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From the outside looking in – Planning and land management in Sydney's fringe

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FROM THE OUTSIDE LOOKING IN – PLANNING AND LAND MANAGEMENT IN SYDNEY'S FRINGE

INTRODUCTION

This paper explores the major issues arising in Sydney's rural-urban fringe. It is important to inform such a discussion by reference to population characteristics and trends which help to explain the unique nature of this dynamic and somewhat indeterminate area. Accordingly the discussion begins by briefly and selectively examining what kinds of people live in the rural-urban fringe. The body of the paper is then taken up with description, discussion and comment on seven planning matters. The paper does not attempt to discuss the policy responses to the issues raised as they are numerous. Instead, we intend to highlight the key issues that have to be considered for planning in the fringe of Sydney.

One important thing to note is that this paper is looking at the rural land in Sydney's fringe from the outside looking in rather from the inside looking out. That is from a rural perspective, rather from a future urban perspective. We aim to challenge the often-held belief that rural land on the fringe of cities is merely urban land in waiting. Whilst it is acknowledged that some rural land will be needed for urban expansion, there are a number of issues that have to be addressed which will influence the location and direction of that urban expansion.

DEFINING THE FRINGE

Fringe territory is defined by reference to a core. In this section we explore relationships of the rural-urban fringe to Sydney in terms of amount of commuting. There are other descriptions of such relationships that might lead to different definitions of the outer limits of the fringe. Commuting is, however widely recognised as one of the most useful measures and this information is contained in the censuses.

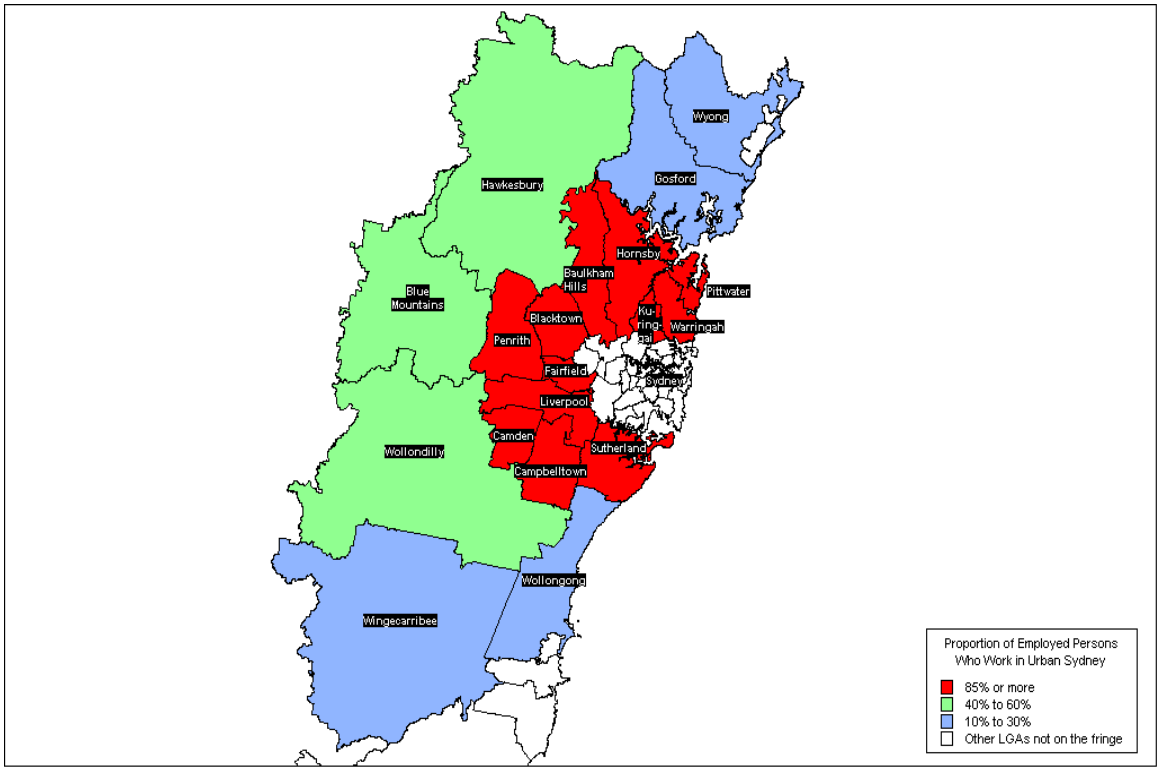
Table 1 shows the percentage of employed persons in local government areas regarded as on the edge of the metropolis who worked in Urban Sydney, the continuously built up area of metropolitan Sydney, in 1996 and 2001. Figure 1 shows Sydney and its rural-urban fringe defined in terms of these proportions in 2001. The map excludes remoter areas where the degree of commuting is less than

10% although the actual figure for such excluded areas as Newcastle, Cessnock and Shellharbour is even lower. We have included Wollongong and Wingecarribee to the south in this first analysis because of the strong interaction of those areas with Sydney.

TABLE 1: Percentage of employed persons who travelled to work in Urban Sydney, 1996 and 2001

ORIGIN	Percentage of Employed Persons who Worked in Urban Sydney 1996	Percentage of Employed Persons Who Worked in Urban Sydney 2001	Percentage Point Change 1996-2001
Baulkham Hills	90.6%	90.9%	0.3%
Blacktown	89.3%	87.7%	-1.6%
Blue Mountains	47.7%	47.7%	0.0%
Camden	85.5%	87.6%	2.1%
Campbelltown	89.8%	88.6%	-1.2%
Fairfield	88.6%	86.1%	-2.5%
Gosford	28.0%	27.3%	-0.7%
Hawkesbury	43.4%	41.9%	-1.5%
Hornsby	91.5%	91.9%	0.4%
Ku-ring-gai	92.4%	94.2%	1.8%
Liverpool	89.5%	87.9%	-1.6%
Penrith	87.2%	85.8%	-1.4%
Pittwater	89.8%	91.0%	1.2%
Sutherland	91.0%	91.3%	0.3%
Warringah	91.6%	91.1%	-0.5%
Wingecarribee	11.9%	13.1%	1.2%
Wollondilly	54.4%	54.4%	0.0%
Wollongong	14.4%	17.6%	3.2%
Wyong	16.6%	16.4%	-0.2%

FIGURE 1: Employed persons who work in Urban Sydney, 2001



However, we make two adjustments to this first step in discussing the fringe further. Because of the size and urban character of the large regional centre and industrial city of Wollongong we do not consider it to be part of the fringe. We further exclude Ku-ring-gai, Warringah and Pittwater because of their negligible rural component, large proportion held as parks and reserves and almost completely built up character (Bunker and Holloway 2001). This leaves us with Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hornsby, Liverpool, Penrith and Sutherland with more than 85% of their employed population working in Urban Sydney; inland local government areas of Blue Mountains, Hawkesbury, and Wollondilly with proportions of 40 to 60%; and the coastal locations of Gosford and Wyong, together with Wingecarribee in the Southern Highlands with percentages of 10% to 30%. There are, notably sharp gradations in these commuting patterns.

Apart from inclusion of Wingecarribee, the outer limit of the fringe area is the same as that used as the Sydney Region by the Sydney Region Outline Plan of 1970 (State Planning Authority of New South Wales 1970), and by Fiona McKenzie in her study of exurban regions around Australia's capital cities (McKenzie 1996).

From a land use point of view, the fringe of Sydney is made up mostly of rural residential development which is interspersed with intensive agriculture, public uses, commercial uses, native vegetation and many others including scattered rural villages of 100 to 2,000 lots. It is also predominantly made up of lots less than 3 hectares (ha) with 55% in the 0.8 to 3 ha range (EDGE Land Planning 2003).

SNAPSHOTS OF THE FRINGE POPULATION

Sydney's rural-urban fringe has been analysed comprehensively in terms of its population characteristics and trends over the years (Murphy and Burnley 1993; Burnley and Murphy 1995a and 1995b; McKenzie 1996; Bunker and Holloway 2001). Here, we look selectively at 2001 Census data for the local government areas making up the fringe, analysing separately the urban and rural components of each.

Table 2 shows population growth between 1996 and 2001 in the local government areas making up Sydney's rural-urban fringe. It should be remembered these figures are subject to an extension of the boundary of Urban Sydney in the period reflecting

outer suburban growth. The final figure for the whole of the Sydney Statistical Division in the table includes all of metropolitan Sydney.

The local government areas fall into three groups. There are those with relatively static urban populations but sufficient rural area for some further growth such as Fairfield and Campbelltown. Baulkham Hills, Blacktown and Camden exemplify areas growing strongly on the edge of Sydney with considerable growth potential in their rural areas. Gosford and Wyong are outlying examples of this kind. Finally there are the predominantly rural areas further from Sydney like Hawkesbury, Wollondilly and Wingecarribee.

Table 3 shows persons born overseas. A much more detailed analysis would be justified in a separate paper devoted to this subject. There are only three areas where the proportion of the urban population born overseas is more than the Sydney average of 32.2%. These are Fairfield, Liverpool and Blacktown. This confirms research into the characteristics of recent suburban growth in Western Sydney (Randolph and Holloway 2003). The rural component in each local government area has values either side of the average because the Sydney Statistical Division figure for such people is made up of those local government areas. It is in almost all cases, lower than the proportion born overseas in the urban portion of each local government area.

TABLE 2: Population change in Sydney's rural-urban fringe, 1996-2001

	Urban Area				Rural Area			
LGA	**1996**	**2001**	**Absolute Change**	**Annual Change**	**1996**	**2001**	**Absolute Change**	**Annual Change**
Baulkham Hills	103,270	124,728	21,458	4.2%	15,526	13,697	-1,829	-2.4%
Blacktown	227,002	249,953	22,951	2.0%	4,486	5,244	758	3.4%
Blue Mountains	36,893	37,088	195	0.1%	35,097	36,583	1,486	0.8%
Camden	23,446	35,020	11,574	9.9%	8,603	8,759	156	0.4%
Campbelltown	140,459	142,743	2,284	0.3%	2,983	2,503	-480	-3.2%
Fairfield	178,755	178,871	116	0.0%	2,469	2,426	-43	-0.3%
Gosford	131,535	146,007	14,472	2.2%	12,876	8,038	-4,838	-7.5%
Hawkesbury	NA	NA	NA	NA	57,117	60,892	3,775	1.3%
Hornsby	125,419	133,419	8,000	1.3%	10,397	11,303	906	1.7%
Liverpool	107,203	143,907	36,704	6.8%	12,626	9,746	-2,880	-4.6%
Penrith	148,275	156,463	8,188	1.1%	14,472	15,417	945	1.3%
Sutherland Shire	189,691	199,050	9,359	1.0%	3,682	3,088	-594	-3.2%
Wingecarribee	NA	NA	NA	NA	36,608	40,632	4,024	2.2%
Wollondilly	NA	NA	NA	NA	33,322	36,942	3,620	2.2%
Wyong	95,569	108,599	13,030	2.7%	20,216	21,964	1,748	1.7%
Sydney SD	**3,469,373**	**3,709,802**	**240,429**	**1.4%**	**463,291**	**238,315**	**-224,976**	**-9.7%**

TABLE 3: Persons born overseas in Sydney's rural-urban fringe, 2001

LGA	Urban Area	%	Rural Area	%
Baulkham Hills	35,814	28.7%	2,615	19.1%
Blacktown	81,035	32.4%	1,212	23.1%
Blue Mountains	5,750	15.5%	6,955	19.0%
Camden	5,158	14.7%	1,778	20.3%
Campbelltown	35,992	25.2%	540	21.6%
Fairfield	94,581	52.9%	762	31.4%
Gosford	20,855	14.3%	1,132	14.1%
Hawkesbury	NA	NA	8,023	13.2%
Hornsby	41,076	30.8%	2,193	19.4%
Liverpool	56,115	39.0%	2,348	24.1%
Penrith	33,497	21.4%	3,008	19.5%
Sutherland Shire	33,914	17.0%	501	16.2%
Wingecarribee	NA	NA	5,952	14.6%
Wollondilly	NA	NA	4,989	13.5%
Wyong	13,024	12.0%	2,654	12.1%
Sydney SD	**1,194,388**	**32.2%**	**39,094**	**16.4%**

Table 4 shows the proportion of the employed population who worked at home in 2001. In rural areas these were much higher than those in the urban portion of the local government areas. This comprises a large number of rural residential uses and will be discussed in detail later in the paper.

TABLE 4: Employed population who worked at home in Sydney's rural-urban fringe, 2001

LGA	Urban Area	%	Rural Area	%
Baulkham Hills	3,377	5.1%	1,006	13.5%
Blacktown	2,286	2.2%	281	11.0%
Blue Mountains	769	4.2%	1,107	7.0%
Camden	521	3.0%	491	12.0%
Campbelltown	1,250	2.1%	119	9.9%
Fairfield	1,576	2.5%	154	13.9%
Gosford	2,780	4.7%	550	15.1%
Hawkesbury	NA	NA	1,901	6.5%
Hornsby	3,187	4.8%	737	12.7%
Liverpool	1,450	2.4%	497	12.0%
Penrith	1,811	2.5%	778	10.8%
Sutherland Shire	3,861	3.7%	92	6.0%
Wingecarribee	NA	NA	1,487	8.8%
Wollondilly	NA	NA	1,042	6.1%
Wyong	1,413	3.6%	640	7.6%
Sydney SD	**65,211**	**3.8%**	**9,522**	**8.6%**

Table 5 depicts household income and illustrates the wide diversity of socio-economic groups living in the rural-urban fringe and the different kinds of urban growth and rural living this constitutes (Vinson 1999, Bunker and Holloway 2001).

TABLE 5: Household income in Sydney's rural-urban fringe, 2001

	Urban Area				Rural Area			
LGA	**Low Income**	**%**	**High Income**	**%**	**Low Income**	**%**	**High Income**	**%**
Baulkham Hills	2,986	7.7%	9,904	25.5%	381	9.1%	919	21.9%
Blacktown	13,251	17.0%	6,691	8.6%	290	17.2%	164	9.7%
Blue Mountains	1,783	13.9%	1,844	14.4%	3,232	23.1%	874	6.3%
Camden	1,212	10.7%	1,414	12.5%	413	15.3%	368	13.7%
Campbelltown	7,586	17.1%	3,586	8.1%	111	16.0%	141	20.3%
Fairfield	11,322	21.5%	3,627	6.9%	96	14.0%	94	13.7%
Gosford	12,644	22.9%	3,774	6.8%	443	16.2%	300	11.0%
Hawkesbury	NA	NA	NA	NA	2,904	14.6%	1,926	9.7%
Hornsby	5,258	11.8%	9,484	21.2%	415	11.5%	672	18.7%
Liverpool	7,482	16.9%	3,835	8.7%	362	13.6%	362	13.6%
Penrith	7,395	14.5%	4,597	9.0%	562	12.8%	605	13.8%
Sutherland Shire	9,119	13.0%	12,066	17.1%	136	12.9%	133	12.6%
Wingecarribee	NA	NA	NA	NA	2,926	20.2%	1,036	7.1%
Wollondilly	NA	NA	NA	NA	1,722	14.6%	1,215	10.3%
Wyong	11,785	28.4%	1,488	3.6%	1,923	24.5%	470	6.0%
Sydney SD	**217,496**	**16.9%**	**179,516**	**13.9%**	**13,050**	**16.6%**	**8,378**	**10.7%**

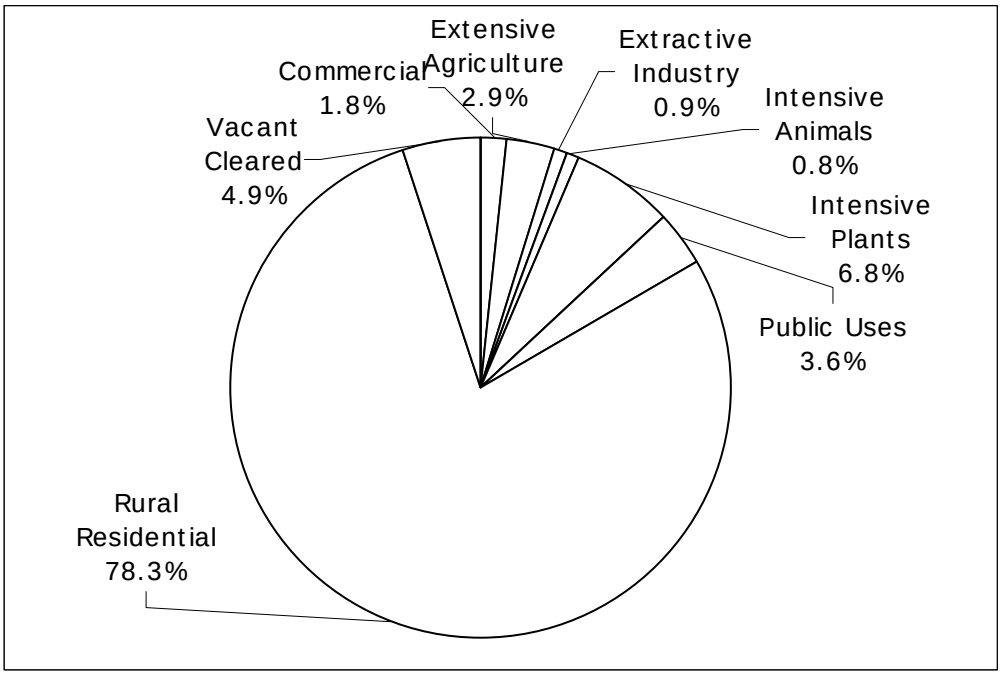
Notes: Low income is less than $400 per week
High income is more than $2,000 per week

WESTERN SYDNEY LAND USE AND FRAGMENTATION

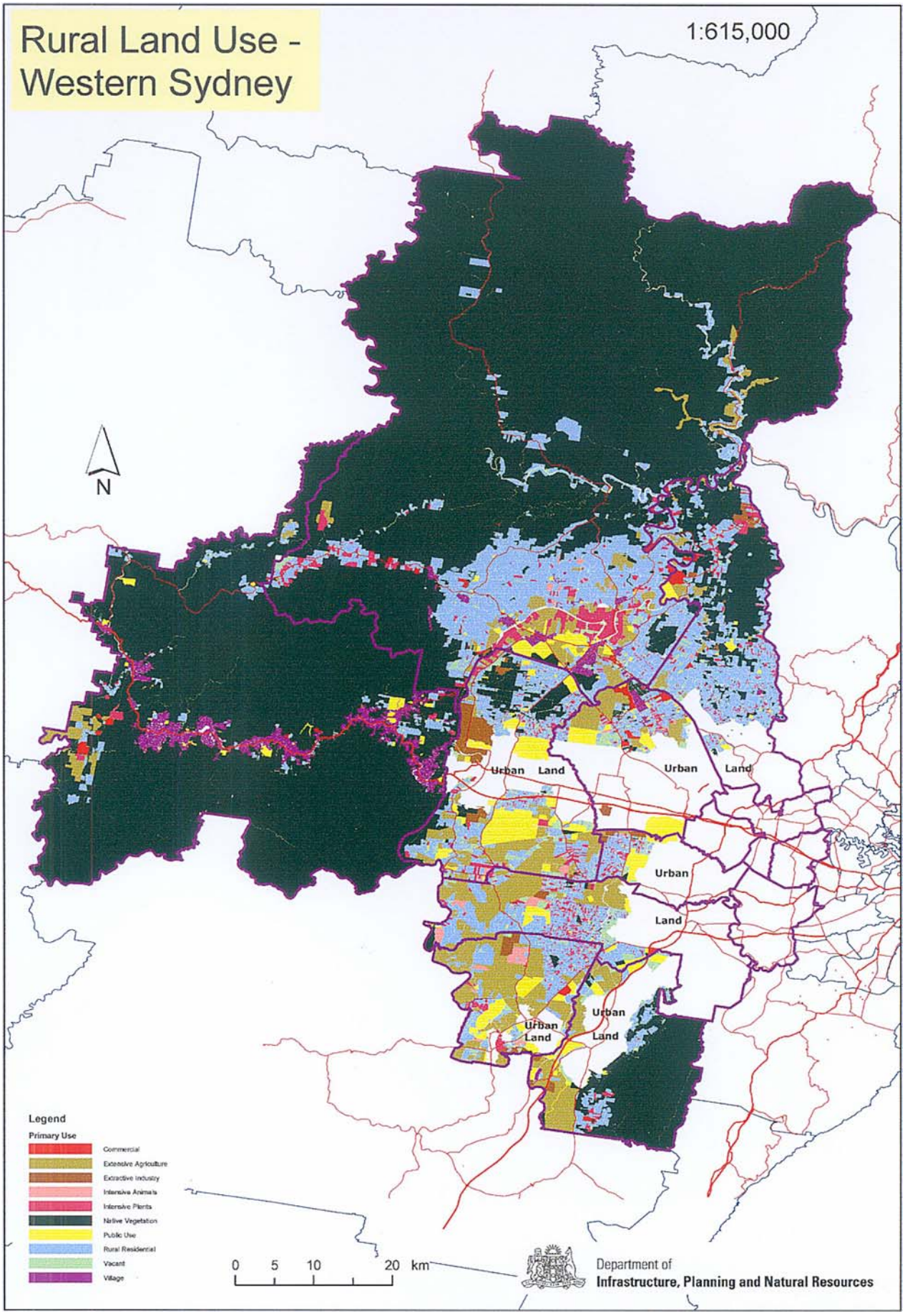
A recently completed project by EDGE Land Planning has taken the form of a comprehensive land use survey of all rural land in Western Sydney. It covered the following 9 Council areas: Baulkham Hills, Hawkesbury, Blacktown, Fairfield, Penrith, Blue Mountains, Liverpool, Camden and Campbelltown.

The overall landuse for the area is shown in Figure 2 and Map 1. It can be seen that the largest landuse (in terms of the number of lots) is rural residential with 78.3% of all rural lots having a residential use as the major use of the property. Intensive Plant uses are the next most dominant with 6.8%. Land that is vacant is 4.9% and this is the third highest. Then follow Public Uses, Extensive Agriculture, Commercial, Intensive Animal Uses and Extractive Industries.

Figure 2: Western Sydney Rural Land Use, 2003



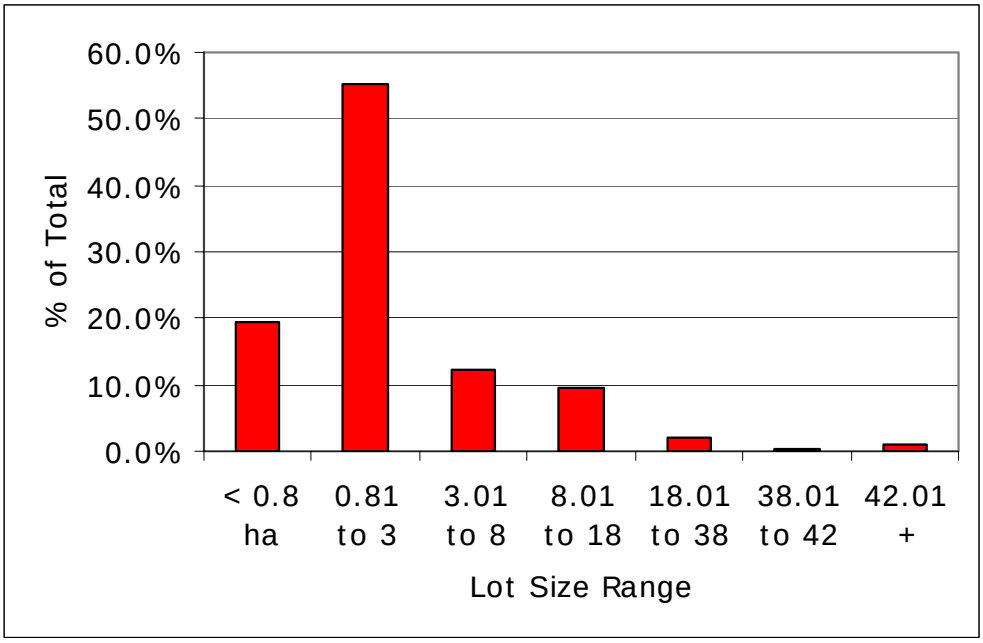
Analysis of the individual Council areas shows that the highest Councils for rural residential uses also have the highest number of intensive agriculture uses. These are scattered throughout the Council areas, which leads to rural land use conflict.



Map 1: Western Sydney Land Use, 2003.

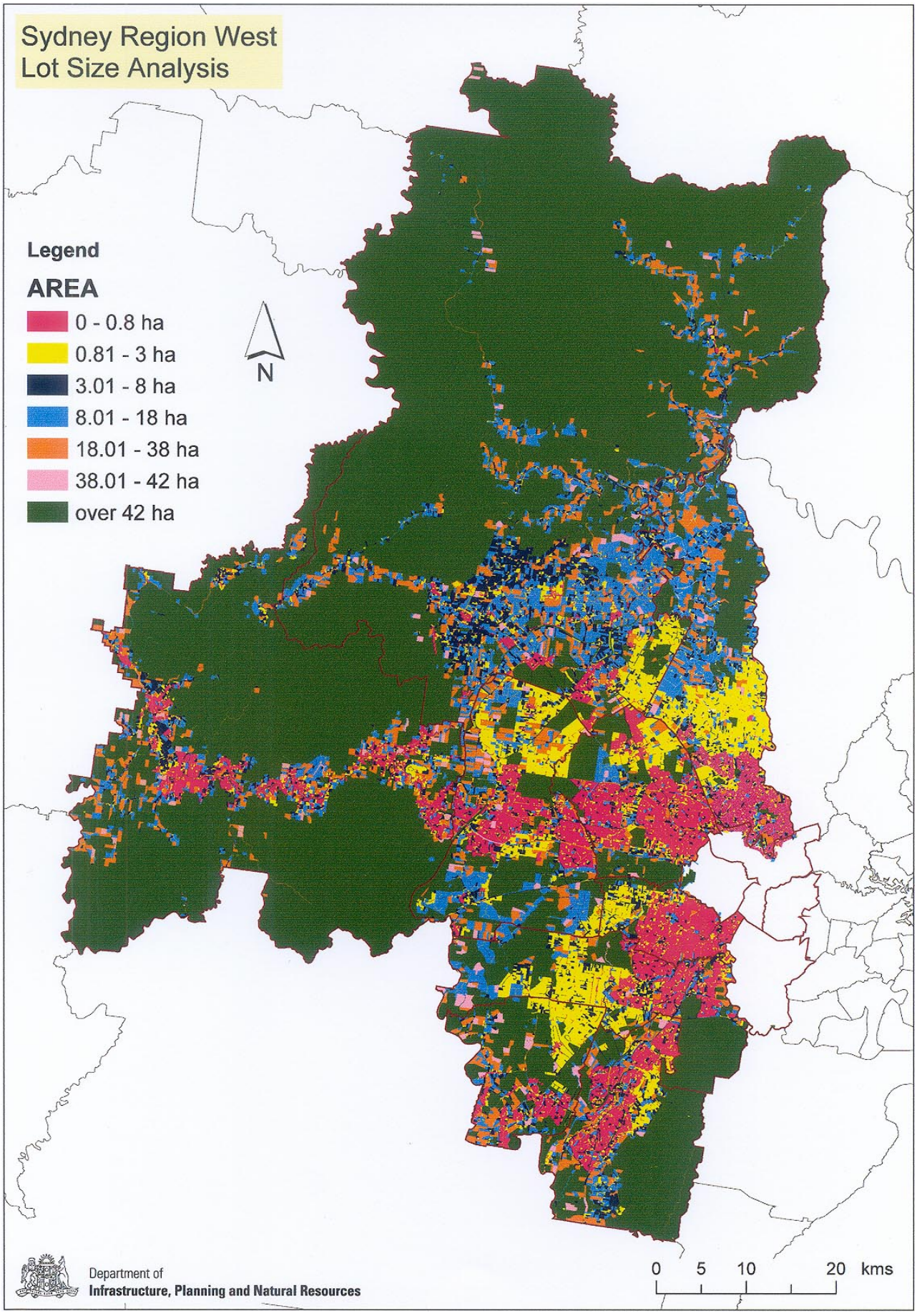
An analysis of the lot sizes has been carried out. This was done to provide an indication of the fragmentation of the land and to provide a picture of areas where there was a dominance of small lots. The lots counted do not include village or native vegetation because they would not provide a proper representation of the total lot distribution of privately held rural land. The total lot size analysis for the study area is provided below in Figure 3 and Map 2.

Figure 3: Western Sydney Fragmentation, 2003.



From these it can be seen that there is a dominance of lots in the 0.81 to 3 hectare range, mostly around the 2 hectare size. There is also a large number of lots of less than 0.8 ha, most of which are in the 4,000m^2 category. It is significant to note that there are very few lots greater than 8 ha. It is also significant to note that the smaller lots are located adjacent to the urban areas, which can act as a constraint to the future development of the land due to this fragmentation.

The predominance of lots in the 0.8 to 3.0 ha range is common in all Council areas. Some, like Blue Mountains, Camden, Hawkesbury and Penrith have approximately 20 to 30% of the lots in the 'less than 0.8' range with the rest having between 10 and 15 % of lots in that category. Hawkesbury and the Blue Mountains have the highest percentage of lots in the ranges greater than 3ha.



Map 2: Western Sydney Lot Size, 2003.

The land use data has been cross referenced with the lot sizes to show the proportion of land use that is within each lot size range. Figure 4 shows the results of this analysis. The major land use categories of rural residential, intensive agriculture (combining intensive animals and plants), extensive agriculture and vacant land have been shown and the others have been grouped together (extractive industry, commercial, and public uses).

Figure 4: Western Sydney Land Use by Lot Size, 2003.

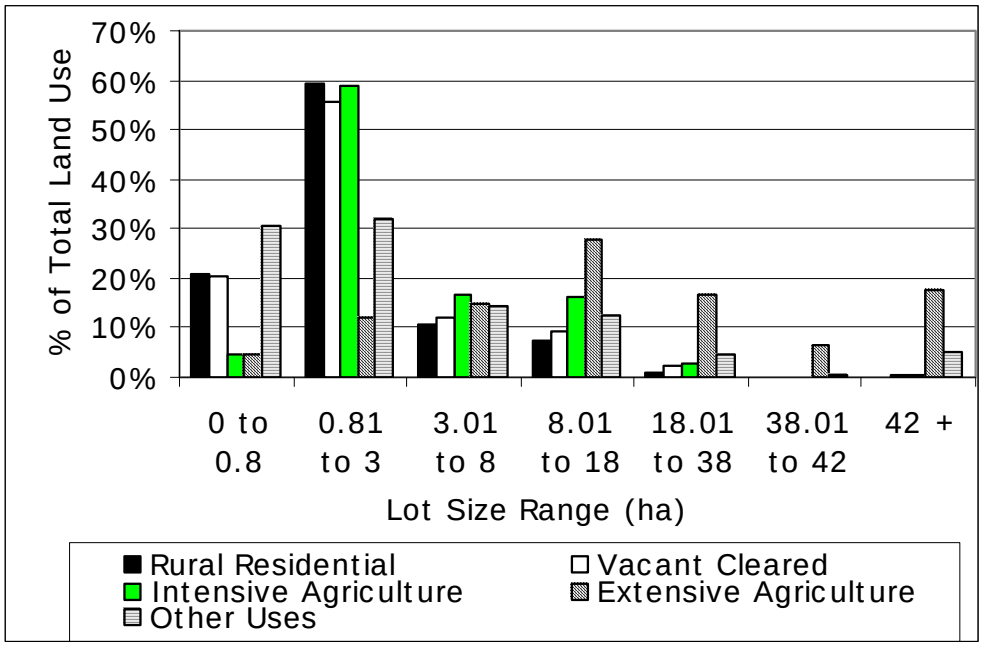


Figure 4 shows that, as expected, in the lot sizes below 8 ha the highest proportion of uses is rural residential. The majority of intensive agriculture is also on lots of 0.8 to 3 ha. It should also be noted that there are a number of rural residential uses on lots of 8 ha and above, amounting to approximately 3,000 lots or 10% of the total. These are also scattered between productive agricultural uses, which can lead to some instances of rural land use conflict. It is also an indicator of the desire for rural lifestyle living, which is discussed later in the paper.

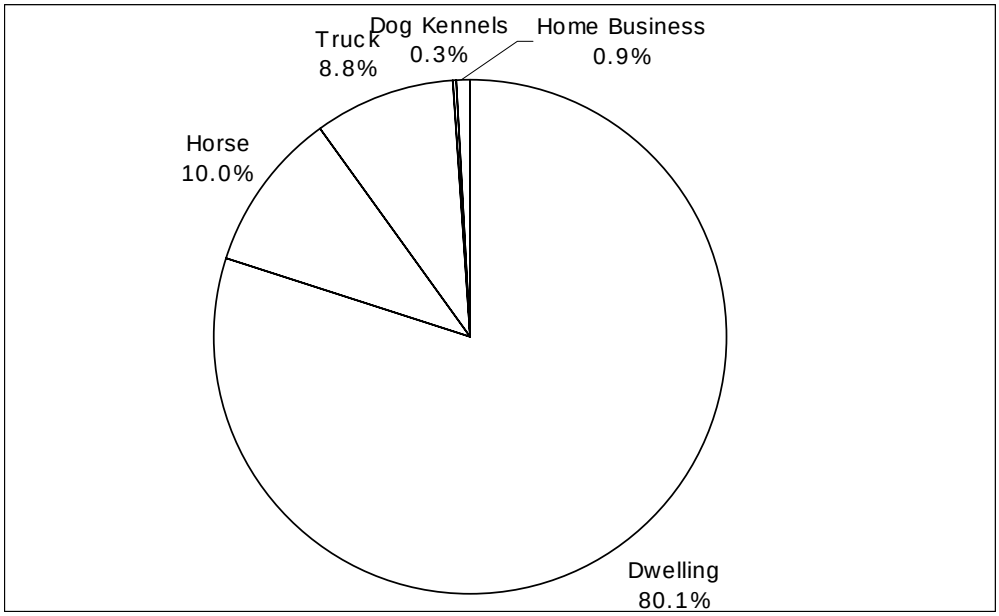
The rural residential uses were also disaggregated into the following secondary uses:

- Dwelling – there is only a house on the lot.
- Horse – there is a house plus a horse or horses observed on the property.
- Truck - there is a house plus a truck usage (bobcat, builder, plumber, etc)
- Home Business – a home business is run from the property and there is a sign advertising this.

- Dog Kennel – there is a house plus dog kennels and there is a sign advertising this.

The total breakdown of this is presented in Figure 5, which shows the dominance of the straight housing use, but it is significant to note that there are a number of horse and truck uses. It should be noted that there is a total of 25,676 lots in this category across western Sydney. These figures are considered to be conservative as they were observed from the road when the land use survey was carried out and not all uses were apparent.

FIGURE 5: Types of Rural Residential Land Uses in Western Sydney, 2003.



URBAN GROWTH

In any discussion of rural land on the fringe of a large metropolitan area such as Sydney, it is necessary to consider the issues of urban expansion. The newly developing urban areas on the fringe of Sydney were once rural land, and much of it was productive agricultural land.

> *"Continued growth in outer areas generally involves environmental costs that can include increased air and noise pollution from motor vehicle use (where other transport options are not available); increased water pollution of local waterways; loss of agricultural land; and loss of remnant vegetation. Growth in the outer (or 'fringe') areas is also generally accompanied by increased costs in the provision of services."* (EPA 2000, pp. 38-39)

The NSW State of the Environment Report provides data on the distribution of the net dwelling stock increase from 1993-94 to 1998-99 (EPA 2000, p. 40). It is

significant to note that the outer ring suburbs have dropped from 42% to 28% of total new dwellings and that the middle and inner rings have increased their proportion of such hosing from 32% to 53%. The increases in residential development within the metropolitan urban footprint are made up of a mixture of the redevelopment of former industrial sites (brownfields development) and medium and high density development.

The NSW State Government is currently investigating land in North West Sydney as well as land at Bringelly, in the South West of Sydney to cater for an estimated population of 200,000 people. It has been pointed out in the Western Sydney Land Use Study that the lot sizes in area are mostly in the 0.8 to 3 ha range. There are a number of issues that have to be considered here. The major one is the cost of the land. Anecdotal evidence is that a 2 ha lot with a house on it now sells for approximately $1.5 million, whereas 5 years ago this land was less than $300,000. This rise in price has been a reflection of the lifestyle choice of people to live in a bushland or rural setting on a large lot. The price of the land makes it difficult for developers to purchase a number of lots and develop them for residential development. Add to this the topographical, ecological and bushfire constraints and it could be that these areas will be kept as lifestyle areas because of the lack of this type of housing in Sydney. Community consultation carried out in these areas has shown that the people move there to ‘get away from the city’ and ‘escape the rat race’ and to have ‘a large block amongst the bush’. They are consequently moving there for lifestyle reasons. The houses are also large and in some cases opulent to the extent that they could be called ‘start-up castles’ to borrow a phrase being used in the USA. The ‘lifestylers’ also say that they do not want to see any more urban subdivision in the area. This questions the traditional viewpoint that these small lots will ‘be subdivided some day’. If the land is to be subdivided, there is likely to be an impact on the timeframe because of the issues raised above.

RURAL LIVING

Rural residential development is the use of rural land for primarily residential purposes. The main source of income is not from a pursuit carried out on the land. Most rural residential dwellers move there for lifestyle rather than for the land’s productive potential. As a result of this and the lack of an agricultural pursuit, the household does not have any affinity with the productive potential of the land and

therefore does not usually understand the issues associated with agriculture. This lack of understanding often leads to rural land use conflict with the adjoining or near agricultural uses (Sinclair, 2001b).

The main thing that separates urban housing from rural residential housing is the size of the lots and distances between the dwellings, which create a sense of openness. Rural residential development, broadly speaking has two types:

> *"Rural Urban Fringe development is that style of development, which is within the servicing catchments and in close proximity to an urban centre. It may have reticulated water and in fact may have reticulated sewerage although most effluent disposal will be on site. It will also have a garbage service. The lot size is generally in the range of 4000 square metres to 2 hectares and it is in "estate" style of development. At the smaller lot size, it is more akin to residential than rural residential and therefore, lots of less than 1 ha are considered to be large lot urban.*
>
> *Rural Living development is a residential use of the land within a rural environment. It is not necessarily near an existing urban centre and does not have reticulated water or any other form of service, which would generally be provided in a rural urban fringe zone or urban centre. The lot sizes are generally 2 hectares and larger"* (Sinclair 2001a).

The rural residential uses are mostly scattered throughout the study area. One feature is that they are usually new houses and are also large houses (some as large as 1,000 to 2,000 m^2 in floor area). They can be found in clusters of mostly rural residential but are often mixed with intensive plant uses.

A number of these, both rural living and rural urban fringe are used by the owners as their place of business. This is particularly so for tradespeople and professional people in single practitioner consultancies who run home offices. The evidence from the *Western Sydney Rural Land Use Study* is that 8.6% of the rural residential uses have a horse and 9.8 % have a truck and 0.9% have a home business confirm this. The truck uses are builders, backhoe operators, plumbers, tipper trucks, bobcats and so on. These are located in these 2 ha areas because of the ability to accommodate the trucks as well as a large shed to house it as well as any materials. This is not a realistic option in the urban areas (they are also prohibited from parking in residential areas). Such uses can cause some rural land use conflict with the adjoining rural residential uses, due to the noise of starting the truck in the early hours of the morning.

Horses are also common on rural residential lots. They are an indicator of a lifestyle use of the land because of the recreational aspect of horse riding. They too need to be on a larger lot of land of at least 2 ha. Horses also have the potential to cause land degradation if they are housed in small areas, as grass cannot grow because of the constant movement of the horse.

Living in rural areas is becoming a housing trend in western Sydney. People are moving from the urban parts to have a larger block of land and live in a rural environment. In consultations carried out in rural fringe areas, these people cite this as their main reason for moving to these areas and they also state that they do not want to see the area becoming urbanised. In addition, they are building large and expensive houses. (EDGE Land Planning et al, 2001 and EDGE Land Planning 2003a)

In a recently released book on the changing patterns of settlement in Australia (*The Big Shift*), Bernard Salt makes the observation that Australians are pursuing a lifestyle pattern of living which he says is luring people to the coast. Whilst acknowledging this statement, experience from studying rural and fringe metropolitan areas like Penrith, Camden, Baulkham Hills, Liverpool, Bellingen, Cessnock, Great Lakes, Maitland, Shellharbour and Shoalhaven has shown that this shift is not just to the beach but also to the rural hinterland of the Metropolitan and coastal areas. So, it is more accurate to call it a move to ‘lifestyle living’.

This desire for rural living has been a trend that has increased in the last 20 years of the 20th century. “The thing that most drives Australians to a particular location is the values that are held by the community. And of course, in the later decades of the 20th century, Australian values changed to embrace a beach lifestyle.” (Salt, 2001, p 5)

People are moving to these areas because they are either retiring or work for themselves or have negotiated flexible working arrangements with their employers. In short, they choose to be where they like the rural peace and quite or coastal serenity rather than being close to work.

AGRICULTURE

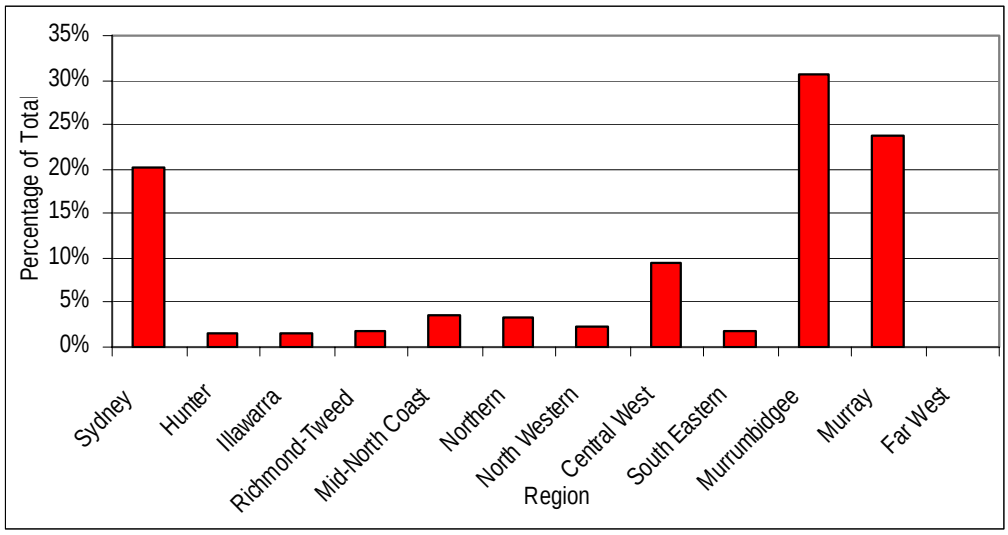
The protection of high quality agricultural land within the Sydney region is an issue paramount to the future planning of the region if it is to continue to grow its own fresh food and produce. Agricultural production in the Sydney region is an important part of the economy as well as providing a rural hinterland. It is the LGAs located on the fringe of Sydney which produce a significant proportion of the fresh produce both consumed and produced in New South Wales (especially perishable commodities). The main agricultural produce grown in Sydney's urban fringe is perishable vegetables, poultry, flowers and cultivated turf. There are also considerable dairies, orchards, horse studs and spelling properties as well as goats, deer, alpacas and other traditional forms of agriculture. NSW Agriculture has valued agriculture in the Sydney region as being worth approximately $1 billion (Gillespie and Mason, 2003). This figure did not include the horse bloodstock industry which can be conservatively valued at a further $1 billion.

Analysis has been carried out of the Australian Bureau of Statistics (ABS) Agricultural Census to give an indication of the relative value of agriculture in the Sydney region compared to other regions of New South Wales. This research has shown the dominance of the Sydney region for intensive agricultural commodities such as perishable vegetables, poultry, flowers and turf. This information has been graphed to show the relative differences between the regions and highlights the importance of Sydney (Figure 6).

Vegetable production occurs in all regions of NSW. The Murray and Murrumbidgee regions produce the highest percentages of total vegetable production (24% and 31% respectively). The Sydney region contributes 20% of the total vegetable tonnage produced in NSW (Figure 6). However, when one breaks vegetable production rates into perishable commodities (those commodities that perish quickly when harvested and therefore need to be located close to the market they serve) a different picture emerges. It can be seen from Figure 7 that the Sydney region produces 100% of the State's Chinese cabbages and sprouts, 80% of fresh mushrooms, 91% of spring onions and shallots. The Sydney region also accounts for 40% of the State's total area devoted to nurseries, 55% of flower production and 64% of the total area under cultivated turf (Figure 8). Poultry production in the Sydney region accounts for 48% of the State total. Figure 9 illustrates this and shows that the Sydney region is where the

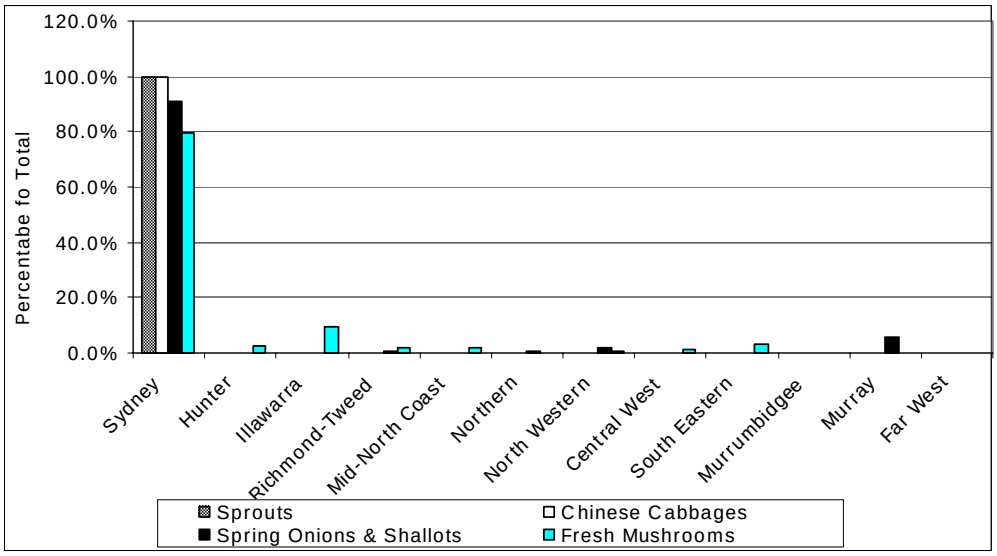
most of the various types of poultry products originate (these being chickens, ducks and turkeys for meat as well as egg production).

FIGURE 6: NSW Total Vegetable Production, 1997



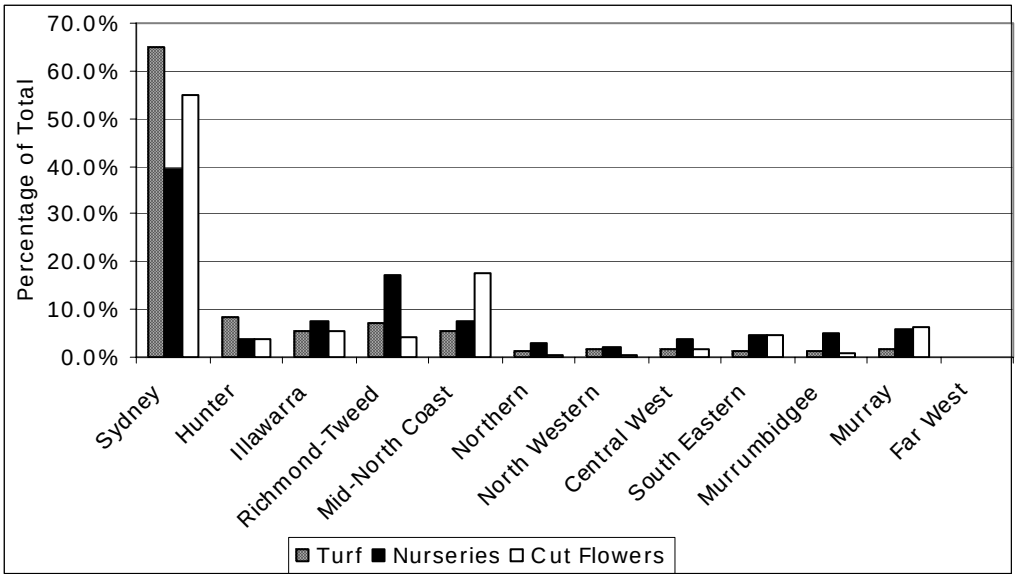
Source: Sinclair, 2003

FIGURE 7: NSW Perishable Production, 1997



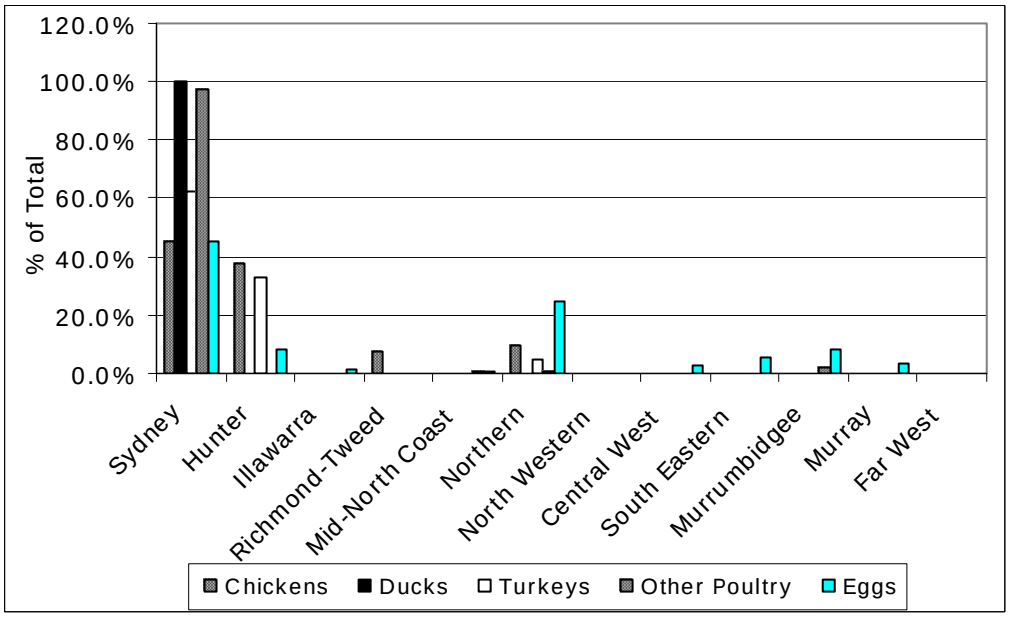
Source: Sinclair, 2003

FIGURE 8: NSW Nursery, Flowers and Turf Production, 1997



Source: Sinclair, 2003

FIGURE 9: NSW Poultry Production, 1997



Source: Sinclair, 2003

Agriculture on the fringe is becoming more intensive as the value of land increases and hence the need to use it for higher yielding commodities. Intensive uses are also being relocated from other Council areas that have become urbanised. Anecdotal evidence is that a number of the farmers carrying out intensive forms of agriculture in the Councils in Western Sydney have relocated from farms in the Fairfield, Liverpool and Blacktown areas that have been urbanised over the past 10 to 20 years.

As shown in the land use by lot size analysis, most of the intensive agriculture is practiced on lots in the 0.8 to 3 ha range, which is considered to be unsustainable because of the potential to create rural land use conflict and lack of area to adequately deal with soil and water management on the property.

> *"Prime agricultural soils represent the highest level of agricultural productivity; they are uniquely suitable for intensive cultivation with no conservation hazards. It is extremely difficult to defend agricultural lands when their cash value can be multiplied tenfold by employment for relatively cheap housing. Yet the farm is the basic factory - the farmer is the country's best landscape gardener and maintenance workforce, the custodian of much scenic beauty. The market values of farmland do not reflect the long-term value or the irreplaceable nature of these living soils. An omnibus protection of all farmland is difficult to defend; but protection of the best soils in a metropolitan area would appear not only the sensible, but clearly desirable." (McHarg 1992, p. 60).*

The urbanisation of Sydney's agricultural lands, especially those used for intensive plant growing has to be considered in the wider context of Sydney's food supply. In Blacktown, for example, there is a total of approximately 450 ha of intensive plant uses. (EDGE Land Planning 2003b) It is noted that this area is being investigated for potential urbanisation and the relocation of this agricultural use should be considered. It is possible that the loss of the number of uses could have an impact on the supply of fresh food into the Sydney markets as the Sydney region produces the greatest amount of perishable produce in the State.

For agriculture to remain on the fringe of Sydney, it must become sustainable. Sustainability in this context embraces the concept of Ecologically Sustainable Development or ESD. This means it must be environmentally, economically and socially sustainable. A use may be economically sustainable, that is, it makes a living for the farmer, but it may be on a lot that is not large enough to allow management of the nutrients or odour, and may have an impact on the amenity of the neighbourhood. It is therefore unlikely to be sustainable. Unsustainable practices include market gardening on small lots, hydroponics on small lots, overgrazing of land by cattle and the loss of topsoil through erosion. Intensive plant uses are often planted from boundary to boundary with no buffer strips and there is also no buffer between the creeks. There is no way to manage the soil and water on these types of farms.

The fringe of the metropolitan areas is also where a large amount of the population growth of Sydney is occurring. This is a similar situation to the United States of America where considerable research has been carried out and literature written on the subject. The issues facing fringe metropolitan areas in the United States are similar to those facing the fringe of Sydney. Daniels and Bower in their 1997 book titled *Holding our Ground - Protecting America's Farms and Farmland* make the following observation:

> *"In the rural and urban fringe, the sharply defined boundaries between cities and countryside are being blurred by two types of development. The first is the continued wave of large residential and commercial projects as population centres expand. The second … features scattered homes and commercial strips held together by highways. In between the houses and stores, there are often large open spaces of farmland, forests and idle land. This dispersed development has greatly increased the confrontation between farmers and non-farm neighbours"* (p. 4).
>
> *"Ironically, newcomers can destroy the farms and farmland that they value. And farmers have often sowed the seeds of their own decline by selling of road frontage for house lots to urban refugees. Most of these newcomers still work and shop in the cities and suburbs, some are retired, and others may commute to work through their computers. But they tend to see rural land as an amenity and a place to live, not as productive farmland" (p. 5).*

BIODIVERSITY

> *"The significance of biological diversity is often expressed in terms of the 'ecosystem services' provided by plants and animals; that is, the role of biological diversity in maintaining the physical environment and food chain on which humans depend. Healthy functioning biological systems are essential to maintain water quality, the cycling of nutrients, the quality of the atmosphere and formation of soils. Also, the cultural, spiritual and economic values of biodiversity are being increasingly recognised."*(WSROC 2000, p. 115)

The status of biodiversity is different in the sandstone ecosystems in the north, west and south, from the shale ecosystems associated with the Cumberland Plain in the east of the region. The Western Sydney Regional State of the Environment Report states that there are 220 plant species and over 80% of the pre-European vegetation cover in the sandstone areas. In this area approximately 90% of the known communities are considered to be adequately conserved. In contrast to this, the Cumberland Plain supports only 26% of the pre-European vegetation cover. Currently 9 of the 18 Cumberland Plain vegetation communities are considered to be endangered. (WSROC, 2000, p113)

At a regional level, 51 plants and 52 animals are listed as rare to threatened. (WSROC, 2000, p. 113). The sandstone areas, because of the larger species diversity have the bulk of these species.

Habitat linkages are an important part of the biodiversity of the region. They provide for the movement of animals from one area of biodiversity to another. Habitat linkages are often bisected by roads and also are located on private land.

The clearing of land is an issue more for the clearing of understorey plants than wholesale clearing of trees. Property owners often wish to 'clear the scrub' to avoid bushfires or just to make their properties look better. However, this can have just as much, and in some cases, a more dramatic impact on biodiversity than the clearing of large trees because of the habitat that it provides.

The National Parks and Wildlife Service has prepared a study and series of maps into the native vegetation of the Cumberland Plain Western Sydney.

Rural residential uses are considered to have a major impact on biodiversity, especially in those areas which have a high number of smaller lots with large areas of habitat, like Londonderry in Penrith City and Annangrove, Kenthurst and Glenorie in Baulkham Hills

TOURISM

Tourism is a growth area in the rural sector of the Western Sydney economy. Uses include bed and breakfast, and farm homestays as well as golf courses and resorts. These types of tourist operations can be compatible with rural uses of the land because of their low scale and intensity. They also help to maintain the openness of the rural landscape. There are a number of properties with substantial heritage buildings which could be used for tourist related uses, such as guest houses, restaurants and resorts, subject to conservation of the heritage qualities of the building and its setting. These also have to have regard to the environmental attributes of the site and ensure that they do not have any detrimental impact. Some of the current uses may not meet these environmental standards and this can be an

issue, particularly if they wish to expand. Hawkesbury Harvest is an example of a growing tourism sector.

Economic development is perhaps one of the most important parts of any rural land. If the land is not able to make a profit, it will cease to be 'productive' and the pressure will be placed on it to be subdivided and the use changed. The provision of data on the economic contribution of the rural lands to the total economy is very important. It follows that strategies to ensure that the rural areas remain economically sustainable are also important.

WATER MANAGEMENT AND USE

The rural lands of Western Sydney all drain into the Hawkesbury River system and the Georges River system. The quality of the water is a concern that has been highlighted by the Healthy Rivers Commission (1998) as one of the major issues for the future of the entire Hawkesbury Nepean Catchment. The Hawkesbury - Nepean River also floods and affects the land in the Camden, Penrith and Hawkesbury areas in particular.

Water for stock and domestic use as well as the quality of water leaving different land uses within the rural areas are both as important as each other.

Water is used by intensive and extensive agricultural uses, rural residential and extractive industries that are located throughout the rural areas. Of these, the agricultural uses would be the largest users. A great number of these use water that has been extracted from creeks and streams or from groundwater. It is noted that some of these uses also draw on the reticulated water supply provided by Sydney Water. These water users require a licence to extract the water both from the above ground sources as well as the groundwater. There is currently a moratorium on extraction of water from the Hawkesbury river system for new water users. The security of water is therefore an important issue for the future of the rural lands.

Water quality within the rivers has been measured by the EPA. The EPA measurements found that the water quality in certain waterways is significantly under stress and impacted by development. It does not meet objectives for ecosystem

protection, primary recreation or harvesting fish, particularly during wet weather. The water is generally suitable for stock watering and crop irrigation. The main source of pollutants is run-off from both urban and rural development and may include sewage overflows. It should be noted however, that some of the creeks within the catchment have very good water quality but these are mostly creeks that have very little development in their catchments.

WASTE DISPOSAL

The fringe is where most of the city's solid waste is disposed. It is expensive to truck waste for long distances, especially the considerable amounts of building material resulting from development and redevelopment. Mostly, it occurs in landfills some of which are worked-out quarries. Waste management strategies and facilities are an important issue in fringe areas. Because of their high profile, they require extensive community consultation and input. Issues include the location and operation of waste sorting and recycling centres, truck movements, landfill operation and management, clay lining of disposal sites to prevent leaching and the pollution of underground water, and day-to-day monitoring of waste management processes.

CONCLUSION

In recent years, there has been a marked reorientation from earlier perceptions of the fringe as primarily a theatre for accommodating metropolitan influence and physical expansion. Urban consolidation policies have provided a breathing space at the same time as concerns of land and water use and management have become increasingly important. So that:

> "*emerging tools such as performance-based planning and codes of practice offer new possibilities, but it is apparent that traditional mechanisms such as zoning and subdivision control still need to be part of the equation. The challenge is to discover how to use these new and old policy instruments in combination, and how that combination might need to be varied to suit different localities and circumstances."*
> *(Bunker and Houston 2003, p. 320).*

This conclusion was put much more elegantly by a clear-sighted review of writers' perspectives on the Australian landscape:

> *"there has also been demonstrated a lack of equilibrium between the built environment and the natural landscape in the areas where the two intersected, with the area of intersection often depicted as a zone of desolation. Now… Australian cities are also beginning to show signs of exhausting their own infrastructures, and the natural resources on which they rely for their continuation." (Falkiner 1992, p.235).*

Rural land has many attributes – one of which is as a resource for urban expansion. However, in order to cater for this urban expansion the issues outlined must be considered. In this way, an appropriate policy response can be considered – one that includes incentives, performance based policies and regulations in a balanced manner. It is only then that we can achieve a sustainable outcome for the fringes of our cities that provided for urban living, rural lifestyle, biodiversity, infrastructure and economic development. By looking at the growth of our cities from the outside looking in we can plan for the future of the rural land to ensure that its best attributes are conserved because once rural land is urbanised, it is lost for ever.

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