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Renewing the Compact City

Interim Report

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Renewing the Compact City: Interim Report

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Executive Summary

The Conveyancing (Strata Titles) Act was introduced in 1961 in New South Wales (NSW) and created a mechanism for the vertical sub-division of multi-unit housing. Since then, residential strata dwellings account for an increasing share of the built environment with now over 27% of all dwellings in the Greater Sydney Statistical Area classified as a flat, unit or apartment. As many of these structures begin to age, and urban ambitions change, there is an emerging recognition that the particularities of strata title make period renewal of the built environment a complex undertaking.

This report presents data from the first stage of a research project called Renewing the Compact City which aims to investigate economically viable and socially sustainable approaches to renewal of existing multi-unit strata titled residential development in Sydney. This first stage aimed to established the characteristics of strata schemes across Sydney, where, how big and how old they are, and also who lives in strata. The baseline data presented gives a comprehensive overview of the strata sector in Greater Sydney.

Greater Sydney has the largest number of residential strata properties of Australian cities, with a total of 535,427 lots across 35,619 schemes that are larger than 2 lots, as of 31 December 2013. In earlier periods much of the strata development followed the main train lines, with the exception of the northern beaches area, however over time, strata development has become more common throughout the Sydney region. A basic profile of these lots shows that:

- Approximately one third (33.1%) of these schemes were registered before 1980.
- 20,742 (58.2%) of all schemes are between 3 and 10 lots in size.

The tenure profile of flats, units and apartments in the Greater Sydney Statistical Area from the Australian Bureau of Statistics 2011 census shows that:

- 31.4% of higher density dwellings are owner occupied
- 42.5% of higher density dwellings are privately rented
- 6.9% of higher density dwellings are public or community housing
- 19.2% of higher density dwellings are visitor only or unoccupied

People who live in flats, units and apartments in Greater Sydney are more likely to be:

- 25-54 years old (31.3%)
- Lone person households (34.4%)
- In the labour force (73.7%)
- In professional occupations (45.5%)
- Born overseas (51.9%)

However, these headline figures mask substantial regional variation of the concentrations of strata properties and the communities of people that live in strata, as demonstrated in Appendix A.

Finally, this report presents the outcomes of a feasibility assessment of renewal potential of existing strata stock under current market conditions. Eastern suburb, north shore and locations near the ocean or harbour present the most favourable market conditions to make strata renewal feasible. The feasibility model reports that 15% of existing strata schemes could be feasibly redeveloped to 3 or less storeys. However, when factoring in dwelling prices based on median incomes of local households, less than 3% of existing strata could be feasibly redeveloped at levels considered affordable to local households.

Introduction

Across Australia, city planners are focusing on urban renewal as a major driver for change both to provide additional housing for growing urban populations and to implement widely accepted principles of sustainability. The dominant model involves renewal of existing urban areas along transport corridors and hubs, particularly in and around activity concentrations such as existing town centres. The compact city – 'building up' rather than 'building out' – has become the planning orthodoxy of the 21st century in most of the world (Forster, 2006; OECD, 2012).

Over a long period, efforts to implement urban consolidation and densification policies have focused on renewal of former industrial land often located in central locations. As the availability of these sites slowly diminish, there is an emerging recognition that implementing these policies in areas identified for renewal will require a reworking of existing residential areas in Sydney (Easthope *et al.*, 2013).

While there have always been complications in the implementation of major urban renewal plans related to the often fragmented ownership structure of urban land and competing claims over its use, renewal of existing strata titled housing enters new, and largely untested, territory (Easthope *et al.*, 2013). Not only do renewal plans face the challenges of complex horizontal land subdivisions, strata title has effectively created a further vertical subdivision on each land parcel. Given the role multi-unit housing plays within the Sydney housing market, the potential social and economic impacts are significant.

This report provides base line information identifying the location, scale, market value, and social profile of the strata sector across greater metropolitan Sydney. This information was used to inform later stages of the project, including a community survey of strata residents and owners across the greater Sydney metropolitan area, and stakeholder and community scenario testing workshops. The community workshops will be based in six different locations across Sydney. Each location is identified and profiled in this report. Results from the community survey and stakeholder and community workshops will be published in a subsequent report.

This report is split into three sections. The first section provides an overview of strata development, population profile and market value across the Greater Sydney Statistical Area. The second section models the feasibility of redeveloping strata schemes under current market conditions. The final section details the data sources used to build the Greater Sydney and case study profiles and highlights some of the limitations and issues related to the use of this data.

This study was undertaken by researchers at the University of New South Wales funded under the Australian Research Council Linkage grant programme (ARC Linkage LP130100400) with industry partners, including UrbanGrowth NSW, Strata Community Australia NSW, Australian College of Community Association Lawyers, the Owners Corporation Network of Australia and NSW Fair Trading.

Greater Sydney Statistical Area Profile

This section profiles various characteristics of the strata units and the population within strata units across the Greater Sydney Area. It is separated into three parts which reflect the different data sources used to compile the figures. The first two parts, dwelling profile and community profile, are based on an analysis of Australian Bureau of Statistics (ABS) 2011 census of population and housing and provide an overview of the scale, structure, tenure and location of flats, units and apartments (henceforth higher density dwellings) across Sydney and the population that live in these dwelling types. The third part profiles different attributes of strata schemes across Sydney based on records from NSW Land and Property Information (LPI). All figures reported are based on the Greater Sydney Statistical Area geography as defined by the Australian Bureau of Statistics 2011.

Dwelling Profile

Sydney has the highest proportion of private sector higher density housing of Australia's largest cities and these dwellings account for approximately 27.4% (see Table 1) of all dwellings across Sydney. Unoccupied dwellings have been included in these figures as they account for 6.1% of all dwellings and 8.9% of flats, units and apartments across Sydney (see Table 2). While there are significant geographical concentrations of higher density dwellings in central Sydney, Eastern suburbs, North Sydney, Parramatta, and along the northern rail corridor, there is a wide distribution of this form of housing across the metropolitan area, see Figure 1.

Table 1 Dwelling Structure of all occupied and unoccupied private dwellings in Greater Sydney

Higher Density Dwellings		Other Dwellings	
468,950	27.4%	1,241,714	72.6%

Note: Includes dwellings in all tenure and landlord categories

The tenure profile of these dwellings differs from the remainder of the housing market with only 31.4% of flats, units and apartments being owner occupied (outright or with a mortgage) compared with 68.2% of other dwelling types (see Table 2). Dwellings that are privately rented, vacant or fit into other tenure categories (including visitor only households) represent some form of investment ownership and account for approximately 61.7% of the total stock of high density dwellings, compared with 28% for the balance of dwellings in Greater Sydney. There are, however, some zones where there are concentrations of owner occupier rates of above 50% (see Figure 2).

Table 2 Tenure Profile of dwellings in Greater Sydney

	Higher Density Dwellings		Balance of Greater Sydney	
Owned outright	59,377	12.7%	403,361	32.5%
Owned with a mortgage	87,876	18.7%	443,195	35.7%
Private rental	199,133	42.5%	205,809	16.6%
Social housing	32,272	6.9%	46,881	3.8%
Other tenures (including Visitor only)	48,443	10.3%	66,267	5.3%
Unoccupied	41,843	8.9%	76,208	6.1%
Total	468,944	100%	1,241,721	100%
*Investor Owned**	*289,419*	*61.7%*	*348,284*	*28.0%*

* Includes 'Private rental', 'Other tenures' and 'Unoccupied' categories

Figure 1 Total flats, units and apartments at Statistical Area Level 1

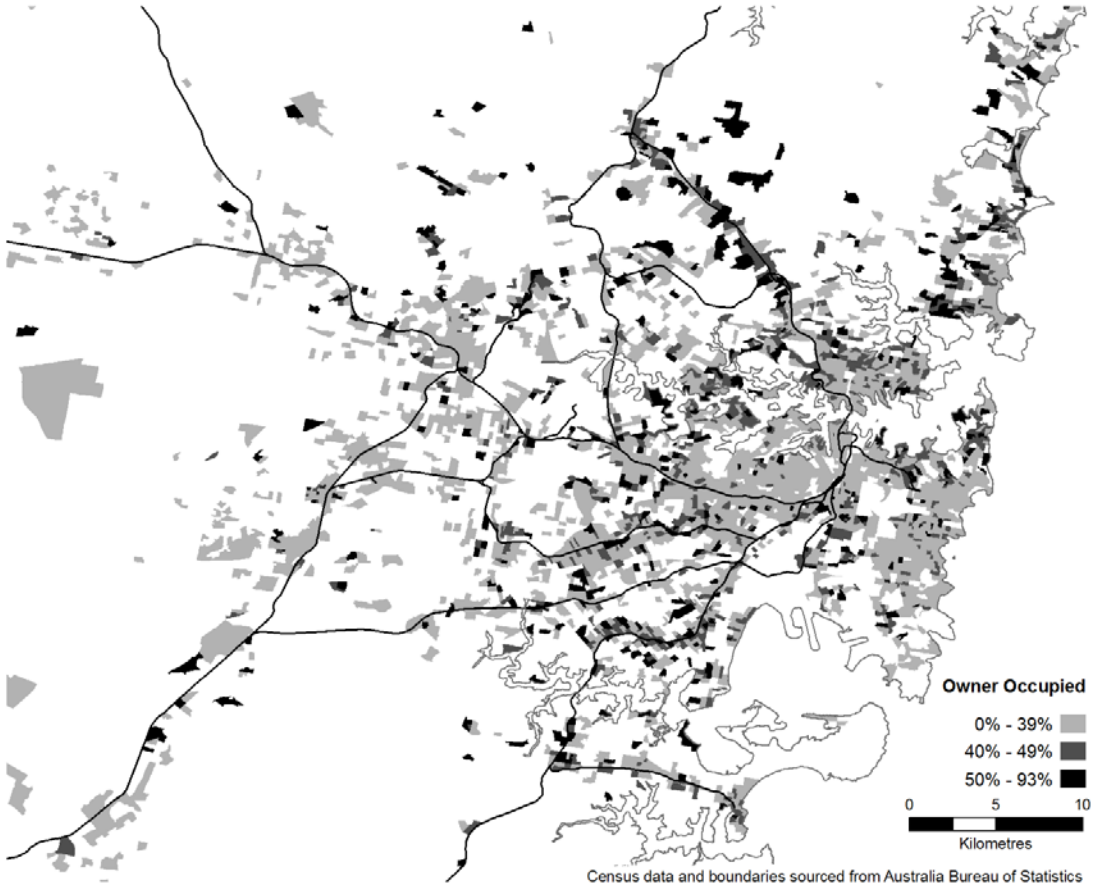

Figure 2 Owner occupancy rates at Statistical Area Level 1

Community Profile

All figures are derived from place of enumeration datasets to enable dwelling characteristics to be cross-tabulated with other population and housing variables. Unless indicated otherwise, figures are based on population in private sector housing and therefore exclude people living in state owned housing or housing rented through community or other housing agencies. This enables a point of comparison between private sector higher density dwellings and population living in all other dwellings without including various social housing categories into the figures for the balance of Sydney. The combination of using enumeration profiles and tenure variables means the total numbers of people for Greater Sydney does not reflect the total population for that region.

The population living in private high density housing is concentrated in the 25 to 34 and 35 to 54 age cohorts, representing approximately 59% of the total population compared to 42% of the population living in other types of housing in Greater Sydney, while under 15 and over 65 cohorts are underrepresented in higher density housing compared with the balance of Sydney (see Table 3).

These aggregate figures mask significant regional variation in distribution of particular age cohorts living in higher density dwellings. Figure 3 shows the distribution of persons in high density dwellings aged 65 and over across the metropolitan area, showing higher concentrations in eastern harbour suburbs, Mosman and Cremorne, along the Pacific Highway/Northern rail line corridor, and the far northern beaches.

Differences in age profiles are also reflected in household composition. Single family households with children represent 28% of all households compared with 55.5% for the balance of households in other dwellings in Greater Sydney. Conversely lone person households account for 34.4% of all dwellings in higher density development compared with 15.5% for the balance in Greater Sydney. Again, spatial variation in household composition in higher density dwellings (see Figure 4 and Figure 5) reveals concentrations of lone person households in the inner west, central Sydney and north shore areas, while families with children show significant concentrations in western suburbs, specifically Canterbury, Auburn, Parramatta, Fairfield and Liverpool local government areas.

Table 3 Age Profile of persons in Greater Sydney

	Higher Density Dwellings		Balance of Greater Sydney	
Under 15	93,437	12.9%	673,652	21.5%
15-24	90,343	12.5%	420,300	13.4%
25-34	226,876	31.3%	378,974	12.1%
35-54	197,665	27.3%	921,492	29.4%
55-64	57,017	7.9%	363,156	11.6%
65 and older	59,733	8.2%	379,330	12.1%
Total	725,071	100%	3,136,904	100%

Figure 3 Proportion of population aged 65 years and over at Statistical Area Level 1

Table 4 Household Profiles of dwellings in Greater Sydney

	Higher Density Dwellings		Balance of Greater Sydney	
Family Households (with Children)	95,453	28.0%	581,251	55.5%
Family Households (without Children)	93,184	27.3%	241,854	23.1%
Multiple Family Households	3,265	1.0%	33,019	3.2%
Lone Person Households	117,258	34.4%	162,885	15.5%
Group Households	31,598	9.3%	28,578	2.7%
Total	340,758	100%	1,047,587	100%

Note: Excludes visitor only households and other non-classifiable households.

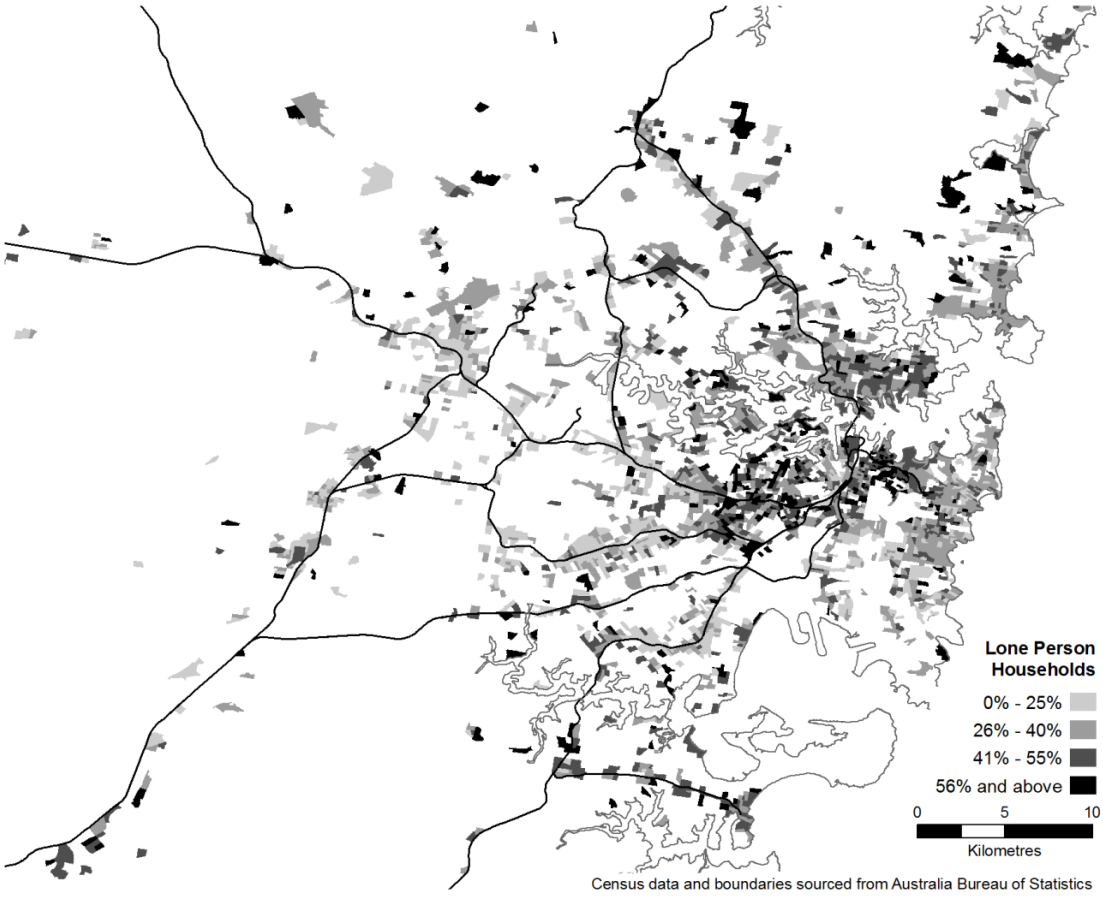

Figure 4 Proportion of lone person households at Statistical Area Level 1

Figure 5 Proportion of families with children at Statistical Area Level 1

The patterns for household income in higher density dwellings are broadly similar to the balance of Greater Sydney however there is slight over representation in lower income categories and under representation in the high income categories amongst people living in higher density housing, see Table 5. As a point of comparison, the median weekly household income for the Greater Sydney statistical area is $1,447. The spatial variation of household income broadly reflects patterns of income distribution across the broader Sydney population. Households in lower income bands are generally concentrated in the inner west, southern and western suburbs, see Figure 6. Low income households overlap with family households with children in the Liverpool to Fairfield and Lakemba to Campsie areas.

Figures for the balance of Sydney in Table 6, Table 7 and Table 8 include persons in all other dwelling and tenure categories, including those living in higher density public and community housing. This is due to changes to Australian Bureau of Statistics Table Builder not allowing cross tabulations between dwellings and some population profile categories. Public and community housing accounts for 4.97% of total dwellings in Greater Sydney so will have limited impact on the distribution of figures for the balance of Sydney.

The unemployment rate for people living in higher density dwellings is marginally higher than that for the balance of Greater Sydney, being 6% and 5.7% respectively, see Table 6. However the level of full time employment, 67.9%, and labour force participation rate, 73.7%, are considerably higher in higher density dwellings than for the balance of Sydney. The occupation profile (see Table 7) also reveals that 32.2% of people in higher density dwellings are employed in professional occupations compared with 23.8% for the remainder of Sydney.

Sydney has long been recognised as having a diverse ethnic profile however there are some clear differences between the population living in higher density properties and the balance of the population in Greater Sydney. Notably, 48.1% of higher density dwelling residents were born in the Oceania region (includes Australia, New Zealand, Micronesia, Polynesia and Melanesia) compared with 65.9% for Greater Sydney, see Table 8. People born on the Asian continent (North-East Asia, Southern and Central Asia and South-East Asia) account for 30.8% of the total population living in higher density dwellings, compared to 11.5% for the balance of the population in Greater Sydney.

Table 5 Household weekly income of dwellings in Greater Sydney

	Higher Density Dwellings		Balance of Greater Sydney	
No or Nil Income	7,829	2.3%	9,317	0.9%
Under A$400	25,721	7.4%	70,234	6.7%
A$400-799	48,789	14.1%	143,653	13.6%
A$800-1499	85,961	24.8%	215,857	20.5%
A$1500-2499	72,099	20.8%	222,225	21.1%
A$2500-3999	63,378	18.3%	211,695	20.1%
A$4000 and over	14,794	4.3%	67,823	6.4%
Other*	27,820	8.0%	112,342	10.7%
Total	346,391	100%	1,053,146	100%

*Includes households with negative income, partial income stated, all income not stated and not applicable

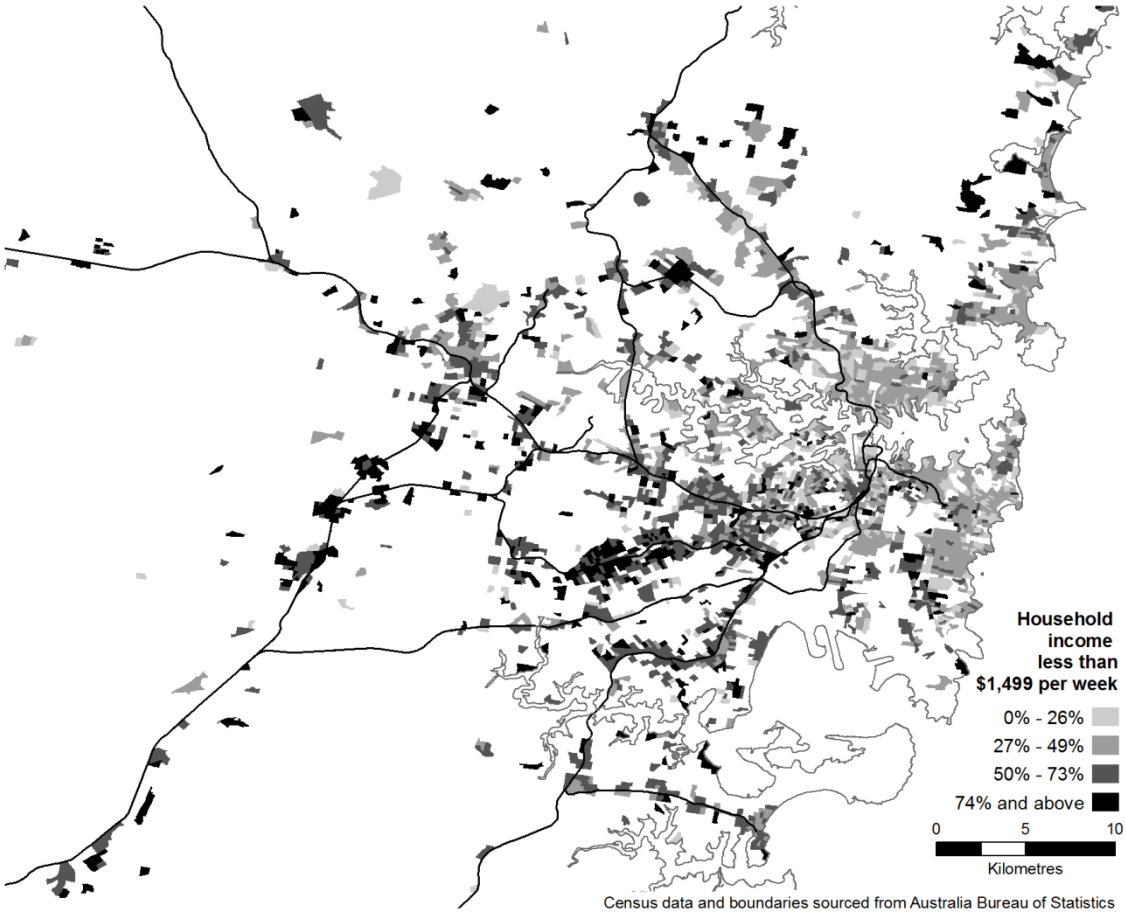

Figure 6 Proportion of households with income less than $1,499 per week at Statistical Area Level 1

Table 6 Labour force status of persons in Greater Sydney

	Higher Density Dwellings		Balance of Greater Sydney	
Employed – Full Time*	309,884	67.9%	*1,048,308*	*60.5%*
Employed – Part Time*	99,261	21.7%	*485,513*	*28.0%*
Employed – Away From Work*	20,047	4.4%	*100,253*	*5.8%*
Unemployed/Unemployment Rate*	27,437	6.0%	*98,149*	*5.7%*
Not in Labour Force /Participation Rate	162,760	73.7%	*1,196,846*	*59.1%*

*Percentage of total labour force

Table 7 Occupation of persons in Greater Sydney

	Higher Density Dwellings		Balance of Greater Sydney	
Managers	57,099	13.3%	*216,818*	*13.3%*
Professionals	138,083	32.2%	*388,480*	*23.8%*
Technicians and Trades Workers	43,193	10.1%	*208,278*	*12.7%*
Community and Personal Service Workers	38,271	8.9%	*143,789*	*8.8%*
Clerical and Administrative Workers	64,018	14.9%	*269,417*	*16.5%*
Sales Workers	36,037	8.4%	*149,913*	*9.2%*
Machinery Operators and Drivers	17,370	4.0%	*100,768*	*6.2%*
Labourers	27,255	6.4%	*124,069*	*7.6%*
Inadequately Described or Not Stated	7,871	1.8%	*32,542*	*2.0%*

Note: Percentage of persons in all occupations excluding 'Not Applicable' and 'Overseas Visitor' categories

Table 8 Country of birth of persons in Greater Sydney

	Higher Density Dwellings		Balance of Greater Sydney	
Oceania and Antarctica	342,291	48.1%	*2,425,208*	*65.9%*
North-West Europe	50,278	7.1%	*201,300*	*5.5%*
Southern and Eastern Europe	29,339	4.1%	*160,554*	*4.4%*
North Africa and the Middle East	26,038	3.7%	*127,345*	*3.5%*
South-East Asia	53,404	7.5%	*177,097*	*4.8%*
North-East Asia	96,166	13.5%	*150,134*	*4.1%*
Southern and Central Asia	69,451	9.8%	*94,937*	*2.6%*
Americas	21,248	3.0%	*52,705*	*1.4%*
Sub-Saharan Africa	13,070	1.8%	*43,065*	*1.2%*
Others/Not Stated	10,757	1.5%	*247,286*	*6.7%*

Time Series Profile

The total number of people living in higher density dwellings increased in all age cohorts across the census period with the exception of the 15-24 and over 65 age cohorts, see Table 9. The 25 to 34 age cohort showed the largest increase in share of the population rising from 28.9% in 2006 to 31.3% in 2011. This change is reflected in the household profile for Greater Sydney which saw an increase in the proportion of one family households from 51.0% in 2006 to 55.4% in 2011, see Table 11. The total number and share of lone person households decreased from 39.1% to 34.4% across this period. The proportion of dwellings being owner occupied also increased across the census period from 39.7% to 42.5%, see Table 12.

Table 9 Population change 2006-2011

	2006		2011	
Under 15	82,935	11.9%	93,437	12.9%
15-24	102,037	14.6%	90,343	12.5%
25-34	202,587	28.9%	226,876	31.3%
35-54	189,967	27.1%	197,665	27.3%
55-64	52,974	7.6%	57,017	7.9%
65 and older	69,297	9.9%	59,733	8.2%
Total Population	699,797	100.0%	725,071	100%

Table 10 Change in employment 2006-2011

	2006		2011	
Employed	359,182	94.1%	429,192	94.0%
Unemployed	22,481	5.9%	27,437	6.0%
Not in Labour Force/Participation Rate	144,057	61.9%	162,760	73.7%

Table 11 Change in household profile 2006-2011

	2006		2011	
One family household	157,586	51.0%	188,637	55.4%
Multi-family Household	1,708	0.6%	3,265	1.0%
Lone person household	121,058	39.1%	117,258	34.4%
Group household	28,903	9.3%	31,598	9.3%

Note: Excludes visitor only households and other non-classifiable households.

Table 12 Change in tenure of private sector higher density dwellings 2006-2011

	2006		2011	
Fully owned	53,827	18.0%	59,382	17.1%
Being purchased	64,723	21.7%	87,884	25.4%
Rented	179,919	60.3%	199,139	57.5%
Occupied Dwellings	298,469	100%	346,405	100%

Note: Excludes dwellings rented through a state housing agency, housing co-operatives, community and church groups and other tenure categories.

Strata Scheme Profile

Table 13 shows the distribution of strata schemes by size and date of registration with more than 20,000 of the 35,000 residential strata schemes having 10 or less lots. When considering registration dates of schemes, there have been relatively consistent numbers of schemes in the 3- 20 lots categories being registered in each of the listed decades. The rate of registration of large schemes of over 100 lots has been increasing since strata legislation was introduced in the early 1960s.

Table 14 provides an overview of the number of schemes and units registered in each 10 year period. The average scheme size has increased significantly in the last decade or so to 21 lots per scheme following a period of thirty years when the average schemes size stayed relatively stable at around 13 lots per scheme. Figure 7 shows the location and size of strata schemes by the decade in which they were registered. There is a clear trend towards increasing numbers of strata schemes being developed in each decade reflective of Sydney's growth trajectory and increasing emphasis on this form of housing through urban policy, as expressed in local planning policies. In earlier periods much of the strata development followed the main train lines, with the exception of the northern beaches area, however over time, strata development has become more common throughout the Sydney region.

When the volume of schemes and lot registrations is broken down into smaller time scales a pattern is revealed. Figure 8 shows the volume of lots and schemes registered in five year bands and shows a clear cyclical pattern which likely reflects key events in relation to investment in the residential property market. The downturns indicated during the 1985-1989 and 2005-2009 periods coincide with major international financial crises. Relatively higher rates of scheme registration peaking in the early 1970s reflects both the increasing rates of unit construction and the conversion of properties under company title to strata title.

Table 13 Number of schemes by size and registration date for Greater Sydney

	Scheme Size						
Registration Date	3-5 Lots	6-10 Lots	11-20 Lots	21-50 Lots	51-100 Lots	100+ Lots	**Total**
1961-1969	313	1,297	1,440	788	92	12	**3,942**
1970-1979	1,205	2,754	2,689	1,072	107	25	**7,852**
1980-1989	1,505	2,105	1,278	509	97	36	**5,530**
1990-1999	2,833	2,562	1,605	757	186	122	**8,065**
2000-2009	2,611	2,513	1,650	1,055	377	221	**8,427**
2010-2013	573	471	329	259	105	66	**1,803**
Total	**9,040**	**11,702**	**8,991**	**4,440**	**964**	**482**	**35,619**

Table 14 Strata schemes and units by date of registration for Greater Sydney (EXCLUDING 1 AND 2 LOT SCHEMES)

	Pre-1969	1970-79	1980-89	1990-99	2000-09	2010-2013	Total
Schemes	3,942	7,852	5,530	8,065	8,427	1,803	35,619
Lots	62,363	107,351	67,743	110,983	148,526	38,461	535,427
Av. lots per scheme	15.8	13.7	12.3	13.8	17.6	21.3	15.0

Figure 7 Location of strata schemes by size and registration date

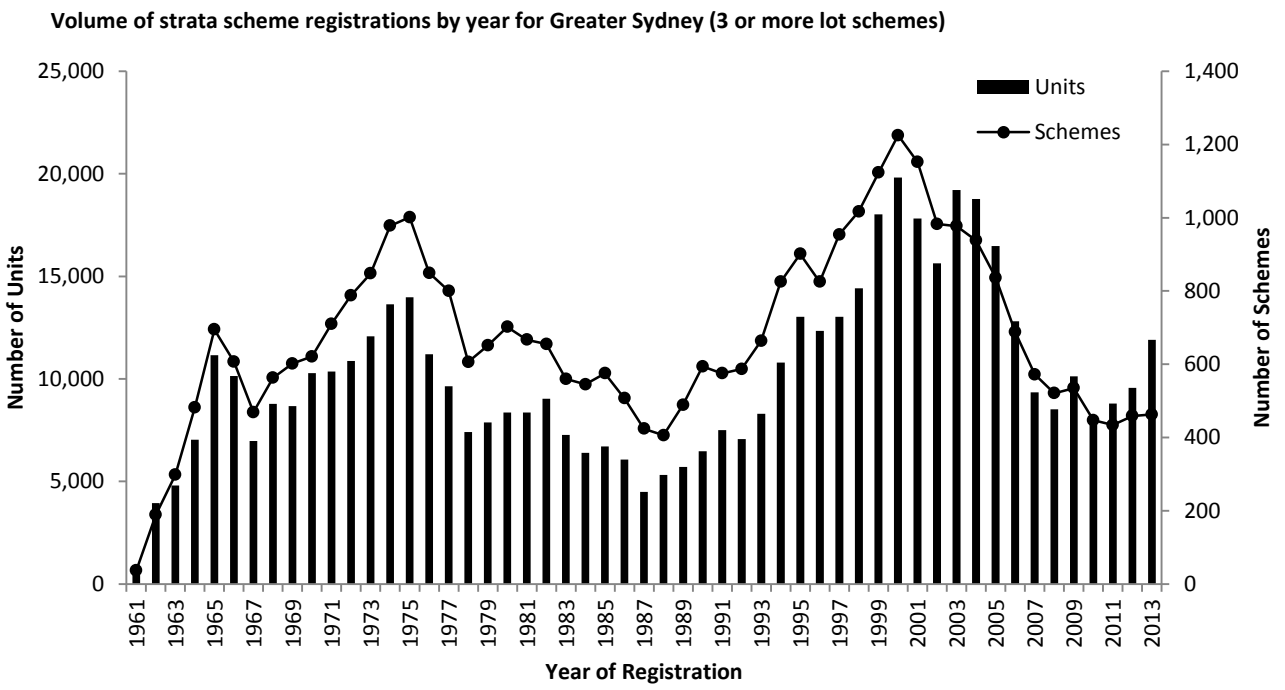

Figure 8 Volume of units registered by registration date excluding schemes of less than 3 lots

Strata sales

Figure 9 shows the median dwelling price by quarter for units and houses from 2003 to 2014 for Greater Sydney. Prices remained relative stable between 2003 and 2009 and then experienced an upward trend to 2014. Table 15 shows the distribution of sale values by year from 2009 to 2013. Prices increased over this period, with the greatest increase occurring between 2011 and 2013. 2009 coincides with the later stages of the financial crisis, also reflected by the lower numbers of sales occurring during this period.

Table 16 and Figure 10 show sale value quartiles and number of sales by registration date of the strata scheme for 2013. Schemes registered after 2009 achieved the highest sale values, which likely reflect the new condition of the strata lots being sold. Schemes registered during the 1980s had the lowest median and lower quartile sale values. Schemes that were registered prior to 1970, representing the oldest apartment stock, achieved sale values similar to schemes registered during the 2000-2009 period. The higher values achieved by pre-1970 stock partly reflects their location being concentrated in eastern parts of Sydney (see Figure 7).

Table 17 shows sales values by scheme size and indicates that small (3-5 lot) schemes have achieved higher sale values, most likely reflecting the higher proportion of these being town house or villa house developments. Mid-size schemes achieved both the lowest and smaller range of sales values. The very large schemes (over 100 lots) recorded the second highest median sale values, which likely reflects higher values achieved by newer apartments, most likely associated with their location in central city and higher values areas.

Table 18 shows sale values by number of bedrooms, and as could be expected, shows a clear increase in sale value with apartment size. The distribution of sales also shows that there is a greater range of values achieved for larger apartments than for smaller apartments.

Some caution is needed when comparing figures derived from Australian Property Monitor data and Valuer General's data as the slightly different date variables are used to establish calendar year samples. As described above in the Case Study Profile Data section, the APM dataset will vary from Valuer General derived distribution of values because different date attributes have been used to create the time period subsets. APM uses an event date criterion which is similar, but not identical to contract date. The result is that the APM data will include some sales where settlement occurred outside the 2013 and 2011 calendar years.

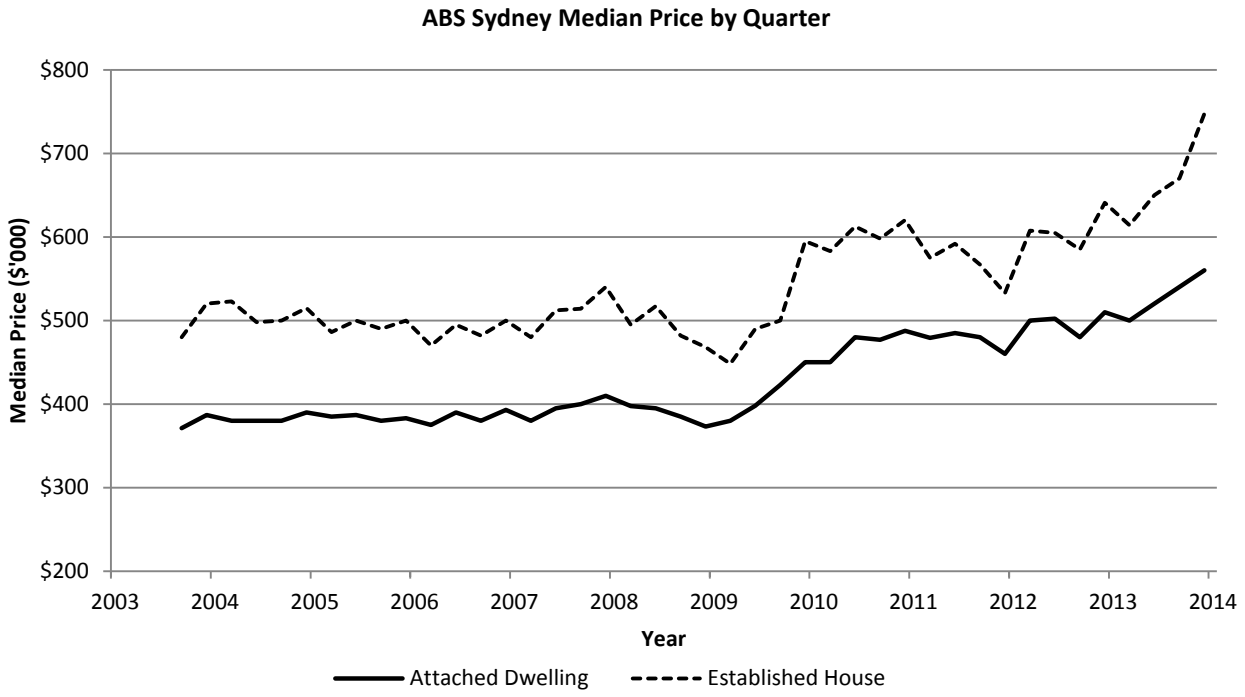

Figure 9 Sydney median dwelling price by quarter (source: Australian Bureau of Statistics, 2014)

Table 15 Strata unit sales values by year (Valuer General Database)

Year	2009	2011	2013
Lower Quartile	$326,500	$355,000	$390,000
Median	$429,000	$465,000	$520,000
Upper Quartile	$555,000	$595,000	$675,000
Number of Sales	26,703	37,456	35,440

Note: excludes 1 and 2 lot schemes

Table 16 Strata unit sales values 2013 by scheme registration date (Valuer General Database)

	Scheme Registration Date						
	Pre-1970	1970-79	1980-89	1990-99	2000-09	2010-13	All
Lower Quartile	$415,000	$350,000	$315,000	$360,000	$395,000	$490,000	$390,000
Median	$520,000	$480,000	$454,000	$490,000	$521,000	$610,000	$520,000
Upper Quartile	$660,000	$624,250	$640,000	$666,775	$670,000	$755,000	$675,000
Number of Sales	3,532	6,293	3,599	5,930	10,353	5,733	35,440

Note: excludes 1 and 2 lot schemes

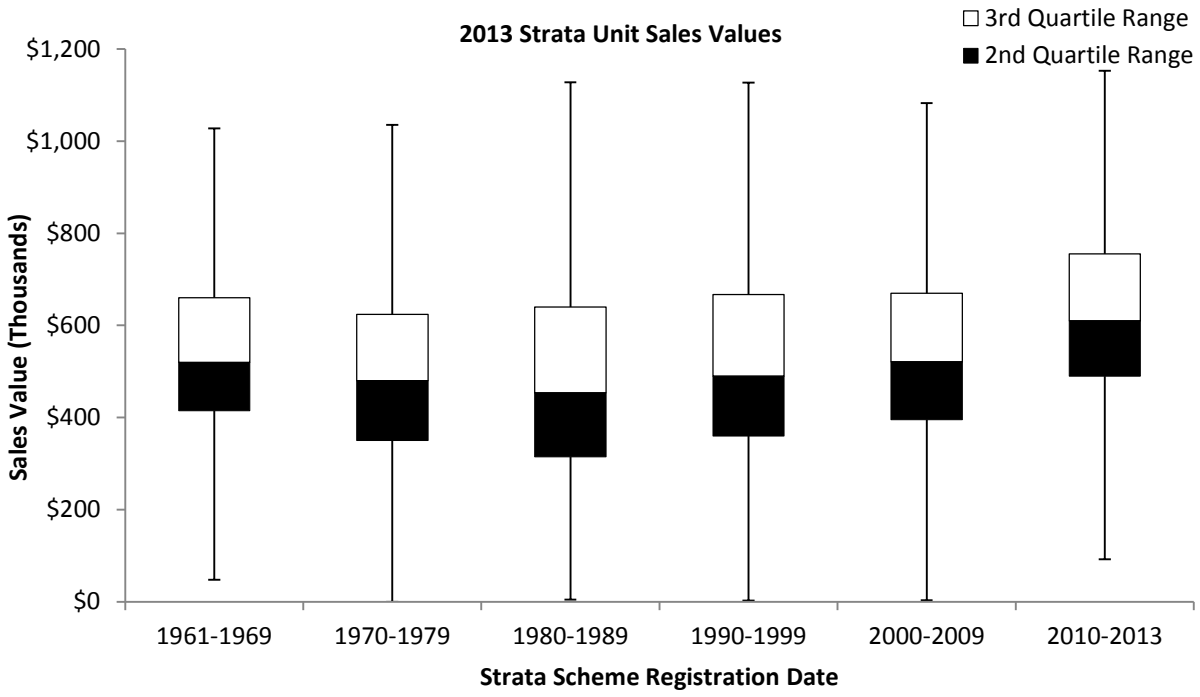

Figure 10 2013 strata unit sales values by scheme registration date

Table 17 Strata unit sales values 2013 by scheme size (Valuer General Database)

	Scheme Size						
	3 to 5 Lots	6 to 10 Lots	11 to 20 Lots	21 to 50 Lots	51 to 100 Lots	101+ Lots	All
Lower Quartile	$425,000	$366,000	$373,000	$385,000	$410,000	$462,000	$390,000
Median	$605,000	$500,000	$485,000	$498,000	$540,000	$598,888	$520,000
Upper Quartile	$815,500	$675,000	$625,000	$645,775	$690,000	$736,000	$675,000
Number of Sales	2,414	6,059	8,634	9,056	4,604	4,673	35,440

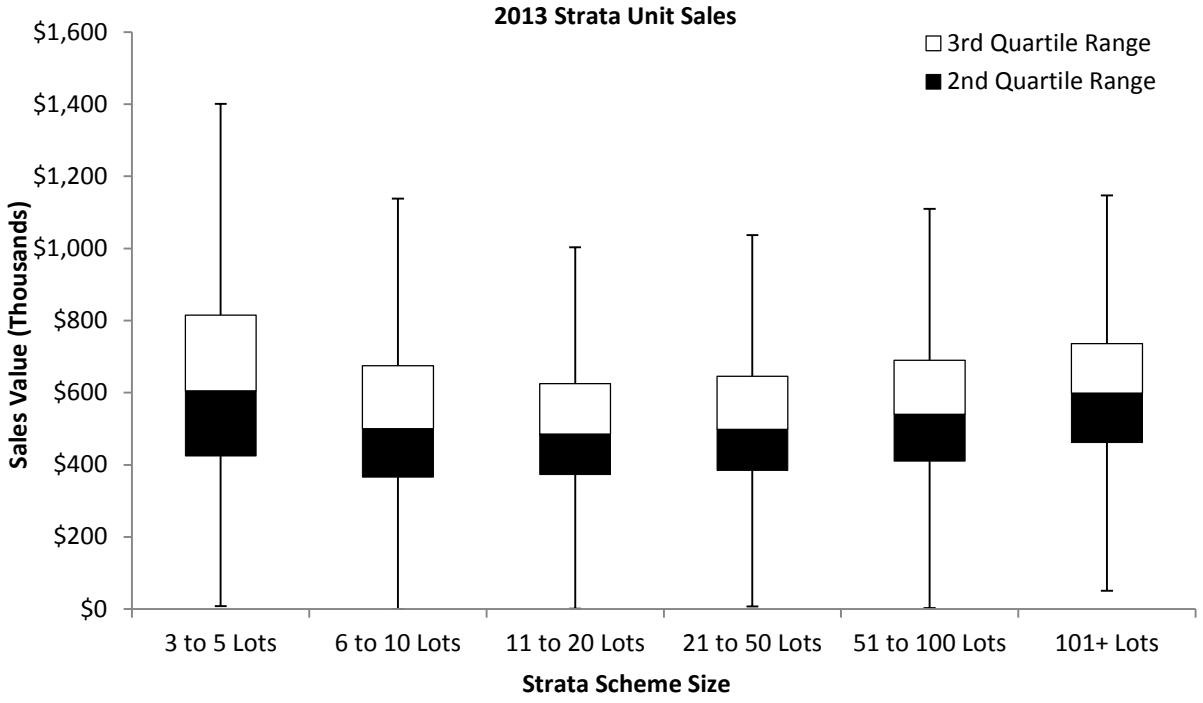

Figure 11 2013 strata unit sales values by scheme size

Table 18 Strata unit sales values 2013 by unit size (APM)

	1 Bed	2 Bed	3 Bed	4 Bed or more
Lower Quartile	$375,000	$395,000	$519,500	$625,000
Median	$450,000	$518,000	$715,000	$755,000
Upper Quartile	$530,013	$650,000	$985,000	$1,253,750
Number of Sales	4,258	14,702	3,977	450

Note: records attributed with null bed values have been excluded because it is not possible to distinguish between those that reflect an incomplete record and those that reflect studio apartments. Null values account for 40% of sale records for 2013.

Cancelled Strata Schemes

The figures presented below on cancelled or terminated strata schemes have been split into two sections based on two different data extracts with different levels of information.

The first extract represents all strata schemes that have been cancelled across New South Wales and only includes size of scheme and the date at which the scheme was registered (see Table 19), as it was not possible to match cancellation dates or addresses to all cancelled schemes. This table includes all types of land uses and so may include non-residential strata. Approximately 44% (374) of all schemes terminated were 1-2 lot schemes while 3-5 lot schemes account for a further 30%. Only 30 (3.6%) of all cancelled schemes were larger than 20 lots.

Figure 12 shows the number of schemes cancelled by registration date and Figure 13 excludes all schemes with fewer than 3 lots. Both Figures suggest that the majority of schemes cancelled were registered between 1976 and 1993. This does not give an indication of the age of each when they were cancelled, however does indicate a typology of building that has been the subject of more cancellation events.

Table 19 Number of cancelled schemes by size and registration date for NSW

	Scheme Size							
Registration Date	1-2 Lots	3-5 Lots	6-10 Lots	11-20 Lots	21-50 Lots	51-100 Lots	100+ Lots	Total
1961-1969	22	13	17	5				57
1970-1979	61	57	28	17	3			166
1980-1989	120	95	55	14	8	3		295
1990-1999	146	74	26	9	7	2	2	266
2000-2009	25	9	11	1	1	1	2	50
2010-2013				1	1			2
Total	374	248	137	47	20	6	4	836

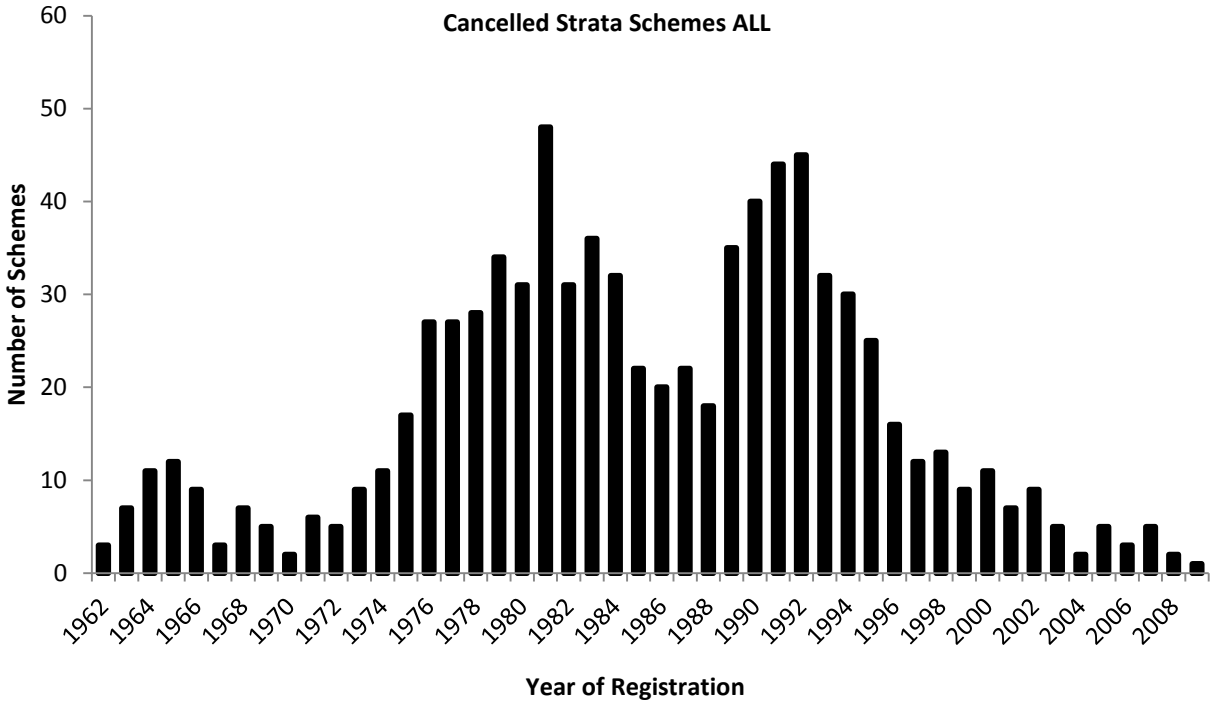

Figure 12 Number of schemes cancelled by registration date for New South Wales

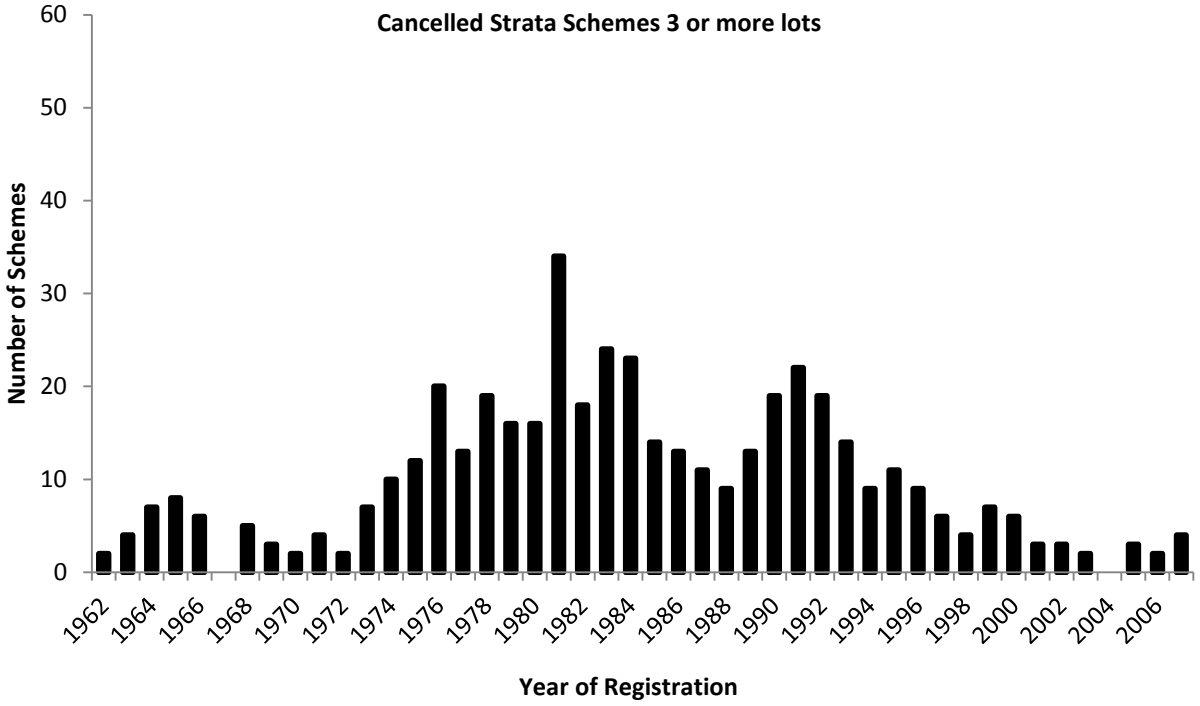

Figure 13 Number of 3 or more lot schemes cancelled by registration date for New South Wales

The second data extract includes scheme address and cancellation dates with each of the records, however, as indicated previously we were not able to match a number of records to addresses. Of the 836 schemes that have been cancelled in NSW only 512 (62%) have address information recorded, and only 479 have a cancellation date recorded. On closer inspection of the data, there are no cancellation dates listed occurring before 2001. That there is no data before this date as opposed to limited data suggests that the LPI database either did not record this information prior to 2001, or more likely that there are problems creating links in the database to allow this information to be extracted systematically for all cancelled strata schemes. Table 21 shows a summary of the two data sets with registration date and cancellation shown where possible.

Table 21 shows that 1 or 2 lot schemes account for just under half (150) of schemes terminated within Greater Sydney and only 14 (4.3%) out of 326 schemes were 21 lots or greater. Table 22 provides a summary of schemes that have been terminated comparing registration date with termination date. As reflected in Figure 13, above, a higher proportion of all terminated strata schemes were those that had been registered in the 1970s to 1990s, peaking in the decade of the 1980s. Figure 14 shows the location of terminated strata schemes of 3 or more lots in the Sydney region. While schemes have been terminated in a wide variety of locations, there are concentrations in coastal and harbour locations, including Manly, North Sydney, along the harbour between Sydney CBD and Rushcutters Bay, Bondi and Cronulla, see Figure 15.

Table 24 shows the number of strata schemes of 3 or more lots that have been cancelled across NSW by registration and cancellation dates. Over half of the 3 or more lot schemes have been cancelled since 2000, with 97 being cancelled in the four years 2010 to 2013 alone. In many ways this is to be expected because as schemes age, cancellations should occur in higher numbers. It is also likely that in earlier periods there were a significant number of development opportunities on parcels of land occupied by single houses or under single title, which represent both easier and less expensive propositions. This is important because it demonstrates that although they are not large numbers, cancellation is happening to some degree under the current legislative framework.

Table 20 Number of cancelled schemes by registration date and cancellation date for NSW

	Cancellation Date			
Registration Date	2000-2009	2010-2013	ND	**Total**
1961-1969	18	14	25	57
1970-1979	62	26	78	166
1980-1989	98	46	151	295
1990-1999	109	56	101	266
2000-2009	26	24	0	50
ND			2	2
Total	313	166	357	836

Of the 512 schemes where address information is available, 326 are located within the Greater Sydney Statistical Area.

Table 21 Number of cancelled schemes by size and registration date for Greater Sydney

	Scheme Size							
Registration Date	1 to 2 Lots	3 to 5 Lots	6 to 10 Lots	11 to 20 Lots	21 to 50 Lots	51 to 100 Lots	101+ Lots	Total
1961-1969	10	9	10	2				31
1970-1979	31	24	15	3	1			74
1980-1989	41	29	21	6	3	1		101
1990-1999	54	28	9	3	3	2		99
2000-2009	14	3			1	1	2	21
Total	150	93	55	14	8	4	2	326

Table 22 Number of cancelled schemes by registration date and cancellation date for Greater Sydney

	Cancellation Date			
Registration Date	2000-2009	2010-2013	ND	Total
1961-1969	14	13	4	31
1970-1979	49	20	5	74
1980-1989	65	31	5	101
1990-1999	60	34	5	99
2000-2009	14	7		21
Total	202	105	19	326

Table 23 Number of cancelled strata schemes 3 or more lots in size by registration and cancellation date for NSW

	Cancellation Date			
Registration Date	2000-2009	2010-2013	ND	**Total**
1961-1969	11	11	13	**35**
1970-1979	35	17	53	**105**
1980-1989	43	30	102	**175**
1990-1999	47	26	47	**120**
2000-2009	11	13	1	**25**
ND			2	**2**
Total	**147**	**97**	**218**	**462**

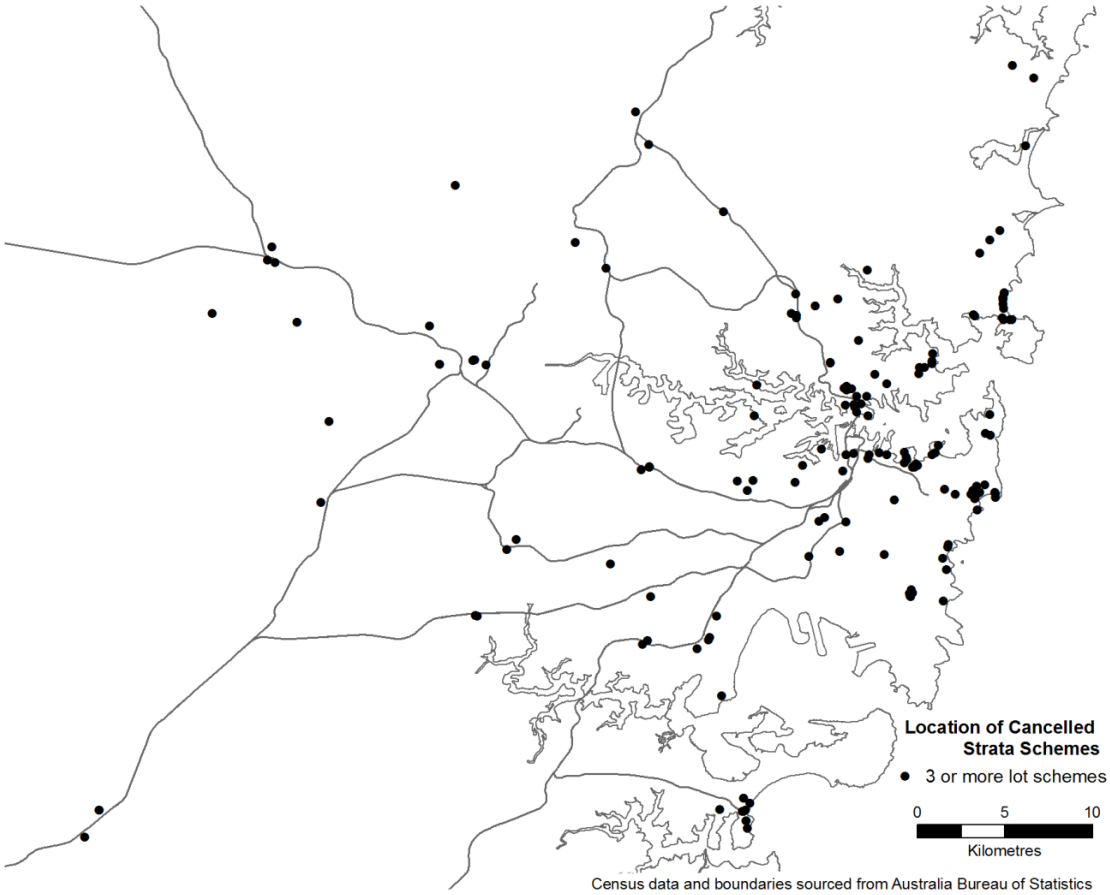

Figure 14 Location of terminated 3 or more lot strata schemes

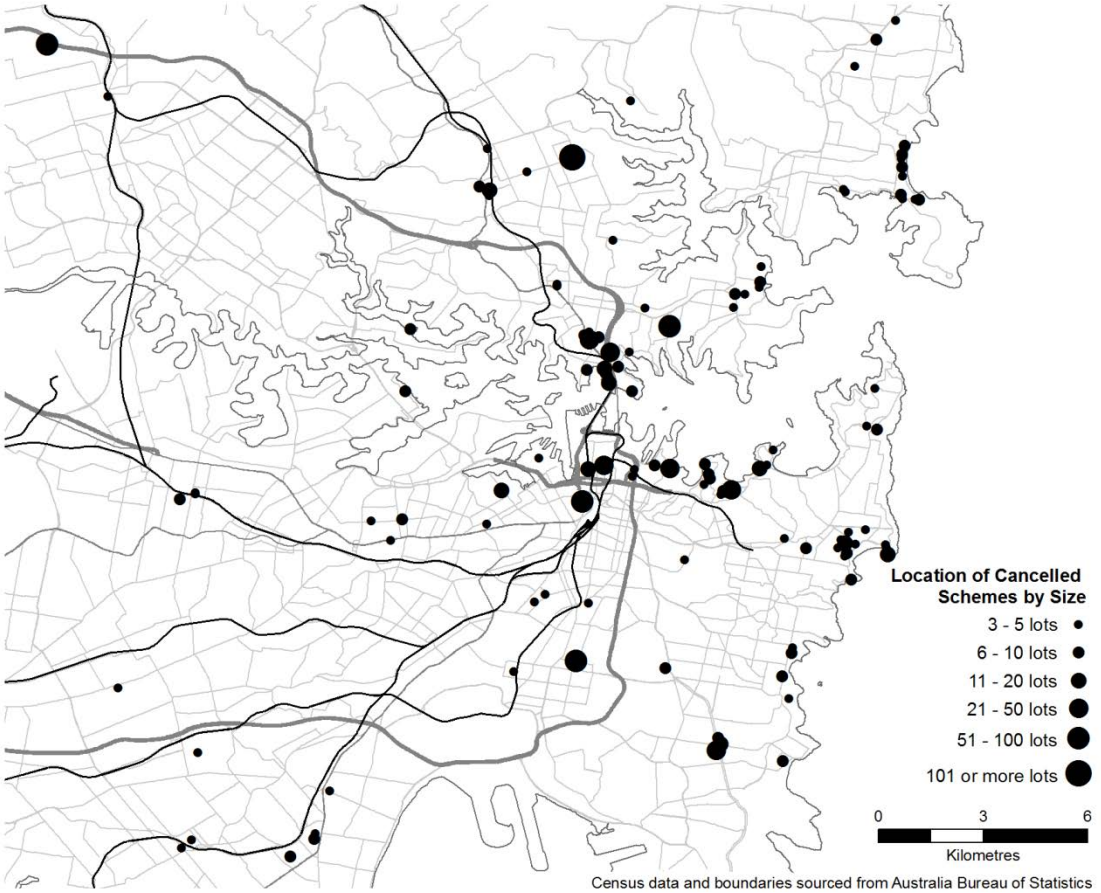

Figure 15 Location of terminated 3 or more lot strata schemes, central Sydney zone

Strata Renewal Feasibility Modelling

The data presented in the first three sections outlines the spatial and temporal distribution, market characteristics and social profile of strata schemes across the Greater Sydney region. In this section, this data is used as a basis for understanding the feasibility of renewing strata schemes in the current market context. While there are many mechanisms through which strata schemes may be redeveloped, in the absence of alternatives renewal activity, if it occurs, will happen largely through private sector led development. The specific ownership complexities of strata schemes make reaching unanimous agreement to terminate a scheme and begin a redevelopment process very difficult. However even if agreement can be reached, there remains a number of other market barriers to renewal due to what is assumed to be the high costs of redeveloping strata schemes compared with redeveloping single house lots into strata. The particular cost dynamics of strata termination and renewal pose significant challenges that have not been very well understood to date.

Other research has noted the costs and geographically variable housing market conditions create significant barriers to renewal of existing strata in much of Sydney (Pinnegar & Randolph, 2012). This previous modelling focused on specific areas in Western Sydney where redevelopment of older strata units was seen as desirable on a number of grounds, however was generally understood as not possible within the current market framework. This previous modelling focused on Cabramatta in Sydney's west, and found the costs of redevelopment compared with the sale values the local market supported at the time, meant that redeveloping older schemes would not be financially viable.

The modelling presented in this report extends the previous work undertaken by Pinnegar & Randolph (2012) by estimating the feasibility of renewing existing strata schemes across the Greater Sydney region. Feasibility of renewal will be contingent on a number of factors including the buyout costs of existing development, the property market dynamics in different parts of Sydney, the characteristics of the specific parcels of land and the type of development the planning context supports. There are many development controls that will affect apartment yield on each site, however maximum building heights and floor space ratios (FSR) have the most baring on development potential as they set out the bulk and scale that is permissible on each site. These vary across local government areas and are specified in Local Environment Plans (LEP). There are a number of holes in the digital datasets representing FSR and building heights across Sydney, making use of this as a key data layer problematic. To partially overcome this data deficiency, the feasibility model sets out answer a slightly different question. Instead of asking where development is feasible based on the above criteria, the model aims to understand how many units would need to be constructed on each site for development to be feasible. Once this has been established, a judgement can be made about whether this would be permissible under the current planning framework, or whether the planning framework would need to change to make renewal more feasible. Given that part of the task here is to understand how renewal can feasibly occur, this approach will allow us to better understand the mechanisms or policy levers that may be required to create the conditions necessary for renewal.

Much of urban renewal to date (both market led and Government led) relies on a gentrification process or the intensification of land uses to create cost differentials between existing and new development. Gentrification is well known to be part of a process driving socio-spatial inequalities in many cities, which raises questions about the long term social sustainability of a market based approach to urban renewal. It is on this basis that the second part of the modelling aims to investigate the affordability dynamics of renewal by testing the feasibility of development if dwellings are provided at price points affordable to households in the local area.

The first section below briefly outlines the methodology for conducting the feasibility assessment. The second section presents an analysis of outcomes at the Greater Sydney level. Finer grained results are presented for each of the case study areas in Appendix A.

Methodology

This section provides an overview of the feasibility assessment methodology. A more detailed explanation can be found in Appendix B.

The feasibility model was based on cadastral parcel boundaries of strata titled land parcels across Greater Sydney. Each cadastral lot was attributed with basic information about the existing strata development including land area of the parcel, number of strata lots, and the year of registration, which acts as a proxy for building age. Valuer General sales data, construction costs guidelines published in Rawlinsons Construction Costs Guide (Rawlinsons, 2014) and SEPP 65 apartment design guidelines were used to inform the model. It was not possible to know the particular configuration of unit sizes for existing development, so a 2 bedroom costs and sale average has been assumed across the model.

The model can be broadly separated into three parts. First was to establish an estimate of the buyout cost for the existing strata development based on aggregated sales figures of strata units at SA2 level. The second component involved estimating the development costs for building new units as either walk up flat or high rise development at three different qualities, basic, medium and high standard (6 different scenarios). Finally, sale proceeds were based on different price points of new strata development at SA2 level. It was assumed throughout the modelling that a feasible scenario is one where there is a 20% profit margin across all costs associated with the development. Once a relationship between the component parts of a feasibility equation can be established (i.e. where sale proceeds are greater than buyout costs + development costs), the number of new units required to reach a feasible outcome can be calculated.

Using this number of new units, floor space ratios are based on flat sizes and site coverage listed in the SEPP 65 guidelines and land area of each strata land parcel. Using the same site coverage variable, an estimate of building height can be established assuming each building level equates to roughly 3 metres.

'Traffic Light' Scenarios

This process broadly establishes the level of development required for renewal to be feasible under current market conditions, and the next step is to then decide what planning arrangements would be needed for renewal to be possible. Approaching it this way enables us to understand under what conditions renewal could occur. FSR outcomes were categorised based on a scale of possibility, with low FSRs being possible and high FSRs not possible, as summarised below and in Table 24.

1. Yes - Permissible;
2. Maybe - Potentially permissible depending on variations in some of the constraints included in the FSR and Building Height calculations, such as increasing building footprint from 35% up to a maximum of 80%;
3. No - Not likely due to the very high FSR and therefore building heights returned as a result of the initial costs analysis; or
4. N/A - When the construction costs per unit are higher than the potential sale price at that price point within the area, then the feasibility formula will return a negative value. This indicates that regardless of buyout cost and underlying planning restrictions, it would not be possible reach a viable redevelopment scenario.

Table 24 Floor space ratios and building heights

		Yes	Maybe	No
Walk Up Flat	FSR	Up to 1:1	Between 1:1 and 2:1	Above 2:1
	Height (stories)	3	3-4	N/A*
High Rise Flat	FSR	Up to 2.5:1	Between 2.5:1 and 3.5:1	Above 3.5:1
	Height (stories)	Up to 8	8-13	Above 13

* It would cease to be a walk up flat if FSR reached 2:1 even if site coverage approached 100% as it would require a building of 4 or more storeys, which would then place it in Rawlinsons Construction Cost category of 'High Rise' because of the additional costs of building over four stories.

Affordability Scenario 1

The above analysis assumes a sale price based on the current market in each SA2, however these are often considered unaffordable to first time purchasers. The first affordability scenario aims to estimate the number of schemes that could be feasibly redeveloped if the sale value is set at an affordable level relative to median household incomes in each SA2 based on 2011 census data.

Affordability Scenario 2

The second affordability scenario assumes the same affordable sale price relative to SA2 median household incomes, and removes the 20% profit margin criteria from the feasibility assessment. The intention of this scenario is to demonstrate the potentialities of alternative financing methods (such as a community housing provider) which are not necessarily relying on a profit across the development to remain viable. In essence it represents a break even proposition whilst delivering an affordable product relative to the population in a given area.

Renewal Feasibility for Greater Sydney

The outcome of the model is to test the development potential for two different types of buildings at two different build qualities, which equates to six different redevelopment scenarios. Figure 16 shows the redevelopment potential of existing strata blocks that were registered prior to 1990 to new walk up flat development. The diagram is separated into four parts to reflect the different traffic light categories of redevelopment potential, and an accumulation of all categories. The diagram shows that there are existing strata schemes across the metropolitan region that could feasibly be redeveloped, just as there are many schemes that are in the 'maybe' and 'no' categories.

The diagrams indicate that there is potential for high quality redevelopments in the eastern suburbs area, north Sydney and Mosman, Manly and Cronulla, while there is the potential to redevelop at medium quality in the Canterbury area and scattered in small concentrations across large parts of Sydney. When the various categories are combined and layered (as depicted in the fourth panel in Figure 16 and Figure 17) it shows the relative concentration of schemes that could be viably redeveloped.

Figure 18 shows the same layered redevelopment potential for the high-rise flat category of building and clearly indicates a much wider spread of areas of viability across Greater Sydney. Three distinct areas of either 'No' and 'N/A' categories emerge, located (i) along the train line corridor between Liverpool and Campbeltown; (ii) in Fairfield and Cabramatta; and (iii) around Wiley Park and Lakemba. The 'N/A' category indicates areas where the construction costs of this form of building outweigh the existing property market in this category, while the 'No' category indicates areas that would need to be built at very high densities (above 3.5:1 floor space ratio) to make a particular redevelopment viable.

Figure 19 shows a combination of the previous 6 scenarios prioritised to reflect the relative likelihood of redevelopment occurring. Walk up flat categories, ranked high quality to basic, are given preference over high rise, also ranked from high quality to basic. Lots that are not listed as viable ('Yes') in any category, but are listed as 'Maybe' in any category, are assigned a 'Maybe' category. Lots listed as 'No' or 'N/A' in all categories are assigned accordingly. Areas shown as purple therefore represent lots that could be redeveloped as walk up flats, which is generally considered permissible under current planning requirements. Green areas reflect lots that would need to allow construction of between 4-8 stories for redevelopment to be viable, whilst red and blue categories are locations where redevelopment is not currently viable under any scenario based on current market conditions.

Figure 20 and Figure 21 show the distribution of feasible redevelopment scenarios aggregated at SA2 level, first as a proportion of the number of schemes in the SA2 and second as total numbers of schemes that are able to be redeveloped. This aggregation demonstrates the relative differences in the housing market that will or will not support renewal of existing strata schemes. High value locations close to the coast or on the harbour demonstrate the greatest potential for renewal of existing strata schemes. Figure 21, which shows the number of schemes that could be renewed by SA2, reflects both the number of existing scheme in the area combined with favourable local markets. As expected, many of the darker zones appear in eastern suburb and coastal areas, however there are a couple of notable exceptions. The Kogarah/Hurtsville area and in the northern near the Macquarie Park zone, both of which have been the focus of significant investment in the recent past.

There are a number of general observations that can be made about the patterning of redevelopment potential across Greater Sydney. First, while there are areas that have greater or lesser concentrations of potential, there are blocks that could be feasibly redeveloped in almost all areas of Sydney. However, across all areas, renewal potential is patchy as demonstrated in the case study profiles in Appendix A, which show the feasibility outcomes at a smaller scale. This patchiness in all areas demonstrates that feasibility is highly contextual and will depend on the particularities of any given scheme, with current scheme size and land area influencing possibilities.

Second, this model suggests that buildings that could feasibly be renewed are those where significant uplift in value can be achieved through a redevelopment process. Uplift in value can be derived from differences existing in the local property market between older, run down flats, compared with newer high quality flats. This condition mostly exists in high value locations, as demonstrated by Figure 16. Buildings can effectively be replaced by new development containing a similar number of units.

In other locations where this difference in price point does not exist, there is little capacity to derive profit from quality change alone. In many parts of the city, the addition of unit numbers is required to make a renewal feasible. This difference is most effectively represented in Figure 19 in which the purple zones indicated replacement with buildings of similar size and scale, while the green zones indicate schemes that would need to significantly increase in size to be redeveloped. The purple effectively follows high value coastal or harbour front zones while the green shows areas where increases in density would be needed to create market conditions that would support renewal at scale. Again, this process is further demonstrated by Figure 22 and Table 25 which show that as scheme sizes increase, the possibility of a feasible renewal scenario at densities lower than the 2.5 FSR (8 stories) reduces.

Affordability Scenarios

Figure 23 shows the distribution of schemes that could feasibly be redeveloped at price points affordable to households on median incomes within the local SA2. With the exception of a few schemes in high income SA2s, there were few schemes that could be redeveloped and return a 20% profit to a private sector developer. Figure 24 shows the distribution of schemes that could be redeveloped at affordable price points when the 20% profit margin is removed from the calculations. This shows an increase in the number of

schemes that could be renewed, however it is still below what may be the case under the current market conditions. There is no doubt that units in Sydney are being sold to home buyers (as opposed to investors), however, the implications of this analysis clearly point to the process of new apartment development being largely attracting a higher income purchaser compared to existing local demand potentials. .

Affordability Scenario 2 does however offer some alternative provided there is a mechanism to intervene in the financing and delivery arrangements of new units. The difference between Table 26 and Table 27 shows that if a not-for-profit scenario was to underpin the renewal of strata, then up to 10% of existing schemes could be delivered at a break-even point that were affordable to households with median incomes in the local area. Further analysis of this affordability modelling will be pursued using more targeted income groups, such as first time buyers.

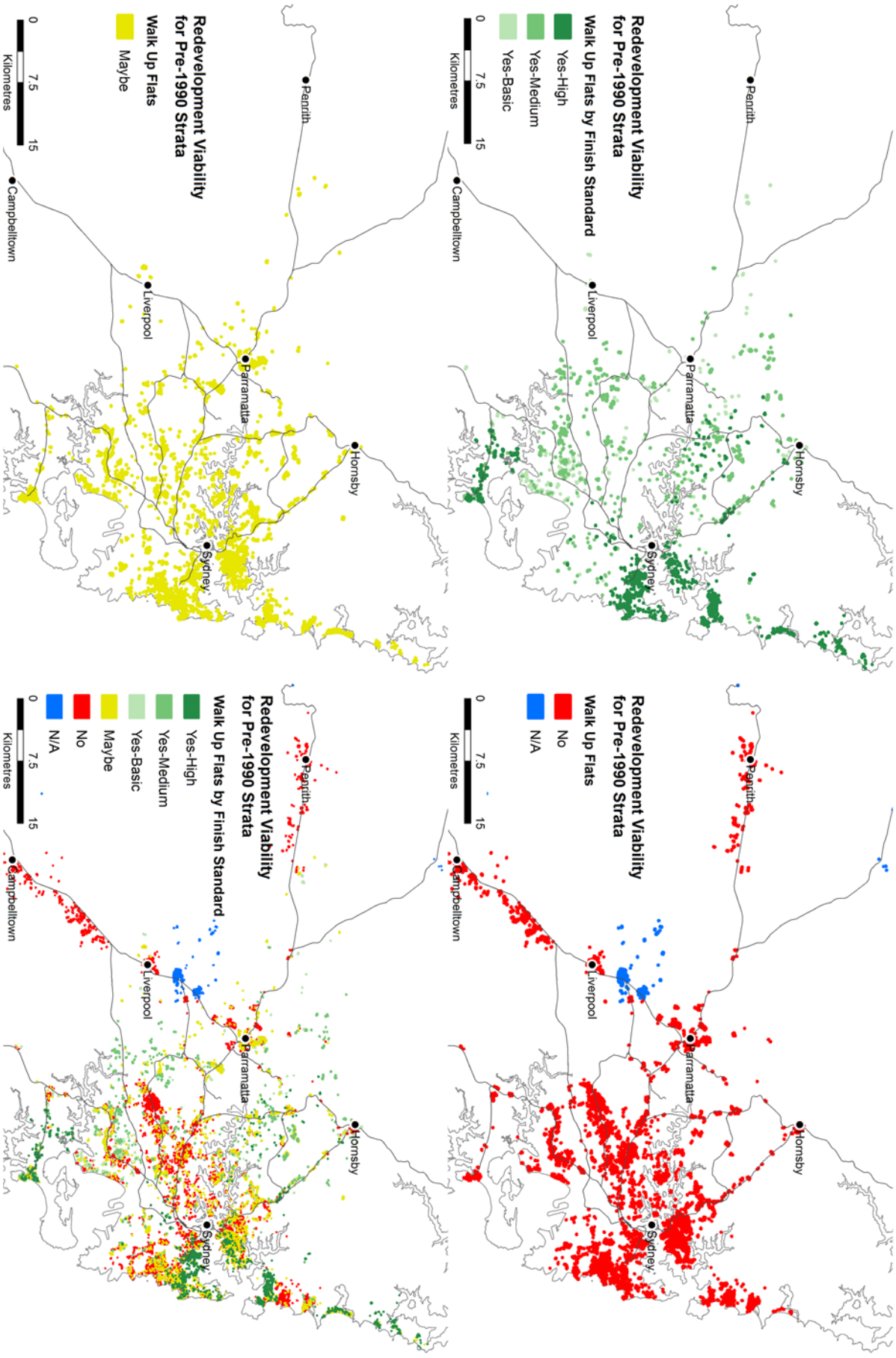

Figure 16 Walk up flat viability by category

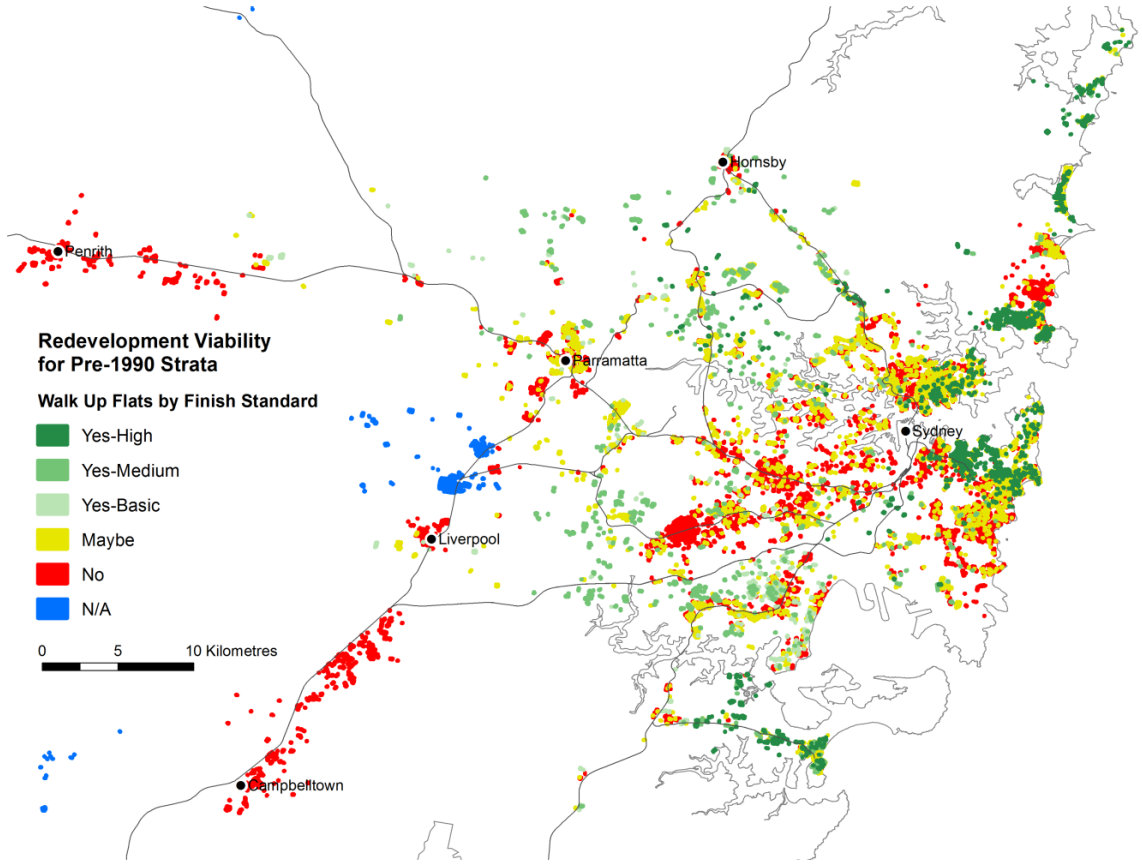

Figure 17 Accumulated walk up viability

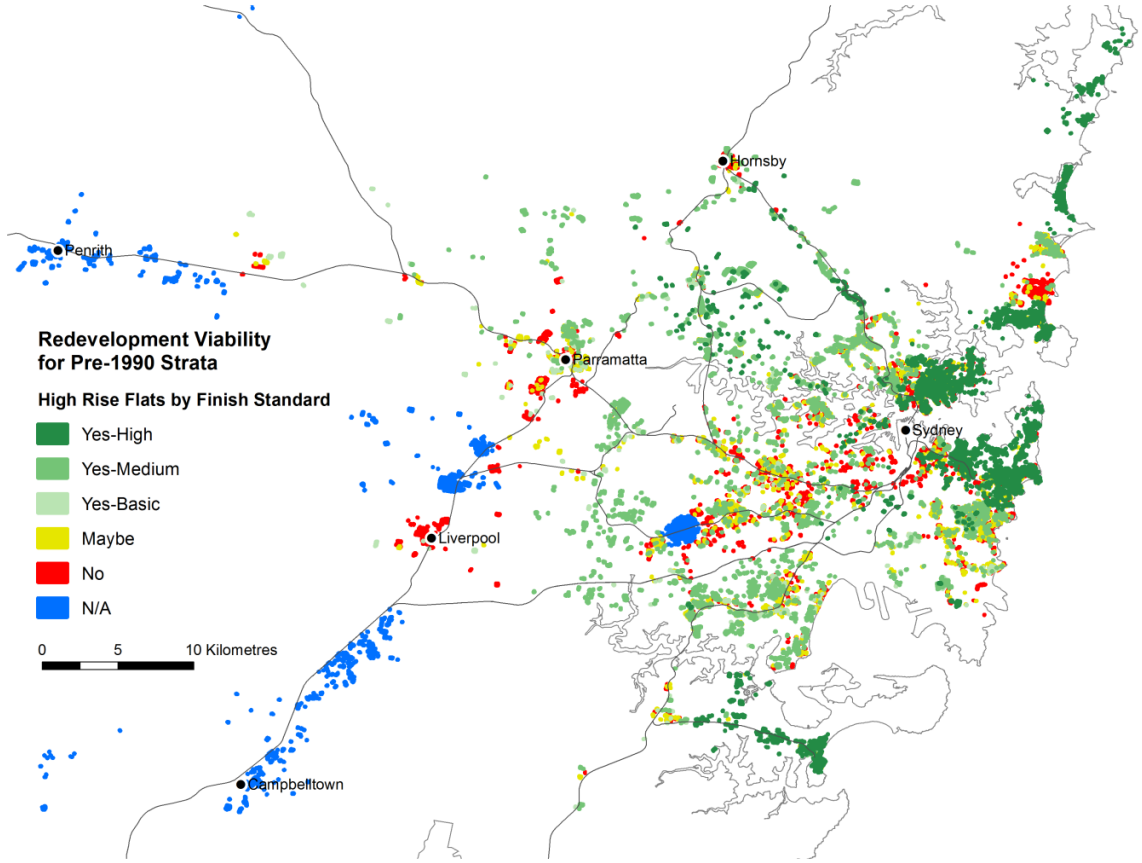

Figure 18 Accumulated high rise flat viability

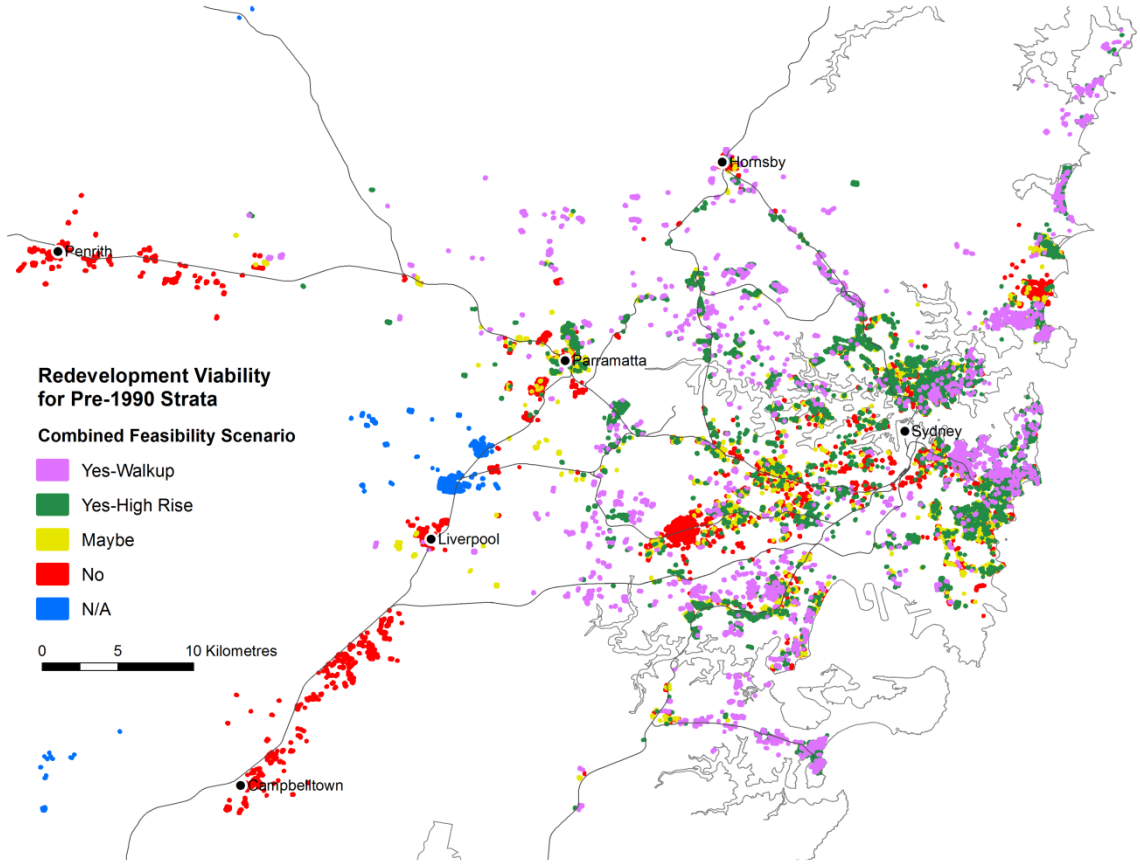

Figure 19 Accumulated viability categories for all renewal scenarios

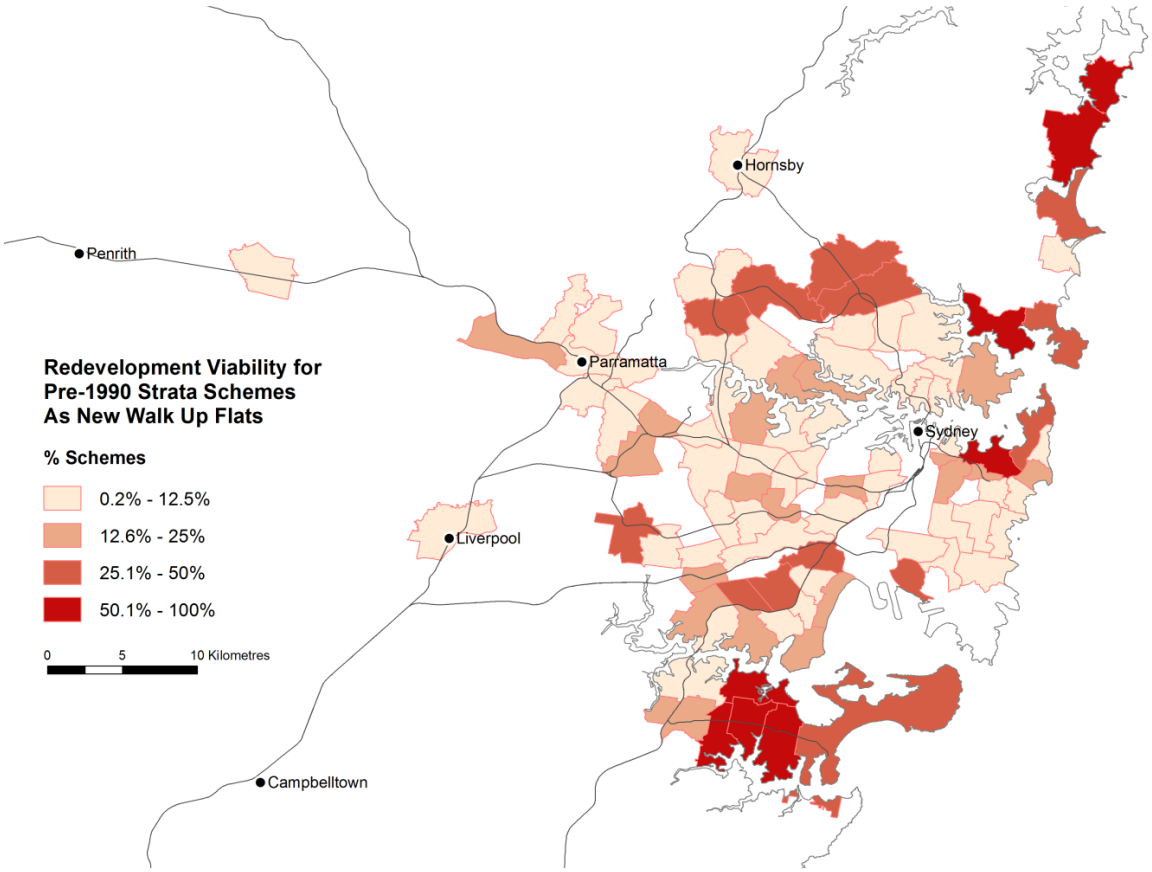

Figure 20 Proportion of schemes that could be renewed by SA2

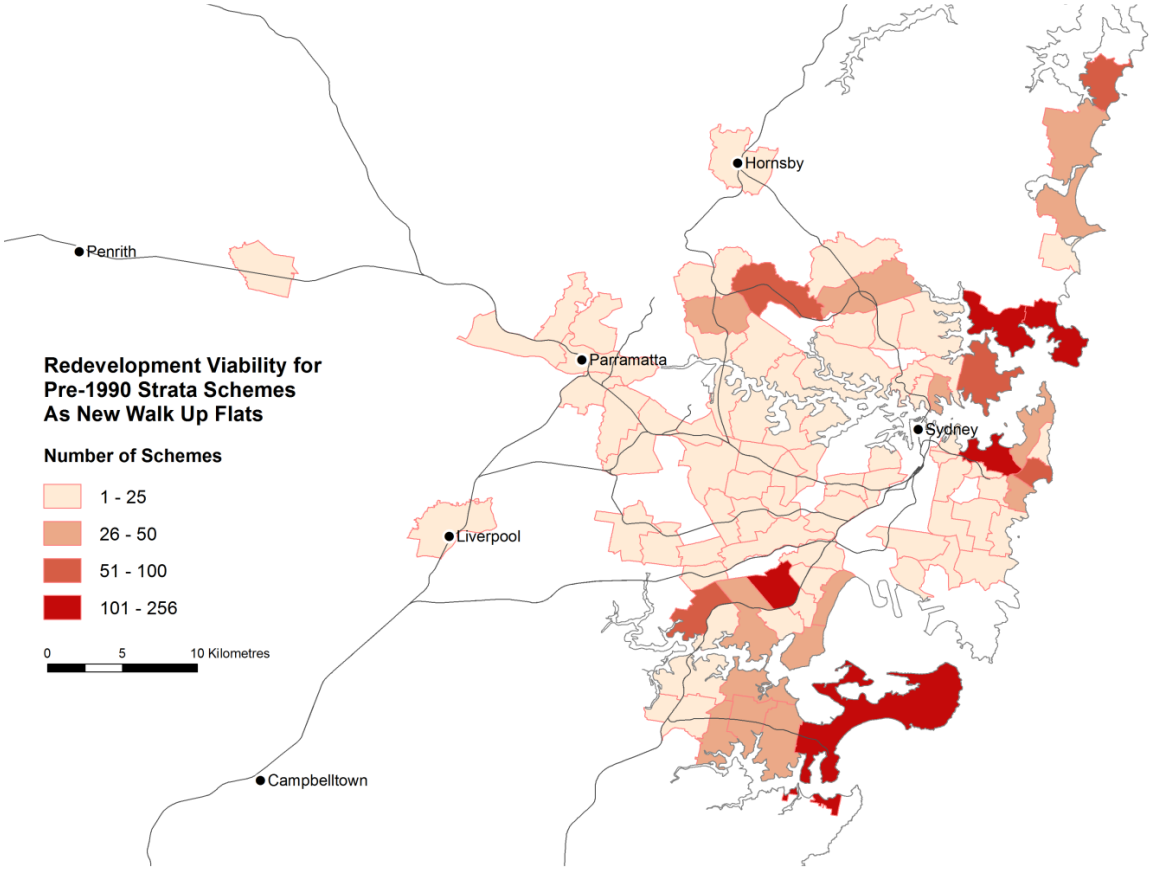

Figure 21 Number of schemes that could be renewed by SA2

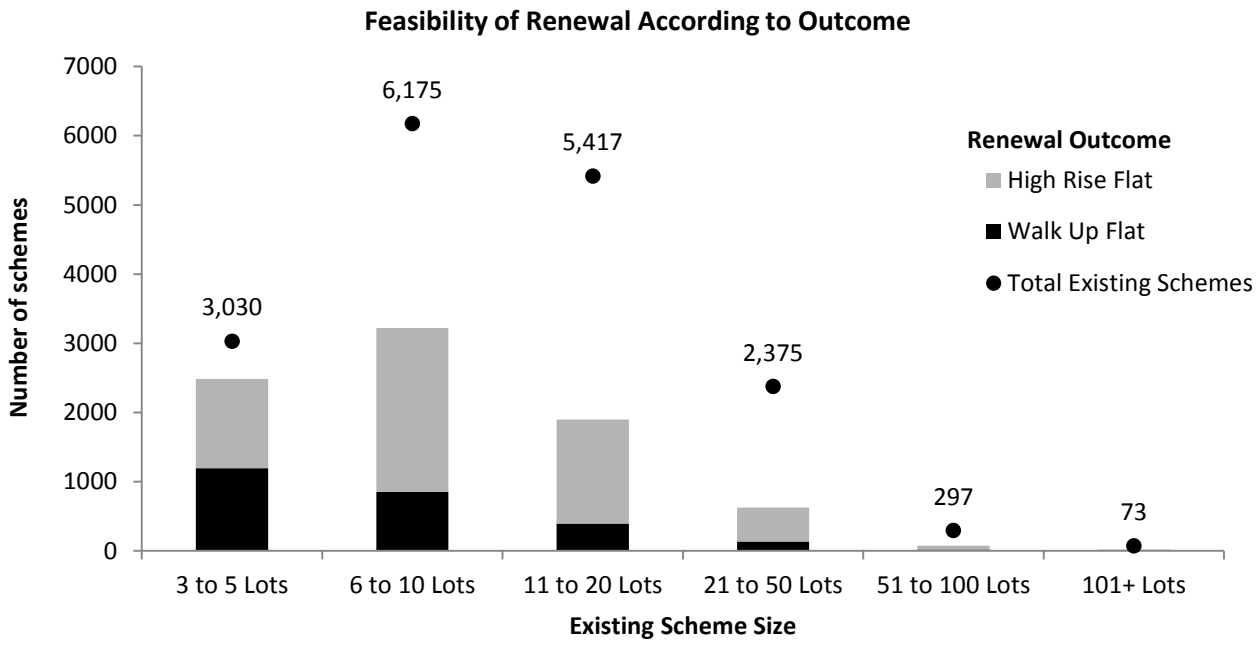

Figure 22 Number of strata schemes able to be redeveloped by existing scheme size category

Table 25 Renewal feasibility by outcome (percentages of row totals)

Existing Scheme Size	Yes-Walkup		Yes-High Rise		Maybe		No/NA		**Total**
	No.	%	No.	%	No.	%	No.	%	
3 to 5 Lots	1,194	39.4%	1,294	42.7%	210	6.9%	332	11.0%	**3,030**
6 to 10 Lots	854	13.8%	2,368	38.3%	1,315	21.3%	1,638	26.5%	**6,175**
11 to 20 Lots	393	7.3%	1,507	27.8%	1,317	24.3%	2,200	40.6%	**5,417**
21 to 50 Lots	136	5.7%	492	20.7%	396	16.7%	1,351	56.9%	**2,375**
51 to 100 Lots	21	7.1%	53	17.8%	36	12.1%	187	63.0%	**297**
101+ Lots	3	4.1%	15	20.5%	2	2.7%	53	72.6%	**73**
Total	**2,601**	**15.0%**	**5,729**	**33.0%**	**3,276**	**18.9%**	**5,761**	**33.2%**	**17,367**

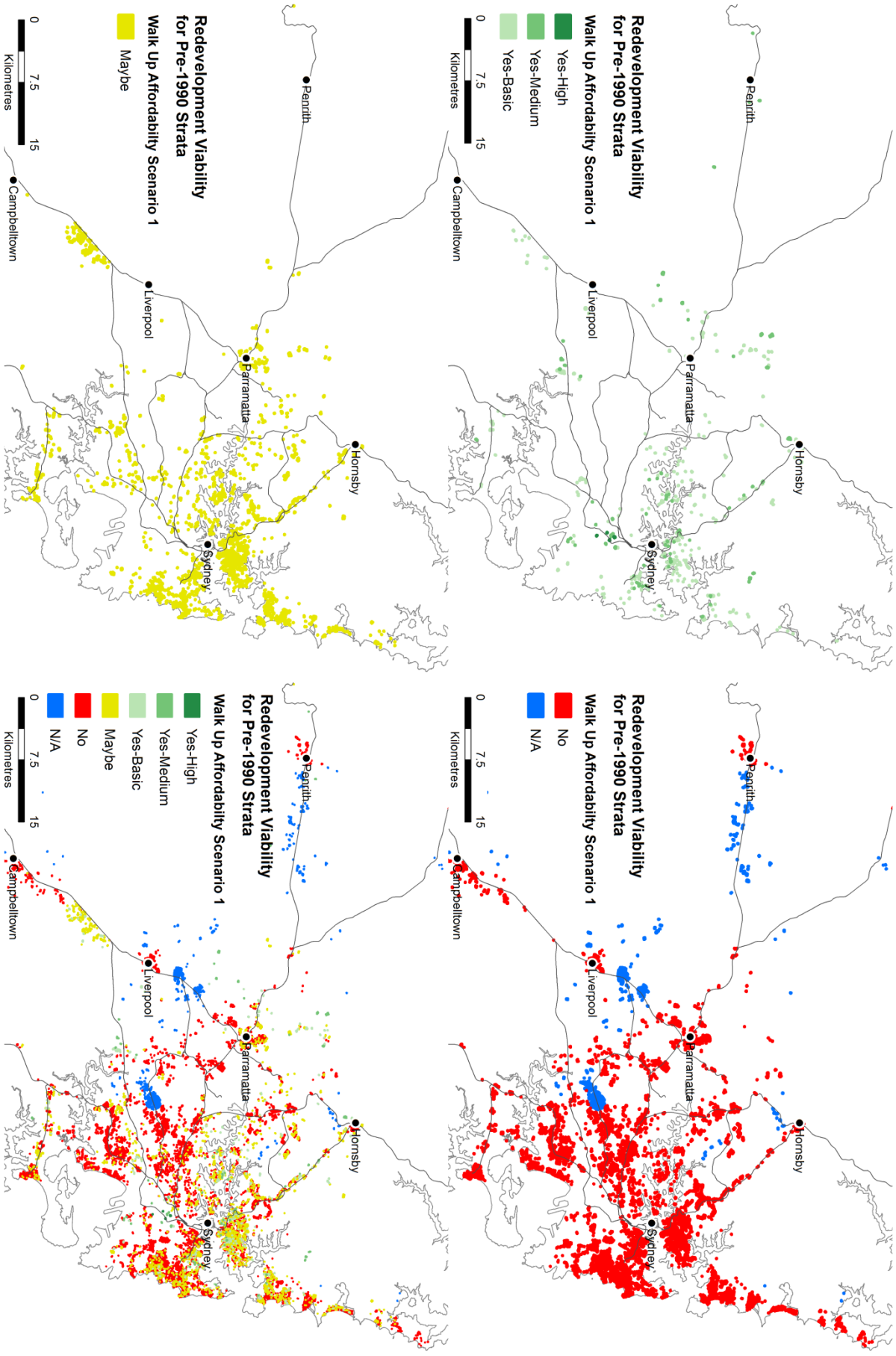

Figure 23 Feasible renewal with median household income setting sale prices (affordability scenario 1)

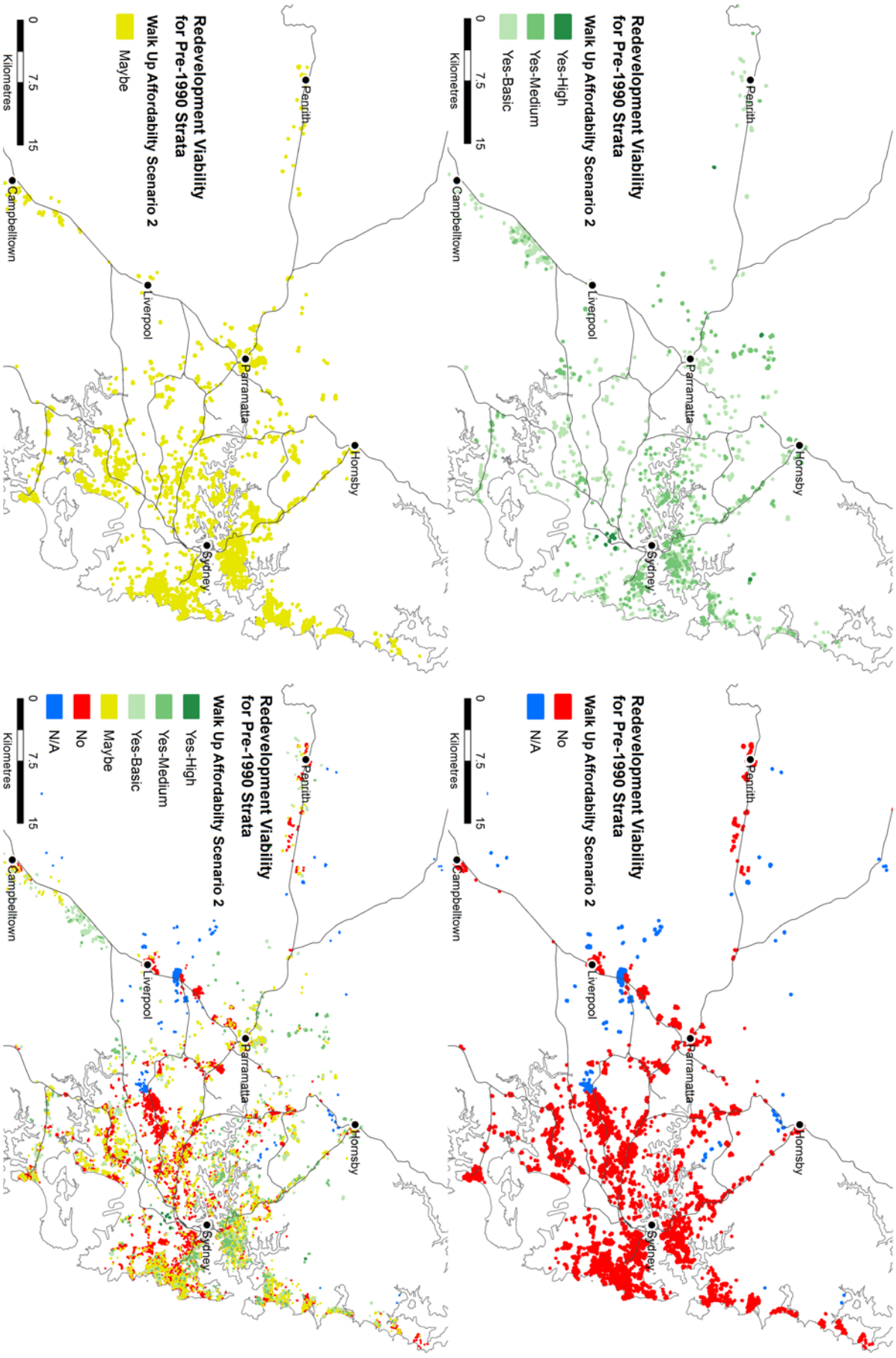

Figure 24 Feasible renewal at affordable sale prices, less 20% profit margin (affordability scenario 2)

Table 26 Proportion of strata schemes able to be redeveloped as a walkup flat according to scheme size category - Affordability scenario 1 (median household income as purchase price)

A1 - WalkUp	Yes	Maybe	No/NA	Total
3 to 5 Lots	7.2%	38.2%	54.6%	100%
6 to 10 Lots	1.9%	14.1%	84.0%	100%
11 to 20 Lots	1.0%	9.1%	89.9%	100%
21 to 50 Lots	1.1%	5.8%	93.1%	100%
51 to 100 Lots	1.0%	4.4%	94.6%	100%
101+ Lots	0.0%	12.3%	87.7%	100%
Total	**2.4%**	**15.4%**	**82.2%**	**100%**

Table 27 Proportion of strata schemes able to be redeveloped as a walkup flat according to scheme size category - Affordability scenario 2 (median household income as purchase price and less 20% profit margin)

A2 - WalkUp	Yes	Maybe	No/NA	Total
3 to 5 Lots	27.2%	48.8%	24.0%	100%
6 to 10 Lots	8.5%	34.5%	57.0%	100%
11 to 20 Lots	5.3%	23.0%	71.7%	100%
21 to 50 Lots	4.4%	17.5%	78.1%	100%
51 to 100 Lots	3.7%	15.5%	80.8%	100%
101+ Lots	8.2%	6.8%	84.9%	100%
Total	**10.1%**	**30.6%**	**59.3%**	**100%**

Profile and Case Study Data

This section provides an overview of the different sources of data presented in this report, the process used to analyse this data, and some of the limitations of the data.

Dwelling and Community Profile Data

All case study level data is based on an aggregation of Statistical Area Level 1 data within the Australian Bureau of Statistics (ABS) defined suburb boundaries. Unless otherwise specified, all figures represent a subset of the total population and include only those people in private sector high density housing. Given that dwelling characteristics define the population subset, all figures are based on place of enumeration.

Private sector high density housing is defined using ABS dwelling and tenure variables and comprises the following: Occupied private dwellings; Flat, unit or apartment, excluding those attached to a house shop or office; owned outright; owned with a mortgage or being rented, excluding those rented through state housing agencies and community organisations.

Tenure tables include counts of dwellings in other tenure categories to provide an overall picture of the dwelling composition in Sydney and within each case study area. In particular the inclusion of 'other tenures', which includes counts of visitor only households, and 'unoccupied dwellings', account for significant proportions of the total dwelling stock and any attempt to renew different parts of the city will need to consider these.

Sub-Market Profile

The sub-market profiles are based on a Principle Component Analysis (PCA) of 28 census variables presented in the community profiles. The sub-market profiles identify relationships between the variables. The PCA was used to identify four different groupings or typologies that describe more the 80% of the residential population in each SA1. These can be described as 'Economically Engaged', 'Battler', 'Achieving Education' and 'Residentially Retired'. Each SA1 can be assigned to more than one of the four categories and where SA1s do not meet the threshold for any category they are classified as highly mixed. The figures presented in each of the tables represent a percentage of the total SA1s in a given case study area that are classified according to each category. Given SA1s can be assigned more than one category, the sum of percentages can be over 100%.

Time Series Profile

2006 census data is based on an aggregation of Collection District (CD) boundaries that fall within the case study boundaries. Collection districts were associated with the case study areas based on the location of the centre point location of collection district polygons. There is variation between 2006 CD boundaries and 2011 SA1 boundaries which may account for some variation in figures for each census period. For this reason, no estimate of change in population or dwellings in absolute terms across the census periods should be derived from the figures. However, change in relative proportions of each category can be used to estimate a shift in population characteristics across census periods.

Strata Scheme Profile

Strata profile figures are based on the land titles records from New South Wales Land and Property Information (LPI) current as of 31 December 2013. Schemes were aggregated using the Strata Plan number within the database and estimates of scheme size were derived from counts of unique Lots within each scheme. Some schemes have multiple registration dates listed reflecting changes to the strata plan that may have been lodged following the registration of the scheme, in which case the earliest date listed is used

to reflect the actual registration date of that particular scheme. Strata scheme registration dates are used to indicate the age of individual apartment blocks, however should be used as an estimate only as many of the older developments were originally built under company title and subsequently converted to strata title. Non-residential strata schemes have been removed from this analysis based on land use zoning attributes in the LPI database. Schemes that include both non-residential and residential uses have been included in the analysis.

Each scheme was geocoded using the property address attributes and the Geocoded National Address File (GNAF). 12% of records were assigned a location with other potential locations tied, however of these only 117 records (>0.2%) had a match score of less than 100. A match score of 100 is assigned when there is a complete match with an address in the GNAF database. This means that of the 12% of records with addresses tied, almost all had a complete match to an address in the database.

The geocoded output was then assigned a SA1 seven digit code based on the point location of the addresses and figures presented in the strata scheme profiles are based on an aggregation of the SA1s that are associated with the case study areas.

There are differences between estimates of dwelling numbers derived from LPI data and dwelling count figures from the Australian Bureau of Statistics in the community profiles. There are several potential sources of difference in the two data sets, including:

- ABS records dwelling data according to building form (flats, units and apartments), some strata lots are townhouses and villas and have been excluded from the community profile estimates of dwellings reported here, while they would have been included in the LPI count of strata lots, which does not differentiate by dwelling form.
- Different methods used to obtain and geocode information: The LPI database reflects recorded property ownership records and is based around horizontal segmentation of land into discrete parcels (cadastre) and vertical segmentation of buildings based on lodged strata plans. ABS data is derived from counts of individual dwellings on census night and in some instances may not reflect the legal division of cadastre and strata. For example one apartment or dwelling may be reflected as two Lot divisions within a strata plan.
- Some lots registered on a strata plan may not represent a dwelling, such as car parks, and in these situations would inflate the notional number of dwellings in a given scheme.
- LPI property data includes schemes that are owned by public and community housing providers that were excluded from the ABS derived figures.
- ABS figures include flats the may be held under company title. Strata data reflects the legal status of strata titled properties and by definition will exclude any development that is currently registered under company title.

Sale Price Data

Sale price data is based on the Valuer General database of property sales and represents a record of transactions as lodged with NSW Land and Property Information. Values of transactions were extracted based on the contract date attribute which is the date at which a contract of sale is entered into with the prospective purchaser. As this is the point in time at which a price is agreed upon by the vendor and purchaser, it is considered that this reflects the 'market value' at that date. This is similar to the methodology used by the Australian Bureau of Statistics (Australian Bureau of Statistics, 2014) when generating median sales figures each quarter.

There are some records that refer to the same transaction though have been entered in the database for administrative reasons. For example, where 1 property is sold that relates to two or three separate lots on a strata plan. Other examples include where there is a difference in sale price between two records that have

the same address, market date and completion date. It is not uncommon for sale prices to be modified after a contract has been signed for a range of reasons usually set out in sale contracts. Other records appear ambiguous in that there are differences in the record but there are overlaps in dates and or similarities in price, for example, where the completion date for one record with the same address is a few days different to another record. The reason for duplication of these records is not known, however the date overlaps suggest that they do not represent separate transactions and were removed from the database. Some however appear to be legitimately distinct transactions, for example when two transactions for the same address are listed but are a few months apart. It is likely that this represents a subsequent sale of a property after its initial purchase.

To determine and remove duplicate sales records were filtered through querying a combination of contract and settlement dates for the same address to remove records to represent a single sale event. Each sale record was then geocoded based on the lot identifiers and matched with the profile of each strata scheme so that both age and size of scheme can be associated with a particular unit transaction.

The aggregated sale values that were subsequently derived from this database represent only those dwellings that were sold during a given period, which may differ from the range of values that would be associated with the dwelling stock as a whole. Different segments of the property market respond to broader economic conditions if different ways, which will affect average sales prices.

Using lot plan details also enables strata units to be identified by their legal status, rather than housing form. Other available sources of median unit price values, such as Australian Property Monitors, base their differentiation on form rather than title. It is for these reasons that differences in median values reported by other sources may be observed.

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