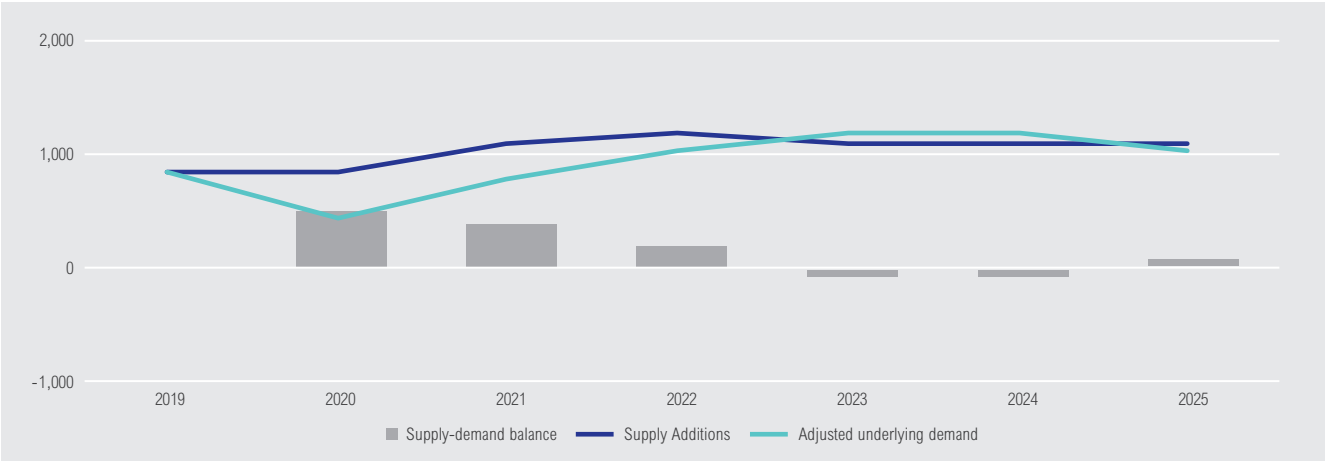
South Australia

Greater Adelaide



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	5,800	3,400	4,100	5,700	7,900	7,500	7,200
Change in annual underlying demand	7,300	6,100	2,100	3,200	5,300	5,500	5,900
New net annual dwelling supply	8,400	6,400	8,300	5,400	4,400	4,500	4,600
Supply-demand balance	2,600	3,000	4,200	-300	-3,500	-3,000	-2,600

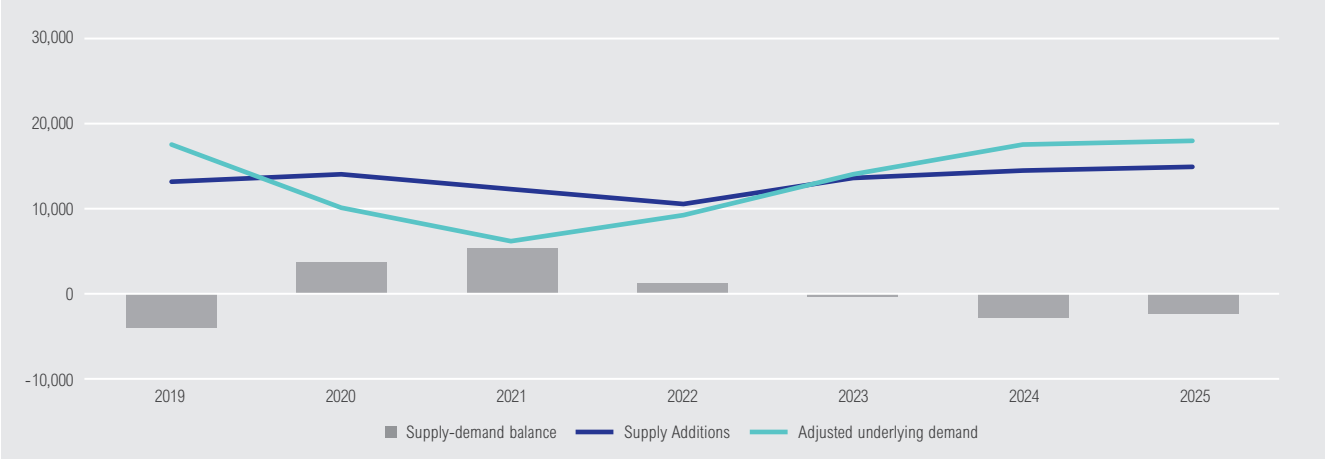
Rest of South Australia



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	900	400	800	1,100	1,300	1,300	1,100
Change in annual underlying demand	1,300	1,200	800	800	900	900	900
New net annual dwelling supply	900	900	1,200	1,300	1,200	1,200	1,200
Supply-demand balance	0	500	400	200	-100	-100	100

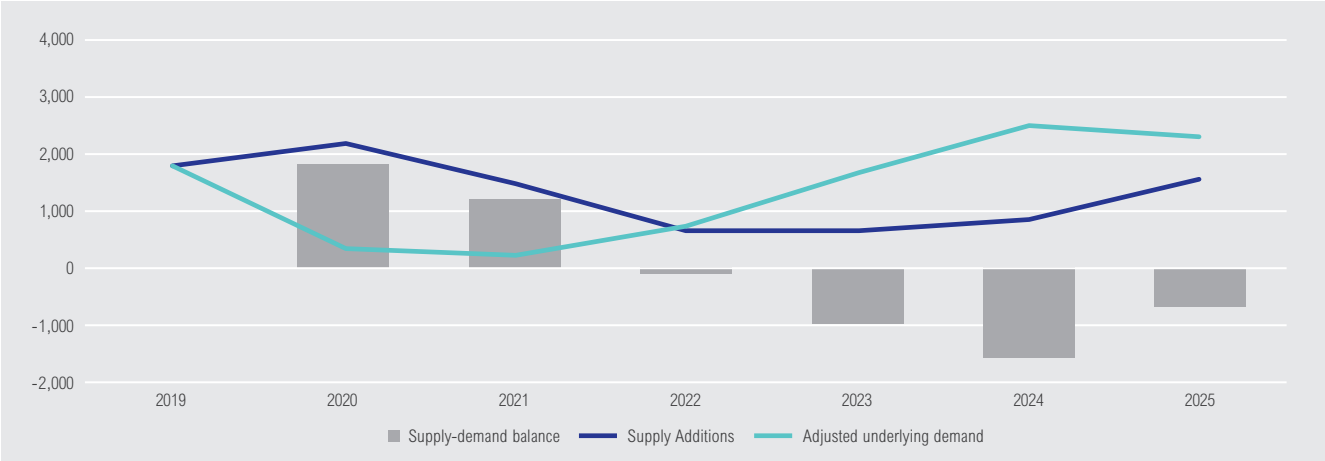
Western Australia

Greater Perth



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	16,800	9,900	6,200	8,900	13,600	16,700	16,900
Change in annual underlying demand	13,300	11,600	6,700	7,600	11,400	14,600	15,000
New net annual dwelling supply	12,700	13,600	11,600	10,200	13,000	13,900	14,400
Supply-demand balance	-4,100	3,700	5,400	1,300	-600	-2,800	-2,500

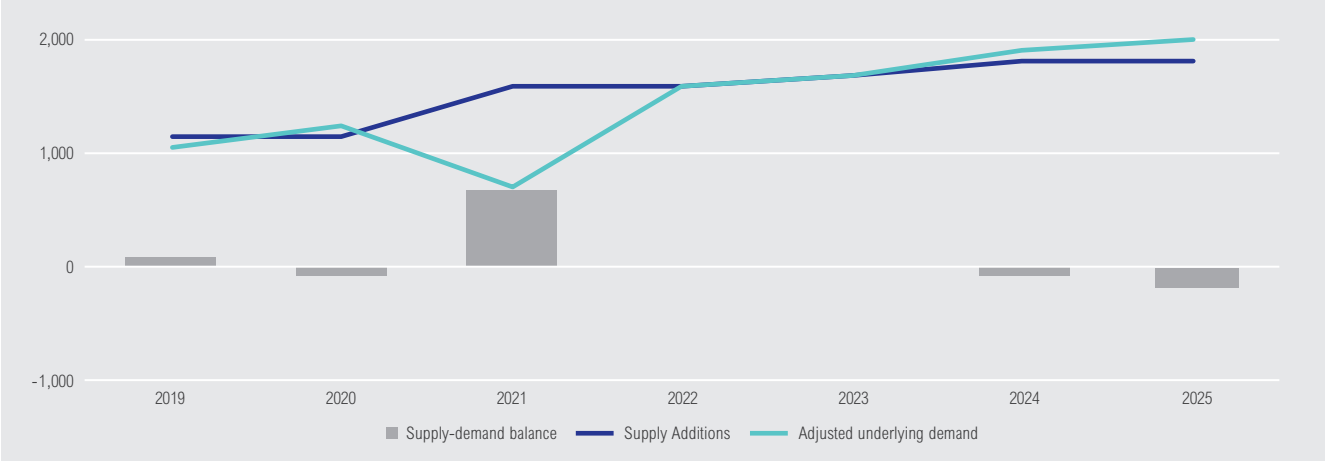
Rest of Western Australia



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	1,800	400	300	800	1,700	2,500	2,300
Change in annual underlying demand	1,300	900	400	500	1,200	2,000	2,000
New net annual dwelling supply	1,800	2,200	1,500	700	700	900	1,600
Supply-demand balance	0	1,800	1,200	-100	-1,000	-1,600	-700

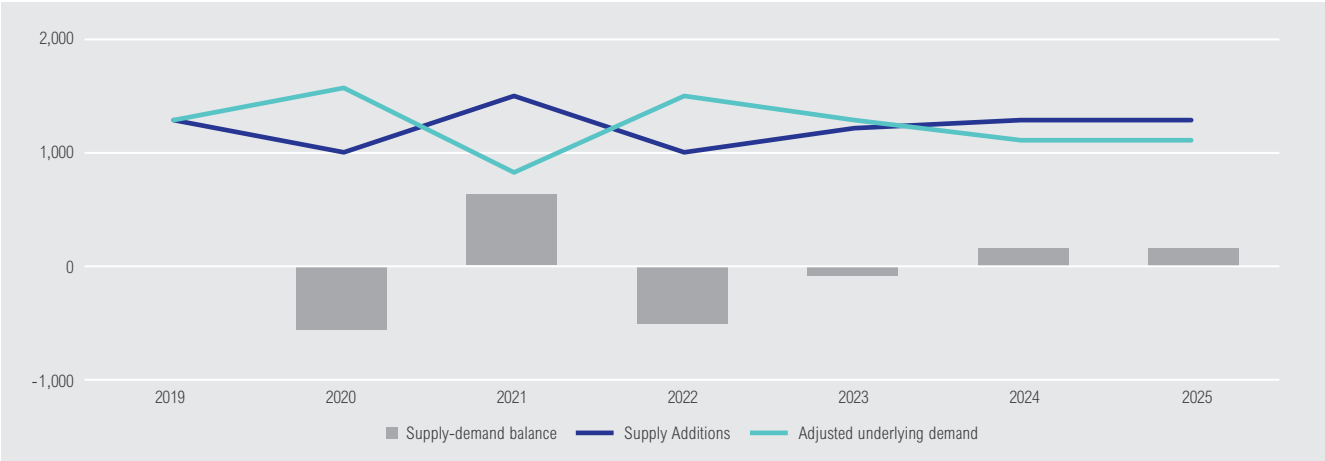
Tasmania

Greater Hobart



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	1,100	1,300	800	1,600	1,700	1,900	2,000
Change in annual underlying demand	1,800	1,600	1,000	1,100	1,300	1,700	1,700
New net annual dwelling supply	1,200	1,200	1,600	1,600	1,700	1,800	1,800
Supply-demand balance	100	-100	800	0	0	-100	-200

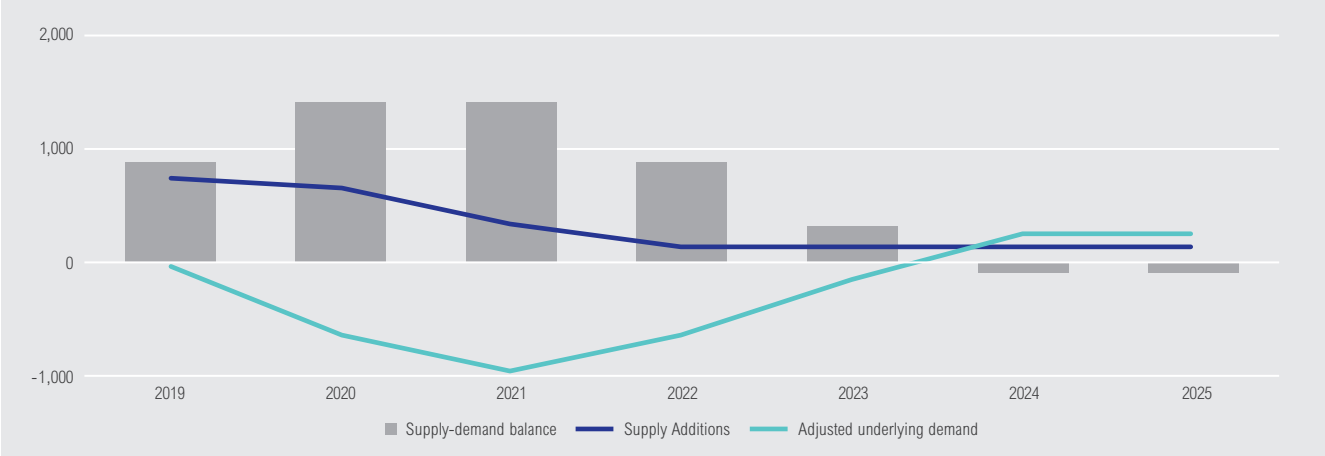
Rest of Tasmania



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	1,300	1,600	800	1,500	1,300	1,100	1,100
Change in annual underlying demand	1,900	1,600	1,100	1,200	1,100	900	900
New net annual dwelling supply	1,300	1,000	1,500	1,000	1,200	1,300	1,300
Supply-demand balance	0	-600	700	-500	-100	200	200

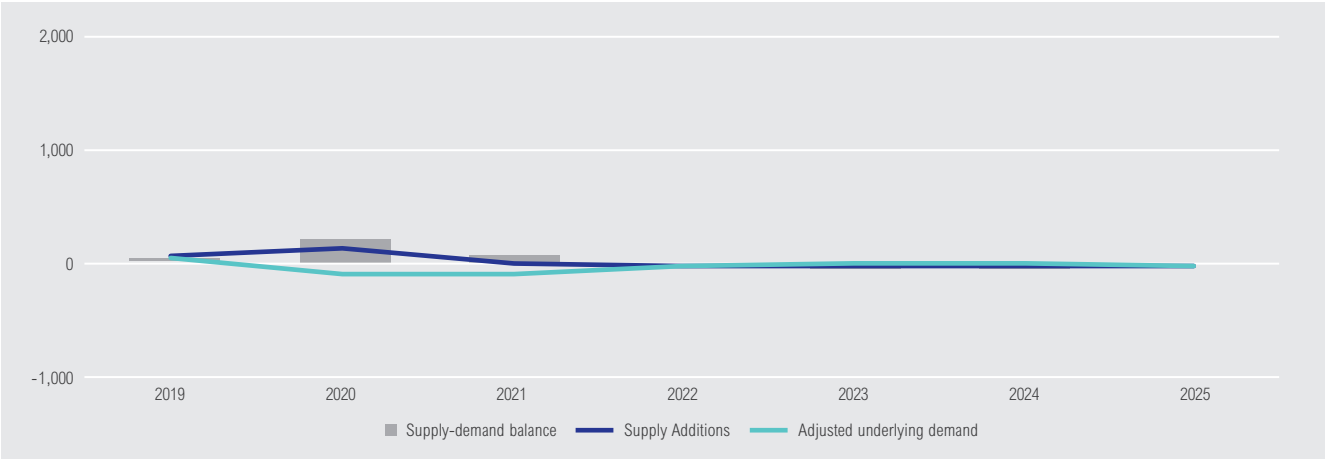
Northern Territory

Greater Darwin



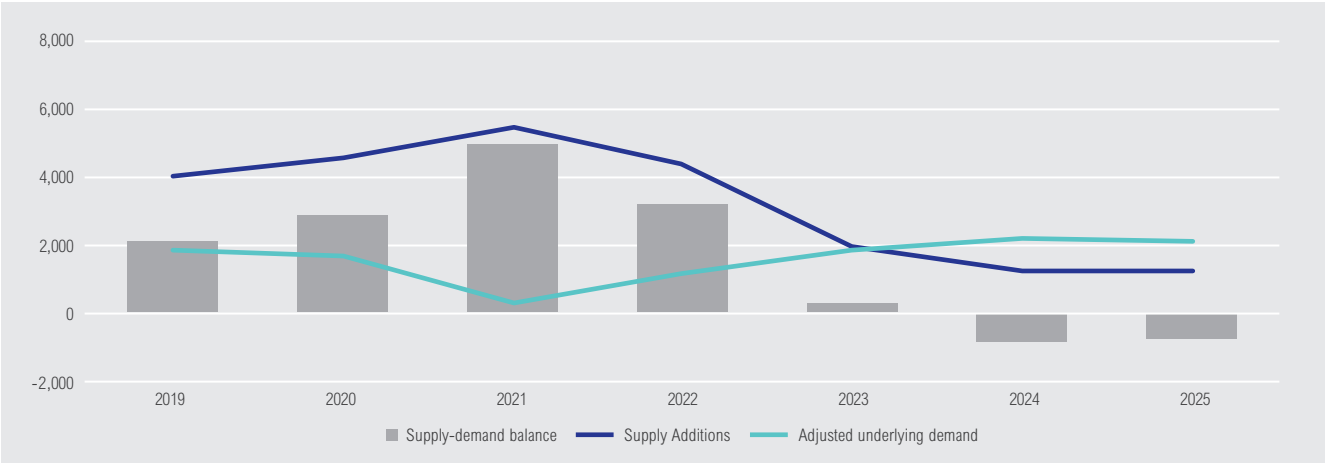
Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	-100	-700	-1,000	-700	-200	200	200
Change in annual underlying demand	-100	-800	-800	-900	-300	100	100
New net annual dwelling supply	700	600	300	100	100	100	100
Supply-demand balance	800	1,300	1,300	800	300	-100	-100

Rest of Northern Territory



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	100	-100	-100	0	50	50	0
Change in annual underlying demand	200	-50	-50	-50	0	0	0
New net annual dwelling supply	150	250	50	0	0	0	0
Supply-demand balance	50	350	150	0	-50	-50	0

Australian Capital Territory



Year	2019	2020	2021	2022	2023	2024	2025
Change in adjusted underlying demand	1,900	1,700	300	1,200	1,900	2,300	2,200
Change in annual underlying demand	2,700	1,800	1,200	1,000	1,600	1,900	2,000
New net annual dwelling supply	4,100	4,700	5,500	4,500	2,100	1,400	1,400
Supply-demand balance	2,200	3,000	5,200	3,300	200	-900	-800