



2004 - 2010 Residential demolition and resubdivision report

Adelaide Statistical Division
February 2013



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Government of South Australia

Department of Planning,
Transport and Infrastructure

2004 - 2010 Residential demolition and resubdivision report

Adelaide Statistical Division

Cadastre and Land Information as at 30 June 2004 and 30 June 2010

This document reports on the location, scale and nature of residential dwelling demolitions and resubdivisions in the Adelaide Statistical Division between 2004 and 2010. Data is summarised at the suburb and Local Government Area level.

For further information

Please visit www.sa.gov.au or contact the Population, Land and Housing Analysis Unit, of the Department of Planning, Transport and Infrastructure on 08 8303 0600.

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ABBREVIATIONS

Abbreviation	Meaning
ASD	Adelaide Statistical Division
CV/SV	Capital Value to Site Value
DCDB	Digital Cadastral Database
ETSA	Electricity Trust of South Australia
GIS	Geographic Information System
LGA	Local Government Area
NPSP	Norwood, Payneham and St Peters
RDPA	Residential Development Potential Analysis

EXECUTIVE SUMMARY

Purpose of report

This report provides a detailed analysis of the nature, scale and geographic distribution of residential demolitions and resubdivisions in metropolitan Adelaide between July 2004 and June 2010. The report also includes information about site and dwelling characteristics before and after demolition and resubdivision.

Demolitions

- A total of 10,975 dwellings were demolished in the Adelaide Statistical Division between July 2004 and June 2010. This equates to 1,829 dwelling demolitions per year.
- Almost 70 per cent of demolitions in metropolitan Adelaide were within 10 kilometres of the City of Adelaide.
- An estimated 18,989 new dwellings will be constructed in place of the demolished dwellings, which is a net increase of 8,014 dwellings. On an annual basis this is an average increase of approximately 1,335 dwellings as a result of redevelopment on demolition sites.
- In 2004, around 67 per cent of demolition sites were privately owned and 27 per cent were owned by Housing SA.
- The total replacement rate on demolition sites equates to 1.7 dwellings for every one dwelling demolished.
- The total land area of demolition sites between 2004 and 2010 was 823 hectares, or an annual average of 137 hectares.
- Comparison with previous studies shows that the number of demolitions has increased over the last two decades from 700 in 1991 to 1,303 in 1999 and an annual average of 1,829 in this study.

Resubdivisions

- The number of sites in the Adelaide Statistical Division identified as being resubdivided with the original residential dwelling(s) retained totalled 2,812 between July 2004 and June 2010. Annually, the number of small scale resubdivisions equates to 469 sites.
- An estimated 3,507 new dwellings will be constructed on resubdivision sites. On an annual basis this equates to 585 new dwellings per year.
- 94 per cent of resubdivision sites were privately owned.
- Between 2004 and 2010 small-scale resubdivision where the original dwelling was retained contributed around 141.5 hectares to the Adelaide Statistical Division's residential land supply which is an annual average of 24 hectares.

Dwelling increase

The average net annual increase from demolition and resubdivision activity over the study period was 1,920 dwellings. This represents around one-third of the total dwelling stock growth in metropolitan Adelaide.

1 INTRODUCTION

1.1 Context

This study examines the demolition, resubdivision and redevelopment of the housing stock in the existing suburbs of metropolitan Adelaide. It is a phenomenon that has been moving through our suburbs since the 1980s and it currently accounts for around one-third of all housing developments. This type of development is categorised as 'minor infill' and most projects result in the production of only one or two additional dwellings.¹

The potential for minor infill under current council development plans is extensive and the first section of the report quantifies this potential across metropolitan Adelaide using a Geographic Information System (GIS) based analysis. In this analysis the minimum requirements for different development types within each Council zone/policy area and the geometry of the existing residential land parcels are used to calculate a theoretical potential for minor infill. Although the potential is vast, the actual amount realised over time is restricted by a number of factors including; the age, location and ownership of the existing housing stock, and the capital to site value (CV/SV) ratio.

The second, and most substantial, part of the report is a comprehensive analysis of the amount of demolition, resubdivision and redevelopment activity in the Adelaide Statistical Division (ASD) over the period 2004 to 2010. Once again a GIS based analysis process is used to extract the number and spatial distribution of demolitions and resubdivisions, as well as the replacement rate on demolition sites. This section provides important baseline information about the supply of additional dwellings coming from minor infill which in turn helps to inform the overall land supply situation.

It should be noted that this study focuses on the existing zoned residential areas in metropolitan Adelaide. Other methods are used to identify the theoretical potential from major infill projects within the precincts and corridors outlined in *The 30-Year Plan for Greater Adelaide* (the 30-Year Plan). In many of these areas there is currently a mixture of different zones and significant re-zonings are required to achieve the density and infill objectives of the 30-Year Plan.

1.2 Residential land supply monitoring

This study is a part of the overall land supply monitoring activities performed by the Department of Planning, Transport and Infrastructure. In the context of the total number of additional dwellings built each year in metropolitan Adelaide minor infill contributes around 25 to 35 per cent. This is a significant share and therefore it is essential we understand both the potential and actual activity occurring across suburban Adelaide and the Greater Adelaide region.

In recent years land supply monitoring has become increasingly complex as the amount of broadhectare greenfield development has decreased and the dwelling supply coming from both minor and major infill sites has increased. This change, in conjunction with the 30-Year Plan, means that our land monitoring activities need to consider supply from all sources including:

- Broadhectare land development in both infill and fringe / township locations
- Major infill sites within transit corridors and key precincts
- Minor infill sites - created by the demolition, resubdivision and redevelopment of existing residential land parcels - the focus of this report.

In February 2010, the 30-Year Plan introduced a new approach to land supply that includes:

- Adopting a 25 year rolling supply of land for industrial, residential, commercial and retail land based on population, housing and employment targets in the 30-Year Plan
- Ensuring that 15 years of zoned land is available for urban development at any given time

¹ The 'minor infill' category includes developments of 10 additional lots or less.

- Allowing for a 25 per cent buffer in the supply of broadhectare land to protect housing affordability
- A target to increase the amount of infill to 70 per cent of all development by 2036.

The introduction of infill targets has reinforced the need for accurate and timely information about both major and minor infill developments. Figure 1 depicts the land monitoring process and shows the relationship between the Planning Strategy which sets the broad policy directions and targets, and the *Housing and Employment Land Supply Program*² which assesses the supply against the targets and recommends a future land re-zoning strategy. The minor infill component of the overall land supply monitoring process is the focus of this report.

Figure 1: Land supply monitoring process in South Australia

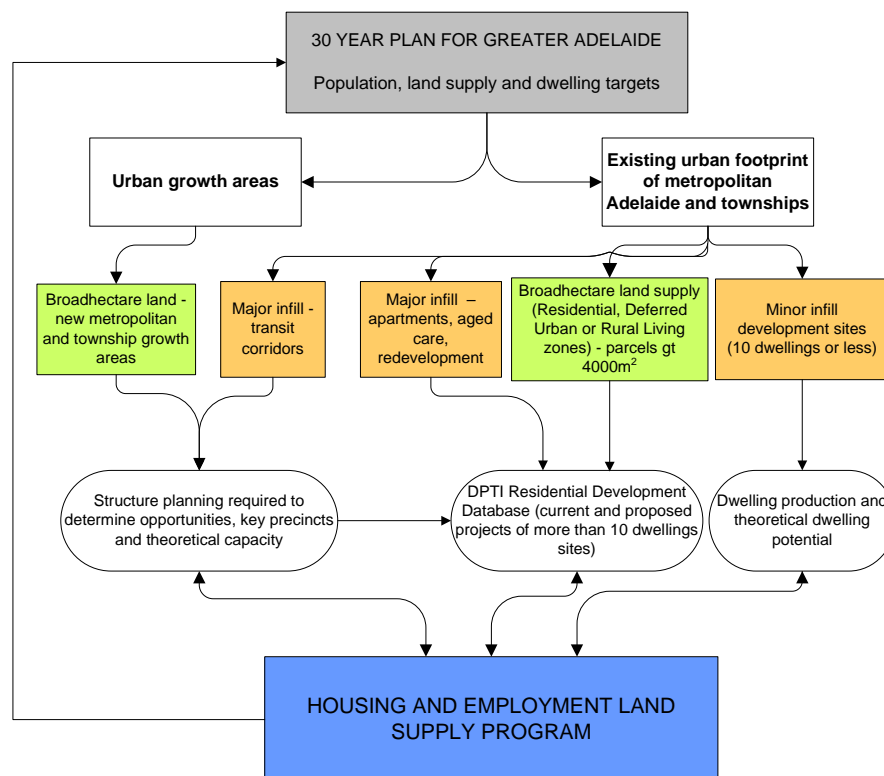


Table 1 shows the relative share of new dwellings from the three main development types in Greater Adelaide. While the share from minor infill tends to fluctuate between 25 and 35 per cent depending on the state of the housing industry, in numeric terms it provides a relatively stable supply source.

Table 1: Share of new dwellings from the three main development types in Greater Adelaide

Development type	Description	Share
Broadhectare	Includes land in fringe, township and infill locations zoned for residential use.	40-50%
Minor Infill	Demolition, resubdivision and redevelopment of existing suburban blocks.	25-35%
Major Infill	Designated corridors, precincts and the City of Adelaide. The potential for major infill development is also vast however can only be realised through significant zoning changes.	20-30%

² Housing and Employment Land Supply Program 2010 - www.sa.gov.au/planning/landsupplymonitoring

2 MINOR INFILL DEVELOPMENT POTENTIAL

The scope for minor infill development across metropolitan Adelaide is substantial and the following analysis quantifies when, where and how much could occur. The potential for minor infill development is calculated by a GIS process developed by the department known as the Residential Development Potential Analysis (RDPA).

2.1 Residential development potential analysis (RDPA)

To estimate the potential for minor infill, a GIS based analysis is used to compare the geometry of the existing land parcels (parcel area and street frontage) to the minimum requirements for different development types (detached, semi-detached, flats, group and row housing) within each Council zone/policy area.

The output of this process is a theoretical maximum potential number of additional dwellings, for different dwelling types (detached, semi-detached, row etc), on each land parcel. A comparison of the theoretical maximum potential with the existing dwelling(s) determines whether an increase is possible on each parcel.

The following land parcels were excluded from the analysis:

- Land parcels with existing flat and apartment buildings. Fragmented ownership will make it very difficult to redevelop these sites.
- Land parcels with State heritage listed buildings.
- All zones that do not currently allow residential development.
- Land parcels that are greater than 4,000m² in residential zones. These parcels are included in the Broadhectare land supply analysis.

The RDPA provides a base case potential under current residential policy settings which is an invaluable starting point for understanding the potential minor infill land supply. The analysis is based on individual land parcels and the data can be aggregated to any specified geography (suburbs, Local Government Areas, corridors as defined by the 30-Year Plan).

2.2 Using capital to site value ratios to indicate development time-frames

A refinement of the RDPA analysis process involves applying the capital value to site value (CV/SV)³ ratio to determine likely development time horizons. This ratio measures the value of the dwelling and other improvements relative to the land value. In theory, a lower CV/SV generally means that the site is a more likely candidate for redevelopment in the short to medium term.

To test the CV/SV theory, new dwellings built in metropolitan Adelaide since 2008 on land parcels identified in the 2009 RDPA were selected and analysed.⁴ In other words, land parcels with redevelopment potential that were actually developed over the period 2008 – 2011. The results shown in Table 2 clearly supports the theory, with 82 per cent of the developed sites having a 2008 CV/SV of between 1 and 1.3, and a further 10 per cent having a CV/SV between 1.3 and 1.5.

Another finding from this analysis is that 3,994 (5.1%) of the 78,352 sites identified with potential for redevelopment (and with a CV/SV less than 1.5) had been developed in the three years to 2011.

³ The CV/SV for each parcel is calculated using data from the State Valuation file.

⁴ The RDPA analysis does not include Adelaide LGA or Adelaide Hills (part) LGA.

Table 2: Land parcels developed between 2008 and 2011 with potential for one or more additional dwellings by CV/SV group

CV/SV ratio	Number of parcels developed	Percent of parcels developed	Number of land parcels in RDPA
1 – 1.3	3,543	82%	49,399
1.3 – 1.5	451	10%	28,953
1.5 - 2	285	7%	60,449
>2	31	1%	40,088
Total	4,310	100%	178,889

This brief analysis, and the more detailed analysis of demolition activity in section 3 of this report, confirms that the CV/SV ratio is a very useful predictor of the sites that are more likely targets for redevelopment in the short to medium term.

2.3 How much potential is there?

The theoretical maximum development potential calculated by the 2009 RDPA for metropolitan Adelaide is around 240,000 - see Table 3. Although, as discussed in the previous section, the most likely stock of sites for redevelopment in the short to medium term is expected to come from properties with a current CV/SV between 1 and 1.3 (maximum potential of around 71,000).

The actual amount achieved over time is likely to be considerably less than the theoretical maximum amount as the property owners will either:

- renovate and remain in their existing dwelling
- demolish and replace with a single dwelling
- wait until it becomes economically viable to redevelop their property
- age-in-place and elect not to downsize

To more accurately reflect the realistic potential in the longer term an availability assumption was applied to each of the CV/SV groups. For the properties with a current CV/SV ratio between 1 and 1.3 it was assumed that 40 per cent of the sites will be developed over the longer term. For properties with current CV/SV ratios greater than 1.3 it was assumed that 30 per cent would be available over the longer term.

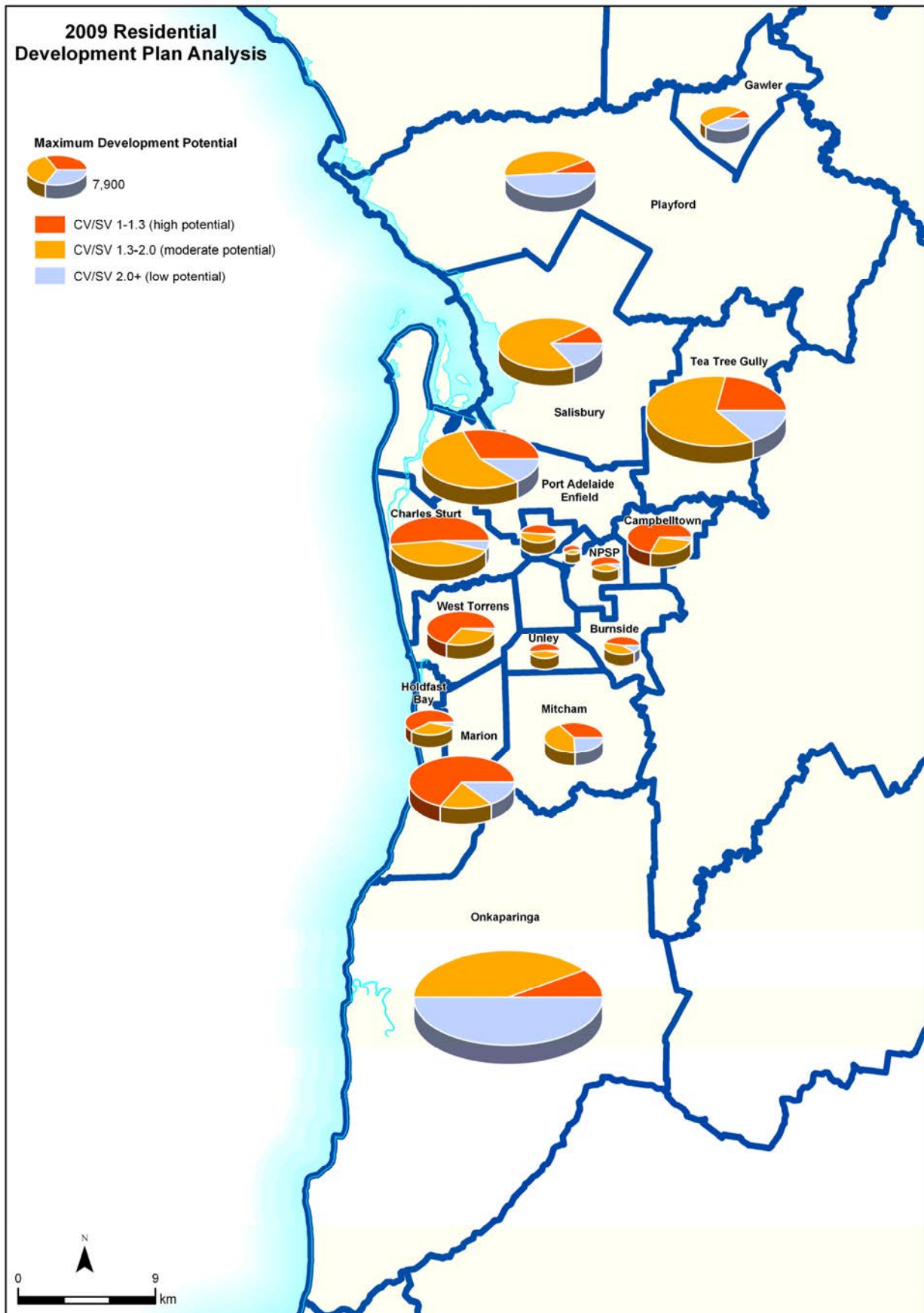
After applying the availability assumption, the longer term realistic potential from minor infill is around 80,000, which represents around 30 per cent of the 30-Year Plan target for 258,000 additional dwellings.

Table 3: Theoretical maximum development potential by CV/SV group

CV/SV ratio	Theoretical maximum development potential	Availability assumption	Realistic potential
1 – 1.3	71,239	40%	28,495
1.3 – 2	114,794	30%	34,438
>2	56,291	30%	16,887
Total	242,324		79,820

Map 1 shows the spatial distribution of theoretical maximum potential at the Local Government Area level for the three CV/SV groups. The inner and middle LGAs have the greatest amount of short to medium term potential based on the relatively high potential coming from properties with low CV/SVs.

Map 1: Theoretical maximum development potential by Local Government Area



2.4 Issues and limitations

The RDPA process provides invaluable baseline data about the underlying potential for minor infill development across established suburbs. However the following issues need to be considered when using this information:

1. The RDPA relies on the current council development plans and does not account for dwelling setbacks, site coverage ratios, design issues, significant trees, heritage places or other localised influences on urban form. For this reason it cannot be used to definitively calculate dwelling yield on individual land parcels and should only be utilised to calculate potential yields by area (e.g. by zone).
2. A number of council development plans lack clear specifications for minimum frontages and site areas thus reducing the accuracy of the analysis.
3. It does not cater for multi-storey developments which are common in councils such as Holdfast Bay and the City of Adelaide. The RDPA does not apply to the City of Adelaide.
4. The RDPA process only considers policies within existing residential zones. Other methods are used to identify the theoretical potential from major infill projects within the precincts and corridors outlined in the 30-Year Plan. In many of these areas there is a mixture of zones and significant re-zonings are required to achieve the density and infill objectives of the 30-Year Plan.
5. The Residential Development Code (introduced in 2009) allows complying new dwellings to be built without reference to the relevant development plan code, i.e. these dwellings only require building consent. All metropolitan councils have indicated areas under which the Residential Code applies. As the code does not specify minimum site areas or frontages for development, the development potential of these areas cannot be analysed and quantified.

2.5 Summary

The aim of this introductory section is to provide a context for the more detailed analysis of demolition, resubdivision and redevelopment presented in the next section of this report.

3 DEMOLITION AND RESUBDIVISION ACTIVITY 2004 - 2010

3.1 Background

Up until 1980, the Australian Bureau of Statistics collected data on dwelling demolitions as an input to their housing stock collection. In 1981 a report was prepared for the South Australian planning department outlining the necessity and data requirements for monitoring residential development in the ASD. The report recommended that a systematic method of collecting demolition data be identified, as these sites would increasingly become the major source of land available in the central sector of the ASD (Cloher, 1981). Despite this recommendation, the first collection of dwelling demolition data for the ASD since 1979 did not occur until 1992, when the planning department analysed Electricity Trust of South Australia (ETSA) permanent meter removals that occurred in a six month period in the previous year (Edwards, 1992). The method assumed that a demolition requires the permanent disconnection of the power supply, which involves the removal of a meter box and power cables to the property. Sites identified as having a permanent meter removal were surveyed and information collected about the number and type of dwellings demolished and constructed. In 2001 the survey was repeated using meter removal data from calendar year 1999 (Burrows et al, 2002). Both surveys were time consuming and costly.

In 2004 the Department of Planning, Transport and Infrastructure devised an alternative method for obtaining dwelling demolition data for the ASD. It involved the use of GIS software and geoprocessing scripts to automate the processes for extracting dwelling demolition data from the Digital Cadastral Database (DCDB) and linked Valuation files. To assess the effectiveness of the new method, the GIS process was initially applied to the 1998 and 2001 DCDB, Valuation and link files. This time-frame allowed for a comparison of results with the demolitions identified in the 1999 Demolition Survey. The GIS process identified 93 per cent (820) of the 882 residential demolition sites identified in the 1999 Demolition Survey. Problems with information in the Valuation files and missing links between the DCDB and Valuations accounted for the 7 per cent (62) of sites that were not identified.

The introduction of the Property Cadastre has helped to overcome some of the issues relating to the Valuation information and missing link files. The Property Cadastre stores information relating to Valuation assessments, as opposed to the DCDB which is land parcel based. By 2010, the availability of the Property Cadastre layer and improved GIS software capabilities enabled the extraction of dwelling demolition information for the years 2004 to 2010 via a series of queries.

The process of extracting dwelling demolition information also identified sites that had been reconfigured with the original dwelling(s) retained and the balance of the site subdivided to create additional allotments. This is more commonly known as 'resubdivision'. The process of resubdivision does not involve the demolition of dwellings. Examples include corner allotments where a new dwelling is constructed in what was the backyard of the original dwelling and battle-axe developments where a new dwelling is constructed at the rear of the original dwelling. The resubdivision of sites results in the creation of new residential allotments and contributes to the overall supply of land in the ASD. This report summarises activity on both demolition and resubdivision sites to provide a broad picture of minor infill development.

3.2 Scope

3.2.1 Demolitions

In the context of this study a demolition is defined as the permanent removal of a residential dwelling(s) built prior to 2004 on an allotment less than 4,000m², that is replaced with a new or partially constructed residential dwelling(s), or was still vacant in 2010. The main residential dwelling types are detached houses, semi-detached (maisonettes), home units, flats and aged flats.

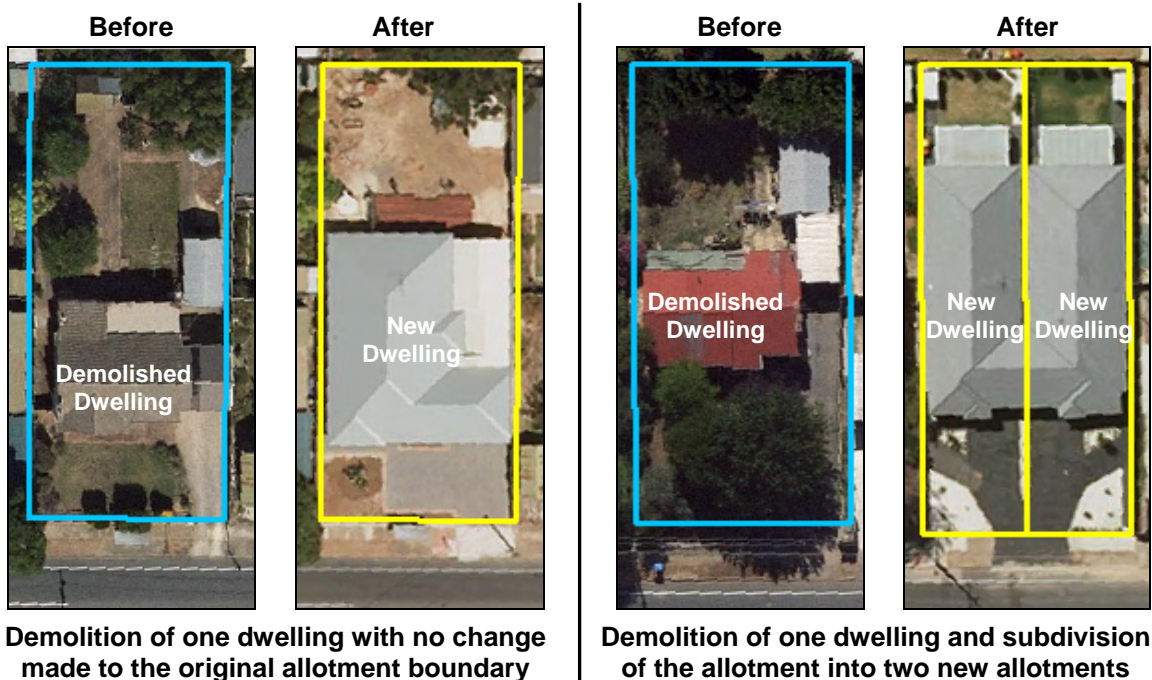
A demolition 'site' refers to the allotment from the 2004 Property Cadastre that the dwelling demolition occurred on. For large Housing SA redevelopments involving the levelling of multiple street blocks and reconfiguration of allotments, a boundary was created around the whole site. Some of these amalgamated Housing SA sites exceed 4,000m².

A number of different demolition scenarios are possible. These include the demolition of a dwelling(s) with:

- no change made to the original allotment boundary
- the subdivision of the original allotment into two or more new allotments
- the amalgamation of two or more allotments into one
- the amalgamation of two or more allotments into one, then subdivision to create new allotments; and,
- boundary shifts, making the allotment area larger at the expense of an adjacent allotment

Figure 2 shows examples of the most common demolition scenarios.

Figure 2: Examples of residential demolition scenarios



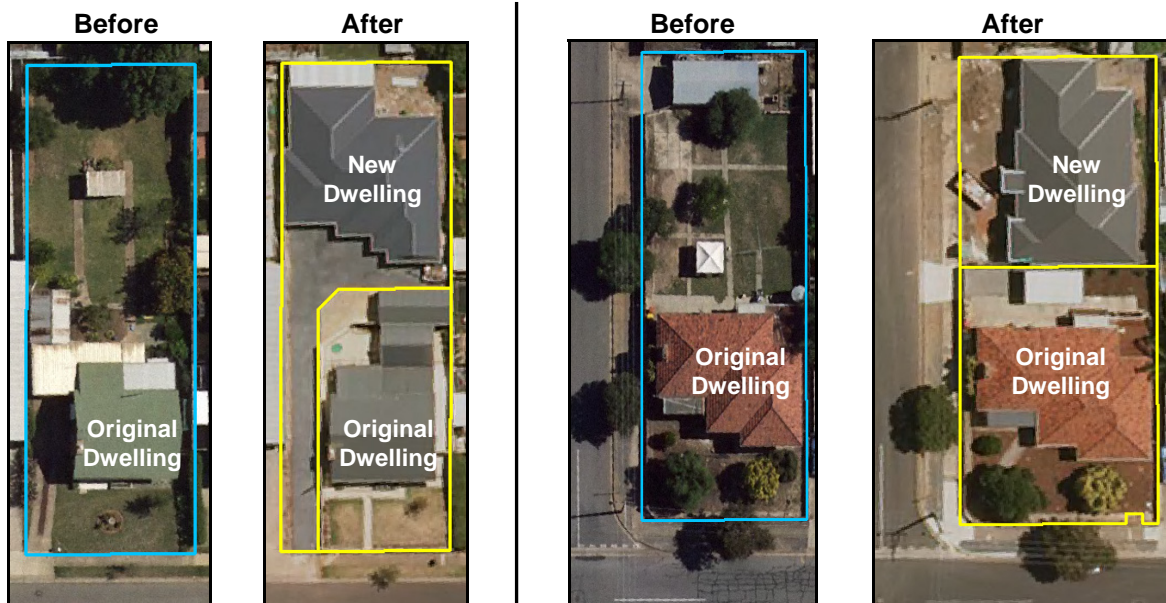


Demolition of dwellings and amalgamation of allotments, then subdividing to create four new allotments

3.2.2 Resubdivisions

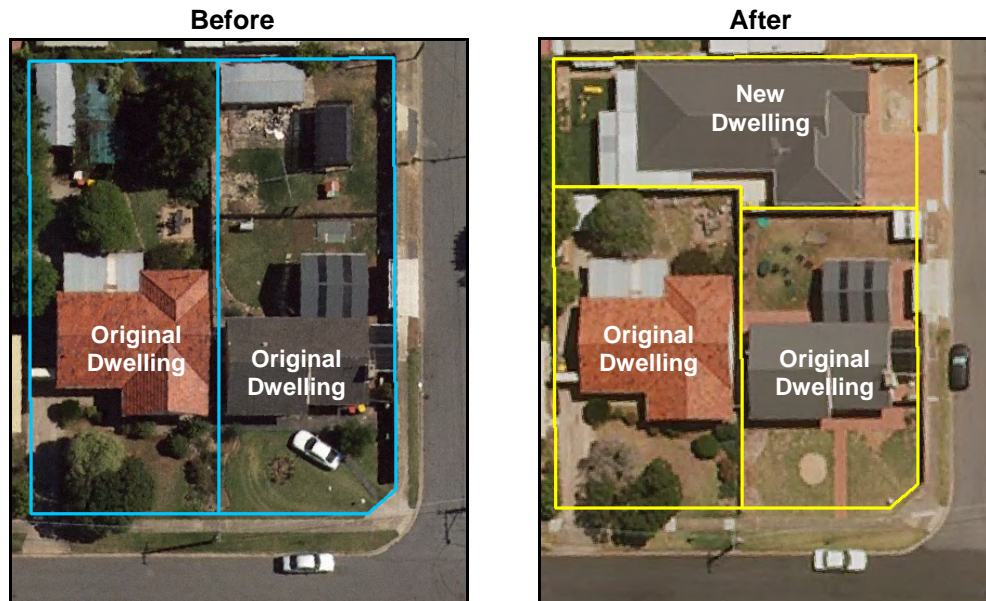
A resubdivision site is defined as a parcel of land less than 4,000m² containing a residential dwelling(s) built prior to 2004, that is resubdivided with the newly created land parcel still vacant or containing a new or partially constructed residential dwelling(s) in 2010. In the context of this analysis a resubdivision does not involve the demolition of a dwelling. Figure 3 shows examples of residential resubdivision scenarios.

Figure 3: Examples of residential resubdivision scenarios



One new dwelling constructed on a 'battle-axe' allotment at the rear of the original dwelling

One new dwelling constructed on a corner allotment at the rear of the original dwelling



One new dwelling constructed at the rear of two original dwellings

3.3 Data sources

3.3.1 Property Cadastre

The Property Cadastre is a spatial representation of all properties in South Australia assessed by the Valuer-General for rating and taxing purposes. As the custodians of the Property Cadastre, the Department of Planning, Transport and Infrastructure is responsible for maintaining and updating the dataset on a daily basis. A 'snapshot' of the Property Cadastre is obtained as at 30th of June each year. The 2004 and 2010 snapshots of the Property Cadastre were used for this study.

3.3.2 Valuation file

Each year the Department of Planning, Transport and Infrastructure captures a snapshot of Valuation information, which contains a number of items pertaining to the valuation of a property. The Valuation file is linked to the Property Cadastre using unique identifiers common to each database. The 2004 and 2010 snapshots of the Valuation file were used for this study.

The valuation items utilised for the databases include:

- year built – the year the dwelling was constructed (dwellings constructed before 1984 have estimated year built values)
- landuse – a four digit descriptor of the landuse
- site value – value of the land
- capital value – value of the land and any improvements (e.g. dwelling)
- owner number – number identifying the owner of the property (e.g. Housing SA, Private, Company, Association)

3.3.3 Aerial photography

Recent (2010) and historic (1997, 2004, 2007) aerial photography was used to verify some of the sites identified by the GIS process.

3.3.4 Deposits and proposals

The land division development applications (deposits and proposals) layer was used in conjunction with the aerial photography to verify some sites.

3.4 Time-frame

The databases identify sites where a demolition or resubdivision (with original dwelling retained) occurred between July 2004 and June 2010. The six year time-frame has been used in an effort to account for the time lag that exists between the demolition of a dwelling and the construction of a new dwelling. However, around 30 per cent of demolition sites were either still vacant or had unfinished dwellings on them when the 2010 Valuation snapshot was taken. The large Housing SA redevelopments which span several years contain a mix of post demolition land uses, including; vacant land, unfinished dwellings, new dwellings and in some cases recreation reserves.

3.5 Study method and validation

The method employed to create the dwelling demolitions and resubdivisions databases is outlined in Appendix 1. A range of validation checks were performed throughout the GIS Process. These are also detailed in Appendix 1.

3.6 Field checks

In September 2010, field checks were performed on the demolitions database using a sample of sites in Ascot Park, Glenelg East, Somerton Park, Dover Gardens and Park Holme. The current details (number of dwellings etc) of the demolition sites recorded were correct for all sites in the sample. The addresses of possible omissions from the database were noted down and these after checking in the office were found to be sites where the demolition process was complete by 2004, and therefore outside the scope of the database.

4 RESULTS

4.1 Demolition and resubdivision activity 2004 - 2010

This section summarises the total level of both demolition and resubdivision activity.

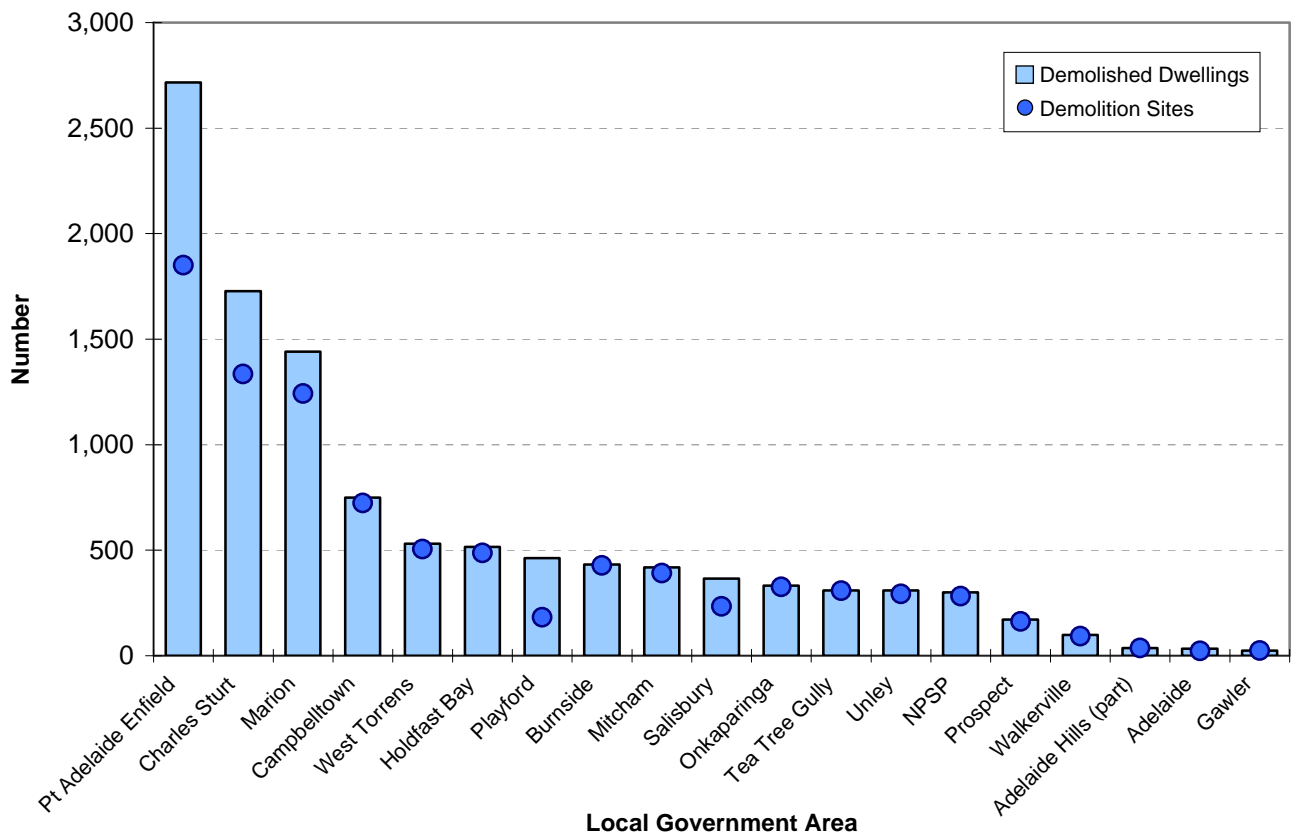
4.1.1 Demolitions

Between July 2004 and June 2010 there were 8,924 sites where the demolition of residential dwellings occurred. On these sites 10,975 dwellings were demolished, equating to an annual average of 1,829 dwellings over the six year period.

Figure 4 summarises the number of demolition sites, along with the total number of demolished dwellings by Local Government Area (LGA) (see Appendix 2 for a map of LGA boundaries). Port Adelaide Enfield had the highest number of demolitions, with 2,716 dwellings demolished on 1,851 sites. This accounted for almost one quarter of all demolished dwellings in the ASD. Several large Housing SA redevelopments in this LGA contributed to the high number, with 47.9 per cent (1,302) of demolished dwellings owned by Housing SA in 2004.

Some Housing SA sites were large and contained many demolished dwellings which accounts for the significant difference between the number of demolition sites and demolished dwellings in some LGAs including Port Adelaide Enfield, Salisbury and Playford.

Figure 4: Number of demolished dwellings and demolition sites by Local Government Area, 2004 to 2010



Almost 70 per cent (7,615) of the demolitions in the ASD were located on sites within 10km of the CBD. At the suburb level, Map 2 shows that Mansfield Park and Angle Park had the highest number of demolished dwellings - 489 and 271 respectively. In these suburbs, over 90 per cent of the demolished dwellings were owned by Housing SA in 2004. Other suburbs with a high number of demolished dwellings that were predominantly owned by Housing SA include Smithfield Plains, Athol Park, Salisbury North and Elizabeth Park. The coastal suburbs of Glenelg North, Henley Beach, Grange, Somerton Park, Henley Beach South and West Beach also had relatively high numbers, however none of the demolished dwellings were owned by Housing SA.

4.1.2 Resubdivisions

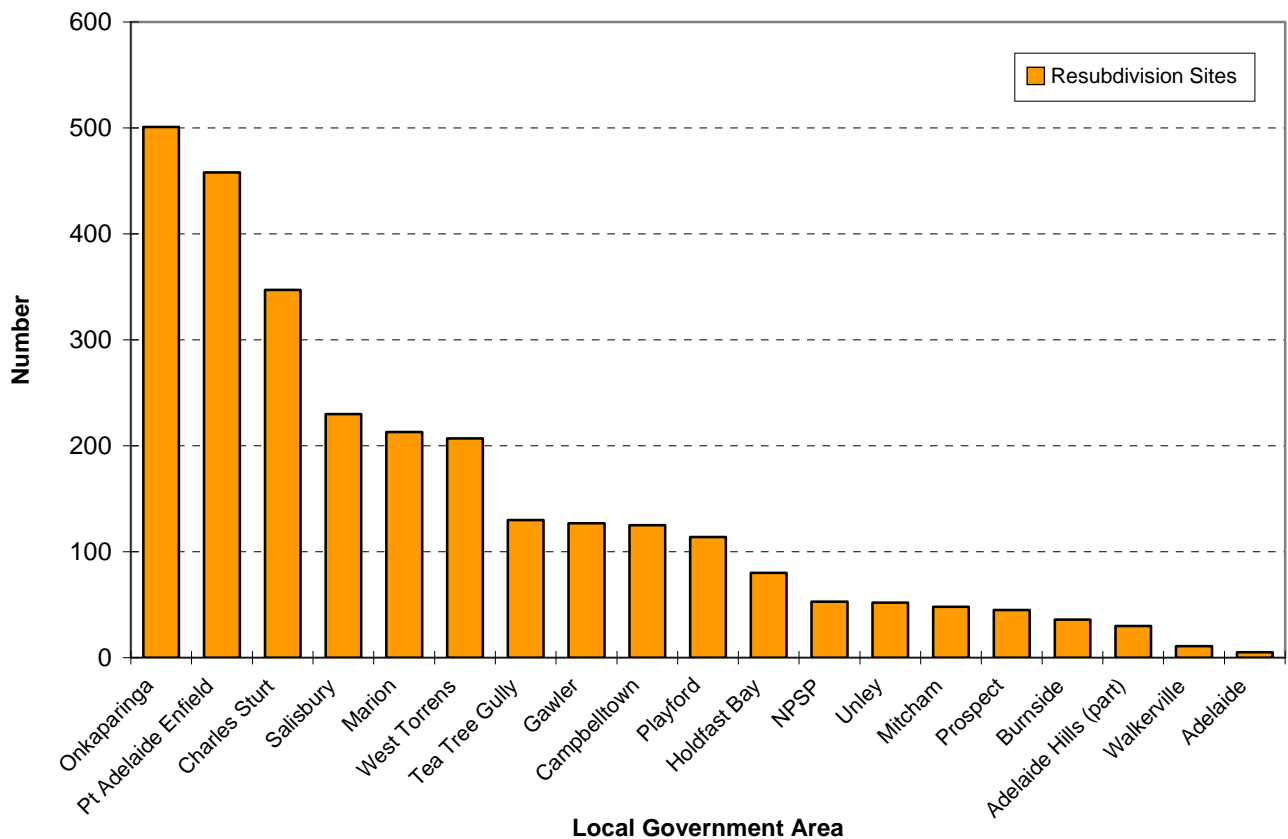
The number of sites resubdivided with the original residential dwelling(s) retained totalled 2,812 between 2004 and 2010. There were a total of 2,948 original dwellings on these sites. Over the study period, the average annual number of small scale resubdivisions was 469 sites.

Figure 5 shows that Onkaparinga LGA had the highest number of resubdivision sites with 501. With the exception of Gawler it was the only LGA where resubdivision sites outnumbered demolition sites. This is likely to be related to large allotment sizes in the LGAs, the availability of suitable sites, permissible zoning and the economics of demolition versus resubdivision.

At the suburb level the southern areas of Morphett Vale (78) and Aldinga Beach (56) had the highest number of resubdivision sites - refer to Map 3. Salisbury (44), Seaton (42), Willaston (41), Gawler East (38) and Croydon Park (37) also had relatively high numbers.

Just over half (1,504) of all resubdivision sites in the ASD were located between 5 and 15km from the CBD.

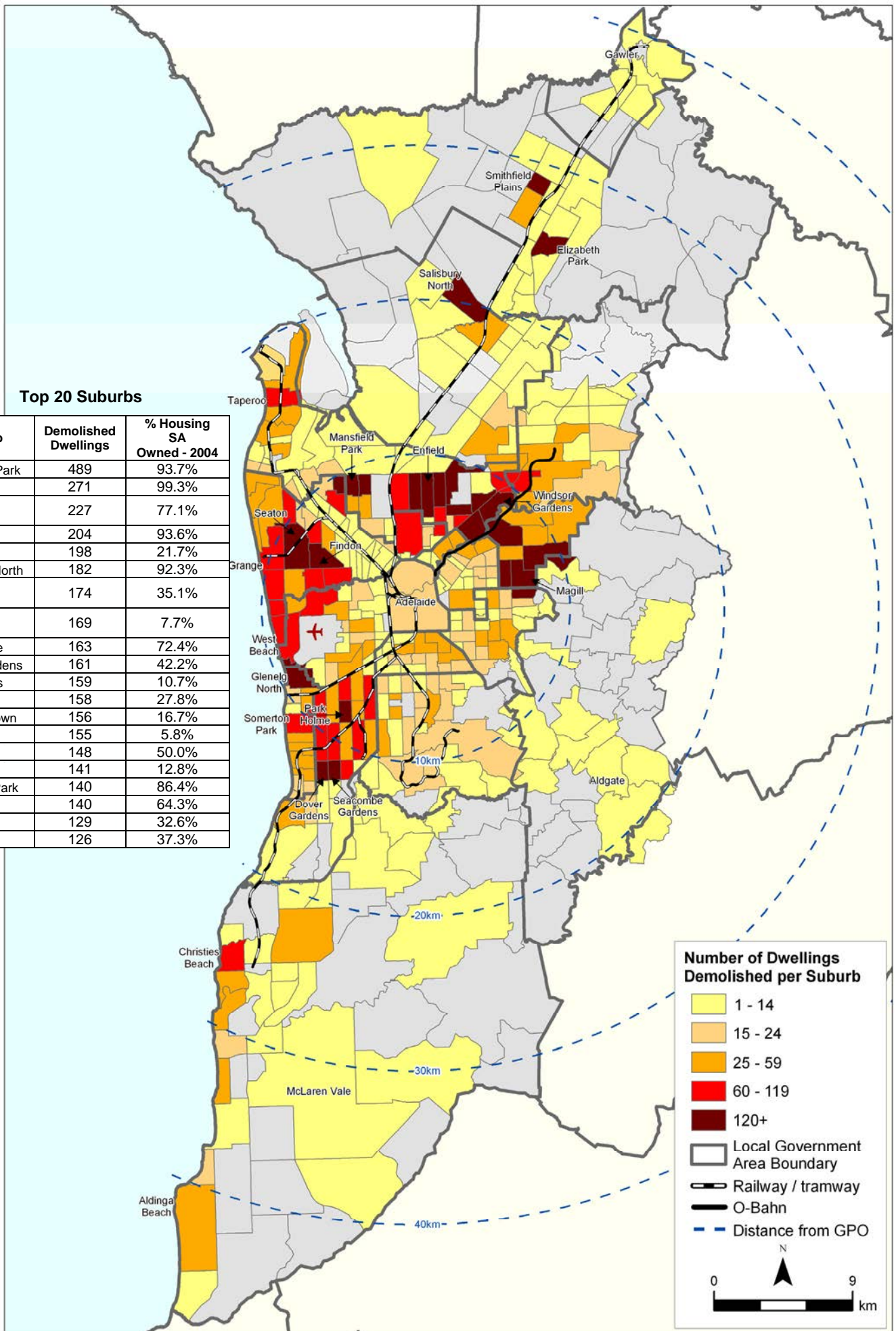
Figure 5: Number of resubdivision sites by Local Government Area, 2004 to 2010



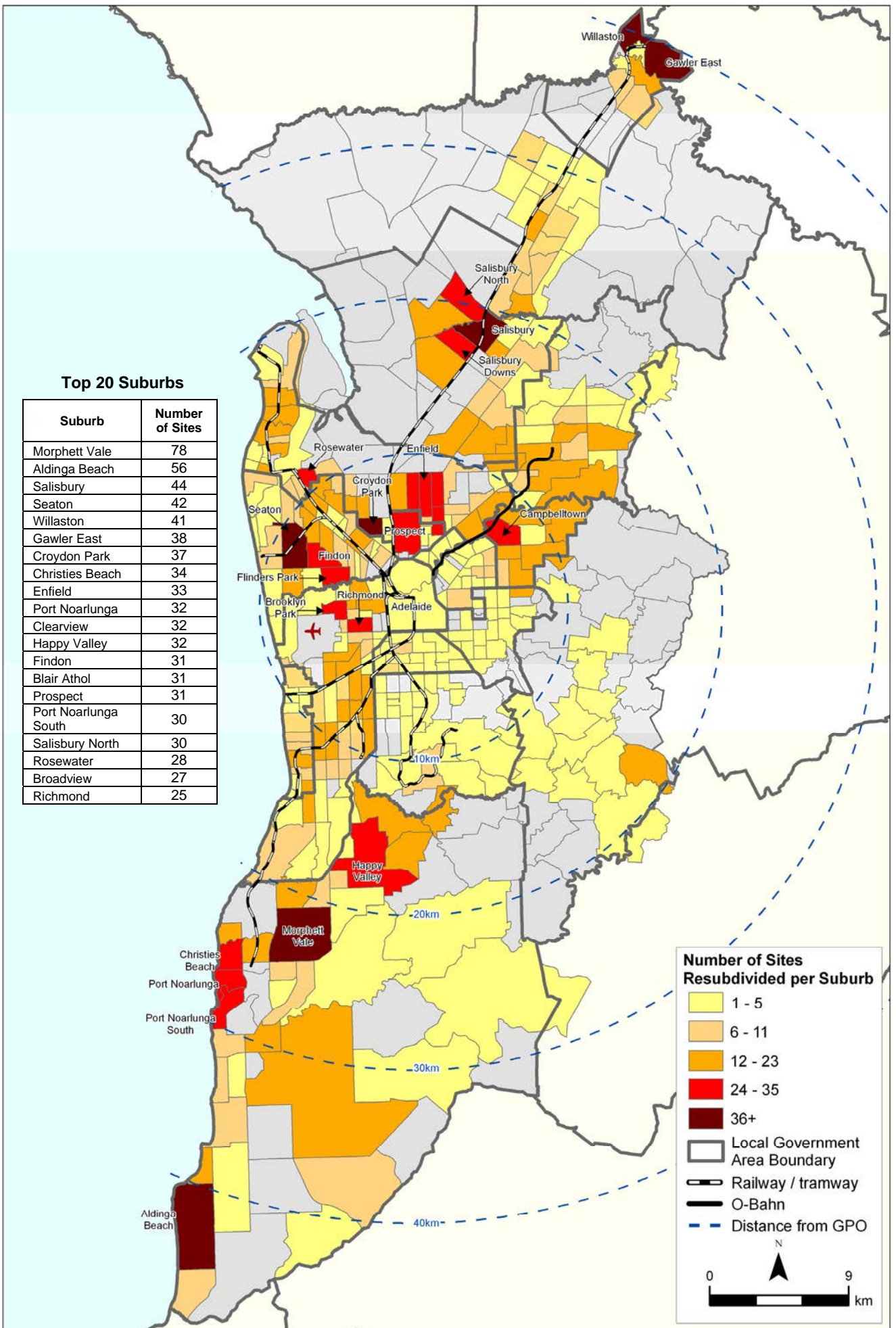
Map 2: Number of dwellings demolished per suburb, 2004 to 2010

Top 20 Suburbs

Suburb	Demolished Dwellings	% Housing SA Owned - 2004
Mansfield Park	489	93.7%
Angle Park	271	99.3%
Smithfield Plains	227	77.1%
Athol Park	204	93.6%
Seaton	198	21.7%
Salisbury North	182	92.3%
Seacombe Gardens	174	35.1%
Windsor Gardens	169	7.7%
Park Holme	163	72.4%
Dover Gardens	161	42.2%
Greenacres	159	10.7%
Klemzig	158	27.8%
Campbelltown	156	16.7%
Magill	155	5.8%
Findon	148	50.0%
Tranmere	141	12.8%
Elizabeth Park	140	86.4%
Blair Athol	140	64.3%
Northfield	129	32.6%
Enfield	126	37.3%



Map 3: Number of resubdivision sites per suburb, 2004 to 2010



4.2 Site and dwelling characteristics - pre demolition/resubdivision

The GIS process used to identify demolition and resubdivision sites also extracts information about the characteristics of the dwelling(s) and the site as per the 2004 Valuation snapshot. Whilst some of this information may have changed for some sites (e.g. ownership) between the 2004 Valuation snapshot and the demolition of a dwelling or resubdivision of a site, it still provides a good indication of the characteristics of pre-demolition and pre-resubdivision dwellings.

4.2.1 Dwelling ownership

Table 4 shows the ownership of dwellings as at 2004 that were either demolished or on a site that was resubdivided. The predominance of the private (66.8%) and Housing SA (26.7%) ownership of demolished dwellings is evident.

Map 4 shows the spatial distribution of demolition sites by ownership. Sites under private or company ownership were evenly distributed throughout the ASD, while Housing SA owned sites were concentrated in particular suburbs including Mansfield Park, Angle Park, Athol Park, Smithfield Plains, Salisbury North and Elizabeth Park. Of the 2,933 Housing SA dwellings demolished in the ASD, 44.4 per cent (1,302) were located in Port Adelaide Enfield LGA.

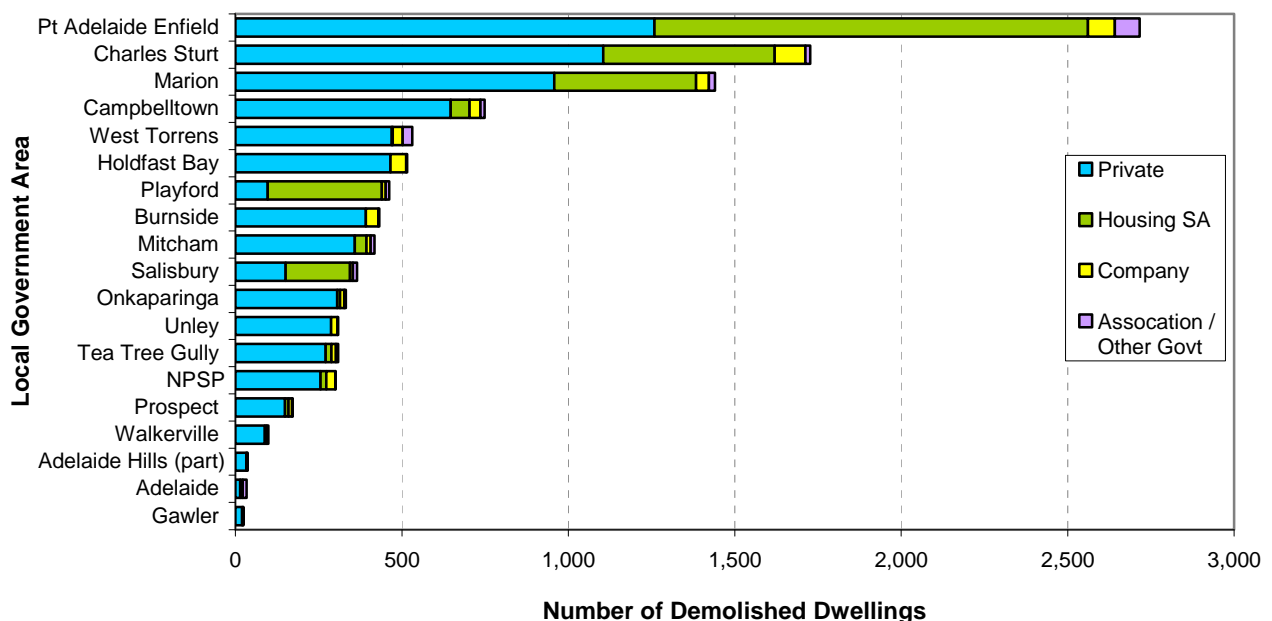
The majority (93.8%) of original dwellings on resubdivision sites were privately owned in 2004.

Table 4: Ownership of demolished and original dwellings, 2004

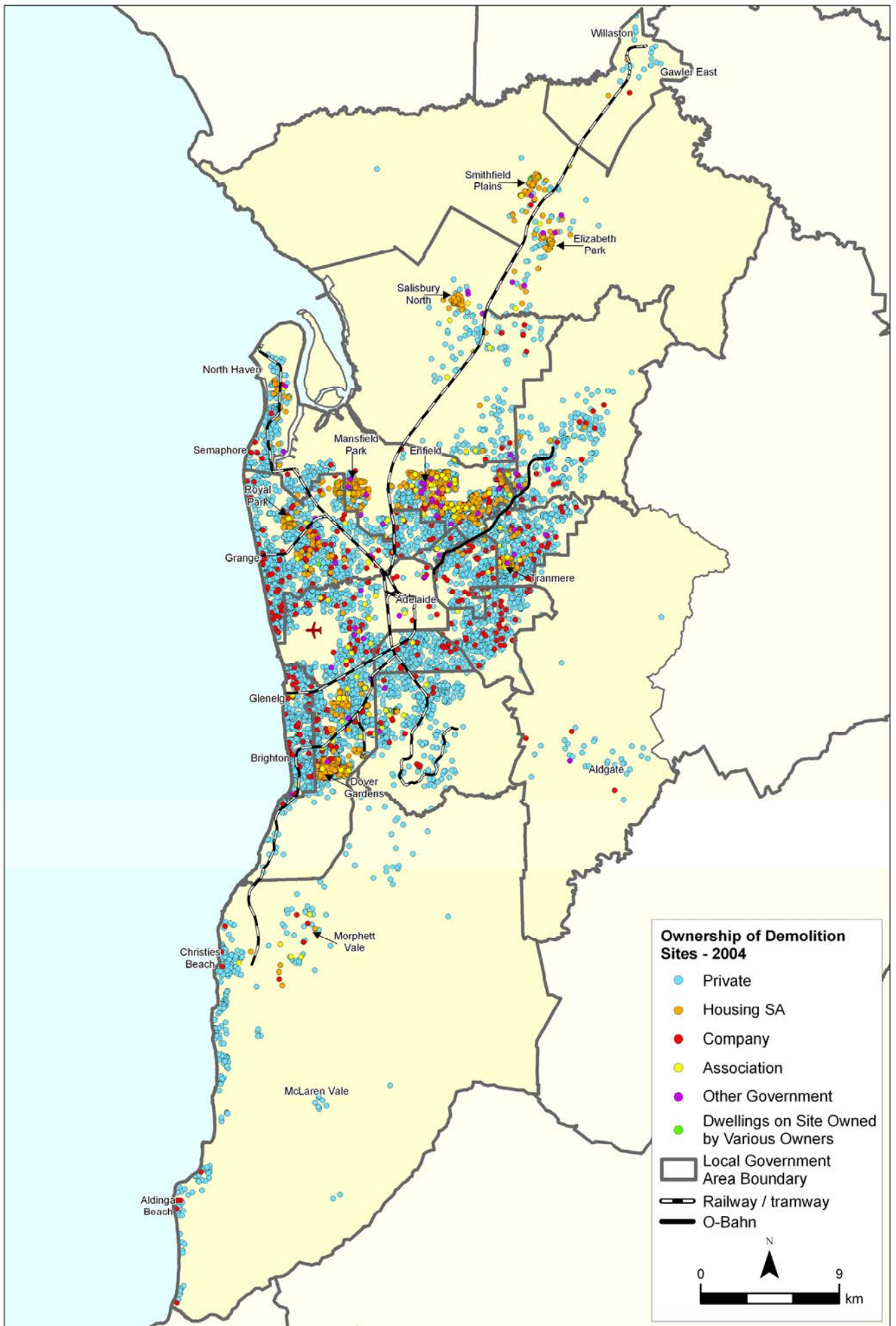
Owner Type	Demolished Dwellings		Resubdivisions - Original Dwellings	
	Number	Percent	Number	Percent
Private	7,330	66.8%	2,765	93.8%
Housing SA	2,933	26.7%	26	0.9%
Company	486	4.4%	139	4.7%
Association	149	1.4%	13	0.4%
Other Govt	77	0.7%	5	0.2%
Total Dwellings	10,975	100.0%	2,948	100.0%

LGAs with more than 90 per cent of demolished dwellings in private ownership in 2004 include Unley (93.2%), Onkaparinga (92.2%), Burnside (90.7%) and Holdfast Bay (90.3%). The LGAs of Playford, Salisbury and Port Adelaide Enfield had more than 45 per cent of demolished dwellings owned by Housing SA. Figure 6 shows the number of demolished dwellings by owner type in each LGA.

Figure 6: Number of demolished dwellings by ownership by Local Government Area, 2004



Map 4: Ownership of demolition sites, 2004

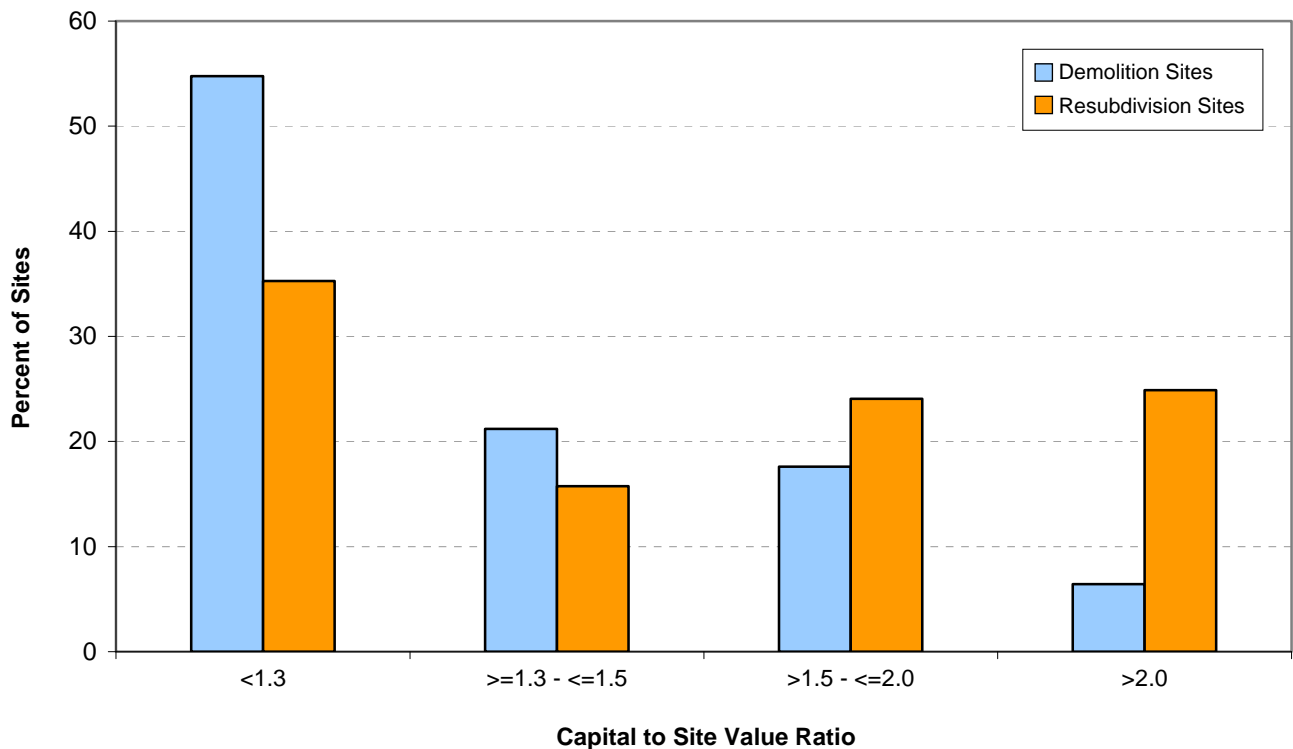


4.2.2 Capital to site value ratio

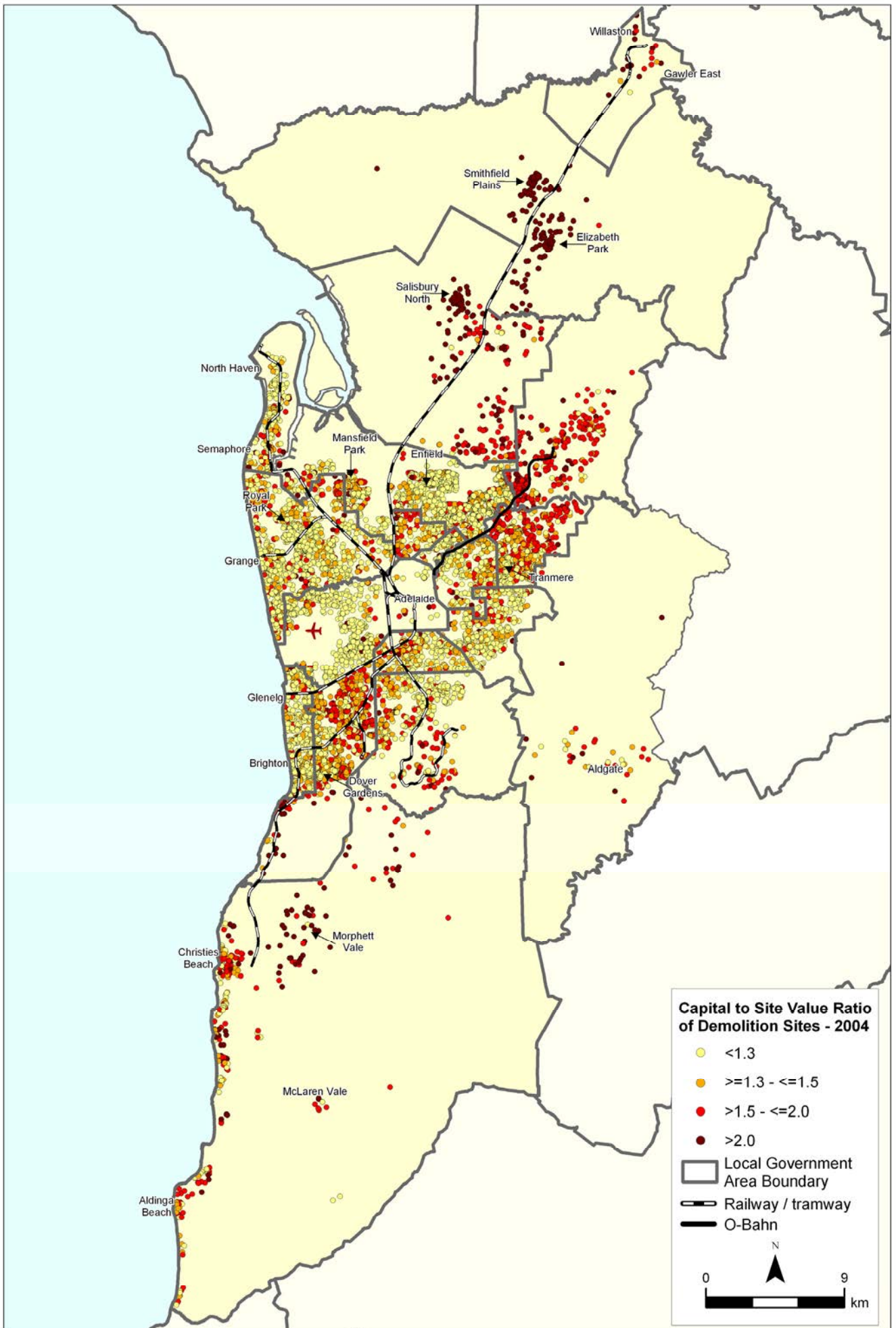
The CV/SV ratio is an important characteristic because it measures the value of the capital improvements (i.e. a dwelling) relative to the land value. As an example, a site with a land value of \$300,000 and capital value of \$360,000 (land value + dwelling value) has a CV/SV ratio of 1:1.2 (\$360K / \$300K). Low CV/SV ratios identify sites where the value of the dwelling(s) is only slightly higher than the land value, thus making them more attractive for redevelopment. In this study 54.8 per cent of the demolitions sites had a CV/SV ratio of less than 1.3 - see Figure 7. The spatial distribution of demolition sites by CV/SV ratio is shown in Map 5. Sites in most of the inner, middle and coastal areas closer to Adelaide had low (<1.3) CV/SV ratios which is a reflection of the higher land values and an ageing housing stock in these areas.

The proportion of sites by CV/SV ratio category were more evenly distributed for resubdivisions than demolitions. This is partly related to the spread of resubdivision sites in the ASD (Map 6) since there are significant numbers of sites in the outer suburbs where land values are lower and because the original dwelling on the site is retained. Figure 7 shows that the CV/SV ratio isn't as important in determining whether a resubdivision is viable.

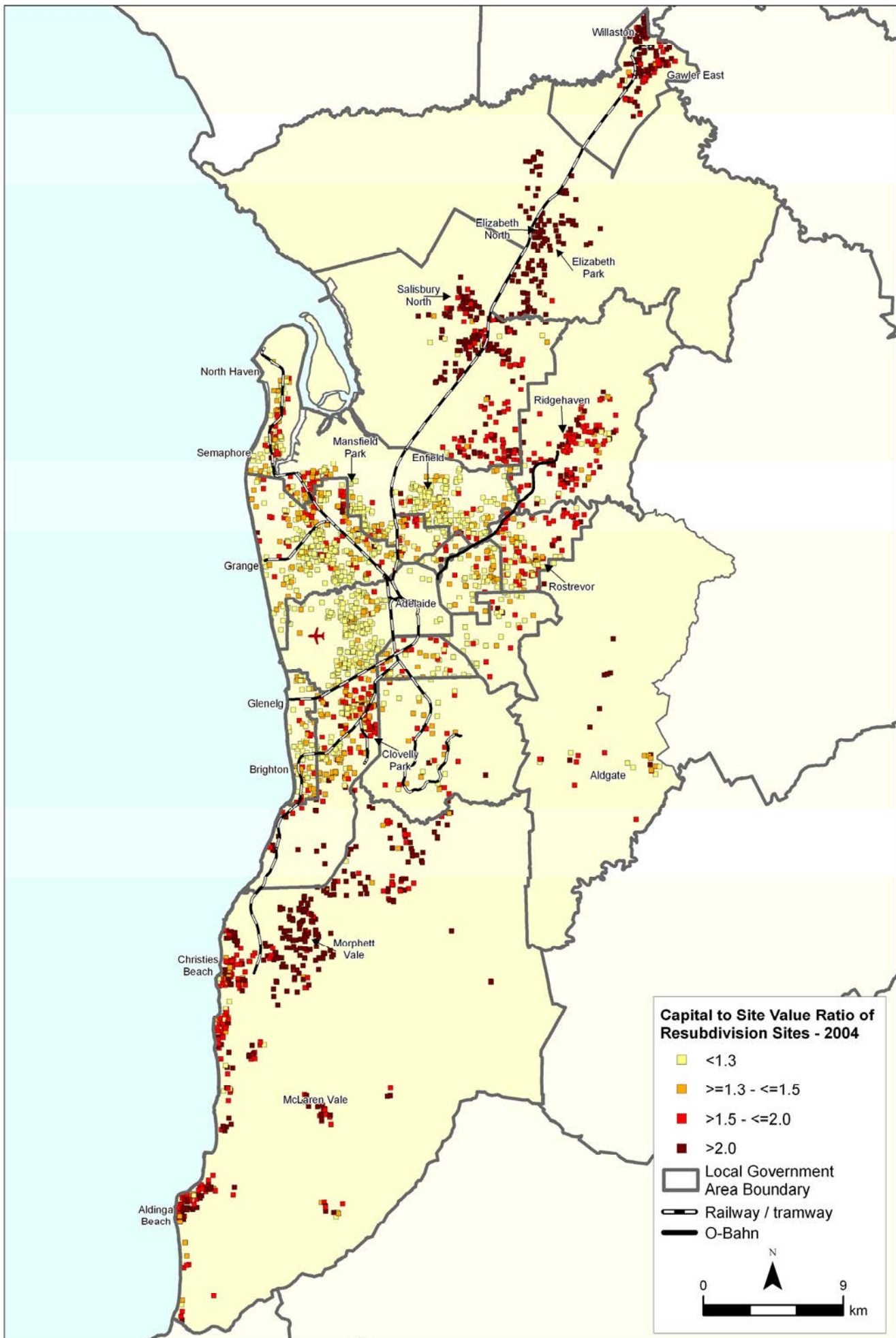
Figure 7: Capital to site value ratio of demolition and resubdivision sites, 2004



Map 5: Capital to site value ratio of demolition sites prior to demolition, 2004



Map 6: Capital to site value ratio of resubdivision sites prior to resubdivision, 2004



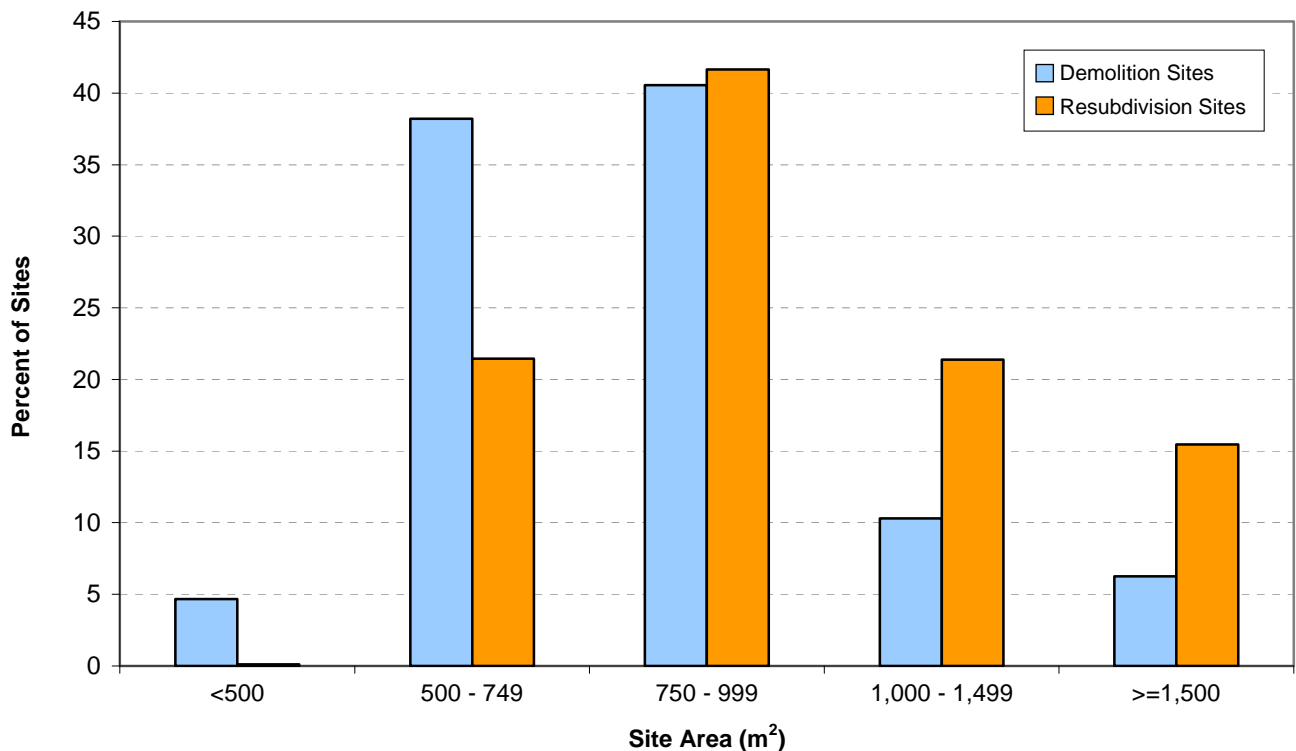
4.2.3 Site areas

Figure 8 shows the percentage of sites by original land size category for all demolition and resubdivision sites as at 2004. The majority of demolition sites (78.8%) were between 500m² and 999m² in size. This is partly a reflection of the characteristics of the suburbs in which redevelopment is occurring and zoning requirements that specify minimum site areas for new dwellings. Many of the larger demolition sites ($\geq 1,500\text{m}^2$) were Housing SA redevelopments involving the levelling of multiple street blocks and reconfiguration of land parcels.

The total land area of demolition sites throughout the ASD between 2004 and 2010 was 822.6 hectares.⁵ The annual average amount of land that is recycled as a result of demolition activity is 137 hectares per annum.

More than 40 per cent (1,170) of resubdivision sites were between 750m² and 999m². Of the 2,702 resubdivision sites 96.1 per cent contained one original dwelling. Between 2004 and 2010 small-scale resubdivisions where the original dwelling was retained contributed around 141.5 hectares to the ASD's residential land supply, or an average of 24 hectares per annum.⁶

Figure 8: Site areas of demolition and resubdivision sites, 2004



⁵ Some large Housing SA sites include road reserves in the total site area.

⁶ The 141.5 hectares does not include the land area the original dwellings were located on.

4.2.4 Dwelling types

Table 5 shows the numbers of demolished dwellings and original dwellings by type. Detached houses were the most common dwelling type demolished and accounted for 75 per cent of all demolitions. A significant number of semi-detached dwellings were also demolished and the adjoining suburbs of Mansfield Park, Angle Park and Athol Park, which are part of Housing SA's 'Westwood' urban renewal project, accounted for 36.2 per cent (896). An example of Housing SA semi-detached dwellings are shown in Figure 9.

The majority of original dwellings on resubdivision sites were detached dwellings (95.3%).

Table 5: Type of demolished and original dwellings, 2004

Dwelling Type	Demolished Dwellings		Resubdivisions - Original Dwellings	
	Number	Percent	Number	Percent
Detached House	8,228	75.0%	2,809	95.3%
Semi-Detached	2,477	22.6%	102	3.5%
Unit	41	0.4%	2	0.1%
Flat	229	2.1%	35	1.2%
Total Dwellings	10,975	100.0%	2,948	100.0%

Figure 9: Example of Housing SA owned semi-detached dwellings



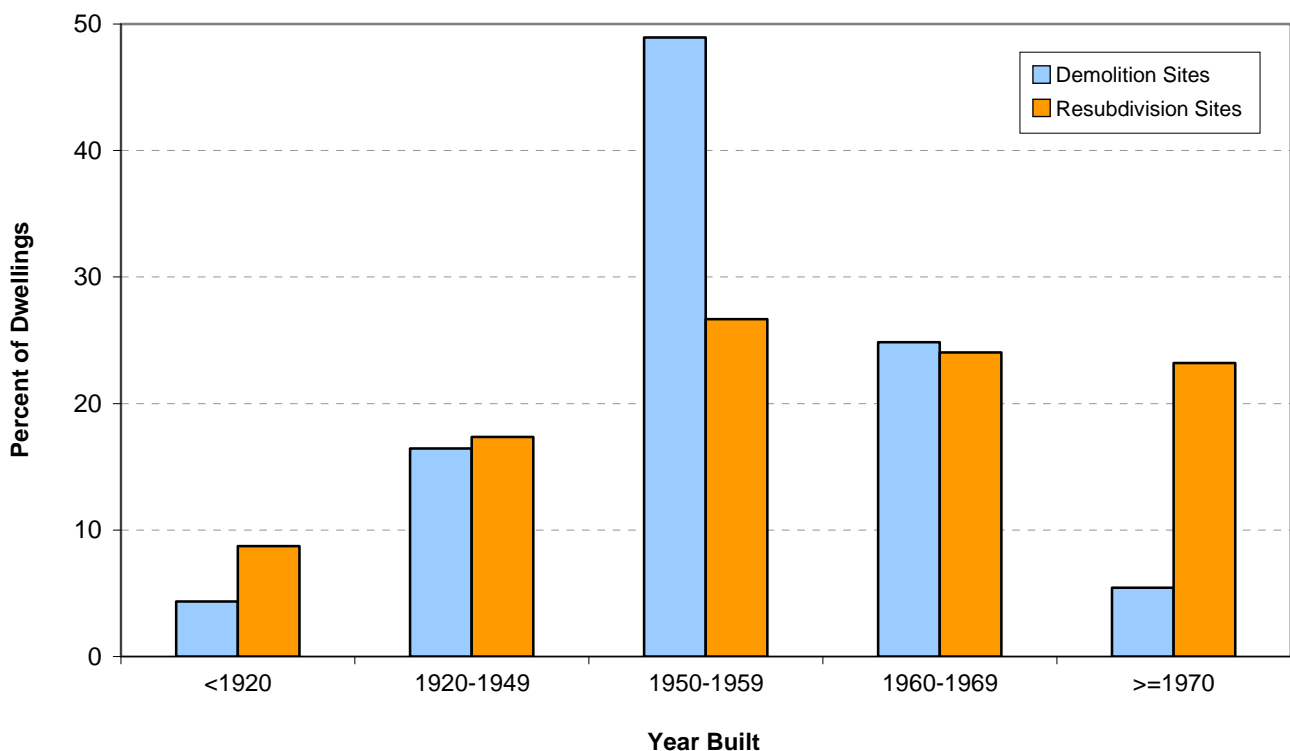
4.2.5 Year built

Figure 10 shows that almost 50 per cent (5,371) of demolished dwellings were constructed between 1950 and 1959. These dwellings were constructed during the post World War II building boom predominantly in the middle-ring suburbs of Adelaide - see Map 7. In many cases, these houses are situated on relatively large blocks and the recent uplift in land values has now made them attractive for redevelopment. Large public housing estates were also built during this decade, which is why 57.3 per cent of the 2,933 demolished Housing SA dwellings were built between 1950 and 1959.

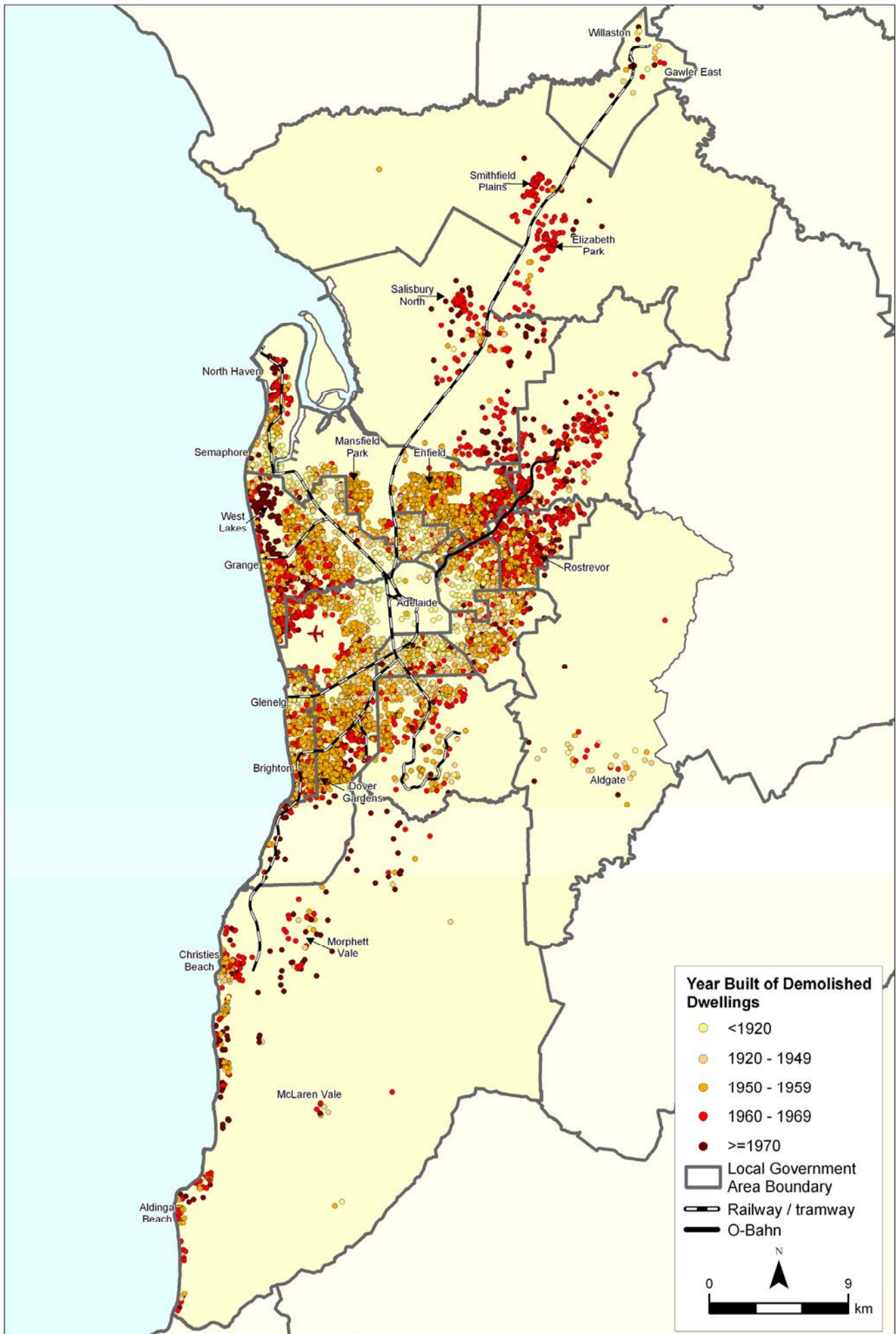
Map 7 shows the year built for demolished dwellings and that there's a cluster of dwellings built post 1970 in West Lakes and West Lakes Shore that have been demolished. A total of 75 dwellings were demolished in these two popular suburbs, which shows that areas with good amenities and aesthetics can also drive redevelopment. All of these dwellings were privately owned in 2004.

The distribution of resubdivision sites across the ASD is reflected in the year of construction of original dwellings on the sites - see Map 8. Unlike demolished dwellings the age and condition of an original dwelling on a resubdivision site is not such an important factor in determining if the site is viable for development. As shown in Figure 10 the proportion of original dwellings on resubdivision sites by year of construction were similar for 1950 to 1970 onwards.

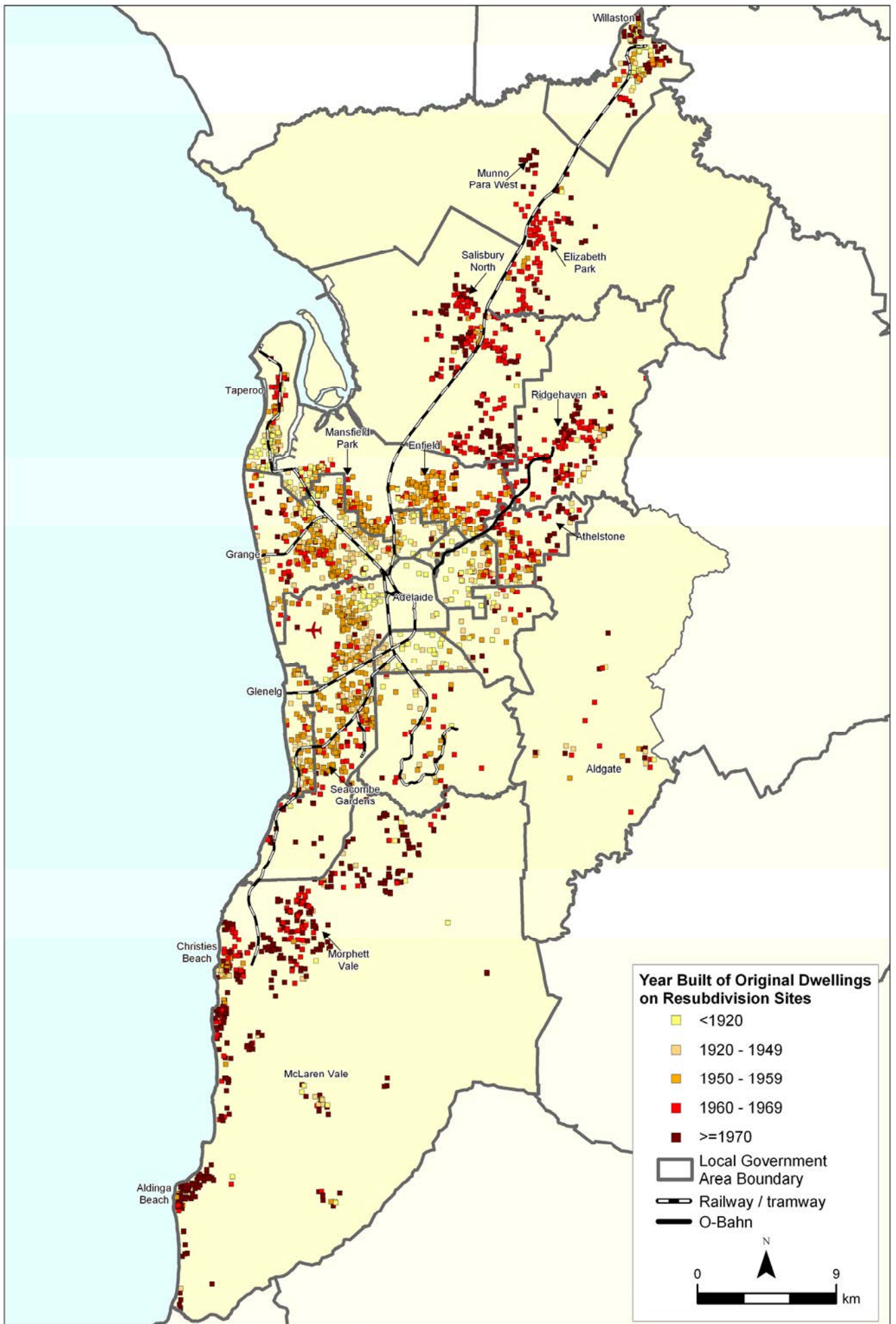
Figure 10: Year built of demolished and original dwellings



Map 7: Year built of demolished dwellings



Map 8: Year built of original dwellings on resubdivision sites



4.3 Site and dwelling characteristics - post demolition/resubdivision

The GIS process used to identify demolition and resubdivision sites also extracts information about the site and new dwelling(s) post demolition or resubdivision as per the 2010 Valuation snapshot.

At the time of the 2010 Valuation snapshot the redevelopment process was complete on 70.6 per cent (6,299) of demolition sites - see Table 6. At the same time 17.6 per cent (1,569) of sites were still vacant, while the remaining 11.8 per cent (1,056) had unfinished dwellings or a combination of dwellings and vacant parcels.

On 65.3 per cent (1,835) of resubdivision sites, the process was finished with all additional dwellings completed by the time of the 2010 Valuation snapshot. A further 28.1 per cent (790) of sites were still vacant and 6.7 per cent (187) were unfinished.

Table 6: Site status as at June 2010

Site Status - 2010	Demolition Sites			Resubdivision Sites		
	Number	Percent of Sites	Area (ha)	Number	Percent of Sites	Area (ha)
Vacant	1,569	17.6%	159.7	790	28.1%	41.3
Unfinished	1,056	11.8%	117.3	187	6.7%	13.6
Finished	6,299	70.6%	545.6	1,835	65.3%	86.6
Total Sites	8,924	100.0%	822.6	2,812	100.0%	141.5

4.3.1 Dwelling increase

For sites where the development process was complete (finished sites) the dwelling increase from demolitions and resubdivisions can be measured. Table 7 summarises the total dwelling increase for the ASD and also includes approximations of increases on sites that were still vacant or unfinished in 2010.

On the 6,299 finished demolition sites, 7,070 dwellings were demolished and 12,161 dwellings constructed in their place, resulting in an increase of 5,091 dwellings between 2004 and 2010. This equates to a replacement rate across the ASD of 1.7 dwellings constructed for every one dwelling demolished. By applying individual suburb level replacement rates to the dwellings that were demolished on sites still vacant or unfinished in 2010, the likely dwelling increase on these sites is 2,923 dwellings. Adding this estimate to the dwelling increase that has already occurred on finished sites gives an estimated total increase of approximately 8,014 dwellings. On an average annual basis this equates to a net increase of approximately 1,335 dwellings as a result of redevelopment on demolition sites.

An additional 2,206 dwellings were built on finished resubdivision sites between 2004 and 2010. These dwellings were constructed on 86.6 hectares of land. Assuming the same yield by individual suburb on the remaining 54.9 hectares of land that make up the sites still vacant or unfinished as at 2010, equates to an estimated increase of 1,301 dwellings on these sites. Therefore the total dwelling increase on all resubdivision sites could be around 3,507 dwellings, which is an average of 585 dwellings per year.

The total dwelling increase resulting from demolitions and resubdivisions, including estimates for yields on vacant and unfinished sites, over the period 2004 to 2010 is 11,521 dwellings. This averages to an additional 1,920 dwellings per year.

In the ASD redevelopment of demolition sites accounted for 69.6 per cent (8,014) and resubdivision sites accounted for the remaining 30.4 per cent (3,507) of the estimated total net dwelling increase resulting from demolitions and resubdivisions.

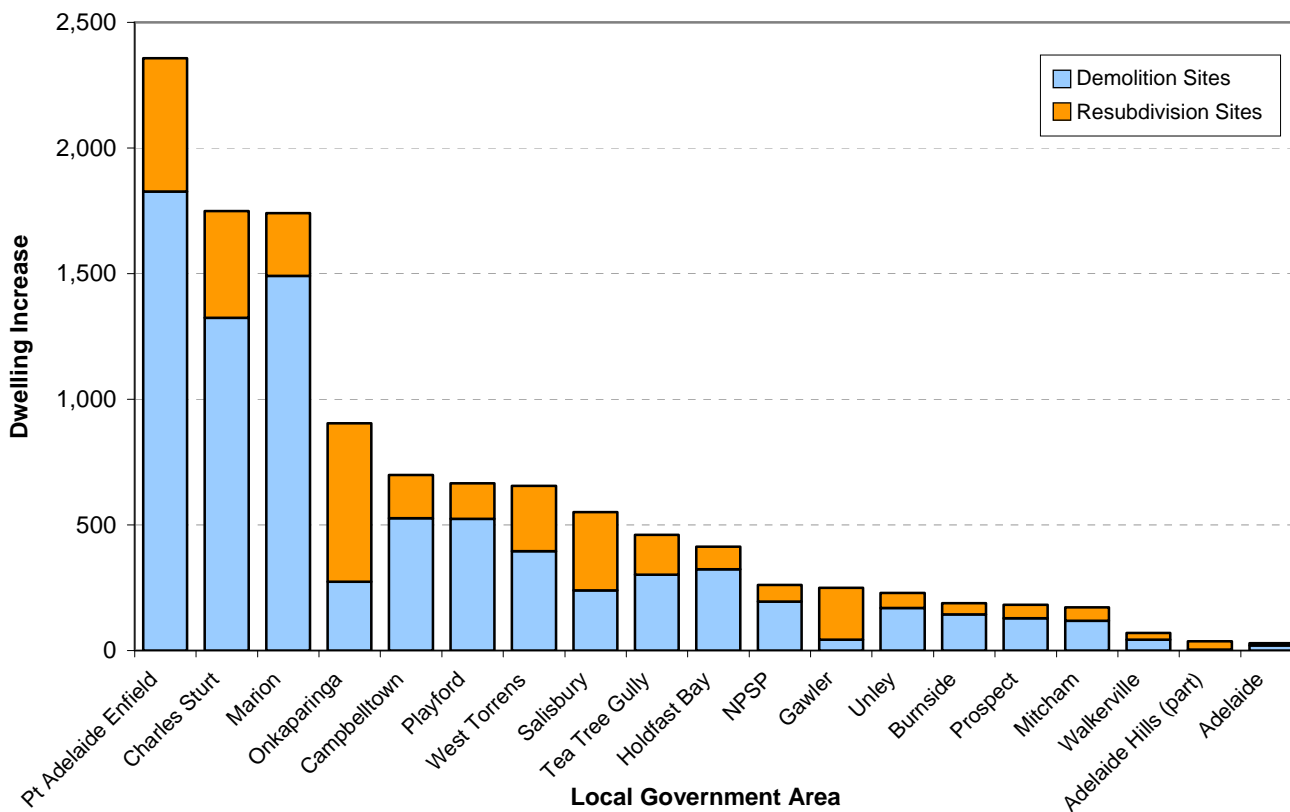
Table 7: Dwelling increase on all demolition and resubdivision sites, 2004 to 2010

Demolitions	Finished Sites	Finished demolition site count	6,299
		Total dwellings demolished on finished demolition sites	7,070
		New dwellings built on finished demolition sites	12,161
		Dwelling increase on finished demolition sites	5,091
		Replacement rate on finished demolition sites	1.7
	Vacant and Unfinished Sites	Vacant and unfinished demolition site count	2,625
		Total dwellings demolished on vacant and unfinished demolition sites	3,905
		Estimated new dwellings that may be constructed on vacant and unfinished sites (based on replacement rate per suburb)	6,828
		Estimated net dwelling increase on vacant and unfinished demolition sites	2,923
	All Sites	Estimated dwelling increase on all demolition sites - 2004 - 2010	8,014
Estimated average annual net dwelling increase on all demolition sites		1,335	
Resubdivisions	Finished Sites	Finished resubdivision site count	1,835
		Original dwellings on finished resubdivision sites	1,928
		Additional dwellings built on finished resubdivision sites	2,206
	Vacant and Unfinished Sites	Vacant and unfinished resubdivision site count	977
		Original dwellings on vacant and unfinished resubdivision sites	1,020
		Estimated additional dwellings that may be constructed on vacant and unfinished sites (based on additional dwellings per hectare by suburb)	1,301
	All Sites	Estimated additional dwellings on all resubdivision sites - 2004 - 2010	3,507
		Estimated average annual additional dwellings on all resubdivision sites	585
Total	All Demolition and Resubdivision Sites	Total estimated dwelling increase on all demolition and resubdivision sites - 2004 - 2010	11,521
		Total average annual estimated dwelling increase on all demolition and resubdivision sites	1,920

Figure 11 summarises the total dwelling change on demolition and resubdivision sites by Local Government Area and also includes approximations of change on sites that were still vacant or unfinished in 2010. With an estimated increase of 2,358 extra dwellings, Port Adelaide Enfield LGA had the greatest change. This is not surprising, given that this LGA also had the highest number of demolition sites in the ASD.

The total estimated dwelling change in Charles Sturt and Marion was almost identical despite more dwelling demolitions and resubdivisions occurring in Charles Sturt than in Marion. This reason for this is that Marion has a higher replacement rate than Charles Sturt on demolition sites. The LGA with the greatest dwelling change resulting from the construction of additional dwellings on resubdivision sites was Onkaparinga (630). In Onkaparinga resubdivisions accounted for 69.7 per cent of the total estimated dwelling increase.

Figure 11: Dwelling increase on all demolition and resubdivision sites by Local Government Area, 2004 to 2010



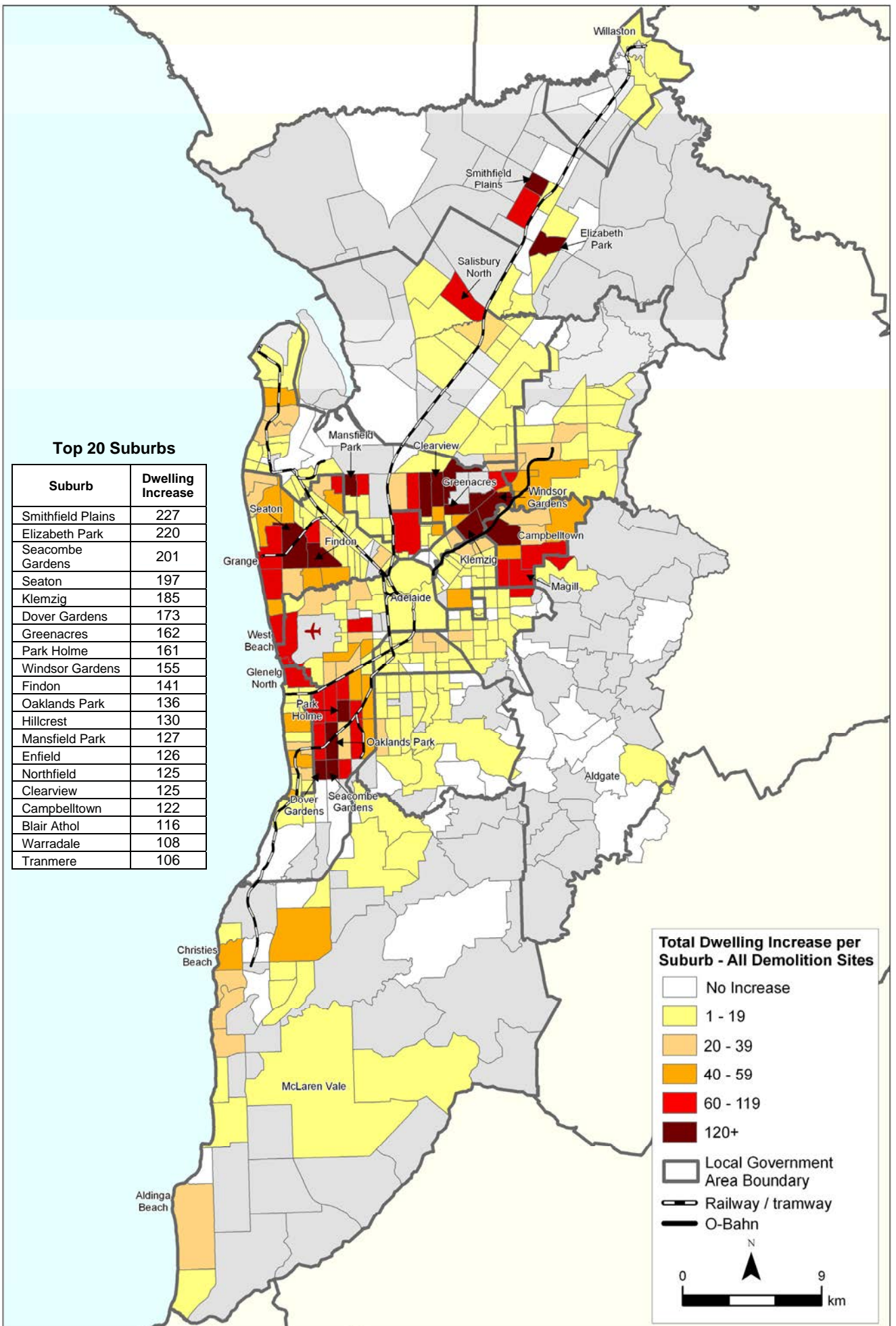
Note: Graph includes estimations of dwelling change on sites that were still vacant or unfinished in 2010.

Map 9 shows dwelling increase on all demolition sites at the suburb level and includes the estimated dwelling increase on sites that were still vacant or unfinished in 2010. Middle ring suburbs tend to have the greatest net dwelling increases due to demolition and redevelopment. In many of these suburbs including Seacombe Gardens, Klemzig, Dover Gardens, Seaton and Park Holme there were Housing SA regeneration projects occurring and significant redevelopment activity by the private sector. In the northern suburbs of Smithfield Plains and Elizabeth Park most of the dwelling increase occurred on Housing SA redevelopments.

Other suburbs with relatively high dwelling increases but no Housing SA projects were located in the west and along the coast and include Grange, Henley Beach, Henley Beach South, Glenelg North, Glenelg, Somerton Park, Glengowrie and Warradale. The eastern suburbs of Magill, Tranmere, Campbelltown, Greenacres and Rostrevor also had significant net dwelling increases due to demolition and redevelopment on mostly private owned sites.

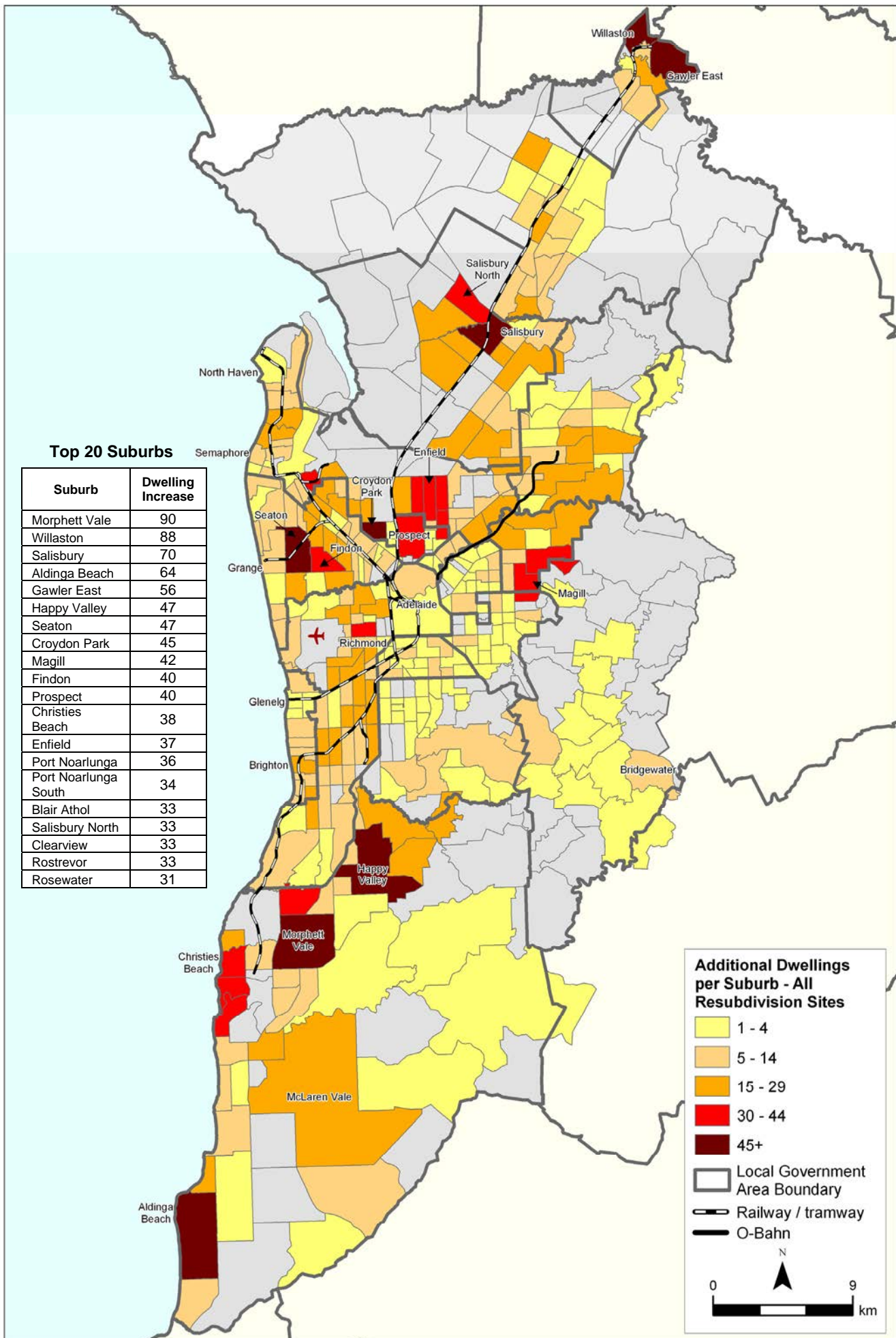
Map 10 shows the number of additional dwellings per suburb built on resubdivision sites, including estimates for sites that were vacant or unfinished in 2010. Morphett Vale had the highest increase with 90 additional dwellings built on resubdivision sites. The northern suburbs of Willaston, Gawler East, Salisbury and Salisbury North also had significant increases. Other suburbs closer to the city with a relatively high dwelling increase from resubdivision activity include; Seaton, Findon, Croydon Park, Magill, Findon, Prospect and Enfield.

Map 9: Total dwelling increase on all demolition sites by suburb, 2004 to 2010



Note: Map includes estimations of dwelling increase on sites that were still vacant or unfinished in 2010.

Map 10: Total additional dwellings built on all resubdivision sites by suburb, 2004 to 2010

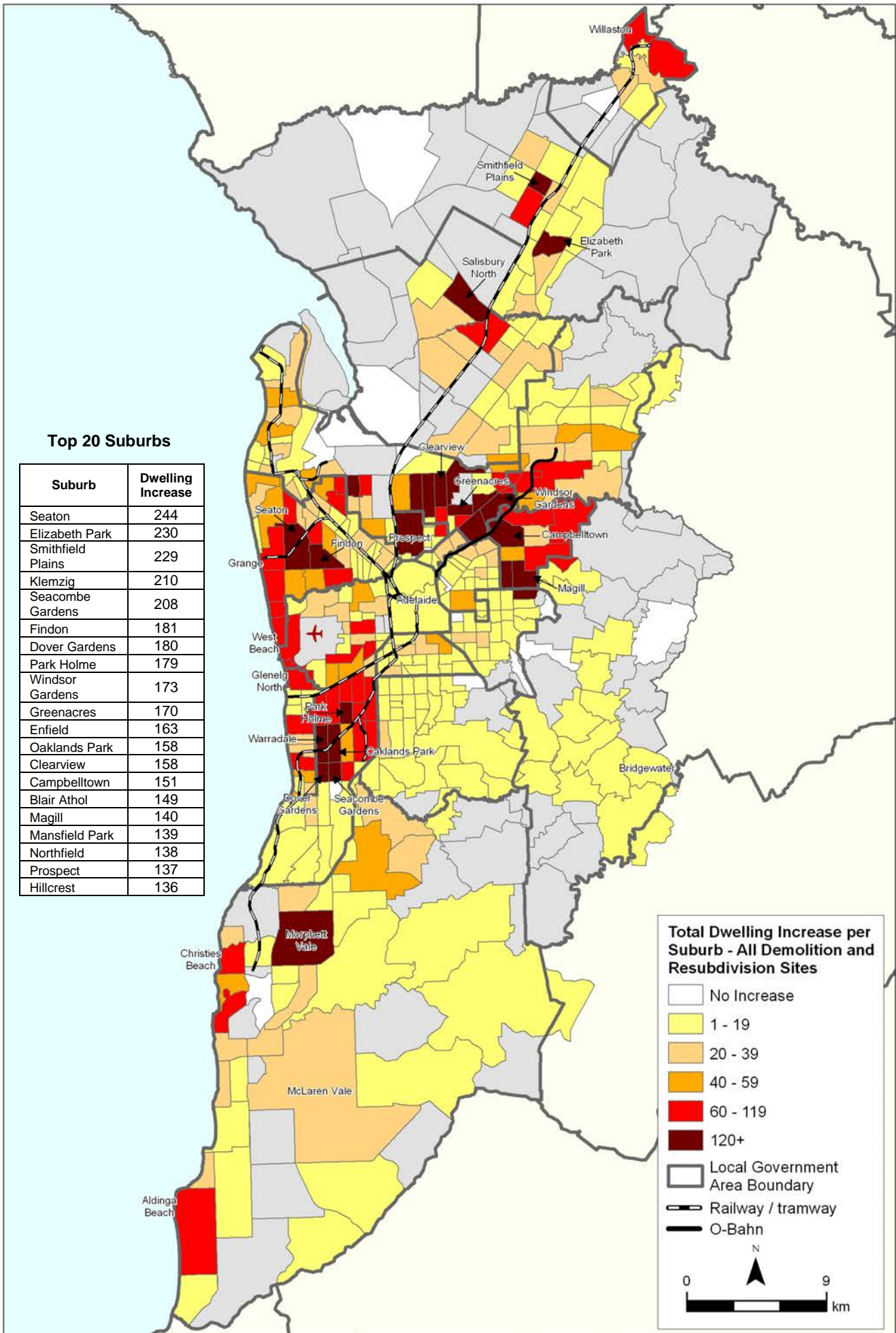


Note: Map includes estimations of dwelling increase on sites that were still vacant or unfinished in 2010.

Map 11 summarises the estimated total dwelling increase resulting from both demolitions and resubdivisions on all sites by suburb. Seaton recorded the highest increase of 244 additional dwellings. Redevelopment of demolition sites accounted for 80.7 per cent of Seaton's dwelling increase. The adjacent suburb of Findon had an increase of 181 dwellings. To the south west of the city the suburbs of Seacombe Gardens, Dover Gardens, Warradale and Park Holme also experienced a significant increase in dwellings.

In the north east Clearview, Greenacres, Windsor Gardens, Klemzig, Campbelltown and Magill had the highest dwelling increases. In the northern suburbs of Smithfield Plains and Elizabeth Park most of the dwelling increase occurred on Housing SA redevelopments. Within the middle ring suburbs listed above more than 70 per cent of dwelling change on sites resulted from redevelopment of demolition sites. In contrast, resubdivisions contributed more to the dwelling increases than demolitions in outer suburbs such as Willaston (88.0%) and Aldinga Beach (71.1%).

Map 11: Total dwelling increase on all demolition and resubdivision sites by suburb, 2004 to 2010



Note: Map includes estimations of dwelling increase on sites that were still vacant or unfinished in 2010.

4.3.2 Replacement rates - demolition sites

On demolition sites where the redevelopment process is complete, it is possible to calculate replacement rates by dividing the number of new dwellings constructed by the number of dwellings demolished. For example on a site where one dwelling is demolished and replaced with two new dwellings, the replacement rate is 1:2 ($2 / 1 = 2$). This equates to an increase of one dwelling on the site.

At the ASD level, on the 6,299 finished demolition sites 7,070 dwellings were demolished and 12,161 dwellings constructed in their place, resulting in an increase of 5,091 dwellings between 2004 and 2010. This equates to a total replacement rate across the ASD of 1.7 dwellings constructed for every one dwelling demolished, or a net increase of 0.7 dwellings.

Table 8 shows the number and percent of new dwellings by site replacement rate in the ASD. Some large Housing SA sites contain significant numbers of new dwellings, so showing the number and percent of new dwellings by site replacement rate provides a better indicator of the distribution of replacement rates than percentage of total sites.

Of the 12,161 new dwellings, 49.2 per cent (5,984) were on sites with replacement rates of 1:2 or a net increase of one dwelling per site. Around 21 per cent (2,506) of new dwellings were on sites where the demolished dwelling was replaced with one new dwelling resulting in no increase in the number of dwellings.

Table 8: Number of new dwellings by site replacement rate, 2010 - finished demolition sites

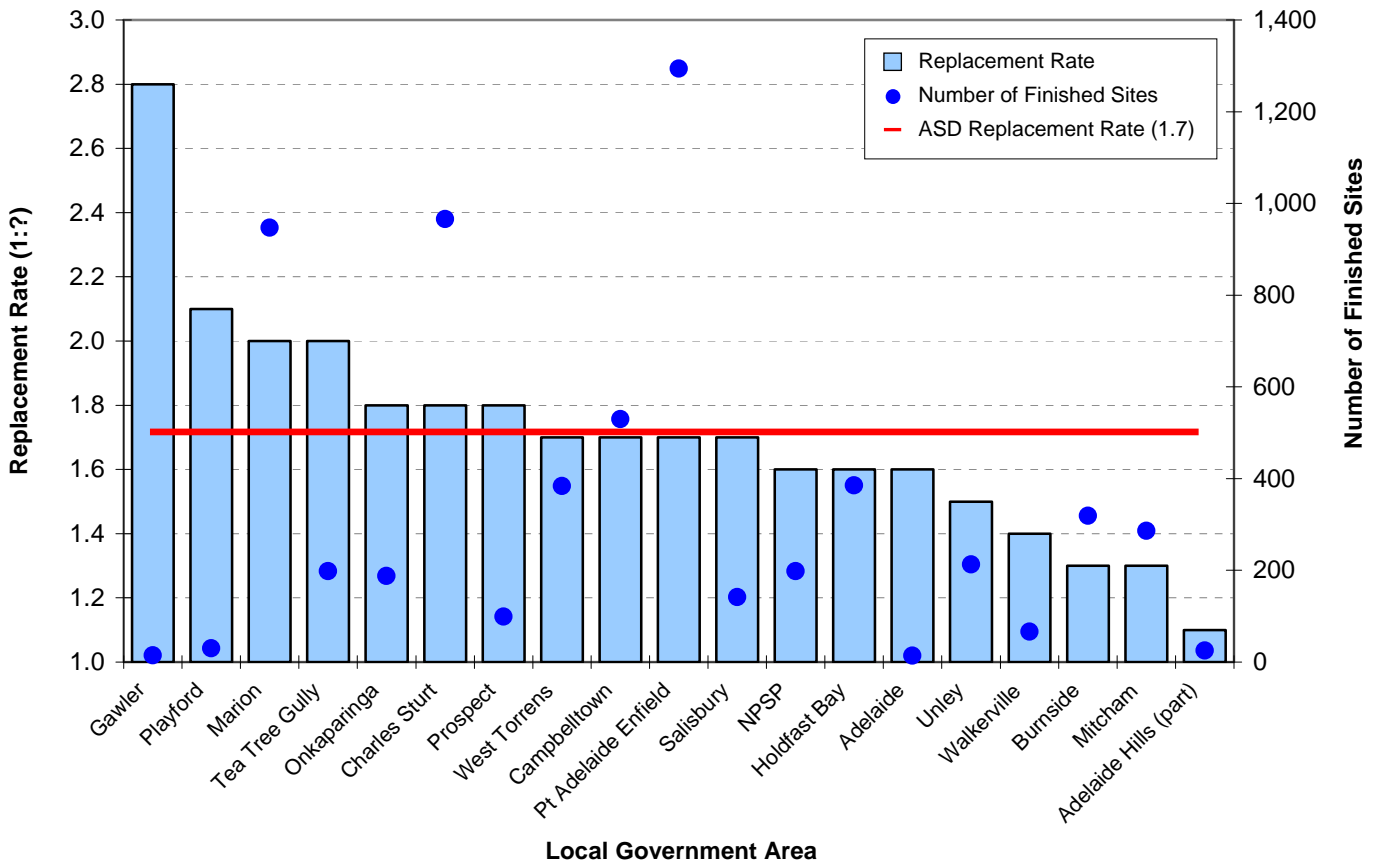
	Replacement Rate (1:?)											Total Dwellings
	Dwelling Decrease	No Change	Dwelling Increase									
	<1*	1	1 - 2**	2	2 - 3	3	3 - 4	4	5	6	>=7	
Number of New Dwellings	69	2,506	888	5,984	225	1,611	42	488	120	126	102	12,161
Percent	0.6%	20.6%	7.3%	49.2%	1.9%	13.2%	0.3%	4.0%	1.0%	1.0%	0.8%	100.0%

* On sites with replacement rates of <1, fewer new dwellings were built than were demolished. For example, a site with four flats demolished and replaced with two new houses has a replacement rate of 1:0.5

** A site where two dwellings are demolished and replaced with three new dwellings has a replacement rate of 1:1.5

Figure 12 shows the total replacement rate by LGA on finished demolition sites. Gawler (1:2.8) and Playford (1:2.1) LGAs which are located in the northern part of the ASD had the highest replacement rates. However, the total number of finished demolition sites in each LGA was relatively low - Gawler (15 sites) and Playford (30 sites).

Figure 12: Replacement rate (1:?) by Local Government Area, 2004 to 2010 - finished demolition sites

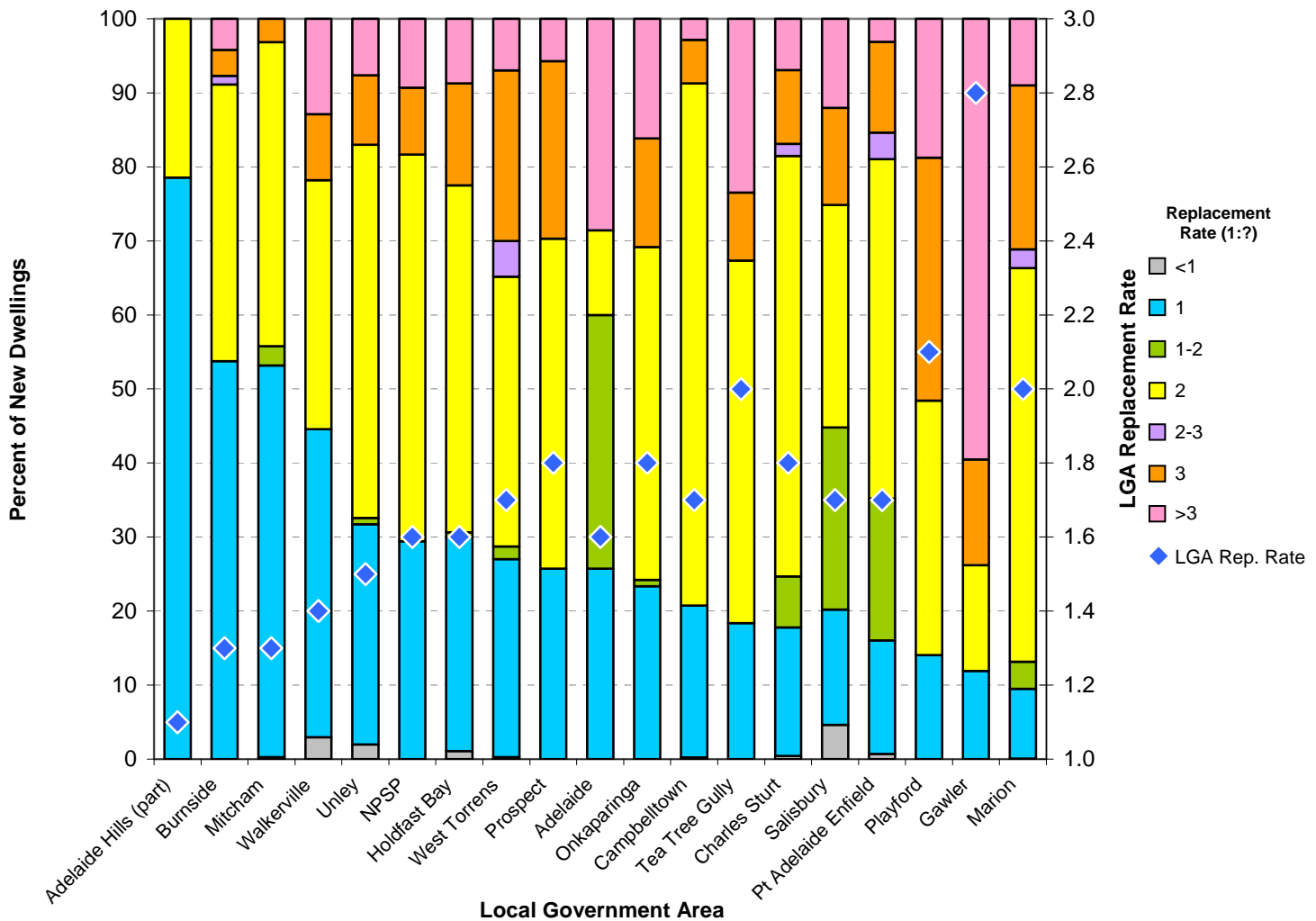


Marion and Tea Tree Gully LGAs both had a relatively high replacement rate of 1:2, due to the high proportions of new dwellings built on sites with dwelling increases. Figure 13 shows the relative dwelling replacement rates in each LGA and the total replacement rates. Marion LGA had the lowest proportion of new dwellings (9.4%) on sites with replacement rates of 1:1. More than half of new dwellings in the LGA were on sites with replacement rates of 1:2 and a further 31.1 per cent of dwellings were on sites with replacement rates of 3 or greater. The majority of redevelopment activity occurred in the northern half of the LGA. In Tea Tree Gully LGA, almost one third of new dwellings were built on sites with replacement rates of 3 or greater, while 49.0 per cent of new dwellings were built on sites with replacement rates of 1:2.

LGAs such as Adelaide Hills (part), Burnside, Mitcham and Walkerville had low overall replacement rates due to the high proportions of dwellings on sites with replacement rates of 1:1. On these sites the demolished dwelling was replaced with one new dwelling, resulting in no net dwelling increase.

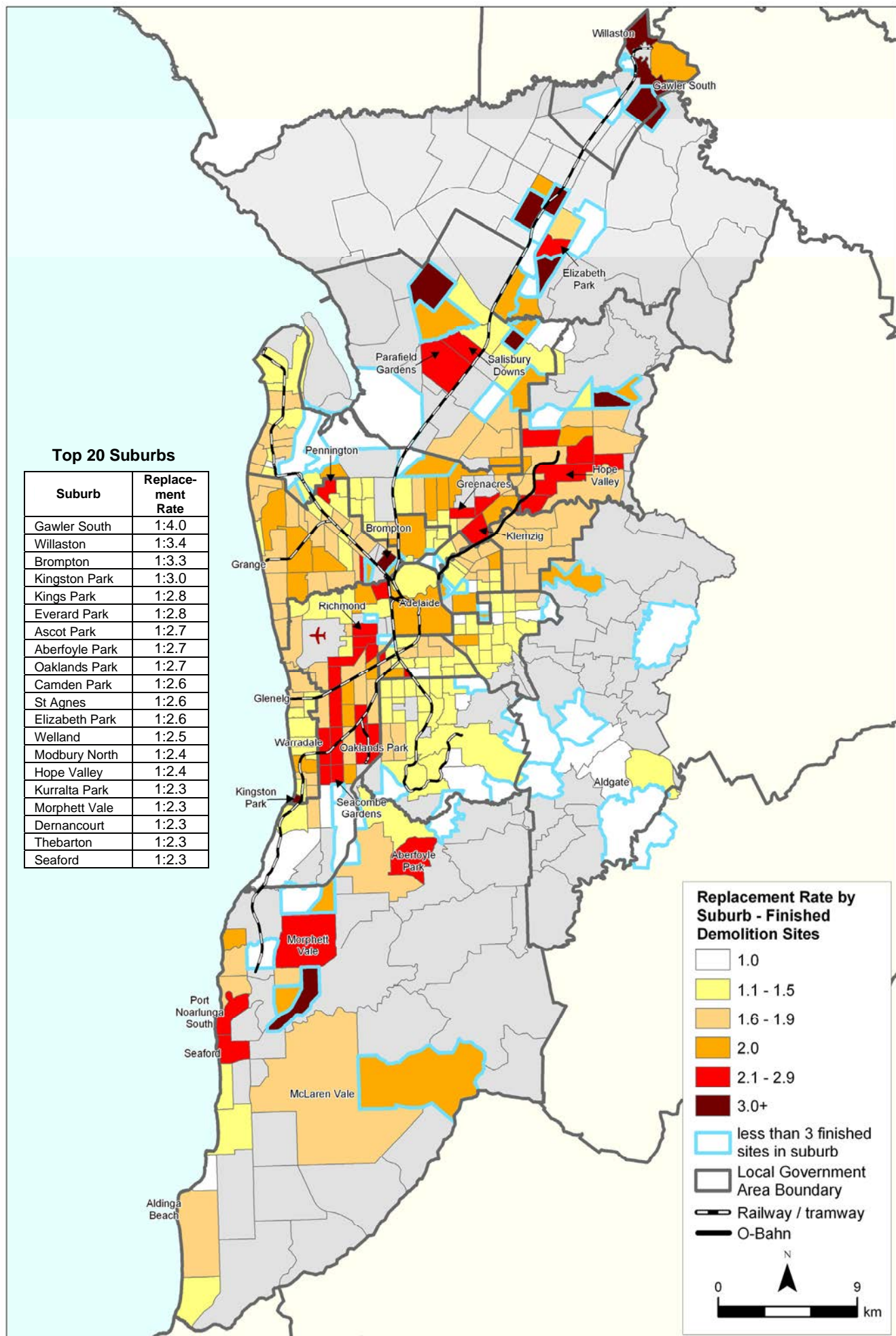
Campbelltown LGA had the highest proportion of dwellings on sites with a replacement rate of 1:2 - 70.5 per cent. However, the majority (20.5%) of remaining new dwellings in the LGA were on sites with replacement rates of 1:1, which reduced the LGA's overall replacement rate down to 1:1.7.

Figure 13: Percent of new dwellings by replacement rate by Local Government Area, 2010 - finished demolition sites



Replacement rates on finished demolition sites by suburb are shown on Map 12. Of the suburbs containing at least three finished demolition sites, Gawler South had the highest replacement rate of 1:4, followed by Willaston at 1:3.4. The inner suburb of Brompton had a replacement rate of 1:3.3 and the small coastal suburb of Kingston Park had 1:3. Suburbs to the south-west of the city including Richmond, Ascot Park, Oaklands Park, Camden Park and Kurralta Park had replacement rates of 1:2.1 to 1:2.7. To the north-west, replacement rates in Greenacres, Klemzig, St Agnes and Hope Valley were between 1:2.1 and 1:2.6.

Map 12: Replacement rate on finished demolition sites by suburb, 2004 to 2010



Note: Only those suburbs with three or more finished demolition sites are included in the table.

4.3.3 Additional dwellings - resubdivision sites

Table 9 shows that 84.3 per cent of finished resubdivision sites resulted in one additional dwelling. This result is not surprising given that the location of the original dwelling on the site restricts the amount of land available for resubdivision, hence only one additional dwelling can usually be constructed on most sites.

However, the resubdivision process does result in an increase in the number of dwellings on 100 per cent of sites. Conversely, on demolition sites only 78.8 per cent of new dwellings were built on sites where the number of dwellings increased because of one for one redevelopments.

Table 9: Number of additional dwellings built per original dwelling on resubdivision sites, 2010 - finished sites

	Additional Dwellings per Original Dwelling (1:?)								Total Sites
	<1	1	1.5	2	2.5	3	4	>=5	
Number of Sites	56	1,546	2	180	1	27	10	13	1,835
Share of Total Sites	3.1%	84.3%	0.1%	9.8%	0.1%	1.5%	0.5%	0.7%	100.0%

4.3.4 Dwelling ownership

Table 10 summarises dwelling ownership details at 2010 for finished demolition and resubdivision sites. In 2010, 85.5 per cent (10,393) of the dwellings built on finished demolition sites were privately owned, with only 6.9 per cent owned by Housing SA. This contrasts with the pre-demolition ownership details where Housing SA owned around 27 per cent of the demolished dwellings. However, once the redevelopment process is complete on the remaining vacant and unfinished sites, the proportion of new dwellings owned by Housing SA is likely to increase.

The majority of additional dwellings constructed on finished resubdivision sites were privately owned (94.8%). The ownership of additional dwellings on resubdivision sites was very similar to the ownership of the original dwellings on resubdivision sites - refer back to Table 4.

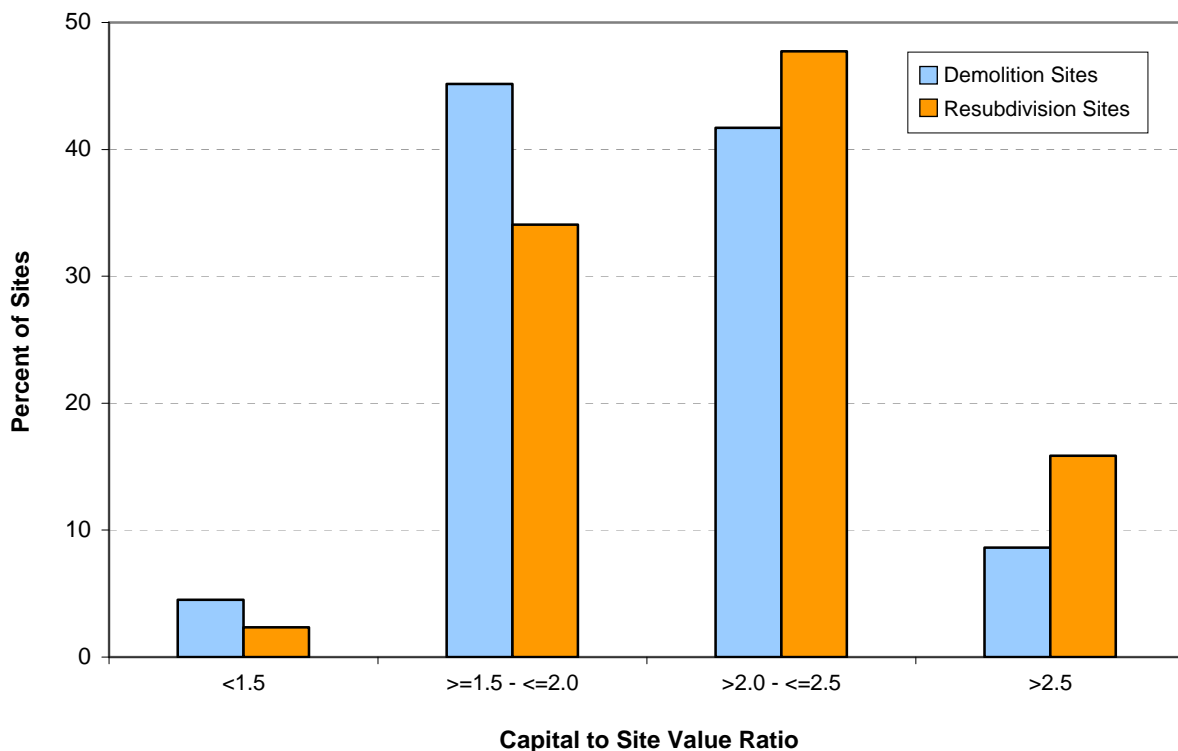
Table 10: Ownership of new and additional dwellings, 2010 - finished sites

Owner Type	Demolition Sites - New Dwellings		Resubdivisions - Additional Dwellings	
	Number	Percent	Number	Percent
Private	10,393	85.5%	2,091	94.8%
Housing SA	841	6.9%	9	0.4%
Company	634	5.2%	96	4.4%
Association	263	2.2%	7	0.3%
Other Govt	30	0.2%	3	0.1%
Total Dwellings	12,161	100.0%	2,206	100.0%

4.3.5 Capital to site value ratio

The construction of new dwellings on demolition and resubdivision sites results in higher CV/SV ratios because of the increased value of the new dwellings and also much smaller allotment sizes (with the exception of 1 for 1 demolitions). For example, a site with a land value of \$200,000 containing a new dwelling with a capital value of \$400,000 (land value + dwelling value) has a CV/SV ratio of 2.0 (\$400K / 200K). Figure 14 shows that 86.9 per cent of finished demolition sites and 81.8 per cent of finished resubdivision sites had CV/SV ratios of between 1.5 and 2.5.

Figure 14: Capital to site value ratio of demolition and resubdivision sites, 2010 - finished sites



Note: CV/SV ratios for resubdivisions only include the value of the resubdivided land and the value of the additional dwelling(s) built on this land.

4.3.6 Land size

The land size of newly constructed dwellings on demolition and resubdivision sites is related to the size of the original land parcel that contained the demolished or original dwelling. For example, the land size of two new dwellings built on a 700m² demolition site would typically be 350m² per new dwelling. Whereas, on a resubdivision site 700m² in size, the original dwelling may for example be on a land parcel 400m², while the additional dwelling built on the site is on a 300m² parcel.

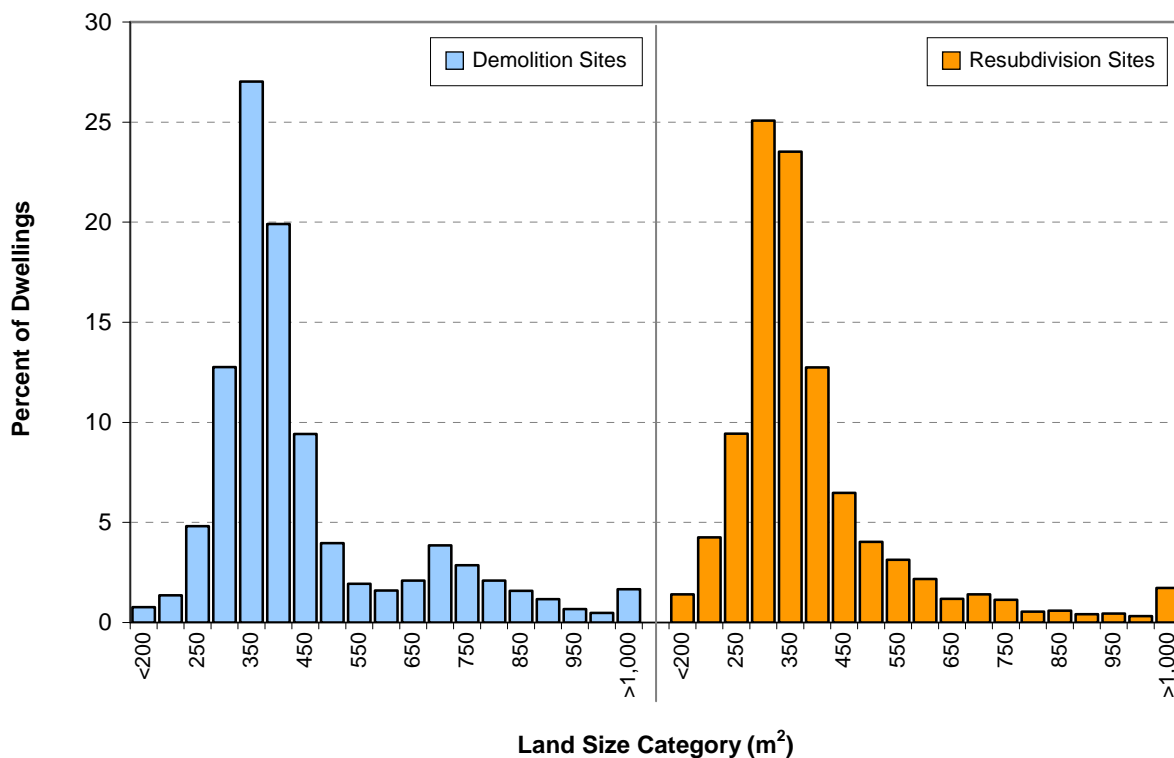
Table 11 shows that 73.9 per cent (8,991) of new dwellings on demolition sites and 75.5 per cent (1,665) of new dwellings on resubdivision sites were on land parcels between 250m² and 499m².

Table 11: Land size of new and additional dwellings, 2010 - finished sites

Land Size (m ²)	Demolition Sites - New Dwellings		Resubdivisions - Additional Dwellings	
	Number	Percent	Number	Percent
<250	504	4.1%	217	9.8%
250 - 499	8,991	73.9%	1,665	75.5%
500 - 749	1,565	12.9%	228	10.3%
750 - 999	875	7.2%	54	2.4%
>=1,000	226	1.9%	42	1.9%
Total Dwellings	12,161	100.0%	2,206	100.0%

Figure 15 shows the proportion of new dwellings on finished demolition and resubdivision sites by land area category. On demolition sites 27.0 per cent (3,287) of new dwellings were in the land size category of 350m², while 25.1 per cent of new dwellings on resubdivision sites were in the 300m² category.

Figure 15: Land size of completed dwellings on demolition and resubdivision sites, 2010 - finished sites

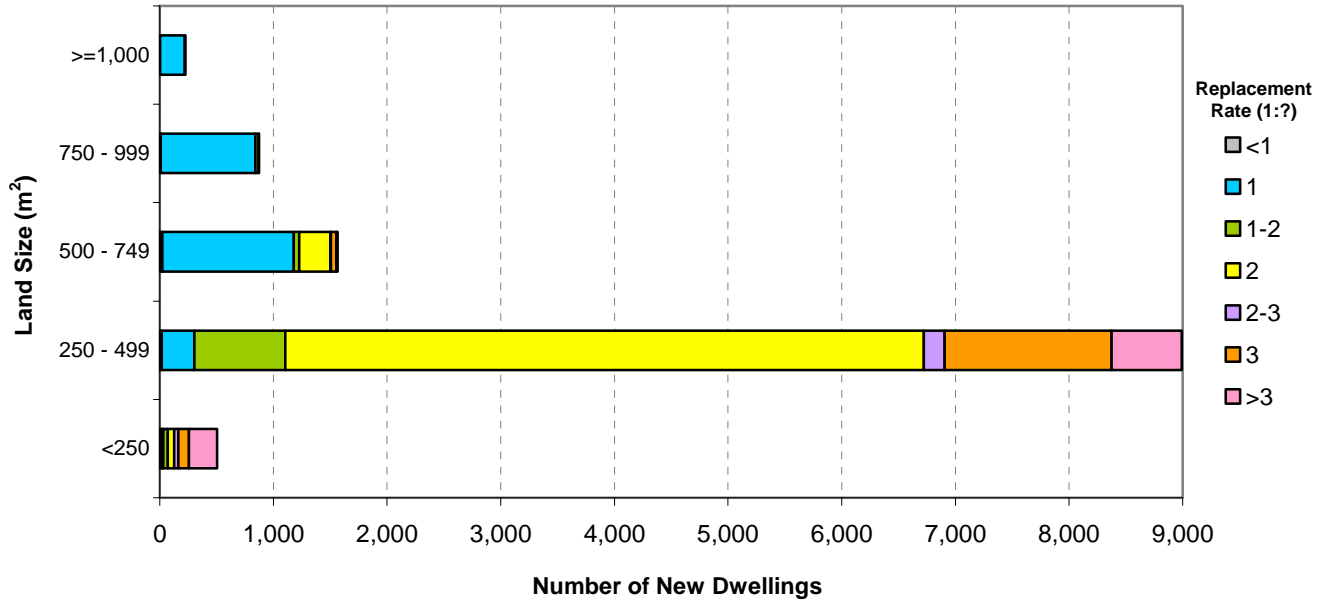


Note: Land areas have been rounded to the nearest 50m².

The replacement rates on demolition sites coupled with the original size of land parcels explains the distribution of land sizes for new dwellings on demolition sites. Of the 6,299 finished demolition sites, 43.5 per cent (2,738) were 500m² to 999m² in size prior to demolition and had replacement rates of 1:2. Therefore, each of the new dwellings constructed on these sites is typically on a land parcel half the size (250m² - 499m²) of the original site.

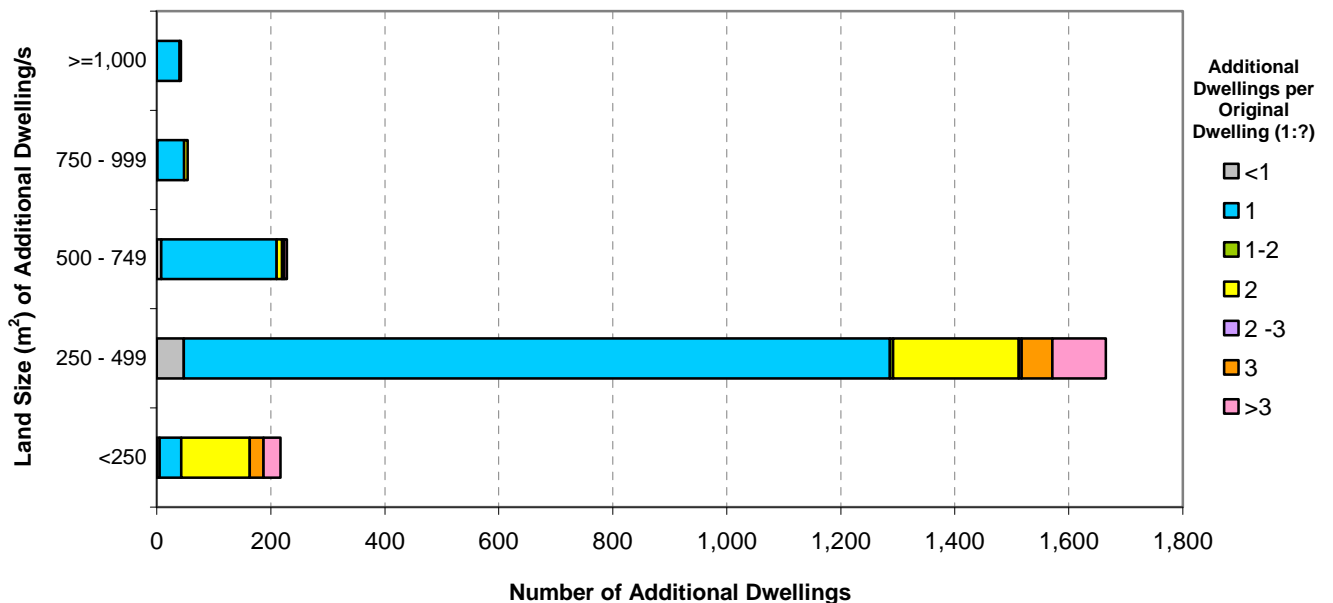
Figure 16 shows the high number (5,618) of new dwellings with land areas of 250m² to 499m² built on demolition sites with replacement rates of 1:2. Across the ASD the median land size of new dwellings on sites with replacement rates of 1:2 was 379m². The larger land parcels (500m² and above) were dominated by new dwellings constructed on sites with replacement rates of 1:1. The median land size of new dwellings on sites with replacement rates of 1:1 was 722m².

Figure 16: New dwellings by land size by replacement rate, 2010 - finished demolition sites



On resubdivision sites the original site is further subdivided to create an additional allotment(s). As a result, the land size of the additional dwelling is therefore always smaller than the original site. Figure 17 shows the high number of additional dwellings that were built on resubdivided land between 250m² - 499m² in size. The majority (74.4%) of these dwellings were built on sites where one additional dwelling was built per one original dwelling.

Figure 17: Additional dwellings by land size, 2010 - finished resubdivision sites



4.3.7 Dwelling types

Information about the type of new dwellings constructed was derived from the landuse codes in the Valuation file. The primary purpose of the State Valuation file however is for rating and taxing purposes, and as a result some data items including landuse are not as accurate or consistent as they could be, particularly where there are more than two new residential dwellings on one site. However, considering that 88.2 per cent of demolition sites had replacement rates of two or less and 97.2 per cent of resubdivision sites had two or less additional dwellings per one original dwelling, the landuse codes still provide a useful overview of the types of new dwellings constructed. The type of new dwellings constructed depends on factors such as; zoning requirements whereby minimum site areas and frontages vary by dwelling type, personal preference of owner builders, market demand and return on investment as determined by developers.

The number of new and additional dwellings by type on demolition and resubdivision sites is shown in Table 12. Detached houses were the most common new dwelling type on both demolition and resubdivision sites accounting for 71 and 89 per cent, respectively. Figure 18 shows typical examples of new detached dwellings.

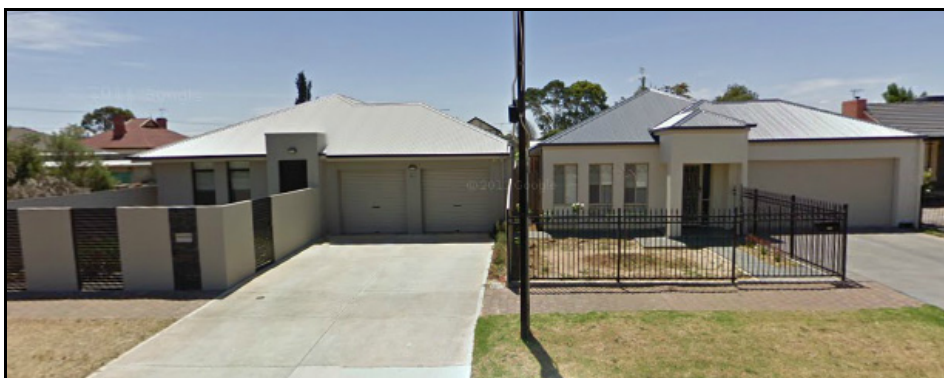
Table 12: Type of new and additional dwellings, 2010 - finished sites

Dwelling Type	Demolition Sites - New Dwellings		Resubdivisions - Additional Dwellings	
	Number	Percent	Number	Percent
Detached House	8,594	70.7%	1,968	89.2%
Semi-Detached	2,409	19.8%	89	4.0%
Unit/Flat	1,143	9.4%	149	6.8%
Aged Flats	15	0.1%	0	0.0%
Total Dwellings	12,161	100.0%	2,206	100.0%

Figure 18: Example of new detached houses on demolition and resubdivision sites



Two new detached houses built on a demolition site





One new detached house built at the rear of an original dwelling on a resubdivision site

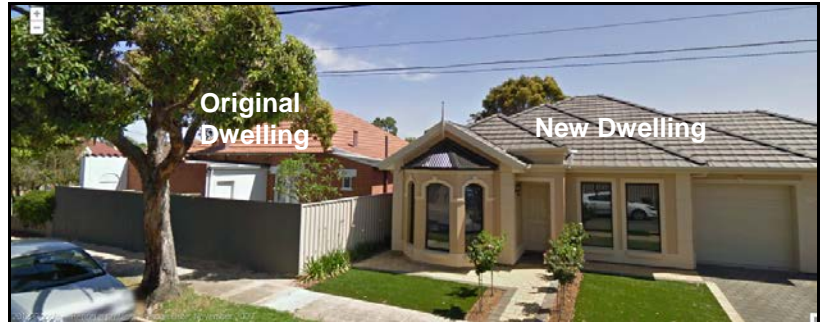
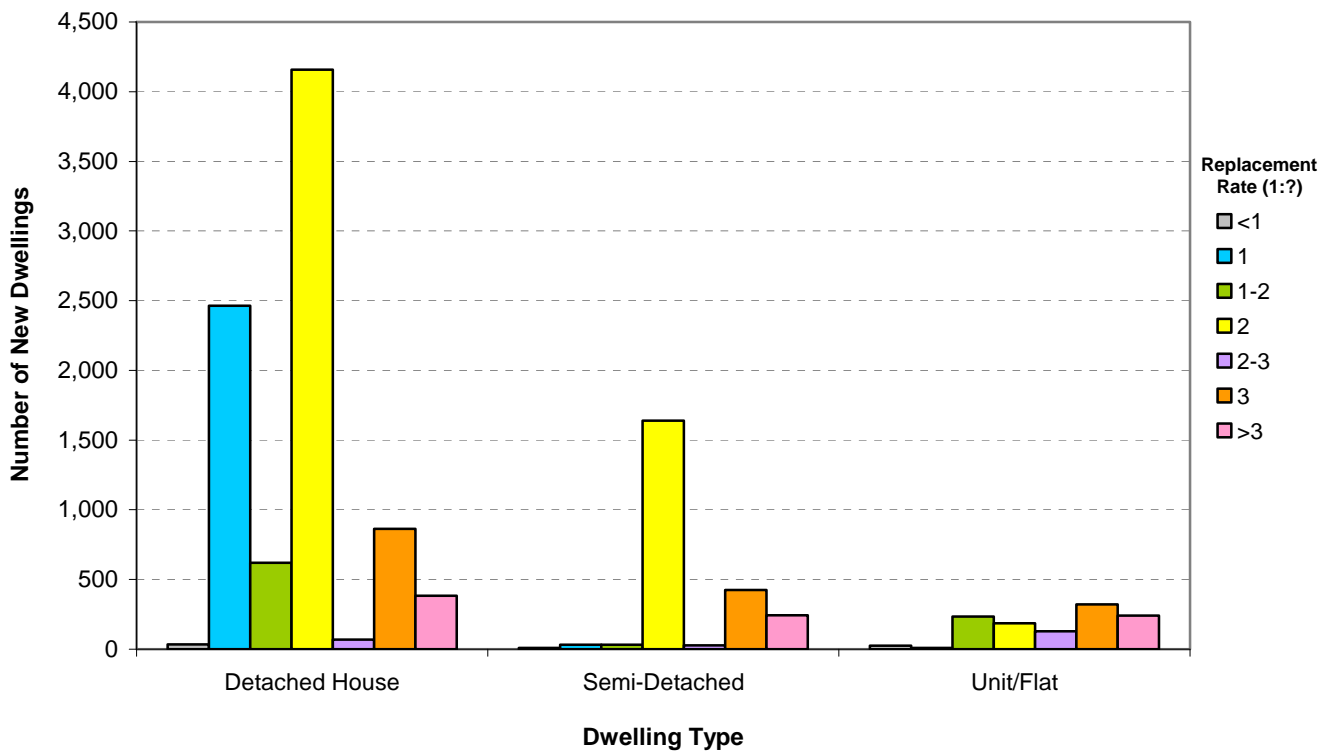


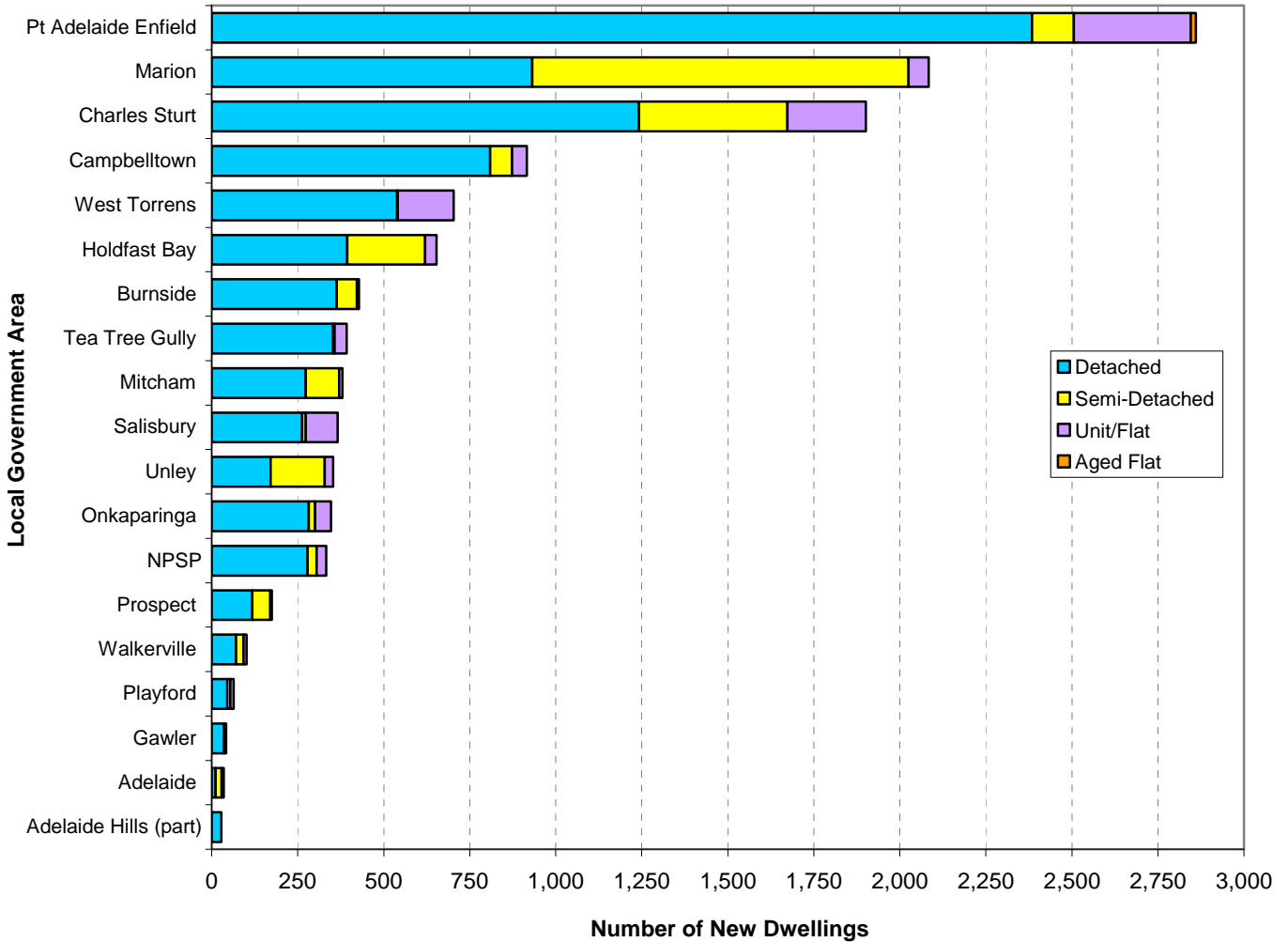
Figure 19 shows the number of new dwellings by type on finished demolition sites by replacement rate. Of the 8,594 new detached dwellings 4,158 (48.4%) were built on sites with replacement rates of 1:2. A further 2,464 (28.7%) detached dwellings were built on sites with replacement rates of 1:1, while 864 (10.1%) were on sites with replacement rates of 1:3. The majority (1,639 - 68.0%) of semi-detached dwellings were built on sites with replacement rates of 1:2.

Figure 19: New dwellings by type and replacement rate, 2010 - finished demolition sites



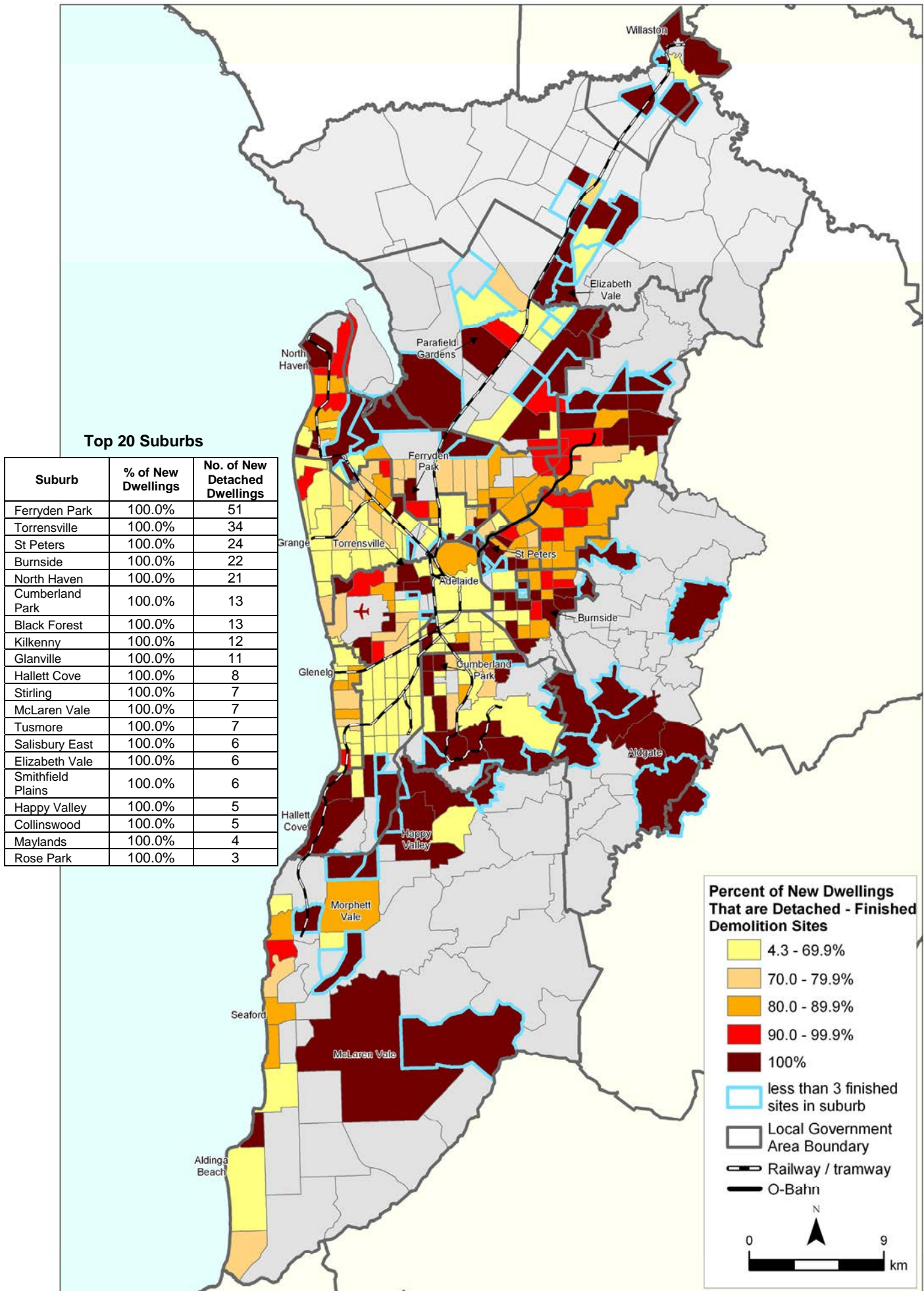
Of the 8,594 new detached dwellings built on demolition sites in the ASD, 27.7 per cent (2,384) were located in Port Adelaide Enfield LGA. Figure 20 shows the number of new dwellings on finished demolition sites by dwelling type by LGA. LGAs with a high proportion of detached dwellings include; Adelaide Hills (100%), Tea Tree Gully (90.1%), Campbelltown (88.4%), Gawler (85.7%) and Burnside (84.8%). Map 13 shows the proportion of new dwellings on finished demolition sites that are detached by suburb.

Figure 20: New dwellings by type by Local Government Area, 2010 - finished demolition sites



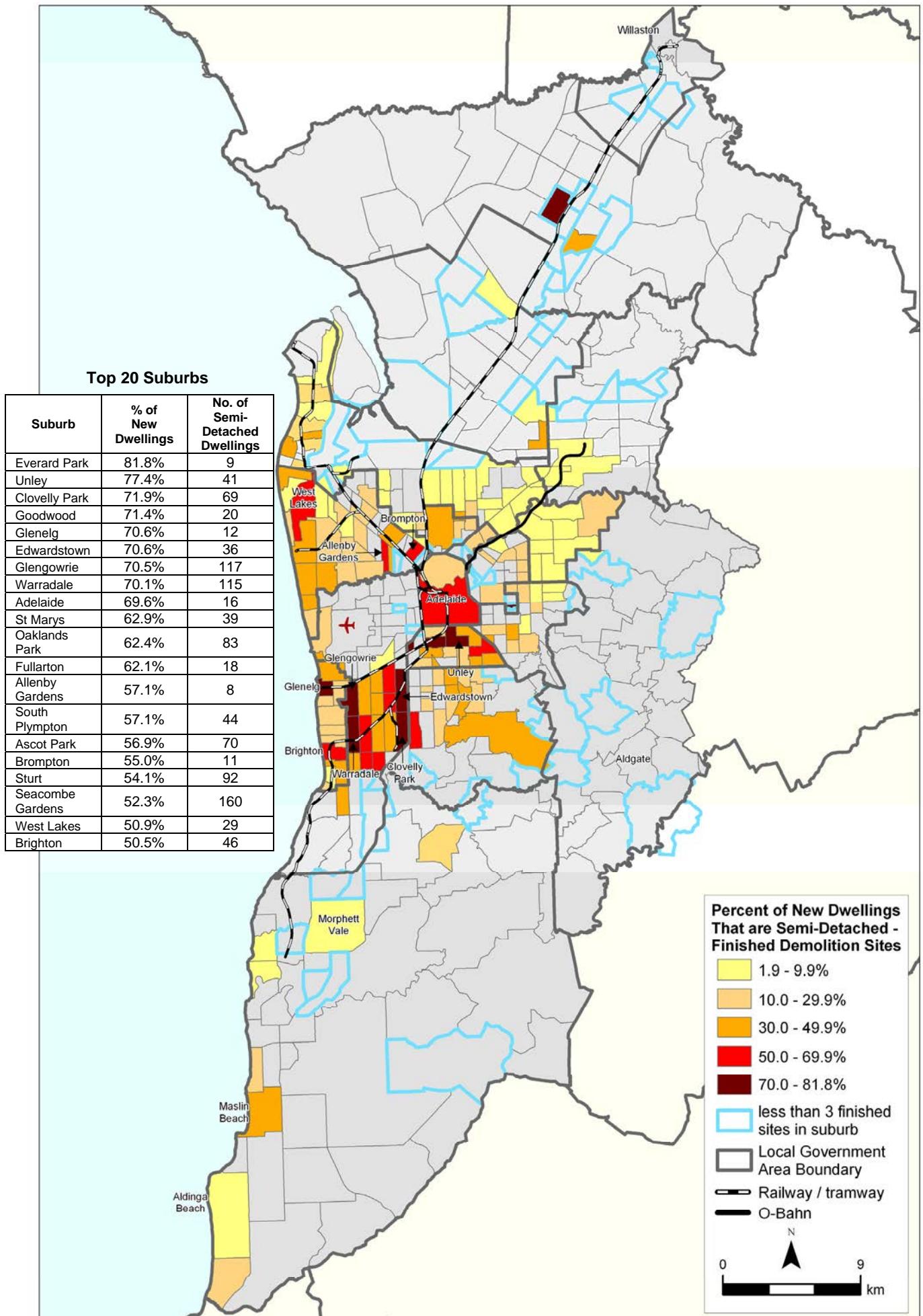
Marion LGA had the highest number (1,093) and proportion (52.4%) of new semi-detached dwellings built on demolition sites. Of the 2,409 new semi-detached dwellings built on demolition sites in the ASD, 45.4 per cent were located in Marion LGA. In the suburbs of Glengowrie, Warradale, Edwardstown and Clovelly Park more than 70 per cent of new dwellings were semi-detached - see Map 14. Unley LGA also had a relatively high proportion of new semi-detached dwellings, with the suburbs Goodwood, Everard Park and Unley all exceeding 70 per cent.

Map 13: Percent of new dwellings per suburb that are detached houses - finished demolition sites, 2004 to 2010



Note: Only those suburbs with three or more finished demolition sites are included in the table.

Map 14: Percent of new dwellings per suburb that are semi-detached - finished demolition sites, 2004 to 2010



Note: Only those suburbs with three or more finished demolition sites are included in the table.

4.4 Comparison with previous demolition studies

4.4.1 Total demolitions

A comparison of the results from this study with two previous studies shows that the number of demolitions has increased over the past two decades. In 1991, an analysis of ETSA meter disconnections estimated that around 700 dwellings were demolished for the year. The next survey in 1999 identified 1,303 dwelling⁷ demolitions for the calendar year. This latest analysis of demolitions occurring between 2004 and 2010 suggests that 1,829 dwellings were demolished per year during the study period.

4.4.2 Site ownership

The ownership of demolished dwellings has also changed between the studies. Whilst ownership was difficult to determine in the 1991 survey, it was estimated that around 22.3 per cent (86) of demolished dwellings were Housing SA owned. The survey coincided with the commencement of the first of the large Housing SA redevelopments in Mitchell Park and Elizabeth. By the time of the 1999 survey, major redevelopments had also commenced in The Parks,⁸ Salisbury North and Hillcrest, with 39.6 per cent of demolished dwellings in the ASD owned by Housing SA. Given the long time-frame required to complete major urban renewal projects, demolitions were still occurring in these suburbs between 2004 and 2010 and had also commenced in other areas including Smithfield Plains, Park Holme and Dover Gardens. However, the proportion of Housing SA owned demolished dwellings in the ASD had dropped to 26.7 per cent over the 2004 to 2010 period.

In the 1999 survey 52.0 per cent of the demolished dwellings were privately owned, compared with 66.8 per cent between 2004 and 2010. Rising land values and the preference of many homeowners to stay within their neighbourhood has resulted in a large increase in private owners demolishing and redeveloping.

4.4.3 Replacement rates

Replacement rates have also varied between the surveys. The 1991 survey indicated a replacement rate of 1:2.19 for the ASD during the six month period. Of the new dwellings on demolition sites, 86.4 per cent were constructed on sites where there was an increase of at least one dwelling. 13.6 per cent of new dwellings were built on sites with replacement rates of 1:1 (no dwelling increase).

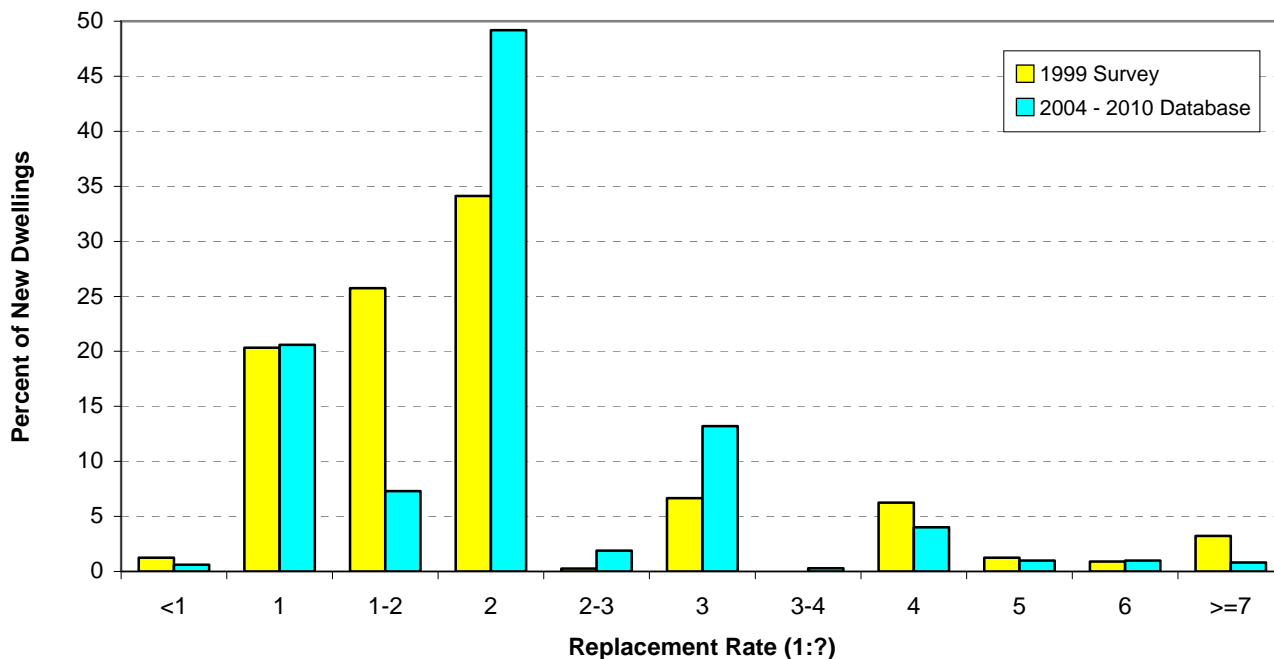
The ASD replacement rate of 1:1.59 for the 1999 survey was lower than the 1991 replacement rate. In 1999 the proportion of new dwellings on sites with an increase of at least one dwelling was also lower (52.7%), while the proportion of new dwellings on sites with replacement rates of 1:1 was higher (20.3%). The high number of new dwellings on Housing SA sites with replacement rates of between 1.1 and 1.9 brought down the overall replacement rate for 1999.

The 2004 to 2010 dwelling demolition database indicates a slightly higher replacement rate for the ASD (1:1.72) than the 1999 study. Whilst the proportion of new dwellings on sites with replacement rates of 1:1 (20.6%) was almost identical to 1999, there were more new dwellings (71.4%) built on sites with an increase of at least one dwelling - see Figure 21.

⁷ 1,177 dwellings were demolished on sites where the post-demolition landuse was residential. A further 126 dwellings were demolished on sites that were still vacant at the time of survey. This gives a total of 1,303 demolished dwellings.

⁸ The Parks redevelopment included the suburbs of Ferryden Park, Mansfield Park, Athol Park, Angle Park and Woodville Gardens.

Figure 21: Percent of new dwellings by replacement rate, 1999 survey and 2004 to 2010 database - finished demolition sites



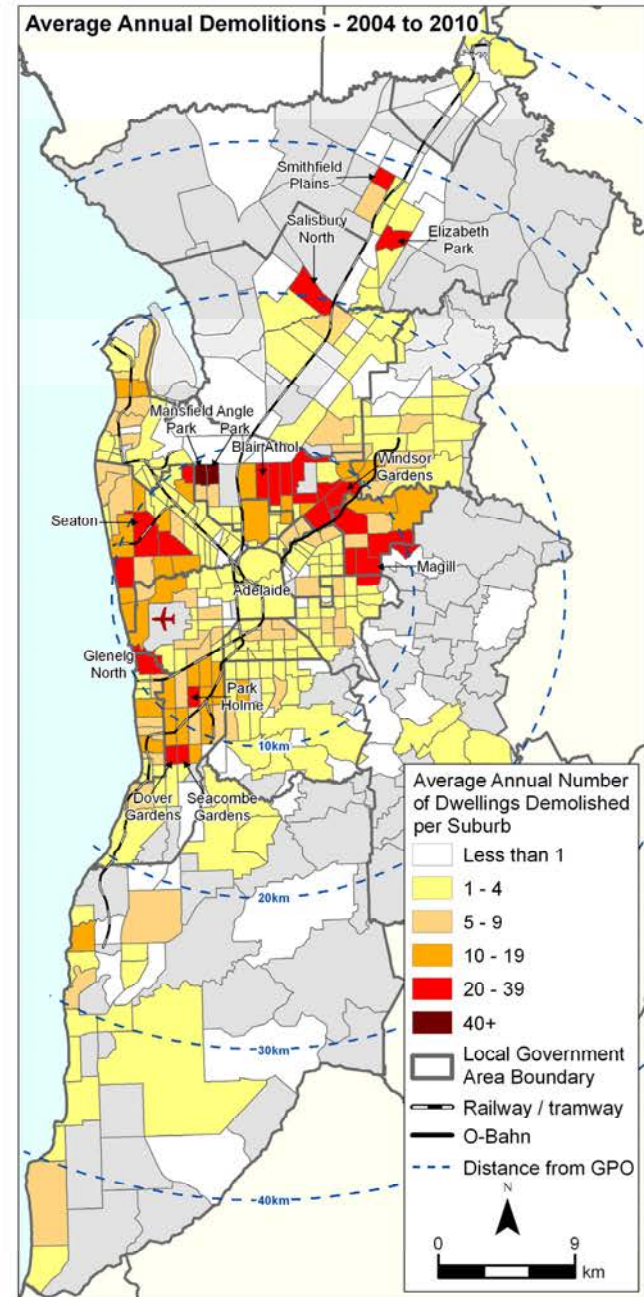
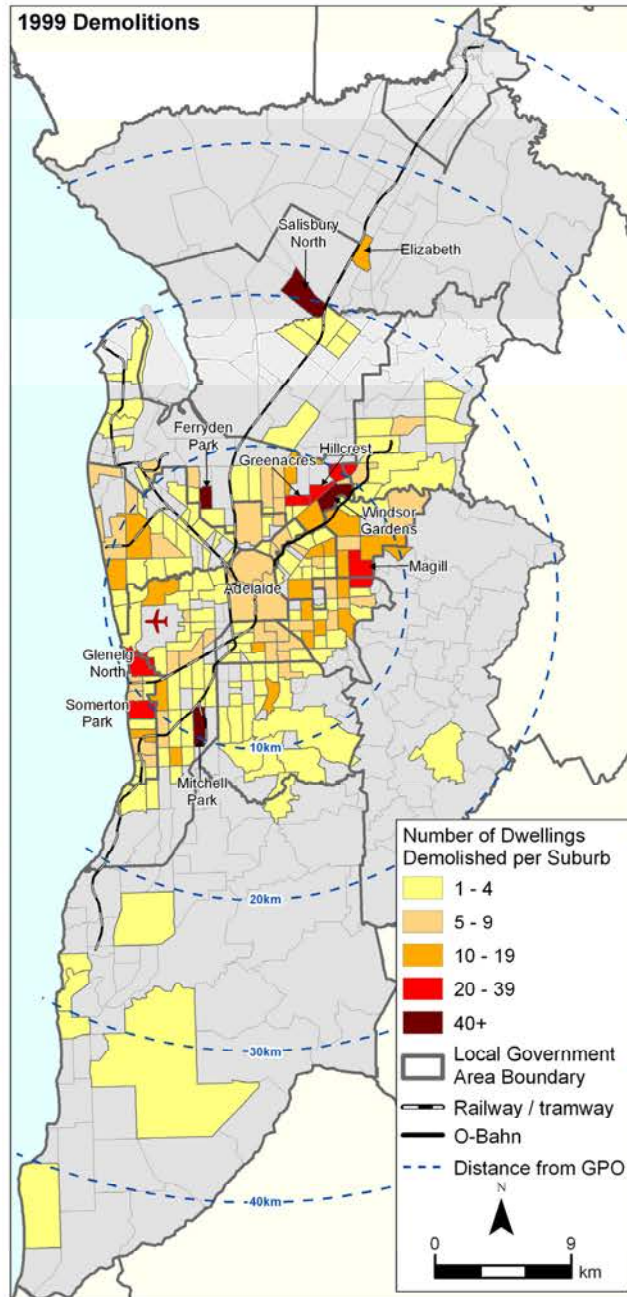
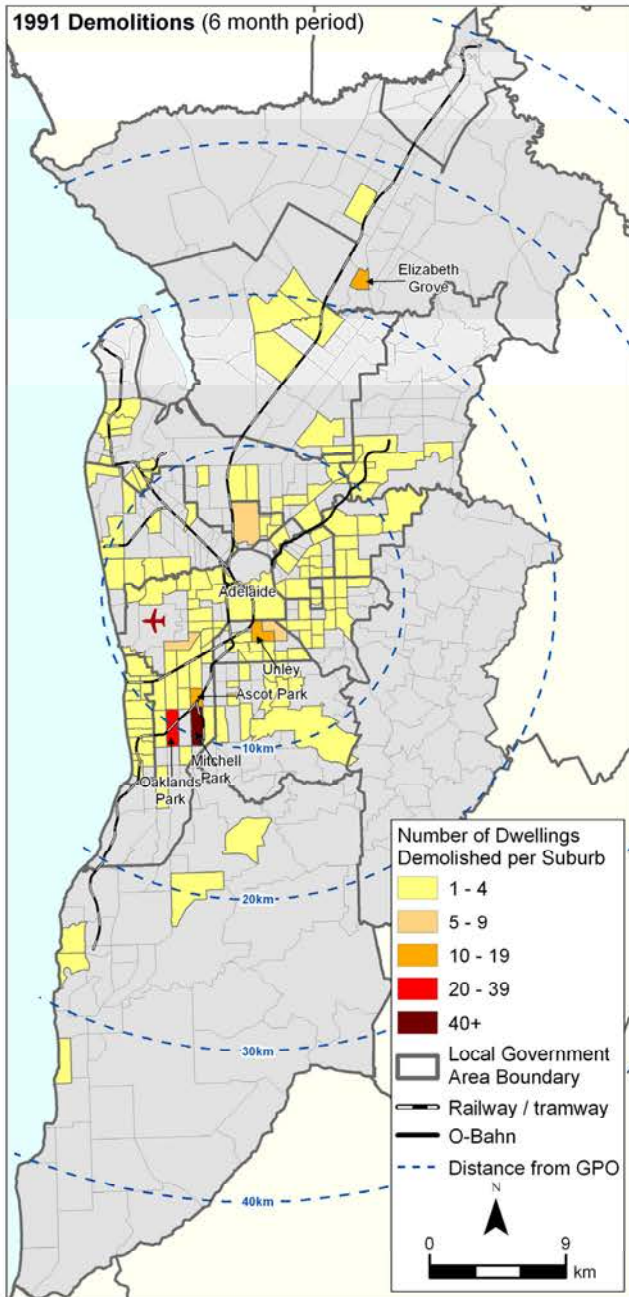
4.4.4 Spatial distribution

Map 15 compares the spatial distribution of demolitions in 1991, 1999 and 2004 to 2010. Whilst the time-frames of each survey differ, the expanding spatial extent of demolitions and the increase in the number of demolished dwellings in many suburbs is evident. In 1991 most demolitions occurred in suburbs well within a 10km radius of Adelaide city. A significant number of Housing SA owned dwellings were demolished in Elizabeth Grove, Oaklands Park and Mitchell Park. Coastal areas were popular for redevelopment with demolitions occurring in all suburbs between Glenelg North and Seacliff. Other areas with significant numbers of demolitions included Ascot Park, North Plympton, Prospect, Parkside and Unley.

By 1999 demolitions were occurring in many of the suburbs within 10km of the city and had also started to spread further to the north east, south and south west. As a result of several large Housing SA redevelopments, significant numbers of dwellings were demolished in suburbs including Salisbury North, Ferryden Park, Windsor Gardens and Mitchell Park. In the east, Magill had a relatively high number of demolitions, while coastal suburbs such as Glenelg North and Somerton Park remained popular areas for redevelopment.

The 2004 to 2010 database reveals that over the time period dwellings were demolished almost the full length of the ASD from Willaston in the north to Sellicks Beach in the south. Demolitions had also extended into hills suburbs such as Aldgate and Bridgewater. However, the actual number of demolitions in these outer suburbs was still reasonably small compared to the inner suburban areas where almost 70 per cent of all demolished dwellings were within 10km of the City of Adelaide. The annual number of demolitions occurring in many of these inner suburbs and particularly those to the west of the city increased between 1999 and this study. However, there were some exceptions in the LGAs of Campbelltown, Burnside and Unley where the average annual number of demolitions in some suburbs was lower over the 2004 to 2010 period, than in 1999. The clustering of suburbs with high numbers of demolitions is also more evident in this study with examples including Blair Athol/Enfield, Campbelltown/Magill, Seaton/Findon and Dover Gardens/Seacombe Gardens.

Map 15: Comparison of number of demolished dwellings by suburb - 1991, 1999 and 2004 to 2010 dwelling demolition databases



5 APPENDICES

Appendix 1: Study method and validation

Listed below is an overview of the processing steps performed in ArcMap and Microsoft Access to create the 2004 - 2010 dwelling demolitions and resubdivisions databases.

1. Identify parcels from the 2004 Property Cadastre that may have been demolition or resubdivision sites.
→ residential landuse, year built of earlier than 2004, land size <4,000m²
2. Select corresponding parcels from the 2010 Property Cadastre and identify possible demolition sites.
→ residential landuse and year built of 2004 or later; or a landuse of vacant or unfinished house
3. Identify parcels that were resubdivided and the original dwelling retained.
→ 2010 Valuation file indicates that the year built on at least one of the parcels is less than 2004, and therefore a demolition has not occurred
→ These parcels create the resubdivisions database while the remaining parcels form the demolitions database
4. Dissolve boundaries between adjacent demolition sites where parcel boundaries have been reconfigured.
5. Use 2004 and 2010 Valuation information to assign original and replacement dwelling information to demolition sites, and original and additional dwelling information to resubdivision sites.

A range of data checks were performed throughout the GIS Process for the 2004 to 2010 data. These included checking:

- small sites (<300m²) and large sites (>1,800m²)
- sites where the dwelling identified as having been demolished or retained on a resubdivided site was constructed after 1975
- sites in newer fringe suburbs where demolitions and resubdivisions are uncommon
- sites with a landuse of 14 (flats). Quite often flats don't have a year built assigned to them on the Valuation file
- Housing SA areas for demolition sites not picked up as part of the GIS process. This can occur when a large number of dwellings are demolished and the site is reconfigured to incorporate roads, parks etc.
- sites with high previous CV/SV ratios and finished sites with low CV/SV ratios
- sites with very high or very low replacement rates
- various Microsoft Access queries were also performed on both databases to ensure consistency between fields (eg *Total_Previous_Dwellings* = sum of *Previous Owners*; *Total_Current_Dwellings* = sum of *Current Year Built* fields; *Current_Capital_Value* > *Current_Site_Value* etc)
- other staff members checked the database for omissions/errors in areas they were familiar with

18.4 per cent (1,639) of the 8,924 demolition sites and 27.1 per cent (763) of the 2,812 resubdivision sites were manually checked in ArcMap, using aerial photography.

Appendix 2: Adelaide Statistical Division Local Government Area boundaries



Appendix 3: References

Burrows, D. & McQueen, I. (2002). *1999 Dwelling Demolition Report – Adelaide Statistical Division*. Planning SA, Department of Transport and Urban Planning, Adelaide.

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