fringe city and contested countryside: population trends and policy developments around sydney

Raymond Bunker and Darren Holloway

Issues Paper 6
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Urban Frontiers Program
Issues Paper No. 6
January 2001

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Fringe City and Contested Countryside: Population Trends and Policy Developments Around Sydney

There are several important reasons for closer attention to analysis and understanding of the rural-urban fringes surrounding large population centres in Australia. These include the rapid rates of population growth occurring there, the variety of populations living in or using the fringe, the complex and dynamic interactions between natural resource management and metropolitan growth and influence, and the effects of globalisation.

This paper is exploratory, seeking to define the characteristics of Sydney’s rural-urban fringe and the issues which have arisen in its development, management and conservation. It takes a broad approach, partly descriptive, partly analytical in order to shape future research directions and emphases. The broad approach is essential given that attention tends to be concentrated on particular issues, functions and phenomena in the fringe such as population trends and demography, biodiversity, suburban growth, agriculture, air and water quality. This is particularly apparent in issues that have arisen in the last decade or two. The association of these individual concerns one with another is also changing, leading to a complex and dynamic series of interrelationships among the matters and phenomena involved.

From these considerations flow a number of questions:
• How does one define the rural-urban fringe? How does one identify and measure its characteristics? How has the fringe reflected recent changes in the political economy of Australia?
• How has the fringe reflected and responded to demographic trends and changes in social attitudes among households, communities and society? What are the kinds of disadvantage, difficulty and deprivation that people living there may experience? Is it important to divide the fringe into sub-regions?
• In what ways has the fringe’s position at the interface of city and country reflected the growth of environmental concerns and issues over recent times and the pursuit of ecologically sustainable development?
• Are there important interests in either the fringe or the city – such as water quality and quantity – which override or dominate other concerns? If so, how are those priorities determined and asserted? What policy mechanisms guide them?

This paper attempts to explore some of these questions in relation to the rural-urban fringe of Sydney, and is a report on work in progress. We firstly define an inner edge and outer periphery of the rural-urban fringe in Sydney using commuting data from the 1996 Census. We deliberately take a wide interpretation of the area constituting the rural-urban fringe so that we can encompass the shifting dynamics of its history over the last twenty years as outer suburban growth has occurred and as a number of economic, social and environmental questions have arisen concerning it.

Secondly, we look at population trends and characteristics of the rural-urban fringe between 1981 and 1999. Thirdly, we examine the policy issues that have influenced the development of the rural-urban fringe in Sydney and assess the impact natural resource management issues have had on the rural-urban fringe in recent years. While our analysis is broad and exploratory it concludes by drawing a number of important implications for future research themes.
Defining the Rural-Urban Fringe

No satisfactory term exists for the penumbra or zone surrounding the major cities and towns. All descriptions tend to be either ponderous or ambiguous or both, such as ‘exurban’, ‘peri-urban’ or ‘perimetropolitan’. ‘Rural-urban fringe’ is awkward but the most accurate in its terminology.

Much more difficult is actually defining the extent of the fringe, given its complexity and dynamic nature. Most research divides the fringe into at least two generalised areas— the edge and the periphery. There is general agreement that the inner edge of the fringe can be defined by the continuously built up area of the central metropolis. The outer limit, or periphery is more controversial. While it is best defined in terms of accessibility to the parent city, this still begs the question of accessibility for what purposes? And to what degree? Most researchers regard the outer edge of the rural-urban fringe as one defined by the limit of reasonable commuting to the metropolis. But there has been little attempt to investigate this, and recent analyses still rely basically on informed judgement about the extent and degree of commuting. While useful for its own purposes, the pattern of intensity of commuting also acts as a partial surrogate for defining accessibility for purposes other than travelling to or from work.

Analysis of the 1996 Census was carried out regarding the journey to work from surrounding local government areas to the metropolitan labour market. The local government areas considered for the origins of such travel were drawn from a wide area around Sydney. The analysis also included the origins of journey to work in local government areas which were part of metropolitan Sydney but also contained some rural areas and space for further urban growth.

Three representations of Sydney as a workplace destination were devised and are shown in Figure 1. The Sydney Statistical Division is widely drawn and includes many outlying local government areas. ‘Urban Sydney’ includes all local government areas which are part of the continuously built-up area of Sydney. The central City of Sydney comprises the local government area of that name.

Table 1 shows the results of these analyses. The large Sydney Statistical Division contains the workplaces of almost all the employed persons living in all the local government areas considered except for outlying areas like Cessnock, Kiama, Lake Macquarie, Newcastle and Shellharbour. These areas were accordingly excluded from further analysis as less than 10% of their employed persons travelled to work destinations within the widely-drawn Sydney Statistical Division, and even lower proportions to Urban Sydney.
**TABLE 1:** Travel to Work Data, 1996 (as a percentage of employed persons)
(source: ABS, 1996 Journey to Work Data)

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>Sydney SD</th>
<th>Urban Sydney</th>
<th>City of Sydney</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baulkham Hills</td>
<td>92.1%</td>
<td>90.6%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Blacktown</td>
<td>90.8%</td>
<td>89.3%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Blue Mountains</td>
<td>89.9%</td>
<td>47.7%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Camden</td>
<td>88.8%</td>
<td>85.5%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Campbelltown</td>
<td>90.7%</td>
<td>89.8%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Cessnock</td>
<td>3.6%</td>
<td>2.0%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Fairfield</td>
<td>88.9%</td>
<td>88.6%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Gosford</td>
<td>89.8%</td>
<td>28.0%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Hawkesbury</td>
<td>89.0%</td>
<td>43.4%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Hornsby</td>
<td>92.4%</td>
<td>91.5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Kiama</td>
<td>6.3%</td>
<td>5.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Ku-ring-gai</td>
<td>92.8%</td>
<td>92.4%</td>
<td>18.3%</td>
</tr>
<tr>
<td>Lake Macquarie</td>
<td>6.7%</td>
<td>2.9%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Liverpool</td>
<td>89.8%</td>
<td>89.5%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Newcastle</td>
<td>3.0%</td>
<td>2.3%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Penrith</td>
<td>90.8%</td>
<td>87.2%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Pittwater</td>
<td>90.0%</td>
<td>89.8%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Shellharbour</td>
<td>6.7%</td>
<td>6.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Sutherland</td>
<td>91.1%</td>
<td>91.0%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Warringah</td>
<td>91.8%</td>
<td>91.6%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Wingecarribee</td>
<td>13.8%</td>
<td>11.9%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Wollondilly</td>
<td>85.7%</td>
<td>54.4%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Wollongong</td>
<td>15.9%</td>
<td>14.4%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Wyong</td>
<td>85.0%</td>
<td>16.6%</td>
<td>3.0%</td>
</tr>
</tbody>
</table>
FIGURE 1: Three Journey to Work Destinations- Sydney Statistical Division, Urban Sydney and The City of Sydney (source: ABS, CDATA96)
FIGURE 2: The Percentage of Employed Persons in Fringe LGAs Who Travel to Work in Urban Sydney, 1996
(source: ABS, 1996 Journey to Work Data)
Of much more importance is the pattern of travel to Urban Sydney, i.e. the metropolitan area, and these data are also represented in Figure 2 showing the degree of dependence of the local government areas considered on Urban Sydney for employment. Not surprisingly those edge local government areas which are part of the continuously built-up area of Sydney, have more than 85% of their resident employed persons working in Urban Sydney, and form a clear band around the older inner suburbs. Inland and further removed, almost half of employed persons living in Hawkesbury, Blue Mountains and Wollondilly work in Urban Sydney. Along the coast Gosford has 28% of its resident employed persons working in Urban Sydney compared with 16.6% in Wyong further to the north. To the south Wollongong and Wingecarribee have slightly smaller proportions than that of Wyong. Figure 2 shows the concentric pattern formed. These gradations are sharply differentiated one from another.

Previous analyses have subdivided the areas lying between the inner and outer limits of the rural-urban fringe usually in terms of an inner ‘edge’ and an outlying ‘periphery’. Figure 2 supports a case for such an edge closely tied to Sydney and a periphery further out, where these latter local government areas have strong employment links with Urban Sydney.

This also raises the question as to whether Gosford and Wyong have stronger commuting links with Newcastle to the north than to Urban Sydney. A similar question can be asked as to whether Wingecarribee has stronger employment affiliations with Wollongong than Urban Sydney. Further investigations confirmed the dominance of Urban Sydney for employment for all these three local government areas, compared with the small proportions of employed persons travelling to Newcastle and Wollongong respectively.

Population Analyses


Given the dynamic nature of the rural-urban fringe, with metropolitan growth in the form of suburban extension pushing the inner limit outwards, and considerable changes in population and land-use taking place in areas further out, it is important to carry out an analysis of population trends over time to trace some of these influences. This is not easy to accomplish in a suitable and consistent spatial framework.

Following on from the examination of commuting patterns to Sydney in 1996, an analysis of population trends in the rural-urban fringe was carried out for the Census years between 1981 and 1996, updated by using the most recent population estimates to 1999. The fringe was divided into an edge or periphery based on the journey to work analysis in the previous section (Table 2). The edge contains local government areas that were part of the continuous urban area of Sydney in 1981, but also had substantial undeveloped areas at that date which have been used during the period for Sydney’s suburban growth. The local government areas within the edge include Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hornsby, Liverpool, Penrith and Sutherland. The periphery contained local government areas whose urban settlements were not physically attached to the Sydney metropolitan area, except for a
minor incursion up the escarpment into the Blue Mountains. The local government areas on the periphery included the Blue Mountains, Gosford, Hawkesbury, Wingecarribee, Wyong and Wollondilly.

**TABLE 2:** Edge and Periphery Components of the Rural-Urban Fringe of Sydney, 1996.

<table>
<thead>
<tr>
<th>Area</th>
<th>Defining Characteristics</th>
<th>LGAs Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRINGE</td>
<td>More than 10% of employed persons travelling to Urban Sydney for work in 1996*</td>
<td>Baulkham Hills, Blacktown, Blue Mountains, Camden,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Campbelltown, Fairfield, Gosford, Hawkesbury,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hornsby, Liverpool, Penrith, Sutherland, Wingecarribee,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wollondilly, Wyong</td>
</tr>
<tr>
<td>a) Edge</td>
<td>More than 85% of employed persons travelling to Urban Sydney for work in 1996*</td>
<td>Baulkham Hills, Blacktown, Camden, Campbelltown,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fairfield, Gosford, Hawkesbury, Hornsby, Liverpool,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Penrith, Sutherland</td>
</tr>
<tr>
<td>b) Periphery</td>
<td>10% to 85% of employed persons travelling to Urban Sydney for work in 1996*</td>
<td>Blue Mountains, Gosford, Hawkesbury, Wingecarribee,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wollondilly, Wyong</td>
</tr>
</tbody>
</table>

*Excluding Wollongong, Ku-ring-gai, Pittwater and Warringah LGAs (see text)

While this delimitation basically followed the results of the journey to work analysis, there were some exceptions. Ku-ring-gai, Pittwater and Warringah were not included in the edge analysis as the vast majority of urban development had taken place by 1981, and the extensive areas of open and undeveloped land represented parks or reserves not available for urban growth. This is substantiated by the low rates of population growth in those local government areas from 1981-1996. The other exception is the City of Wollongong which was excluded because it has a long history as a large regional centre and industrial city in its own right. That function tends to dominate, and the journey to work of residents to Sydney represents interaction between two substantial population and employment centres.

Tables 3 and 4 summarise the results of this analysis. Large population increases have occurred in the fringe, and the edge accommodated most of the population growth that occurred in the Sydney Statistical Division in the 1980s. In those years the increase in population numbers in the total fringe exceeded that for the Division as a whole, but this was reversed in the 1990s, with the fringe only taking about half of the Division’s increase in the years 1996-99, perhaps reflecting the influence of urban consolidation policies. However in all the periods, growth rates in the fringe have substantially exceeded that of the Sydney Statistical Division as a whole, although this differential diminished sharply in the most recent period analysed.
While the population in local government areas at the edge of Sydney has grown much more than the population in the periphery, the rates of growth have been substantially higher in the periphery until the last period when they have been about equal (Table 4).

(source: ABS Various Censuses and ABS 2000)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population at the Edge</td>
<td>990,253</td>
<td>1,107,621</td>
<td>1,218,106</td>
<td>1,318,823</td>
<td>1,447,333</td>
</tr>
<tr>
<td>% of Total Fringe</td>
<td>76.7%</td>
<td>75.9%</td>
<td>74.7%</td>
<td>74.2%</td>
<td>74.2%</td>
</tr>
<tr>
<td>Population at the Periphery</td>
<td>300,267</td>
<td>351,557</td>
<td>412,662</td>
<td>459,204</td>
<td>502,134</td>
</tr>
<tr>
<td>% of Total Fringe</td>
<td>23.3%</td>
<td>24.1%</td>
<td>25.3%</td>
<td>25.8%</td>
<td>25.8%</td>
</tr>
<tr>
<td>TOTAL FRINGE</td>
<td>1,290,520</td>
<td>1,459,178</td>
<td>1,630,768</td>
<td>1,778,027</td>
<td>1,949,467</td>
</tr>
<tr>
<td>% of Sydney SD</td>
<td>40.3%</td>
<td>43.6%</td>
<td>46.3%</td>
<td>48.0%</td>
<td>48.3%</td>
</tr>
<tr>
<td>Sydney SD</td>
<td>3,204,697</td>
<td>3,347,788</td>
<td>3,519,207</td>
<td>3,705,533</td>
<td>4,039,879</td>
</tr>
</tbody>
</table>

### TABLE 4: Population Increase 1981-1999 in the Rural-Urban Fringe of Sydney
(source: ABS Various Censuses and ABS 2000)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Population Increase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge</td>
<td>117,368</td>
<td>110,485</td>
<td>100,717</td>
<td>128,510</td>
</tr>
<tr>
<td>Periphery</td>
<td>51,290</td>
<td>61,105</td>
<td>46,542</td>
<td>42,930</td>
</tr>
<tr>
<td>TOTAL FRINGE</td>
<td>168,658</td>
<td>171,590</td>
<td>147,259</td>
<td>171,440</td>
</tr>
<tr>
<td>Sydney SD</td>
<td>143,091</td>
<td>171,419</td>
<td>186,326</td>
<td>334,346</td>
</tr>
<tr>
<td>B. Growth Rate per Annum (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge</td>
<td>2.4%</td>
<td>2.0%</td>
<td>1.7%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Periphery</td>
<td>3.7%</td>
<td>3.8%</td>
<td>2.3%</td>
<td>3.1%</td>
</tr>
<tr>
<td>TOTAL FRINGE</td>
<td>2.6%</td>
<td>2.4%</td>
<td>1.8%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Sydney SD</td>
<td>0.9%</td>
<td>1.0%</td>
<td>1.1%</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

**Population Characteristics and Trends 1991-1996**

Following this broad analysis, selected population characteristics for the local government areas at the edge and the periphery were analysed for the most recent inter-censal period 1991-1996. They could also be differentiated spatially between urban centres of more than 1,000 persons, localities — or settlements of less than 1,000 — and rural areas. In the case of local government areas on the edge of Sydney the urban populations would be those of the outer suburbs of Sydney.

Tables 5 and 6 present the proportions of the population having the characteristics identified. The percentages of those enumerated at the same address as five years ago gives an indication of how mobile the population is. Table 4 shows that half of the people in the Sydney Statistical Division were still living at the same address as five years earlier both in 1991 and 1996 while the edge had a more settled population than this, and the periphery less so. This is consistent with the higher rates of growth in the periphery recorded in the previous section.
**TABLE 5:** Selected Characteristics of the Rural-Urban Fringe Population of Sydney, 1991 and 1996
(source: ABS, CDATA91 and CDATA96)

<table>
<thead>
<tr>
<th></th>
<th>EDGE</th>
<th>PERIPHERY</th>
<th>TOTAL FRINGE</th>
<th>SYDNEY SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enumerated at the Same Address 5 Years Ago</td>
<td>52.1% 53.1%</td>
<td>45.2% 49.5%</td>
<td>50.4% 52.2%</td>
<td>50.9% 50.3%</td>
</tr>
<tr>
<td>Aged 0-14</td>
<td>25.8% 24.5%</td>
<td>24.9% 23.8%</td>
<td>25.5% 24.3%</td>
<td>21.1% 20.4%</td>
</tr>
<tr>
<td>Aged 15-34</td>
<td>33.0% 31.3%</td>
<td>28.6% 26.0%</td>
<td>31.9% 30.0%</td>
<td>32.9% 31.0%</td>
</tr>
<tr>
<td>Aged 35-59</td>
<td>30.8% 32.8%</td>
<td>29.1% 31.8%</td>
<td>30.4% 32.6%</td>
<td>30.5% 32.3%</td>
</tr>
<tr>
<td>Aged 60 and over</td>
<td>10.7% 11.3%</td>
<td>18.2% 18.4%</td>
<td>12.6% 13.1%</td>
<td>15.5% 15.4%</td>
</tr>
<tr>
<td>Couples without Children</td>
<td>19.3% 20.0%</td>
<td>26.3% 25.5%</td>
<td>21.2% 21.6%</td>
<td>21.8% 21.6%</td>
</tr>
<tr>
<td>One Parent Families</td>
<td>10.9% 11.4%</td>
<td>9.4% 10.3%</td>
<td>10.5% 11.1%</td>
<td>9.6% 9.9%</td>
</tr>
<tr>
<td>Lone Person Households</td>
<td>12.2% 14.4%</td>
<td>19.3% 22.0%</td>
<td>14.2% 16.5%</td>
<td>20.0% 21.5%</td>
</tr>
<tr>
<td>Couples with Children</td>
<td>52.4% 46.5%</td>
<td>40.1% 35.2%</td>
<td>49.0% 43.3%</td>
<td>40.4% 36.3%</td>
</tr>
<tr>
<td>Low Income Households</td>
<td>NA 13.5%</td>
<td>NA 20.8%</td>
<td>NA 15.6%</td>
<td>NA 16.0%</td>
</tr>
<tr>
<td>High Income Households</td>
<td>NA 14.9%</td>
<td>NA 8.4%</td>
<td>NA 13.0%</td>
<td>NA 15.4%</td>
</tr>
<tr>
<td>University Qualifications</td>
<td>10.1% 14.7%</td>
<td>10.2% 13.5%</td>
<td>10.1% 14.4%</td>
<td>15.3% 21.7%</td>
</tr>
<tr>
<td>Unemployed Persons</td>
<td>11.2% 7.9%</td>
<td>10.3% 8.5%</td>
<td>11.0% 8.0%</td>
<td>10.4% 7.4%</td>
</tr>
<tr>
<td>Managers, Administrators, Professionals</td>
<td>23.0% 23.0%</td>
<td>21.6% 24.2%</td>
<td>22.7% 23.3%</td>
<td>25.3% 28.0%</td>
</tr>
</tbody>
</table>

NA= Not Available
### TABLE 6: Selected Characteristics of Edge and Periphery Populations By Urban Centres, Localities and Rural Areas, 1991 and 1996
(source: ABS, CDATA91 and CDATA96)

<table>
<thead>
<tr>
<th></th>
<th>EDGE 1991</th>
<th>PERIPHERY 1996</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
<td>Localities</td>
</tr>
<tr>
<td>Enumerated at the Same Address 5 Years Ago</td>
<td>52.0%</td>
<td>51.6%</td>
</tr>
<tr>
<td></td>
<td>45.1%</td>
<td>42.8%</td>
</tr>
<tr>
<td>Aged 0-14</td>
<td>25.9%</td>
<td>27.5%</td>
</tr>
<tr>
<td></td>
<td>24.6%</td>
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</tr>
<tr>
<td></td>
<td>28.4%</td>
<td>31.4%</td>
</tr>
<tr>
<td>Aged 35-59</td>
<td>30.6%</td>
<td>30.7%</td>
</tr>
<tr>
<td></td>
<td>28.4%</td>
<td>29.4%</td>
</tr>
<tr>
<td>Aged 60 and over</td>
<td>10.7%</td>
<td>10.6%</td>
</tr>
<tr>
<td></td>
<td>19.4%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Couples without Children</td>
<td>19.3%</td>
<td>21.6%</td>
</tr>
<tr>
<td></td>
<td>26.7%</td>
<td>24.6%</td>
</tr>
<tr>
<td>One Parent Families</td>
<td>11.1%</td>
<td>7.3%</td>
</tr>
<tr>
<td></td>
<td>9.7%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Alone Person Households</td>
<td>12.3%</td>
<td>12.8%</td>
</tr>
<tr>
<td></td>
<td>20.3%</td>
<td>15.8%</td>
</tr>
<tr>
<td>Couples with Children</td>
<td>52.2%</td>
<td>54.2%</td>
</tr>
<tr>
<td></td>
<td>38.3%</td>
<td>45.5%</td>
</tr>
<tr>
<td>Low Income Households</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>High Income Households</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>University Qualifications</td>
<td>10.2%</td>
<td>9.6%</td>
</tr>
<tr>
<td></td>
<td>9.9%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Unemployed Persons</td>
<td>11.4%</td>
<td>7.0%</td>
</tr>
<tr>
<td></td>
<td>10.8%</td>
<td>9.6%</td>
</tr>
<tr>
<td>Managers, Administrators, Professionals</td>
<td>22.7%</td>
<td>25.7%</td>
</tr>
<tr>
<td></td>
<td>20.3%</td>
<td>20.9%</td>
</tr>
</tbody>
</table>

NA = Not Available
Table 6 shows that in all categories — urban, localities and rural — peripheral local government areas had substantially more people who had located there within the last five years than areas comprising the edge. Further, the processes of metropolitan growth meant that the proportions of longer-settled people grew between 1991 and 1996 in all categories in both the edge and the periphery. This was particularly marked in urban localities and rural areas confirming the attraction of country environments for living.

In terms of age structure of the population, the periphery is similar to the edge in the proportions of the population who are in the 0-14 and 35-59 age groups, but there is a much larger representation of older people aged 60 and over and correspondingly fewer young adults aged 15-34. While these differences are maintained over the urban-locality-rural continuum, they are most pronounced in the substantial elderly populations living in the larger towns in Gosford, Wyong and the Blue Mountains.

Not surprisingly, the edge has a high proportion of families consisting of couples with children but the periphery has substantially less. In response, the periphery contains many more couples without children and single-person households, although the proportion of lone parent households is about the same. Again, these differences between the two parts of the fringe are carried across the urban-locality-rural spectrum, but the differences are most marked in the urban centres.

In 1998 the ABS defined low income households as those with an income of less than $300 a week and those of high income with more than $1500. The periphery has considerably more low-income households than the Sydney Statistical Division as a whole, and the edge less, as Table 4 shows. In terms of high income households, the periphery has slightly more than half of the Division’s percentage and the edge almost the same. Again the differences between the edge and the periphery in these matters are dominated by the large populations in towns of more than 1,000 people with these characteristics.

In terms of University qualifications, there are significantly fewer people with these in both the edge and the periphery, compared with the Sydney Statistical Division proportions. There is also a lower percentage of people employed as managers, administrators and professionals in this regard. However, there is little differentiation between the edge, the periphery and the Statistical Division in terms of percentage of the labor force unemployed in 1991 and 1996, although intriguingly the unemployment rates are lower in the localities and rural areas of both the edge and the periphery.

Review and Comment on Population Characteristics and Trends

This framework has served its purpose in seeking a definition of the rural-urban fringe and analysing the broad characteristics and trends in its population, differentiated between those living in the expanding metropolitan edge and those in the more removed periphery. In settlement terms the people in the periphery live in towns of varying size ranging from major centres to small villages, or scattered in the countryside.
There does not appear to be much purpose in pursuing this broadly descriptive approach any further. It is already apparent that the population living in the fringe cannot be characterised as having many universal and distinctive characteristics. Examination of the detailed population data for the urban, locality and rural components of local government areas in 1996 indicates considerable differences and suggests that there are several kinds of communities living in the fringe for a variety of reasons. While the analysis has developed a useful framework, it is apparent that there is little further profit in attempting to further define and refine broad characteristics of population living in the fringe of Sydney within this paper. Such a detailed analysis is outside the scope of this paper.

While parts of Sydney’s rural-urban fringe are conditioned by the interaction of a central metropolis with surrounding rural areas, other factors in other parts override this relationship. Gosford is virtually a coastal suburb of Sydney with strong journey-to-work relationships. The early transport routes from Sydney across the Blue Mountains and south west to Goulburn led to the establishment of towns with local and regional functions of their own which they continue to exercise. Wollongong has already been excluded from the analysis of fringe populations because of its history as an important large industrial and commercial centre. It is apparent that no simple model of Sydney’s rural-urban fringe can be erected to adequately describe the people living in it, and even descriptions based on settlement size do not do justice to the different purposes they fulfil. A much finer-grained and differentiated framework of analysis is needed.

These implications are supported by parenthetical comparison with the rural-urban fringe in Adelaide, where a general model of rural-urban fringe populations can be developed much more fully. This is with a smaller metropolis, growing more slowly in recent years than Sydney. The fringe in Adelaide has only a handful of relatively small towns and is dominated much more by its historical and continuing importance for water harvesting and for food production in a state where important land and water resources are scarcer and more concentrated, notably in Adelaide’s rural-urban fringe than is the case with New South Wales.

Following this approach future directions for population research in Sydney’s rural-urban fringe include:

a) using the more detailed data on characteristics of the population by local government areas and their urban/locality/rural components in 1996 together with the pattern of commuting shown in Figure 2 as a framework for selecting small case study areas to explore the nature of different kinds of settlements and communities in the fringe;

b) a more detailed analysis of population characteristics in the case study areas including age-specific net migration, and previous place of residence of migrants;

c) updating these results from the 2001 Census and thus establishing a better and more up-to-date time frame;
d) sample surveys in the case study areas to obtain information on attitudes, perceptions and behaviour of residents.

Policy Issues, Influences and Responses in the Rural-Urban Fringe in the Long Boom 1950-75

The first planning statement regarding Sydney’s rural-urban fringe was made in the County of Cumberland Planning Scheme Report of 1948 which came into force as the County of Cumberland Plan in 1951. The Report designated the inner fringe as a Green Belt and sought to stem the ‘promiscuous urbanisation’ that caused premature, scattered and unserviced subdivision for housing, and led to the abandonment of farming as land values rose. It was seen as a neglected area that could be rehabilitated both to provide adequate livelihoods and services for those living there, and fresh food and recreational space for city-dwellers. It was also meant to contain and consolidate the suburban growth of Sydney.

Population growth in Sydney in the 1950s to 1970s was much stronger than anticipated, and metropolitan growth needs dominated the fringe. The Green Belt succumbed to these pressures. The Sydney Region Outline Plan of 1968 represented the high-water mark of the long boom period. While it took a regional view of a wide area stretching along the coast from Newcastle to Wollongong, it organised the suburban growth of Sydney in corridors in the Cumberland Plain, sketching out the areas needed for urban expansion and even suggesting their staging. Those areas in the path of this headlong expansion were viewed as suburbs-in-waiting. One commentator somewhat unkindly described the Plan as ‘promiscuous suburbanisation’.

Important changes began to occur in the mid 1970s. Writers have ascribed this to a number of processes including the evolution from a modern society to a post-modern one; changes in the political economy of Australia; and significant changes in the demographic and cultural character of Australia’s population accompanied by alterations of lifestyle and behaviour.

Significant social issues are apparent in the rural-urban fringe. There are concentrations of populations suffering disadvantage and deprivation. While some parts of the fringe offer relatively cheap housing, there are problems of isolation, poor accessibility and minimal physical and social infrastructure services and facilities.

In company with the more detailed population analysis sketched out above, these social and community issues need to be explored. Here attention is focussed on how natural resource management and environmental issues have arisen since the end of the long boom, which affect the rural-urban fringe, and how legislative, administrative and planning arrangements have sought to address these.

The Rise of Issues of Natural Resource Management, and Environmental Conservation and Improvement

From the domination of the needs for the suburban expansion of Sydney epitomised in the Sydney Region Outline Plan, more recent decades have seen the rise of significant
concerns about the conservation and management of natural resources. While that has been a general concern leading to state-wide legislation, there is a concentration of important natural resources of water, land, flora and fauna in the rural-urban fringe, together with significant landscapes and heritage associations. This has led to the development of important policy positions about these matters which have radically affected suburban development in Western Sydney.

The Management and Use of Water

New South Wales is a participant in the water reform framework agreed to by the Council of Australian Governments (COAG) in 1994 which became part of the National Competition Policy Agreements signed in the following year linking progress in implementing water reform with payments to the states and territories by the Commonwealth. These reforms include implementation of water allocations or entitlements separated from land title. The allocations include one for environmental flows. The separation from land title is meant to enable water trading and reallocation to higher value uses for that water.

This general thrust of reform has been broadened and reinforced in the case of the rural-urban fringe and beyond, by measures to improve the management of the Nepean-Hawkesbury River system in order to mitigate the risk of flooding and to safeguard Sydney’s water supply both in terms of quantity and quality. This includes a requirement in Sydney Water’s operating licence to reduce the quantity of water drawn from all storages on a per capita basis. The outbreak of cryptosporidium and giardia organisms in Sydney’s drinking water in 1998 has led to increased control on land uses in the catchment areas and an acknowledgement that protected inner catchment areas reserved for water harvesting can no longer be relied upon as reservoirs to filter and clean water received from the whole catchment.

Given the new impetus to total water resource use management for Sydney and it’s environs, there are important implications for the fringe and beyond. Urban development at the edge is now much more influenced by such considerations as reduction in the use of water, better storm water management, remediation and disposal methods, and increase in salinisation of soils brought about by vegetation clearance and watering of gardens. In the fringe, rural production and pursuits are increasingly likely to be affected by water conservation and quality measures, as are population centres and country living. Beyond the fringe, in the catchments of the Nepean-Hawkesbury River systems, there are likely to be significant impacts on land uses and settlements.

Air Quality

This is a big issue in the part of the rural-urban fringe east of the Blue Mountains escarpment and extending into the Cumberland Plain to include many of the suburbs of Western Sydney. Meteorological conditions combined with the topography of the area combine to cause sinks which trap airborne pollutants. Deterioration in air quality has occurred in certain localities and has been attributed to continuing population growth and rates of car use which are above the metropolitan average. Very high rates of car use became apparent in areas released in the north-west and south-west of Sydney in particular.
There are health concerns arising from this substandard air quality. Two measures have been taken to try and improve this situation. One is to place a moratorium on the release of certain areas included in the Urban Development Program, and the other is to stop the growth of vehicle kilometre miles travelled per head. This latter objective will need a variety of measures including the improvement of public transport in Western Sydney and the adjacent fringe.

*Land for Agricultural and Pastoral Production*

This is the major land use in the rural-urban fringe. While conditions have changed since the County of Cumberland Plan saw the Green Belt in part as a supplier of fresh fruit, vegetables and meat for the metropolitan market, Sydney’s rural-urban fringe is a diverse and important agricultural region. It contains considerable areas of good agricultural land, which have the flexibility to be adapted and used for a number of different kinds of crop or animal production. Many of these rural areas are attractive for country living, and indiscriminate subdivision for this purpose in the past has not effectively been controlled by the requirements for a minimum subdivision size: a control introduced in the County of Cumberland Plan in an attempt to ensure that a viable unit remained for farming.

Surveys show a rapid intensification of production in recent years. Some of this has occurred in types of farming which do not demand extensive areas of land such as chicken and egg production, mushroom cultivation, the growing of flowers in glasshouses and hydroponic vegetable growing. It might be more appropriate to treat these as industries and plan for them in terms of suitable locations and compatibility of land use.

Whatever the instruments, rural production requires a variety of measures if it is to sustain its importance in the rural-urban fringe and reflect its changing dynamics.

*Land Conservation and Management*

Sydney’s rural-urban fringe contains significant areas of bushland and remnant vegetation. Their effective protection and management is crucial for the retention of native vegetation. Along with this goes protection against bushfires.

In the same vein sustaining the biodiversity of flora and fauna in the rural-urban fringe is an important issue. It contains many unique or distinctive plant, animal and bird communities and habitats. Systems of National Parks, Regional Parks and Nature Reserves are one of the measures developed to sustain biodiversity, although they frequently have other functions as well.

*Outstanding Landscapes, Heritage and Visitor Use*

The placement of the Blue Mountains on the Register of World Heritage items in 2000 is the most recent and dramatic representation of the variety and attraction of many natural landscapes in the rural-urban fringe. The escarpment overlooking the Cumberland Plain is another example as are areas in the Hawkesbury River catchment and the Southern Highlands.
The fringe is also important in the cultural heritage of the aboriginal tribes displaced by European settlement. As Sydney was the first point of that settlement, it also contains many areas and items of significance in that history.

These attractions attract heavy visitor use by international, interstate and local visitors. They are easily accessible from Sydney, itself an important destination for tourists and visitors.

**Other Environmental and Resource Use Issues**

Two other environmental issues arise in the rural-urban fringe. The first concerns the extraction and use of its extensive and varied mineral deposits. These are of two kinds. One is concerned with the vast coal reserves existing to the south and south-west of Sydney and current exploration of possible oil and gas deposits. The other reflects the need for construction and building materials for the development, redevelopment and renewal of Sydney. These include road metals, gravels, sands and limestone deposits. Such materials are costly to transport and where available in the fringe have been extensively exploited.

The second issue is the disposal of solid waste from the metropolitan area. Again, transport for long distances can be costly. But sites for waste management and disposal are difficult to find, need careful location and operation to avoid undesirable environmental impacts and are understandably subject to suspicious scrutiny if not opposition by local people.

**Legislation, Administrative Arrangements, Policy Positions and Plans**

Instead of the simple statements regarding the function and use of the rural-urban fringe contained in the early metropolitan plans, the rise of environmental and natural resource management concerns over the last thirty years has led to a much more complex and differentiated series of positions and statements.

Table 7 provides some indication of the present position. In the left-hand column are the major acts of parliament which affect the rural-urban fringe in one way or another. While they are state-wide in their jurisdiction, it can be demonstrated that they are of especial importance in their application to the fringe. This is reflected in the right-hand column which gives the major policy statements, plans and measures drawn from them which are meant to govern the future of the fringe. *Shaping Western Sydney* (DUAP, 1998) would be the most comprehensive and inclusive of these.

There is, of course a question as to the effectiveness and degree of implementation of some of these measures. In which case, which will prevail? What are the impacts of these on other plans? What sort of overview is needed? What are the impacts of the recently approved Western Sydney Orbital road and the development of the former ADI site at St Marys.
**Table 7:** Major Legislation and Policy Statements Affecting Development in the Rural-Urban Fringe of Sydney

<table>
<thead>
<tr>
<th>Legislation</th>
<th>Policy Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchment Management Act 1989</td>
<td>Shaping Western Sydney 1998</td>
</tr>
<tr>
<td>Environmental Planning and Assessment Act 1979 and later amendments</td>
<td>Sydney REP 20 Hawkesbury-Nepean (number 2 1997)</td>
</tr>
<tr>
<td>Heritage Act 1977</td>
<td>SEPP 58 Protecting Sydney’s water supply 1999</td>
</tr>
<tr>
<td>Waste Minimisation and Management Act 1995</td>
<td>Greater Western Sydney Regional Agenda 2000</td>
</tr>
<tr>
<td>Water Management Act 2000</td>
<td>Catchment Management Plans</td>
</tr>
<tr>
<td></td>
<td>Regional Waste Management Plans</td>
</tr>
<tr>
<td></td>
<td>Local Government Development Plans</td>
</tr>
</tbody>
</table>
Comment and Review

This paper shows how the rural-urban fringe has not only accommodated most of Sydney’s population growth, but has also been particularly affected by the rise of environmental and natural resource management concerns over the past twenty years, and increasingly involved in questions about the sustainability of Sydney’s growth and functioning in its present form. Our analysis raises four dimensions that shape further research.

Focus on the Periphery

The population analysis in this paper has deliberately used a wide framework within which to investigate the rural-urban fringe of Sydney in terms of area and time period considered. Future research should concentrate on the periphery. This will focus attention on the area beyond the continuously built-up area of Sydney as defined in the ABS 1996 Census. This will avoid the dominant influence of outer suburban populations, and concentrate on the communities and areas making up the varied landscapes presently beyond the metropolitan frontier.

These different landscapes might be viewed as sub-regions reflecting the differential interplay of the dynamic processes affecting the periphery. Future research could well use the population and social analyses foreshadowed in this paper as a basis for erecting a typology of sub-regions (for example see Manning 2000) which would assist in the preparation of sensitive and appropriate policies for them.

The Importance of the Rural-Urban Fringe to the West and South-West of Sydney

Another conclusion that can be drawn from this paper is that the interplay of natural resource management with metropolitan growth, function and operation is most concentrated and complex in the Cumberland Plain to the west, north-west and south-west of Sydney and in the countryside beyond — in the Blue Mountains and Southern Highlands.

Over the years the enormous growth of populations in western Sydney, and the evidence of substantial disadvantage there has led to significant administrative and planning measures to address this. The Western Sydney Regional Organisation of Councils (WSROC) has a long and effective record, there is a Planning Strategy for Western Sydney and a Minister for Western Sydney. There is an environmental component to the 1998 Planning Strategy for Western Sydney, and a later Environment Strategy. Research into Western Sydney’s issues will increasingly acknowledge and reflect the importance of environmental factors and natural resource management.

Policy and Administrative Structures and Processes

It has been demonstrated that there are complex and rapidly shifting dynamics affecting the rural-urban fringe to the west and south-west of Sydney and beyond. The imperatives of water resource use, and public health concerns about water quality have led to radical reforms recently. The effects of these on how water is used and its impacts on urban development and rural production are not entirely clear. Again,
concerns about air quality and public health have led to many areas earmarked for urban development under the Urban Development Program being put on hold.

Given the number of complex and interrelated nature of the issues involved and the restless and fluid circumstances attending them, changing styles of administration and planning are evolving. The older metropolitan plans with their focus on metropolitan form, land use and structure have been replaced by statements defining and addressing the major issues involved in urban growth, change and living. New processes and styles of public administration and policy-making evolve to reflect these circumstances and seek to shape urban development as a response to economic, social and environmental challenges. One example of foreshadowed reform of this kind is contained in the White Paper reviewing plan making in NSW. The Environment Protection Authority (EPA) has a Sydney Planning Unit, and the Department of Urban Affairs and Planning (DUAP) a recently created Sustainability Unit.

In the Medium-Term?

There appear to be some longer-term implications of this analysis. The limitations on suburban development in the south and west of Sydney have not led to such severe shortages of land and pressure on land prices as might have been expected. This probably reflects the increasing proportion of Sydney’s population growth that has occurred in the existing built-up area as a result of urban consolidation policies, and the associated slowing of growth at the fringe.

However, urban consolidation policies become increasingly difficult as the obvious opportunities are taken up, and may be subject to decreasing returns in several ways. In the medium term it is likely the pressures for fringe development will reassert themselves and some prospectus for Sydney’s development in this time period needs to be sketched out.
Notes

1. It was our intention to only show the LGAs that defined the edge of the rural-urban fringe in Sydney. These LGAs were selected as the edge because they were the suburban edge of Sydney in 1981, the year our analysis began. As the other inner LGAs of Sydney were urbanised before 1981 they did not form part of the rural-urban fringe.

2. Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hornsby, Liverpool, Penrith, Sutherland.

3. Blue Mountains, Gosford, Hawkesbury, Wingecarribee, Wyong and Wollondilly local government areas.


5. The Urban Development Program (UDP) is that part of the Metropolitan Urban Development Program (MUDP) that applies to new residential areas. The UDP is the component that manages the planning and servicing of new residential land in identified urban release areas.
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Australian Academy of Technological Sciences and Engineering (1997) Urban Air Pollution in Australia, Australian Academy of Technological Sciences and Engineering, Canberra.


