

House of Representatives Standing Committee on Environment and Heritage

Inquiry into Sustainable Cities 2025

**Submission by
Urban Frontiers Program
University of Western Sydney**

November 2003

urbanfrontiersprogram



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Introduction

The Urban Frontiers Program (UFP) was established as a research centre of the University of Western Sydney in 1998. A principal aim of the UFP is to undertake research that will make a significant contribution to the theoretical and policy debates about processes of urban change and urban management. This submission outlines specific findings, policy implications and recommendations from research conducted by UFP over the last four years that are relevant to the issues identified in the terms of reference for the *Inquiry into Sustainable Cities 2025* and the ideas raised in the discussion paper, *Sustainable Cities 2025: a blueprint for the future*.¹

For the purposes of this submission, the concept of sustainability is taken to mean more than ecologically sustainable development. It encompasses the integration of social, economic and environmental factors in a process that aims to improve the environment and living conditions of one generation to the next. Social and environmental consequences of urban development are of primary interest to the Urban Frontiers Program and, therefore, discussion is limited to these aspects of sustainable cities in this submission.

Much of the work of the UFP has focused on contemporary outcomes of urban growth in suburban areas (which constitute the bulk of the Australian built environment) with an emphasis on understanding the dynamics of contemporary suburban change and how this might be better managed and planned for. We also have an interest in the new locations of social disadvantage that are manifesting in the middle suburban areas within our cities and how the issue of increased social and spatial differentiation impacts on urban social sustainability, and again how this might be better managed through new forms of public intervention and urban planning mechanisms.

Located at the University of Western Sydney, the UFP has the opportunity to examine in detail the impacts of urban development as experienced by the third largest metropolitan region in Australia: Western Sydney. Although this region has been a focus of our interest, the lessons from research here have immediate relevance for all comparable metropolitan regions in other Australian cities. UFP researchers have been active in a wide range of research that has included other Australian cities.

Reflecting this wider concern, the UFP will be shortly hosting the *State of Australian Cities National Conference* in Parramatta between 3–5 December 2003 that will draw on over 80 presentations covering a full range of urban change and development issues from around Australia. The collected papers from this conference will be available on-line early in the New Year. In addition, a central aim of the Conference is to identify the gaps in our knowledge of the key drivers and outcomes of contemporary metropolitan change in Australia, and the range of research that needs to be undertaken to better understand these processes. A

¹ Most of the UFP reports cited in this submission are available on the UFP website: www.urbanfrontiers.uws.edu.au

summary paper - *New Directions for Research on Australian Cities* – will be produced following the Conference in January 2004.²

In the meantime, this submission draws on the current research of the Program to explore a selection of issues that Committee will inquire into relating to the development of sustainable cities to the year 2025. Firstly, the submission describes some of the major determinants of urban settlement patterns evident in Australian cities and the emerging trends indicating increased social polarisation within and between urban regions. This is followed by an outline of how some of the environmental impacts of urban development can be better understood in terms of growth at the rural-urban fringe as well as those relating to energy consumption of different urban forms. Discussion of the measures to reduce environmental, social and economic costs of continuing urban expansion is restricted to a critique of urban consolidation as the primary means of achieving sustainable cities. Finally, a recommendation for a formal federal assistance program is advocated to provide investment in sustainable infrastructure, urban renewal and service provision within urban regions.

Rather than attempting to present a 'blue print' for ecologically sustainable patterns of settlement, the submission aims to highlight key areas relevant to the development of sustainable cities and for future research. It is hoped that this submission will serve to promote the value of funded research to support evidence-based decision-making in the development of a national approach to urban growth management policy.

The determinants of urban settlement patterns

The report of a similar inquiry a decade ago, *Patterns of Urban Settlement: Consolidating for the future?*, stated that the character of Australian cities was being transformed by economic restructuring and rationalisation, technological change, the transition to an information economy and the ageing of the population causing major shifts in migration patterns and economic activity that were likely to continue well into the 21st Century (Commonwealth of Australia, 1992). The emerging patterns noted at that time included the enhancement of Sydney as Australia's premier city, the concentration of business and financial services in the central business districts of Sydney and Melbourne and the dispersal of other employment and economic activity throughout the metropolitan areas leading to more complex travel patterns.

A decade later these trends are no less evident and have been accompanied by an increasing social polarisation within cities and regions between areas of relative advantage and disadvantage (Gleeson and Randolph 2001).

Globalised economic forces and regional restructuring

Authors such as Searle (2002) and O'Neill and McGuirk (2002) among others have described the contemporary patterns of urban settlement within Australian cities that have been driven largely by structural change and growth in the economy and in the population. This has seen major growth of financial and business sectors and expansion of CBD based employment accompanied by a shift in the housing market with high income earners working in the global economy sectors seeking to live closer to the CBD, and, as Searle (2002) writes, "forcing lower income groups to compete for lower amenity housing."

Analysis by the UFP has shown that, as a result, there has been increasing social polarisation occurring within Sydney (Gleeson and Randolph 2002) between areas where income, education and employment levels are higher, mostly in the north and eastern parts of the metropolitan area, and lower income areas in the west and southwest areas that fall within the Western Sydney region.

At the same time, however, Census 2001 data compiled for the *Western Sydney Social Profile* (Gleeson, Holloway and Randolph, 2002) demonstrates that there has also been an

² Details of the conference are available on the UFP website: www.urbanfrontiers.uws.edu.au.

increasing sophistication and complexity in terms of urban settlement within the Western Sydney itself. The combination of these two trends, regional polarisation and sub-regional diversification, highlights the importance of understanding the emergence of Western Sydney as a metropolitan region in its own right when considering the future of Australian cities.

Economic forces are not the only determinant of the contemporary patterns of urban settlement in Sydney. Population growth through immigration, internal migration and natural increase has fuelled demand for housing and the housing market has strongly influenced the nature and patterns of affordability within the metropolitan region. State and local government policy, planning, particularly urban consolidation policy, and infrastructure investment have also directly influenced the location of industry, employment and housing types and cost profiles.

Population growth

In discussions about population growth, considerable attention is given to immigration as a major contributor to pressures for urban development. At one level this is warranted as the majority of overseas arrivals settle in metropolitan areas. However, in Sydney, despite an ageing population, natural increase (birth minus deaths) still accounts for more than 60 per cent of population growth. Much of Sydney's natural increase may well be occurring in Western Sydney, where natural increase accounted for 71 per cent of the total population growth in the region between 1996 and 2001 (Randolph and Holloway, 2003a).

As noted in *Shifting Suburbs* (Randolph and Holloway, 2003a) between 1996 and 2001 there were almost double the number of births (133,047) than the number of overseas arrivals (79,230) in Western Sydney. Nevertheless, overseas migration is an important contributor to population growth in Western Sydney because domestic migration showed a net loss of 29,524 persons during the same period. The dynamics of population change, rather than simply population growth and projections must be given closer examination to better understand patterns of urban settlement.

Immigration

New South Wales, and Sydney in particular, continues to be the preferred destination of migrants and humanitarian entrants to Australia. Between 1996 and 2001 a total of 622,484 new arrivals settled in Australia and 41 per cent (256,357 persons) of these settled in New South Wales (ABS 2001 and ABS 2002). Western Sydney is often characterised as the region attracting most new arrivals. While this may have been the case in the past, there has been a decrease in the proportion of overseas arrivals to NSW settling in Western Sydney from 46 per cent between 1991 and 1996 to 34 per cent between 1996 and 2001.

This decline in the proportion of overseas arrivals to Western Sydney may reflect the change in emphasis in the Migration program in recent years bolstering skilled immigration. There is a significant variation in the distribution of new arrivals to NSW across Migration stream. Examining data from the Department of Immigration and Multicultural and Indigenous Affairs settlement database reveals that, of the overseas arrivals to NSW between 1997 and 2001, Western Sydney received the 72 per cent of the Humanitarian program entrants while the rest of Sydney received a greater proportion of entrants under the Family stream and more than double the number of entrants under the Skill stream (DIMIA, 2003).

Domestic migration

Analysis of migration data from the 2001 Census in the *Shifting Suburbs* report (Randolph and Holloway, 2003a) shows that much of the movement to housing in areas of urban expansion in Sydney is generated predominantly from within Western Sydney itself. Between 1996 Census and 2001 there were net losses from many middle suburbs (Auburn, Parramatta and Bankstown, in particular) to other areas within Western Sydney, and net gains from other parts of Sydney. At the same time, most of the outer Western Sydney Local Government Areas (LGAs) experienced net gains in population through migration from other parts of the region. Campbelltown was the only outer Local Government Area that lost population in net terms to elsewhere in the region.

Urban growth management policy

Government intervention has also been a major influence on the patterns of urban settlement. As Searle (2003) writes urban consolidation has been the major growth management policy in Australia's largest cities for the past two decades as a means of curbing environmental costs of expanding, low-density suburban development. Implementation of urban consolidation policy in Sydney has resulted in a large drop in the share of Sydney's annual housing stock increase being built in Greenfield sites. The proportion of housing stock being built in new outer developments has dropped from 42 per cent in 1993/94 to 27 percent in 200/01 (DIPNR 2003).

However, urban growth pressures has led to the announcement in December 2001 of a new Metropolitan Development Program involving a 15 year framework for planned residential land release (DIPNR 2003a). In the five years to 2007, some 139,395 dwellings are forecast to be completed across the greater metropolitan region of Sydney with one quarter of these dwellings, (34,580 dwellings) to be in new outer release sites. As much as 85 per cent of these sites are in Western Sydney region and it is anticipated that almost all (96 per cent) of these new dwellings will be detached housing. In contrast, the majority of dwellings forecast for completion in the next five years in the inner (98%), middle ring (90%) and outer ring (71%) established areas are expected to be multiunit dwellings (DIPNR 2003a).

The environmental benefits that may be gained from further consolidation in the established areas may well be diminished by increased car use in the new release areas if they are developed without substantial improvements to transport infrastructure to connect people living in these outer areas to employment, education, recreation and human services. A major new research exercise is just beginning at the UFP to explore the energy and water impacts of both Greenfield and Brownfield development in Sydney, to better understand the precise environmental outcomes of these forms of contemporary urban growth. At present, it is true to say that little systematic evaluation has been recently conducted to assess the sustainability claims of urban consolidation policy in Australia, despite its central position in metropolitan planning strategies. This is a major, and remarkable, gap in our current knowledge of urban development and has major implications for the future direction of sustainable urban policy.

In addition, despite forecast output targets for new development for local government areas across the city, local councils and strategic planning authorities have little real understanding of what the outcomes these targets imply in terms of the likely social profiles that will result. Recent research conducted by the UFP and the Western Sydney Regional Organisation of Councils has attempted to model the household composition outcomes of differing dwelling targets across Western Sydney at the LGA level. This showed that current dwelling projections fall short of current household projections, and the dwelling mix projections (houses vs. flats) also fail to adequately account for the likely needs of increasing numbers of smaller households in outer suburban locations (UFP/WSROC, 2003). The firm conclusion from this analysis is that urban growth planning must plan for much greater population diversity than is currently the case. New suburban development must include a range of dwelling choice that reflects the expected mix of household types in the future. Taking this one step further strongly implies that greater choice must also encompass a mix in income capacities, as smaller households will have lower purchasing potential than two or more income households. Planning for diversity means not just providing for a range of dwelling types but also a greater range of dwelling price, including more affordable housing.

Housing affordability and supply

Affordability and choice are also central arguments supporting urban consolidation. This argument is based on the assumption that multi-unit dwellings are lower priced than detached dwellings. While this is true when comparing dwellings within localities, it is not the case between localities. Within the Sydney metropolitan context housing prices are largely determined by location rather than dwelling size, type or quality and is a key influencing factor on settlement patterns.

Randolph and Holloway in their report *Shifting Suburbs* (2002a) describe these significant spatial variations in housing affordability across Sydney and highlight the variations in housing prices in Western Sydney in more detail. This report shows that, while median prices for strata dwellings (multi-unit dwellings) in Sydney Statistical Division (SD) in June 2002³ were lower than for non-strata dwellings (mostly separate houses) both overall *and* within individual LGAs, this was not the case comparing the prices of the two dwelling types *between* LGAs. In fact, the median sales price for strata dwellings in Sydney SD of \$330,000 in June 2002 was higher than the median price for non-strata dwellings in seven of the 13 LGAs in Western Sydney (Randolph and Holloway, 2003). In other words, it was cheaper to buy a freestanding house in many parts of Western Sydney than it was to buy an apartment closer to the Sydney CBD.

Similar spatial differences are emerging within Western Sydney. Prices for strata units in the third quartile in Baulkham Hills, the LGA where house prices were highest in Western Sydney, were higher than those for third quartile non-strata dwellings in all other LGAs in Western Sydney except Baulkham Hills, Auburn, Parramatta and Bankstown. This is also true for dwellings in the lower, first quartile, price range (Randolph and Holloway, 2003a). The analysis also showed that the more socially disadvantaged middle suburban areas were often less affordable compared to many outer suburbs due to the relatively lower household incomes prevalent in these areas.

In fact, much of this unaffordability can be associated with the medium density rental market in these middle areas: rents may be lower than in other parts of Sydney here, but they are still too high in relation to the very low incomes of those who are reliant on this sector for accommodation (Randolph and Holloway, 2002). The conclusion here is that there is no straightforward correlation between increasing numbers of higher density housing and improved affordability. The urban housing market is not that simple. Affordability is not just determined by price level – it is defined by the relationship between price and household income. Put simply, low housing costs do not necessarily imply better affordability outcomes for low income households.

Transport infrastructure planning

Infrastructure, especially transportation, is critical to sustainability (Newman 2003), however, as noted in the Discussion paper urban development in Australian cities for the past fifty years has been dominated by investment in road infrastructure. The result is high car dependency and increasing car use despite growing public concerns about the environmental impacts of vehicle emissions and road building.

In a paper comparing Sydney's public transportation system with that of Toronto, Mees (2000) suggests that the falling share in the rates of travel by public transport in Sydney is more about the lack of integration and service planning and less about urban density or capacity. Mees (2000) notes that Sydney has relatively high density of the urban area, relatively high orientation of sites of activity to the rail system together with a very extensive rail system by world standards, all of which adds to the potential that public transport could play in an environmentally sustainable transport system.

Analysis of Journey to work data from the 2001 Census in the *Shifting suburbs* report (Randolph and Holloway 2003a) shows that the use of public transport in Western Sydney is clearly related to its availability as an effective alternative to car use. In large areas of Western Sydney, the absence of effective public transport services means that there is little option other than to use the car for work and other journeys. The *public transport deficit* is particularly exposed in the new release areas.

Additional evidence of the key role transport plays in the lives of Western Sydney residents came from the *Who Cares About Western Sydney* survey conducted in 2000 for WSROC Councils by the UFP (Randolph, *et al*, 2001). When asked what improvements should take

³ Data used in the *Shifting Suburbs* report (UFP 2003) are derived from the NSW Department for Housing's *Rent and Sales Report*, which is published quarterly.

place in their suburb, by a wide margin the most commonly desired change cited by respondents (sampled randomly from across Western Sydney) would be an improvement in the provision of public transport services, including buses and trains, mentioned by 34 per cent of the sample overall. This is followed by the provision of better or safer roads and improved traffic (stated by 13 per cent). Public transport does matter to many in the suburban regions of Australia. Currently, work is underway at the UFP to explore the impact of the public transport deficit for groups in the outer suburbs who do not have ready access to private cars for their travel needs, or for whom non-car travel might be a preferred option at times.

Increasing socio-spatial differentiation in Sydney

The patterns of urban settlement in Sydney that have emerged in response to these factors indicate a process of increasing socio-spatial polarisation as described variously by Randolph (2000), Gleeson and Randolph (2001), Gwyther (2002) and Randolph and Holloway (2003a).

Social exclusion in Sydney

Gleeson and Randolph (2001) demonstrate that social and spatial differentiation is deepening in Sydney, both at the regional and at the sub-regional level, with areas of social disadvantage increasingly concentrated within Western Sydney (Randolph, 2000). This analysis shows that, unlike in British and American cities, social disadvantage is not an inner city phenomenon, nor is it tenure dependent. Rather, there are concentrated pockets of social exclusion and locational disadvantage within Western Sydney in particular, where transport poverty exacerbates other aspects of social exclusion such as unemployment, low incomes and lack of access to education and health services. Importantly, there are areas of disadvantage that are forming in older middle suburbs that are in areas outside public housing estates with many highly disadvantaged households concentrated in private rental stock.

More recent research on the social conditions and aspects of social exclusion in these areas is being currently prepared for publication by the UFP and work updating the earlier analysis of social disadvantage by tenure reported in Randolph (2000) is being undertaken using 2001 Census data. The results from both of these research projects will be published in early 2004. The data indicates that the areas of extreme social disadvantage in Western Sydney have extended in the 1996 – 2001 period. A key finding is that the areas affected are overwhelmingly areas of private housing. Very similar results have also been found for Melbourne (Randolph and Holloway, forthcoming).

Ageing middle suburbs

Randolph (2002) has identified the emergence of a group of middle ring suburbs that were developed over 30 years ago but which are “now subject to a major wave of restructuring both socially and physically”. These suburbs are located mostly in Western Sydney LGAs of Auburn, Bankstown, Parramatta, Holroyd, Fairfield and Liverpool LGAs and adjoining areas in Canterbury LGA. They are characterised by high proportions of newly arrived migrants and refugees and low-income households, poorer quality housing stock and haphazard redevelopment through poorly applied urban consolidation policies. The initial occupants of these suburbs who remain are now ageing and represent a significant proportion of the population.

Further sub-regional differentiation within Western Sydney has been identified in the recent UFP *Shifting Suburbs* report (Randolph and Holloway, 2003a). Five groupings of suburbs within Western Sydney which can be defined on the basis of the date upon which the suburb was predominantly developed. This analysis reinforces the findings of Gwyther (2002) in regard to the emergence of new ‘privatopias’ developed since 1996 on the urban fringe that are characterised by largest proportion of higher income households in the region. This is contrasted with areas developed prior to 1945 where there is the largest proportion of low income households, higher density housing and unemployment rates are highest.

Planned new release areas

At the same time, areas populated by higher income households have become more concentrated and follow an arc northwest from the Sydney CBD. More recently these areas have extended beyond Baulkham Hills LGA into new areas of Blacktown LGA and are emerging in new developments located on the urban fringe.

Gwyther (2002) contrasts the urban expansion of the post war era, which was characterised by low income first home buyers, with that of the past 15 years in which there has been development of new master planned communities. These new developments are tending to attract middle and higher income (often dual income) families purchasing their second or third home.

This phenomenon has occurred roughly over the same period as the impact of concentration of financial and business employment within the Sydney CBD has driven the gentrification of the inner areas. However, both Gwyther's detailed research and the systematic review of migration and population dynamics across the region conducted by Randolph and Holloway (2003a) confirm strongly that these new urban fringe dwellers have come from other areas of the region, particularly some of the more established suburbs immediately abutting the new release areas. Both analyses point to a process whereby the new upper income fringe suburbs are pulling the regional population apart along income and class lines, leading to an increasing social polarisation within western Sydney itself. Detailed analysis conducted for the Cities of Penrith and Campbelltown confirm these findings in more local detail (Holloway and Randolph 2003b and 2003c).

Rural Urban fringe

The sub-regional analysis in *Shifting Suburbs* also examined the social profile of the rural hinterland areas on the outskirts of the urban area. This showed that populations in the rural urban fringe are in the middle of the spectrum of sub-regional characteristics in the region – basically not as wealthy or mono-social as the newer suburbs but nowhere as diverse or less privileged as the older suburban areas. However, the analysis noted that it is likely that the 'middling' statistics may hide a more polarised population that they appear to indicate. A more detailed analysis of this area in Penrith (Randolph and Holloway 2003b) supported this polarization thesis.

Understanding the Impacts of urban expansion

The environmental and social impacts of urban expansion are many and varied. Rather than an expansive coverage of these issues, research by the Urban Frontiers Program has concentrated on two particular aspects in the context of an evolving understanding of sustainability. Firstly, work by Bunker and Holloway (2001) has explored the challenges posed by population growth in the rural urban fringe, which has received relatively little attention in the literature concerning Australian cities and urban policy. Secondly, ongoing research, reported in Troy *et al* (2003) and Holloway and Bunker (2002), has focussed on developing a planning tool to model how energy is both embodied in the construction in different kinds of urban development and consumed by the people who live there.

Environmental impacts on the rural urban fringe

The rural – urban fringe around Australian cities is a key arena for sustainability concerns and the site of considerable population growth. Bunker and Holloway (2001) argue that the rise of environmental and natural resource management concerns over the last thirty years has led to a much more complex series of policy issues affecting the rural-urban fringe. They define the rural urban fringe into urban edge areas and the outer periphery. Their paper shows that while the population in local government areas at the edge of Sydney has grown much more than the periphery, the rates of growth in the periphery had been substantially higher until the period 1996-1999 when the growth rates were about equal.

Besides strong population growth, the rural-urban fringe is characterised by the presence of natural resources that are either strategically important, such as metropolitan water supply; threatened, such as remnant native bushland; or scarce, such as prime agricultural land (Bunker and Houston, 2003). Environmental issues arising from urban expansion on the rural urban fringe in Sydney have been explored by Bunker and Holloway (2001). Some of these issues, such as the conservation of bushland, water management and waste management, concur with those the noted in the Discussion Paper circulated for the Inquiry. However, Bunker and Holloway (2001) argue that, in the Sydney context at least, environmental issues at the rural-urban fringe go beyond these three. The key issues they have identified are:

1. Management of demand and use of water: Through legislative and policy reform, urban development at the edge is now influenced by considerations aimed at water conservation improving quality as well as to mitigate the risk of flooding and reduce salinisation of soils.
2. Air quality: A major concern of communities within Western Sydney has been the deterioration in air quality and subsequent health impacts attributed to increased population and rates of car use. While curbing urban development is one measure to improve this situation, reduction in car use will require, among other things, major improvement in public transport provision in Western Sydney and the adjacent fringe.
3. Land for agriculture and pastoral production: This is a major land use in the rural urban fringe of Sydney, but these industries no longer simply provide produce for the Sydney metropolitan market as was the case historically. Rather, there has been an intensification of production in particular types of farming such as chicken and egg production, mushroom cultivation, the growing of flowers in glasshouses and hydroponic vegetables.
4. Land conservation and management: Sustaining the biodiversity of flora and fauna in Sydney's rural-urban fringe is an important issue that must be considered along with protection against bushfires.
5. Preservation of natural landscapes and heritage: The World Heritage listed Blue Mountains National Park is a significant part of the natural landscape contained in the rural urban fringe of Sydney. Many of the natural landscapes within the urban-rural fringe have high cultural value with sites significant to aboriginal heritage. Preserving these areas for future generations is as central to the concept of sustainability as preserving biodiversity.
6. Extractive industries: The continued operation of coal mining and quarries extracting road metals, gravels, sands and limestone deposits are two further industries that compete for land within the rural-urban fringe in Sydney. They both place constraints on urban expansion while at the same time having different environmental impacts.
7. Solid waste management: The management of the disposal of solid waste from the metropolitan area is becoming more problematic as suitable sites are difficult to find and proximity to urban areas is often opposed by local people.

While water supply and quality have emerged as the most important policy considerations in the fringe, these have not displaced the need for urban containment for agricultural or landscape and heritage protection reasons (Bunker and Houston, 2003).

Energy consumption

Crucial to the concept of sustainable urban development is the issue of energy consumption and associated greenhouse gas emissions. In an attempt to better understand energy consumption both in terms of the embodied energy of buildings and operational consumption of households Troy, Holloway, Pullen and Bunker (2003) undertook case study research of six suburbs in Adelaide. The aim was to pilot methods of measuring the environmental performance of

different forms of built environment. Their work paves the way towards the design of development control tools and producing spatial models of energy consumption.

Apart from demonstrating the value of such methods, they found that operational energy consumption is the most significant in terms of annual equivalent consumption compared to embodied energy. Transport and electricity are the major components of operational energy consumption, with transport accounting for half the estimated average operational energy consumption in each case study area. Another important finding was that comparing Adelaide city which has more medium to high density housing has embodied energy levels per capita that are little different from the more traditional forms of residential development, that is the detached, single family dwelling.

This study and a subsequent analysis of the Adelaide data on household use of gas and electricity (Holloway and Bunker, 2002) point to the need to pursue research directions to enable the development of urban management instruments and inform pricing policies that will contribute to the conservation of energy and the limitation of greenhouse gas emissions. A major new research project on this issue, together with the related issue of water consumption, is currently being conducted at the UFP for Sydney.

Measures to reduce environmental, social and economic costs of continuing urban expansion

Limits to urban consolidation

Much emphasis has been given to urban consolidation in major planning policies in Australian cities over the past two decades as a solution to the problems arising from urban continued urban expansion, in particular, high infrastructure costs of low density sprawl, excessive car use, declining housing affordability, lack of housing variety, water and air pollution. While these policies have effectively reduced the proportionate expansion of Greenfield site development in Sydney in the past decade as noted above, the Urban Frontiers Program has recently been investigating the likely longer term impacts of these policies.

Searle (2003) argues that while Australian cities offer significant opportunities for further, but better planned, urban consolidation, rather than applying such policies in a blanket fashion across the city, efforts should be made to identify long term constraints on higher residential densities in each part of the city. He presents the following five kinds of potential limits on urban consolidation in existing urban areas:

1. **Infrastructure capacity:** Searle (2003) points to the potential problems of insufficient hydraulic capacity which may be limited due to increased consumption related to modern appliances such as dishwashers and washing machines, the fact that water supply in old industrial areas may not be suitable for large scale residential redevelopment, or that the existing infrastructure is ageing or obsolete and would require expensive upgrading to be adequate for increased residential development. He notes that open space, roads and drainage are three areas that are often overlooked in the planning of redevelopment.
2. **Land capacity:** Searle (2003) asserts that, because of local resistance to urban consolidation in many residential suburbs, that it is likely that the main locations for urban consolidation in the long term will be in existing non-urban fringe, in commercial zones, especially around rail stations and in Brownfield sites. All of these have their own limitations, namely that, firstly, without improved public transport increased densities in outer areas are less than desirable or environmentally beneficial. Secondly, there are likely to be conflicts arising over competing land use between residential development and commercial enterprises. Thirdly, many of the Brownfield sites have already been developed and much of the remaining inner city industrial areas remain important for industrial use linked to Sydney Airport and Port Botany.

3. Maximum density: Drawing on the work of Jane Jacobs (1961) and Christopher Alexander (1977), Searle argues that current trends in urban consolidation in inner Sydney, where much of the development is of blocks of 15 to 30 storeys or more, will not produce socially rich, connected communities but rather increase isolation of individuals.
4. Loss of economic activity: Residential development in old industrial areas can lead to losses in economic activity and jobs. While some businesses may relocate, others particular, smaller firms are more likely to close. Searle (2003) points to the demand by new firms, notably in the new technology industries, for older buildings with lower rental costs close to the inner city as evidence of the need to retain industrial sites
5. Market demand: Searle (2003) notes that the major pull factor for the new inner city residents, the global information based economy, seems likely to continue but argues that the market demand for city-based lifestyles cannot be taken for granted.

In a pioneering study of the local experience of urban consolidation, the Urban Frontiers Program (Bunker, *et al*, 2001, 2002) linked the metropolitan context of consolidation policy to social impacts and community responses to rising residential densities in three local Councils: Sutherland, Hurstville and Campbelltown. The research found that densification is driven at the local level by a complex set of factors including property, employment and investment sub-markets, consumer preferences, cultural outlooks, institutional behaviour and policy frameworks.

The social profile of higher density housing market was found to vary considerably between a number of sub-markets and between LGAs. However, the research identified five broad functions associated with medium density housing, which were not mutually exclusive. These roles were:

1. Accommodating newly arrived migrants in the process of establishing themselves in Australia.
2. Providing housing with features, facilities and standards that are attractive to a growing elderly population with sufficient capital to buy properties more suited to their needs.
3. Providing a variety of dwelling types and price structures for older people to remain in their own locality.
4. Providing housing for a significant proportion of younger people, either renting or purchasing.
5. Providing cheaper, mostly rented, accommodation for households on low incomes.

Another key finding of the research was that the assumption that higher densities around key public transport nodes will reduce car dependence and use was not substantiated. Rather, in all areas where there was a rise in the proportion of households not owning a car over the period 1981-1996, there was a significant increase in the percentage of low-income households.

The research concludes that “the complexity of consolidation policy’s causation and impacts means that local outcomes may in some instances contradict metropolitan scale objectives” and that “State and local governments must take into account the segmented structure of the emerging higher density market in determining policy and planning responses to consolidation outcomes.” (Bunker, *et al*, 2001, 18)

Mechanisms for the Commonwealth government to bring about urban management reform to promote socially sustainable patterns of settlement

In a comprehensive issues paper outlining the importance of Western Sydney as the nations' most important growing urban region, Gleeson and Randolph (2002) argue for Commonwealth involvement in the renewal process of urban development and especially to undertake major new investments in the region's social and physical infrastructure.

They argue that the Commonwealth government is actively shaping the future of cities as experienced directly in Western Sydney through means of provision of subsidies to private health and education services and to home buyers for example, and decisions about infrastructure investment and national immigration targets. Gleeson and Randolph (2002) argue that to avoid further social and spatial polarisation the Commonwealth government must provide additional funds to be invested in sustainable infrastructure, especially public transport, but also urban renewal and social services.

It is advocated that a formal federal assistance program be developed and administered through an Office of Urban Regions within the Department of Transport and Regional Services. The program would offer a package of measures to supplement and support state and local government investments in social and physical infrastructure. It would raise the profile of metropolitan issues with the federal government generally and more holistically. In addition, Gleeson and Randolph offer a range of interrelated and multi-scaled policy options to address both regional and local issues facing the region, with a strong focus on intervening to reduce the increasing degree of socio-spatial polarisation that is evident in the region.

Final comment

While not exhaustive of the range of research on urban issues undertaken or underway at the UFP, the above summarises some of the most relevant to the issue of sustainable cities. A key conclusion from our work is that there are many areas for which insufficient information or research has been conducted in recent years. A major withdrawal from funding urban policy research and its down playing as an appropriate subject for university activity has led to many of the key assumptions that underpin current urban policy and growth management strategies being based on little more than strongly held beliefs. Urban consolidation policy is a typical example.

It is to be hoped that the current *Inquiry into Sustainable Cities 2025* will recognise that sound urban growth management policy must be based on sound and well funded research and information, and that key policy initiatives and the assumptions behind them should be subject to proper and rigorous evaluation. We owe it to our cities and their inhabitants to do no less.

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