

# ***Department of Planning and Infrastructure***

## ***New Metropolitan Strategy***

Sydney over the next 20 years

**Submission by Tony Recsei**

**President  
Save Our Suburbs (SOS) NSW Inc**

**June 2012**

### ***Table of Contents***

<b>INTRODUCTION .....</b>	<b>2</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
<b>1. IDEOLOGICALLY DRIVEN PLANNING.....</b>	<b>4</b>
<b>2. PLANNING ALTERNATIVES.....</b>	<b>24</b>
<b>3. CONCLUSION.....</b>	<b>27</b>
<b>4. REFERENCES.....</b>	<b>29</b>

# INTRODUCTION

Save Our Suburbs expresses appreciation to the New South Wales Government for the opportunity to comment on a new metropolitan strategy in New South Wales. A disciplined objective approach to the planning of New South Wales cities is essential for the well being of its citizens

Save Our Suburbs (NSW) Inc is a non-profit and non-aligned group of residents, opposing forced rezoning and over-development of city suburbs and promoting sustainable living to protect the planet. The organization supports residents in their struggle to save cities from overcrowding, traffic congestion, high housing cost, pollution and loss of bushland and heritage resulting from ill-considered planning impositions and supports whole of nation development. The organization is active in endeavouring to persuade State Governments to effect beneficial changes to planning policies.

# EXECUTIVE SUMMARY

In its current Metropolitan Strategy the Government of New South Wales sees highly prescriptive planning policies based on higher population densities as the solution to housing a population increase. These policies take little account of peoples' preferences. This practice conforms with current planning ideology. Such policies are variously euphemistically termed "smart growth", "urban consolidation" or more recently "urban renewal". They are characterised by highly restrictive land regulation.

These high-density policies are proving to have deleterious effects on the cost of housing, on people and the environment. The general public has not yet comprehended how tight the link is between such restrictive planning policies and the increasing prevalence of these community problems.

However developers of high-density dwellings are likely to benefit from these policies due to the greater number of these structures that have to be built and the higher prices they can command due to the overall housing shortage the policies cause.

The proponents of current restrictive planning policies have provided no evidence that these policies will be beneficial. The well being of the people of New South Wales is being threatened by these state land planning policies that have become increasingly focussed on minimising current expenditure to the detriment of future sustainability and on an ideological agenda that is bereft of evidential substantiation. These policies are imposed on unwilling communities. There is also a lack of coordination between state and federal governments. The result will have long-term adverse consequences.

It is essential that a new metropolitan strategy be evidence-based and fully take into account the multiple requirements for housing in New South Wales.

# 1. IDEOLOGICALLY DRIVEN PLANNING

This perspective is discussed at some length in this submission due to the fact that with regard to its current Metropolitan Strategy NSW Planning has consistently refused to provide any detailed rationale for its pursuit of high-density policies, relying instead on aggressive assertion and the scorning of other views. The Department disparages research that is inconsistent with its pronouncements while refusing to produce any of its own, or entering into any rational debate. One is driven to the conclusion that ideologues and high-rise developers have gained far too much influence and access to decision-makers and policy-drafters.

In this section the effects of the Metropolitan Strategy planning doctrines are discussed in considerable detail in the following areas:

**Cost.** The restriction of land supply in the face of an increasing population has resulted in the cost of housing becoming extremely high by world standards. This submission documents the extent of housing unaffordability and clearly shows that current planning policies are the cause.

**Housing choice.** Australians mostly prefer to live in single-residential dwellings yet current planning policies impose a much larger proportion of high-density than is warranted by people's preferences. Current planning policies reduce housing choice.

**Environmental sustainability.** Greenhouse gas emissions per person are greatest in high-density areas. It is noted that in most situations density has little or no effect on transport greenhouse gas emissions and in any event transport comprises only a small component of the average person's emissions. Current planning policies will adversely affect attempts by individuals to locally collect naturally available energy and water.

**Health.** Mental health is adversely affected by high-density living. Vehicle emissions, which are in greater concentration in high-density areas, are a significant cause of mortality. High-density generally provides a poor environment in which to bring up children.

## 1.1 COST

### 1.1.1 Prescriptive land policies

The current Metropolitan Strategy focusses on housing an increasing population by increasing population densities instead of increasing areas of settlement. This is in spite of the fact that only some 0.3% of Australia's land surface is urbanized. In the face of an ever-increasing demand for housing, state governments have restricted the release of land for urban development. This is the foundation for policies that force higher densities onto communities that oppose this type of living. Thirteen percent of voters tend to associate

the disagreeable effects of high density with an increasing population and seventy two percent of voters think Australia does not need more people <sup>1</sup>.

The strategy of high-density has two components. The first component is to artificially strangle the land supply. Residential land release in Sydney, for example, has been reduced from an historic average of 10,000 lots per year to less than 2,000, thereby radically reducing the number of dwellings available from greenfield sites.

The second component of the high-density strategy “encourages” local government to zone for high-density. In New South Wales each municipal council has been required to submit a rezoning plan that increases population density to government satisfaction; otherwise that municipality is adversely impacted and in extreme cases the council’s planning powers can be undemocratically taken away by various means. These tactics force high-density onto communities originally designed for low densities.

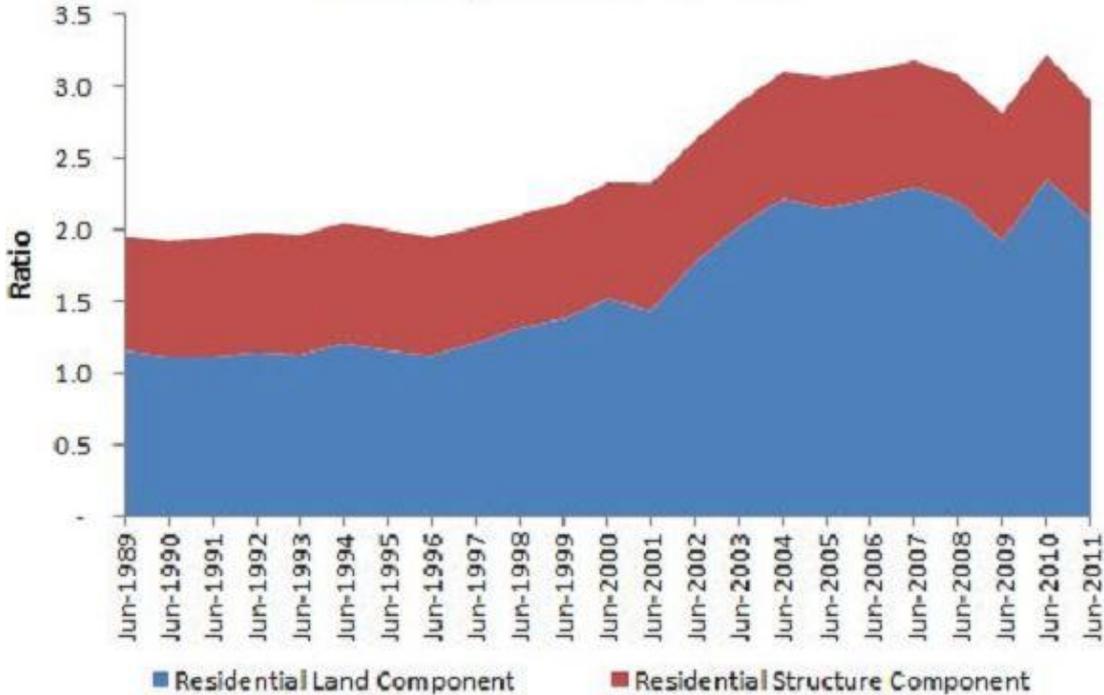
These prescriptive policies result in an increase in median residential lot prices. As economics teaches, scarcity raises prices. This relationship is illustrated in Figure 1 on page 26 of the Planning Commission’s Issues Paper which illustrates the increase in median prices in sympathy with this land release restriction.

The *7th Annual Demographia International Housing Affordability Survey*<sup>2</sup> reveals how unaffordable houses in Australia’s capital cities have become. Of the cities in the seven countries surveyed, Sydney is second only to Hong Kong as the most unaffordable. While measures of affordability vary, there can be no doubt that housing in Australia has become unaffordable. Since 1977, during which period the New South Wales population increased by 38%<sup>3</sup>, the proportion of greenfields land release sites decreased from an annual average of 20% of dwelling production to 5%<sup>4</sup>.

As a consequence of the resultant land shortage the land component in the price of a house in Sydney has increased from 32% in 1977 to 60% in 2002<sup>5</sup> and to an estimated 70% today.

The chart below illustrates this trend for Australia as a whole.

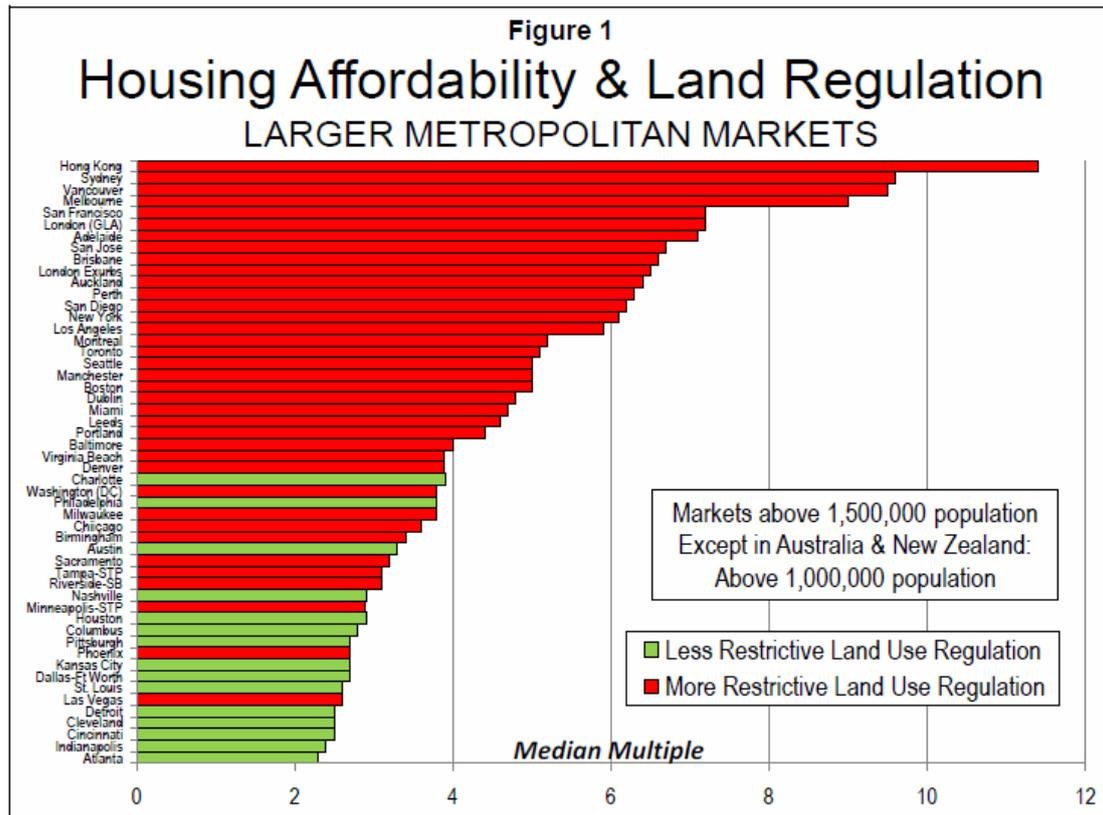
# Housing Values to GDP



Sources: ABS & RBA

[www.macrobusiness.com.au](http://www.macrobusiness.com.au)

The Demographia Survey portrays a widespread relationship between high housing cost and overly restrictive planning. The depiction below shows housing cost as years of family income needed to purchase a house. The representation is somewhat complicated during the year depicted by the collapse of the housing bubble in some prescriptive jurisdictions resulting in a substantial reduction of previous high prices.



*(median house price divided by gross annual median household income).*

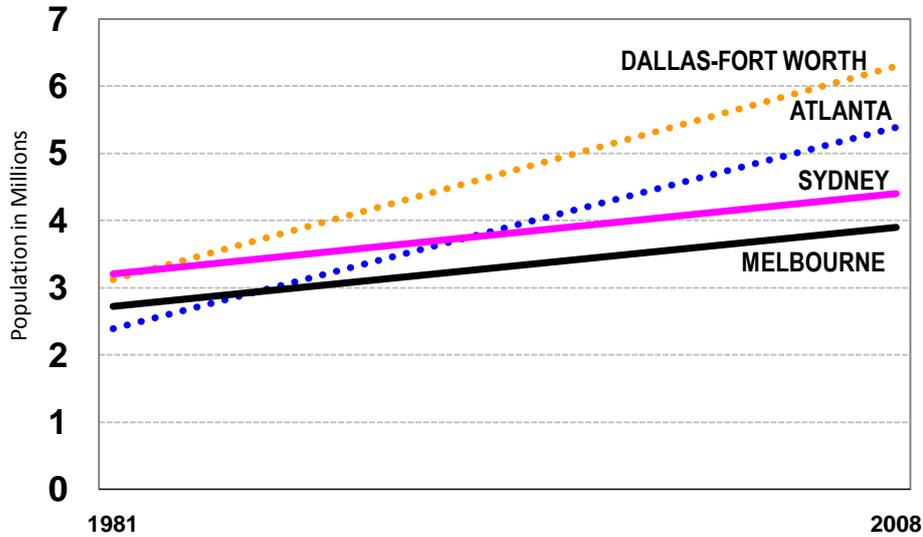
It is apparent that housing costs are higher in jurisdictions employing prescriptive land regulation.

The alternative to less restrictive land use regulation is responsive land use regulation (also called "traditional" regulation). This allows development to respond to the market as reflected in the preferences of people and businesses (and subject to reasonable environmental and health regulation).

A comparison of Sydney, Melbourne, Dallas-Fort Worth and Atlanta starkly illustrates the effect of prescriptive land restriction policies. These cities had equivalent populations in the early 1980s. The population growth of the latter two have since exceeded that of the Australian cities, yet their housing costs today are almost one third of that of the Australian cities.

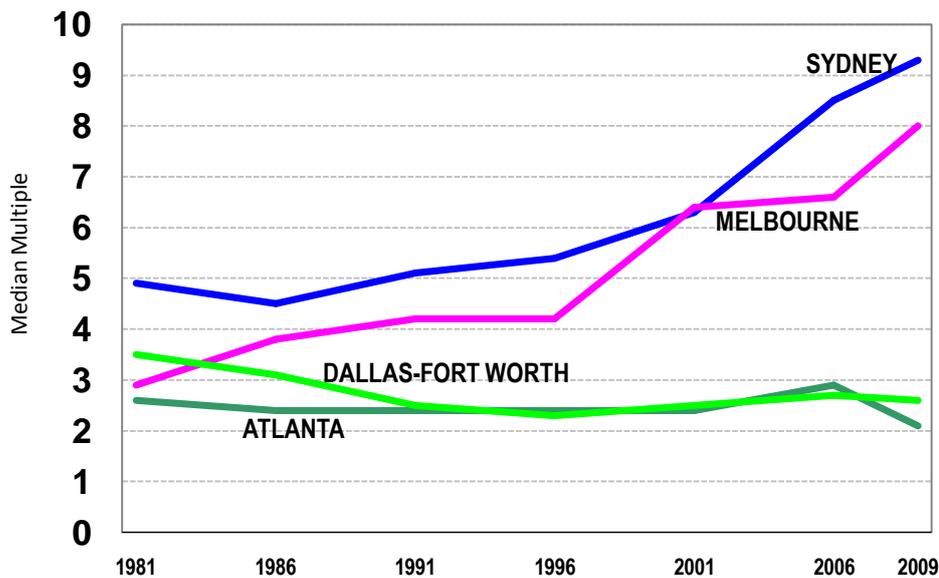
## Population: 1981-2008

SYDNEY, MELBOURNE, DALLAS-FORT WORTH & ATLANTA



## Housing Affordability

SYDNEY, MELBOURNE, DALLAS-FT WORTH & ATLANTA



(from <http://www.demographia.com/dhi.pdf>)

### 1.1.2 Has The Current Metropolitan Strategy Inflated The Cost Of Housing?

As mentioned above, it is noticeable that as part of the trend resulting from the Metropolitan Strategy, over a five-year period (2000 to 2004) annual greenfield housing land production on the Sydney fringe decreased by 6,000

lots. During this period the median price of lots in Sydney escalated from \$150,000 to \$350,000<sup>6</sup> and the median price of a house in Sydney is now about \$630,000<sup>7</sup>, more than it is likely to be if there were no shortages – see Table 1 below. Property price changes resulting from a variation in land supply are likely to flow through to all markets in the region.

A similar but less extreme scenario has occurred in Melbourne<sup>8</sup>.

In its policy agenda the Urban Task Force, which describes itself as “representing Australia's most prominent property developers and equity financiers” reports on attempts to limit Sydney’s growth. It states these attempts “saw a spike in residential property prices from 1999 to 2003 leading to the rapid slowing in NSW population growth”. Referring to the *Metropolitan Strategy* the policy it states “The development of serviced residential lots – promised to be an average of 6,000 to 7,000 a year – simply has not eventuated”. The *Metropolitan Strategy* itself warns that such an outcome ‘would put great pressure in Sydney’s existing suburbs and character and would potentially further reduce housing affordability’<sup>9</sup>.

The Task Force also states “Zoning and strategic policy restrictions reduce competition amongst property owners, and therefore increase the price of land available for large development projects”<sup>10</sup>

The Housing Industry Association states that as a consequence of the land shortage resulting from State Government policies the land component in the price of a house in Sydney has increased from 32% in 1977 to 60% in 2002 (and to an estimated 70% today)<sup>11</sup>.

The Governor of the Reserve Bank, Ian Macfarlane, offered the following evidence to the House of Representatives, Standing Committee on Economics, Finance and Public Administration:

*“Why has the price of an entry-level new home gone up as much as it has? Why is it not like it was in 1951 when my parents moved to East Bentleigh, which was the fringe of Melbourne at that stage, and where they were able to buy a block of land very cheaply and put a house on it very cheaply? Why is that not the case now? I think it is pretty apparent now that reluctance to release new land plus the new approach whereby the purchaser has to pay for all the services up front – the sewerage, the roads, the footpaths and all that sort of stuff – has enormously increased the price of the new, entry-level home.”<sup>12</sup>*

A New South Wales government report by Applied Economics on residential building activity in Sydney offers a number of explanations for this land shortage.<sup>13</sup> It records a variety of purchaser opinions on remote locations, some contradictory, and states “Traditionally households tended to move outwards, often within the same geographical sector, seeking newer and larger houses. However, as a senior development manager observed, with the greenfield sites now 60 km or more from the CBD, ‘Sydney has reached its natural boundary, especially for young kids’. .....However, a major developer contended to the consultant that households in Western Sydney

are not concerned about distance from the CBD especially with growing employment and recreational facilities in centres such as Parramatta, Liverpool, Blacktown and Penrith” (Pp 21, 22) .

This leads to the allegations of some critics of the relationship of housing supply to housing cost who maintain that increasing the land supply on the periphery of Sydney will not reduce the cost of housing as there is insufficient demand for housing in that vicinity. It is difficult to find evidence to support this. Reports of land sales by the New South Wales Government’s property developer, Landcom, show vigorous demand for residential land on the periphery. Prospective purchasers camp out all night or are subjected to a lottery type system<sup>14 15 16</sup>. Those lucky enough to get a chance to purchase paid \$300,000 for a block<sup>17</sup> .

A significant factor in boosting land prices is the practice of landowners and developers holding large tracts of land which they are reluctant to sell unless they can make large profits<sup>18</sup>. Even if large areas of such land are rezoned for development, this practice, known as “land warehousing” can maintain the cost of land higher than it otherwise would be<sup>13</sup>.

It is instructive to investigate the reasons for Sydney’s high housing cost. The best information we have (personal communication March 2012) of the cost components of a home on the periphery of Sydney is:

<b>TABLE 1</b>	
Land cost (Unrestrained subdivided farm land on outskirts, \$20,000 to \$40,000 per hectare yielding six 600 sq m lots)	\$10,000
Services*	\$90,000
Other (including subdividing, profit and selling costs)	\$20,000
Construction 3 bedroom 2 bathroom house	\$130,000
(Yielding a theoretical total of	\$250,000)
*This may be a high estimate – it varies between jurisdictions and case by case.	
The median price of a house in Sydney is about \$630,000 <sup>19</sup> and on the outskirts probably about \$500,000.	

Data on costs in the United States of America is provided in Demographia, 2010<sup>20</sup>. The following summarises data from Table II-4 on the last page of this reference for U.S.A. jurisdictions where land supply is relatively unrestricted as well as the above Australian data (all in the local currencies, the exchange rate is assumed as parity).

<b>TABLE 2</b>			
<b>Locality</b>	<b>House Construction</b>	<b>Land and other</b>	<b>%land cost of total</b>
Sydney	130,000	280,000	68

periphery- restricted land supply			
Sydney periphery- free land supply	130,000	30,000	19
Atlanta	128,800	32,200	20
Dallas-Fort Worth	116,100	29,000	20
Houston	105,200	26,400	20

This comparison shows the construction cost in local currency of a new detached house in the U.S.A to be about the same as in Sydney. It also shows the land cost of about \$30,000 (in the reference termed “finished land and regulation”) to be about equal to the Sydney unrestrained land cost above of \$10,000 plus other costs such as subdivision, profit and selling of \$20,000. The \$90,000 charge for services is omitted in this comparison as in the U.S.A. generally charges for services are not paid up front but are incorporated in subsequent user tariffs.

There can be little doubt that in a theoretical scenario in which land on the periphery of Sydney could be freely developed (excluding specific areas where this is prohibited for valid reasons) the price of housing lots on the periphery would plummet.

### 1.1.3 House Price Volatility

Prescriptive land restriction policies create a scarcity of land, artificially raise the price of housing, and make the housing market more volatile (such as by increasing the exposure of the market to risky mortgage debt). This can lead to chaotic “boom and bust” cycles in housing markets. They convert what would have otherwise been modest price bubbles into extreme price bubbles.

In the United States, when excessively liberal mortgage loan policies were implemented, metropolitan areas that had adopted prescriptive land use policies lacked the resilient land markets that would have allowed the greater demand to be accommodated without inordinate increases in house prices. These price increases were unprecedented and led to the intensive mortgage losses that precipitated the international financial crisis<sup>21</sup> and the mortgage stress that results.

This is noted by Glaeser and Gyourko, who summarize the findings of a number of studies:

*Recent research also indicates that house prices are more volatile, not just higher, in tightly regulated markets.*

*...price bubbles are more likely to form in tightly regulated places, because the inelastic supply conditions that are created in part from strict local land-use regulation are an important factor in supporting ever larger price increases whenever demand is increasing<sup>22</sup>.*

Finally, they note that housing bubbles generally do not occur in responsive markets.

*It is more difficult for house prices to become too disconnected from their fundamental production costs in lightly regulated markets because significant new supply quickly dampens prices, thereby busting any illusions market participants might have about the potential for ever larger price increases.<sup>23</sup>*

There is general agreement among world economists that prescriptive land use regulation is associated with higher house prices. See the attached assessments from leading economists by Wendell Cox of Demographia (Appendix 2). This includes:

- Reserve Bank of Australia Governor Glenn Stevens told a parliamentary committee that “An increase in state government zoning regulations is a significant factor driving up the cost of housing.” He also noted the increase in local and state government levies on new developments as a driver of higher housing prices <sup>24</sup>.
- Former Reserve Bank of New Zealand Governor Donald Brash wrote that *the affordability of housing is overwhelmingly a function of just one thing, the extent to which governments place artificial restrictions on the supply of residential land* <sup>25</sup>.
- Anthony Richards, head of the Economic Analysis Department of the Reserve Bank of Australia recently said that: *...supply-side factors should have a much greater influence on prices towards the fringes of cities, where land is less scarce and accounts for a smaller proportion of the total dwelling price. In principle, the price of housing there should be close to its marginal cost, determined as the sum of the cost of new housing construction, land development costs, and the cost of raw land*<sup>26</sup>. In fact, in prescriptive markets this is no longer the case.

#### **1.1.4 Impact on Economic Growth**

The shortage of land resulting from prescriptive policies adversely affects commerce and industry. Higher housing costs result in higher rentals or mortgage costs. Workers have to make ends meet and so businesses have to pay higher wages. Additionally employers have to pay for higher commercial rentals.

Sydney has the most highly prescriptive land regulation in Australia. Here the cost of industrial land is some 70% greater than in the other Australian capital cities<sup>27</sup>. Recently there have been a number of well publicised instances of industries closing their factories in Sydney and moving to Victoria<sup>28</sup>.

Adverse economic impacts are also indicated by population movements. During the year ended December 2009, 0.2 per cent of the New South Wales population moved to other Australian states. By contrast the State of Queensland gained 0.3 per cent. Total population growth (consisting of net immigration, natural increase and net interstate movement) in the states of

Victoria, Queensland and Western Australia was 2.13, 2.44 and 2.65 per cent respectively. By contrast New South Wales grew a desultory 1.64 per cent.<sup>29</sup>

### **1.1.5 Infrastructure**

High-density advocates claim that such planning improves services and reduces infrastructure costs.

Policies that skimp on infrastructure spending by overloading existing infrastructure are likely to prove the most costly in the long term. The original infrastructure would have been designed for the original housing density. Adding more people must overload infrastructure. In the long term it must be more cost effective to lay out infrastructure in greenfield sites using mass production techniques in common trenches than to augment existing services by digging up roads crisscrossed with undocumented cables and pipes and interface with outdated technology.

When costs of infill compared to greenfield site development are compared, it seems the costs of bringing the standard of infrastructure back to the level of service people enjoyed before high-density infill into communities was imposed are not taken into account (such as in the Australian study released last summer)<sup>30</sup>. It is one thing to compare the direct costs of proximally servicing additional infill by adding onto existing infrastructure, it is quite another to include the costs of bringing trunk infrastructure, for example transport infrastructure, up to the appropriate level to prevent increased congestion.

Since the onset of the imposition of high-density policies in Sydney roads, rail and bus services, water and electricity supply have visibly deteriorated. Newspaper articles repeatedly cite these as the main reasons for the current unpopularity of the New South Wales Government.

With regard to charges for services, there is no evidence that charges in high-density areas are less than in low-density areas – if anything the converse seems true. The New South Wales Energy and Water Ombudsman has now reported a record number of complaints and more households seeking help to pay their bills<sup>31</sup>. The report<sup>32</sup> from the Independent Pricing and Regulatory Tribunal reveals from 2008 to 2012 the charges for Sydney domestic water and sewage services will be increased by 31%.

### **1.1.6 Cost of construction**

The type of dwelling significantly affects the cost of construction. The average cost of building a new unit per square metre is twice that of building a house<sup>33</sup>.

This extra cost is exacerbated by unnecessary waste as viable single-residential dwellings are demolished to make way for unit blocks forced into communities. The embodied energy remaining in the useful life of the single-residential buildings being demolished is unnecessarily destroyed.

This tendency is aggravated further by the fact that the embodied energy per apartment dweller in the replacing dwellings is more than for those in new single-residential as is mentioned below.

### **1.1.7 Overall cost implications of higher densities or expansion of Sydney**

A report, by the Centre for International Economics titled *The Benefits and Costs of Alternative Growth Paths for Sydney: Economic, Social and Environmental Impacts*<sup>34</sup> costs alternative urban forms. It examines three different scenarios for Sydney for the period covered by the current Metropolitan Strategy. These portray alternatives of 90%, 70% and 50% of new housing to be built in existing urban areas (and correspondingly 10%, 30% and 50% in greenfield sites).

The report assembles evidence which appears to favour densification against fringe development. However the magnitude of the cost differences that it finds between its three scenarios is trivial<sup>35</sup>. These small differences make the current *Metropolitan Strategy* 70/30 policy hard to justify, and any intensification of this strategy to 90/10 impossible to justify. Cost differences of either A\$151 or A\$950 are small compared to the price that people have to pay for a house (recalling the median price in Sydney is A\$630,000). These insignificant figures need to be considered in the light of providing people with the opportunity of living in the housing style of their choice.

If costs and benefits were to be fully accounted for, including those borne by existing residents, the case for a policy of enforced densification cannot be supported. High land prices due to restrictive land-releases are already making housing unaffordable for the next generation<sup>36 37 38 39</sup>. Unwanted high-rise development represents theft from the community, reducing the amenity of existing residents and transfers that value to property developers without recompense.

## 1.2 HOUSING CHOICE

To optimise the liveability of a city the choice of housing available to the community should be maximised according to user preferences (within financial and environmental limitations). Current planning policies reduce housing choice.

A number of surveys and reports indicate people's preferences. The inference from a study on apartment life<sup>40</sup> is that half of the current apartment-living households in Sydney and Melbourne would prefer to live in single-residential dwellings. This equates to only about *ten percent* of all those in occupied dwellings in the two cities wishing to live in apartments.

A housing preference survey<sup>41</sup> sent out with rate notices by Ku-ring-gai Council in Sydney reveals a similar result. Of people wishing to ultimately move to another dwelling type only *five percent* indicated a preference for a multi-storey unit.

A new report by the Australian Housing and Research Institute states "Older home owners expressed an overwhelming preference for *remaining in their own homes*" (author's italics)<sup>42</sup>.

A report on apartment living concludes : "amongst the general population, apartment living has not become a more desirable option"<sup>43</sup>.

There can be little doubt that most people do not wish to live in high-density. However, in order to implement its high-density policy, the New South Wales Government forces this lifestyle<sup>44</sup> onto reluctant communities<sup>45</sup>. It plans 460,000 extra dwellings within the existing footprint of Sydney by 2031 and apparently intends that ultimately 50% of dwellings in the city will be high-density in stark contrast to the figure of 5% - 20% that choose that lifestyle.

With this disparity in what is desired and what is being imposed there can be no doubt that housing choice is being reduced.

## 1.3 ENVIRONMENTAL SUSTAINABILITY

### 1.3.1 Greenhouse gas emissions.

Advocates of high-density policies maintain these policies save energy and reduce greenhouse gas emissions. Available evidence demonstrates the reverse to be the case.

A comprehensive study of per capita emissions based on household consumption of all products and services appears in the Australian Conservation Foundation's *Consumption Atlas*<sup>46</sup>. Unexpectedly, this analysis indicates that greenhouse gas emissions of those living in high-density areas are greater than for those living in low-density areas. An analysis of the data<sup>47</sup> shows that the average carbon dioxide equivalent emission of the high-density core areas of Australian cities is 27.9 tonnes per person per year whereas that for the low-density outer areas is 17.5 tonnes per person.

#### 1.3.1.1 Emission sources.

Food and goods purchased account for most of the emissions and this amounts to more for wealthier inner-city dwellers.

Surprisingly, transport emissions amount to very little of an average person's emissions (only 10.5%), household electricity and heating fuel being about twice as much at 20.0%<sup>48</sup>. It should also be noted that the emissions from household dwelling construction and renovations at 11.8% are greater than emissions for transport. It is clear that transport, so heavily emphasised by high-density advocates, is responsible for only a small fraction of household emissions.

Interestingly, using regression analysis to attempt to isolate variables influencing household emissions, the paper on which the Australian Conservation Foundation data is based<sup>49</sup> finds that density, as an isolated variable, has practically no effect on total energy requirements. The paper also finds that density has little effect on the per person energy requirement for mobility and automotive fuel consumption.

Another study which solely measures direct household energy consumption<sup>50</sup> (thus excluding the effect of purchases) found that annual greenhouse gas emissions from this source in high-rise equated to 5.4 tonnes CO<sub>2</sub> per person per year whereas that for detached housing was only 2.9 tonnes. So even when excluding purchases associated with wealth, high-rise still comes out worst.

The explanation for these findings probably partly arises from lower occupancy rates in high-rise compared to single-residential (as revealed in the above-mentioned studies) and the use of elevators, clothes dryers, air-conditioners and common lighted areas such as parking garages and foyers. Most studies do not include this latter important element, simply because they are based upon consumer bills which do not include common consumption. In addition there is the greater energy per resident required to construct high-rise.

### **1.3.1.2 Embodied energy**

An additional consideration is the energy embodied in a dwelling structure. A study<sup>51</sup> finds that the total of transport, building operational and building embodied annual greenhouse gas emissions per person for city apartments is 10 tonnes whereas that for outer suburban dwellers is 7.3 tonnes – once again more for apartments.

### **1.3.1.3 Future considerations**

Looking towards the future, if we are to reduce our urban energy and water footprint by individually collecting localised solar energy and rainwater it appears reasonable that this will only be practical for dwellings that have a large roof area per inhabitant. Low density is more suitable for collecting dispersed sources of energy and water.

### **1.3.1.4 Greenhouse gas emission conclusion**

It can be concluded that in the Australian situation there is no environmental emission evidence that justifies forcing people to live in high-density - if anything the reverse seems to be the case.

## **1. 3.2 Transport and urban form**

### **1.3.2.1 Facts relating to transport**

As mentioned above, transport comprises only a minor portion of household emissions. Additionally, the energy difference between the use of public and private transport modes is surprising small.

Greenhouse gas emissions per passenger kilometre for the Sydney rail network, transporting around 500,000 passengers each day, is 105 grams<sup>52</sup>. The figure for automobiles in Australia, assuming an average seat occupancy of 1.3, averages 155 grams and it is much less for modern fuel-efficient vehicles that emit a mere 70 grams. It needs to also be considered that direct point-to-point travel distances by personal transport are frequently less than that for equivalent public transport journeys, so further reducing the energy difference.

High-density imposed on communities hardly reduces per person travel intensity at all. A Melbourne study<sup>53</sup> shows that people living in newly converted dense areas did not use public transport to any greater extent and there was little or no change in their percentage of car use.

Developers recognise that units without parking are not saleable. In Melbourne medium density housing projects located near commercial or transit centres invariably include one or two parking places per dwelling<sup>54</sup>. The initial developers of a 5.7ha site near Sydney Central Station abandoned their proposed development of the huge multi-unit project mainly because authorities insisted that a maximum limit of 60% of the units could be allocated parking<sup>55</sup>. This abandonment was in spite of the fact that the site could not be in a better location for public transport, being adjacent to the central railway station and major bus routes that radiate out from the locality.

Eighty percent of journeys undertaken are not work related. For many journeys (including travelling to locations outside the city centre, attending children's sport and recreational activities, transporting pets and visiting friends), public transport is unsuitable or even forbidden such as for bulky goods or pets, as well as being too inconvenient and time-consuming to be of practical benefit.

### **1.3.2.2 No evidence of successful examples**

#### **1.3.2.2.1 Centres policy**

The latest trend in high-density policies is to impose high-density around suburban shopping centres. It is assumed that additional employers will be attracted to the area and travel to work for those living there will be reduced.

It seems unlikely that commerce and industry that have fled from central business districts due to congestion and high land cost will be attracted to high-density residential areas where the same disadvantages will apply. No successful example of such a conversion has been provided.

The Markelius Plan for Stockholm of the 1950's is the only major example of such an attempt known to the writer. High-density residential and employment centres were established like beads on a string around transport nodes. However the nexus between residential location and jobs did not eventuate. By 1965, only 24% of the residents of one of the centres, Vällingby worked locally; 76 % commuted out. Most jobs were fueled by in-commuters, while the residents went out. Farsta, another centre, did even worse: Only 15% of residents worked locally, 85% commuted out. Eventually those residents in the medium- and high-rise rental apartments who could afford to moved out. They have been replaced by migrants and social welfare recipients.<sup>56</sup>

The writer suggests there is a fundamental reason for such failures. A great city evolves as a result of the large diversified pool of labour, jobs and facilities it provides. It develops multiple attractors such as distinctive work opportunities, specialist supplies, schools of choice, universities, unique sports, entertainment and friends to visit. Only a tiny fraction of this variety can be located within each envisaged centres. As it is, current city layouts locate a certain proportion of destinations such as local shops and child-care facilities close to residential precincts and it is not clear how high-density centres will make much difference.

#### **1.3.2.2.2 High-density and travel emissions**

New York is frequently quoted by high-density advocates as a successful example of this mode of living. But New York City (local government area or municipality) does not provide a model to be followed of density allowing the predominant use of transit. New York City includes the special case of Manhattan, where there is the aggregation of many unique entities such as head offices that are best located near each other.

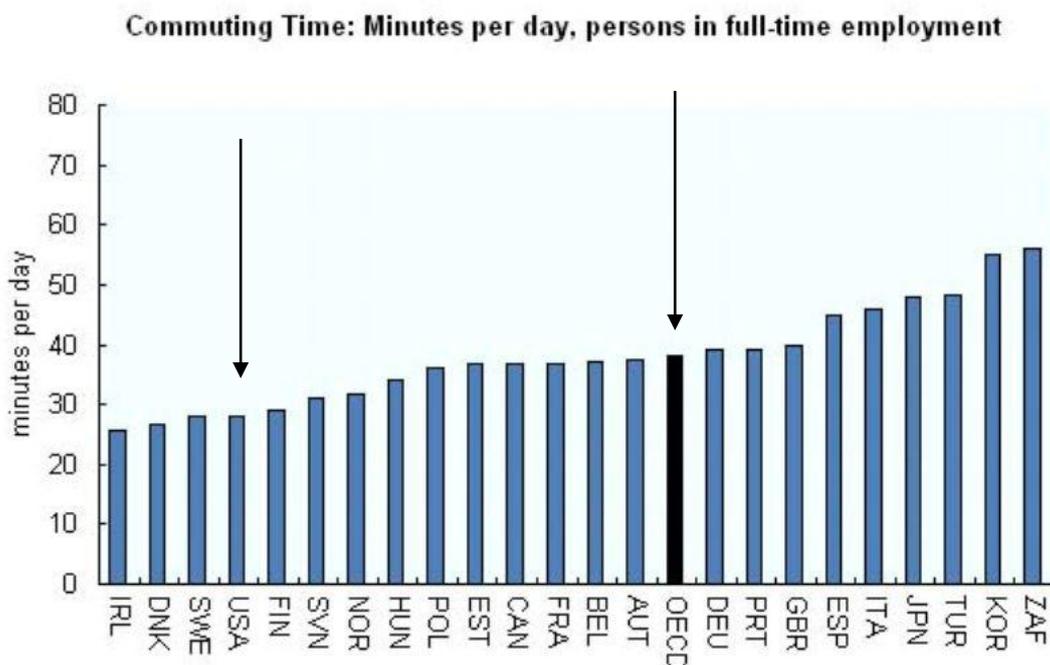
What is more, New York City cannot be considered an independent entity that could be excised from the larger New York urban area, as the areas are interdependent. On its own it cannot realistically be used as a model.

It is interesting to note that journey to work travel times do not seem to decrease as density increases. Looking at New York and some examples of large cities of different density there is no indication that these times are less in dense cities.

<b>DENSITY &amp; JOURNEY TO WORK TIMES: EXAMPLES</b>			
<b>URBAN AREA (Agglomeration)</b>	<b>Population</b>	<b>Density (Population per Square Kilometre)</b>	<b>Average Journey to Work Travel Time (Minutes)</b>
<b>Atlanta</b>	3,500,000	689	30.4
<i>References</i>	3	3	2
<b>New York</b>	17,800,000	2,050	34.8
<i>References</i>	3	3	2
<b>New York City</b>	8,008,000	10,116	39.0
<i>References</i>	3	3	5
<b>New York Inner Suburbs</b>	Not Available		28.8
<i>References</i>			5
<b>New York Outer Suburbs</b>	Not Available		24.8
<i>References</i>			5
<b>Los Angeles</b>	11,789,000	2,729	28.5
<i>References</i>	3	3	2
<b>Osaka-Kobe-Kyoto</b>	17,250,000	6,350	36.2
<i>References</i>	1	1	4
<b>Tokyo-Yokohama</b>	34,250,000	4,350	45.9
<i>References</i>	1	1	4
<b>Sydney</b>	3,641,000	2,050	34
<i>References</i>	1	1	6
<b>Melbourne</b>	3,372,000	1,550	Not Available
<i>References</i>	1	1	
<b>References</b>			
1. Demographia World Urban Areas & Population Projections:Apr 09			
2. American Community Survey of the US Census Bureau: 2008			
3. US Census 2000			
4. Japan Bureau of Statistics 2008			
5. American Community Survey of the US Census Bureau: 2006			
6. NSW Household Travel Survey for 2007			

Cities in the United States such as Dallas Fort Worth and Atlanta, which used to be the same size of Sydney and now have considerably outstripped Sydney, have released sufficient housing land. Journey to work times in denser Sydney is 35 minutes whereas in the less dense cities of Dallas-Fort Worth and Atlanta, although having larger populations, the journey to work times are 29 and 25 minutes respectively.<sup>57</sup>

A report from the Organisation of Economic Cooperation and Development<sup>58</sup> shows that people in the United States have the shortest work trip times than the vast majority of countries in the developed world.



The average commuting time in the United States is about 28 minutes which is 10 minutes shorter than the 38 minutes average commuting time for all member countries. It is interesting to note that on the whole shorter commute times seem to be associated with low density rather than the converse which is probably due to less congestion and the tendency for cities to decentralise.

### 1.3.2.3 Dispersion/Decentralisation

Public transport is only good for travelling to a central location. A modern trend is for cities to decentralise.

The example of New York, discussed above, is one of the most centralized large urban areas in the high income world with only Tokyo ranking higher among areas over 5 million population. In 1956 Manhattan accounted for 43% of employment in the metropolitan area. Today it only accounts for 26%<sup>59</sup>.

In the past 60% of jobs in Sydney were in the CBD. This is now down to 12%.

The evidence is that the imposition of high density policies does not lead to reduced traffic congestion, lower air pollution levels and improved travel times. The reverse appears to be the case.

## 1.4. HEALTH

The increased congestion discussed above caused by high-density policies results in inefficient stop-start traffic which increases greenhouse gas **emissions** as a direct consequence of burning more fuel per km and increases the concentration of dangerous micro-particles from vehicle exhausts. The resulting greater traffic per area and less volume available for dispersion exacerbates this. The World Health Organization maintains that several times as many people die from these particles every year as do from traffic accidents<sup>60</sup>.

In addition, **mental health** problems are of major concern. A recent article in the prestigious journal Nature states “For the major brain disorder schizophrenia, the incidence is about doubled in subjects born and brought up in cities, with evidence of a dose-response relationship that probably reflects causation”<sup>61</sup>.

A study of over four million Swedes<sup>62</sup> has shown that the rates for psychosis were 70% greater for the denser areas. There was also a 16% greater risk of developing depression. The paper discusses various reasons for this finding but the conclusion is compelling: “A high level of urbanisation is associated with increased risk of psychosis and depression in both men and women”.

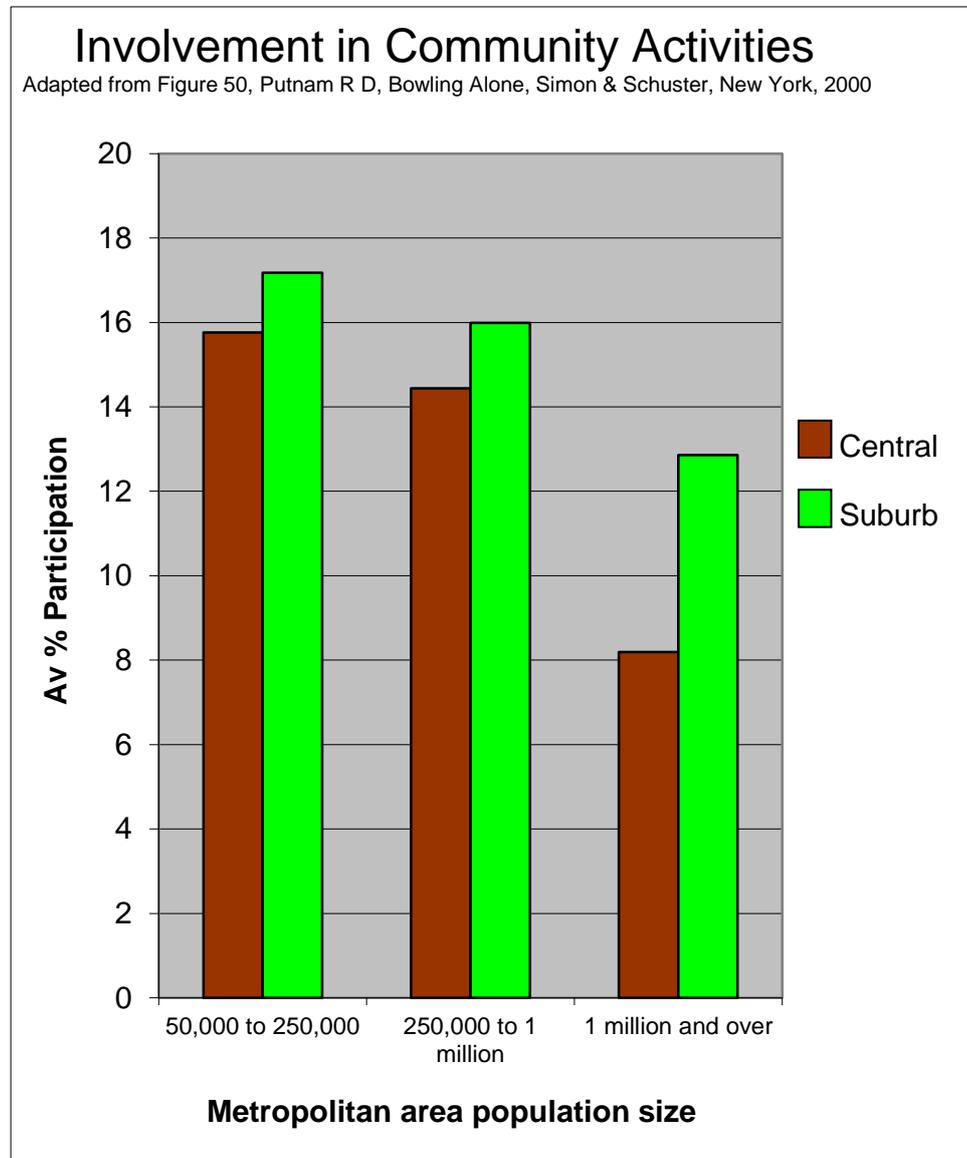
Another study of a population of 350,000 people in Holland<sup>63</sup> also finds adverse mental (and other) health consequences. After allowing for demographic and socio-economic characteristics, for those living in areas with only ten percent green space, the prevalence of depression and anxiety was 32% and 26% respectively. For those with ninety percent green space the prevalence was respectively 24% and 18%, a significant difference for an increasingly serious problem.

Research also indicates that bringing up young children in apartments can have adverse consequences<sup>64</sup>. Keeping children quiet emphasizes activities that are sedentary. There is a lack of safe active play space outside the home - parks and other public open space offer poor security.

There are other indirect indicators that relate to this question.

- The Australian Unity Well-being Index<sup>65</sup> reported that the happiest electorates have a lower population density.
- A recent study in New Zealand<sup>66</sup> asking people whether residents in particular areas would most like to live in that type of area, revealed that the answer was yes for 90% of rural residents, 76% for small town residents, 75% for city suburbs and only 64% for central city dwellers. Apparently as density increased, so did dissatisfaction with that type of living.
- As mentioned in Section 2 the vast majority of Australians prefer to live in single-residential dwellings.
- Social networks should also be considered. Putnam in his famous book “Bowling Alone” sums up that “suburbanisation, commuting and sprawl” have contributed to the decline in social engagement and social capital<sup>67</sup>. However charts in this book show the opposite. The

chart below aggregates Putnam's portrayal. This indicates that involvement<sup>68</sup> in these social activities of people in the centres of the more spacious small towns is nearly twice that in dense large cities. It is also apparent that such community involvement is greater in low-density suburbs than in denser central city areas, especially for the larger centres.



The data therefore show, contrary to what was claimed, that as density increases, people's involvement in community activity declines.

Facts available indicate that adverse health and social consequences of high-density living are significant.

## 2. PLANNING ALTERNATIVES

### 2.1 Decentralisation

After some two decades it is obvious that policies based on imposing higher densities in existing urban areas originally designed for lower densities have failed. There is much public dissatisfaction resulting from excessive housing costs, congestion and overloading of infrastructure. In order to have a significant impact on competition a completely new approach to planning is required.

Vigorous efforts should be made to achieve a more even spread of Australia's population where feasible. To house the increasing population resulting from Federal Government policies, development should aim at towns other than the capital cities such as Sydney. This should include:

1. **Whole of Australia Development** and repopulation of declining regions

2. A **viable decentralisation** policy. A mix of incentives and infrastructure provision can be used to deal with the time and distance issues raised by decentralisation. These include transport infrastructure, top class telecommunications and personal and company tax incentives.

3. The creation of **satellite cities** adjacent to capital cities. Each to be as autonomous as practical and linked by high-speed transport and communications. The planning for each satellite city would emphasise:

- the creation of Green belts
- optimal location from an environment perspective
- good transport networks - easy walk/bike/public transport to centre and a road network designed to facilitate public transport routes
- optimal environmental design – water reuse in city and downstream, thermal properties, power cables underground, sustainable plantings

4. Judicious **expansion of capital cities**. This will be better environmentally than increasing densities. *It should be noted that expansion of Sydney does not have a significant impact on food production. Only 7% of food consumed in New South Wales emanates from the Sydney basin and of this only 1/3 is vegetables, the largest proportion is eggs and poultry, cattle and pig slaughter<sup>69</sup>. Furthermore the area required for housing is small in proportion to agricultural land in the region and it should be relatively easy for development to bypass significant agricultural land that otherwise might be impacted such as the estimated 2025 hectares used for vegetables.*

5. **Higher densities**, where feasible, for those communities **that want it**.

## **2.2 Optimal balance between prescriptive and responsive land regulation**

Within reasonable limits land regulation should be responsive to community needs and maximise the opportunities to cater for these needs. Instead of specifying land where development can take place, government authorities should specify where development cannot take place. Such specification could be both in general and specific terms. General considerations could include, for example, prohibit development on valuable farm land, environmentally highly sensitive areas, within a certain distance from the sea shore etc.

It should be left to the private sector to initiate and develop unrestricted areas with Government taking a more passive supervisory role. The Government should ensure that properly designed user fees, markets and incentives are in place to optimise market-driven development for the long-term benefit of the wider community.

A system should be devised that enables development applications to be heard by an independent determining authority (such as the New South Wales Land and Environment Court) with submissions from the applicant, the community and planning authorities. Applicant criteria that would have to be satisfied would include financial capacity, expertise and historical performance. Developments would need to comply with statutory minimum requirements. The determining authority would have to be satisfied that the local community is in favour of the development.

In general, opposition to development by communities is likely to decrease once a system is in place in which communities have to compete with each other for development instead of having development thrust upon them.

Fixed interest bonds with some state and commonwealth participation could finance infrastructure. In the event of competing applications vying for such funds there should be a tender process with awards being determined by, for example, the minimum requirement for public funds per residential lot produced.

For greenfield developments, in conjunction with planning authorities, the developer would create an owners' association or a board of directors to develop local covenants.

The alternative strategy proposed here would have the following benefits:

- Housing will become more affordable
- There will be more housing choice
- Housing will be more family friendly
- Traffic congestion will be reduced as ultimately will journey to work travel times
- The environment will be healthier for people
- Urban areas will be environmentally more sustainable

- Democracy will be improved with communities being able to make decisions for themselves in new areas.
- The costs and benefits resulting from decisions will fall onto those who make them
- The State Government will be seen more as a rule maker instead of a case by case decision maker and will not be directly in line for criticism of every planning decision
- Neighbourhoods should be in a much better position to evolve to meet changing conditions and changing tastes or requirements of owners than areas that are governed by remote planners.

### **3. CONCLUSION: THE NEED FOR EVIDENCE BASED PLANNING RESPONSIVE TO COMMUNITY REQUIREMENTS**

It is apparent that effective functioning of NSW cities is countered by current prescriptive planning regimes that are driven mainly by unproven ideology and pressure groups standing to benefit financially. Planning practices currently in vogue increase overall cost, reduce housing choice, increase greenhouse gas emissions, impede travel, and adversely affect health. Liveability is adversely affected.

There should be an optimal balance between prescriptive and responsive land regulation. Within reasonable limits land regulation should be reactive to community needs and maximise opportunities to cater for these needs.

The far-reaching and inflexible effects of the implementation of planning decisions require the decision-making process to be soundly based and to be seen as soundly based. Planning should be founded on public preferences and the greater public good rather than on unproven planning doctrines coupled with the advocacy of pressure groups. Planning should be shared between the Department of Planning and dispersed local communities. The centralized body should limit itself to establishing general principles, plan for and establish major infrastructure, deal with matters of genuine State significance and coordinate those matters that cross borders of local communities that cannot efficiently be dealt with at a local level. Strategic planning and management should be separated from development assessment, both on a State and local level

The system should guarantee that the community's needs and aspirations are reflected in legislation and planning proposals.

Public involvement should be organised to genuinely inform people and allow their views to shape policies and plans

It is essential that the planning process be publicly accepted as objective, transparent, democratic, uninfluenced by vested interests and motivated by overall long-term community benefit.

Within reasonable limits land regulation should be responsive to community needs and maximise opportunities to cater for these needs.

The effectiveness and functioning of New South Wales cities and towns are being detrimentally impacted by current planning policies. Infrastructure is being not funded in a coordinated manner or for optimal long term benefit. The policies are not evidence based. There has to be a better approach

Planning in New South Wales should be:

- Democratic
- Evidence based

## 4. REFERENCES

- <sup>1</sup> Katherine Betts, *A bigger Australia: opinions for and against*, People and Place, 18(2), pp. 25-38
- <sup>2</sup> <http://www.demographia.com/dhi.pdf>
- <sup>3</sup> Australian Bureau of Statistics
- <sup>4</sup> New South Wales Department of Planning Metropolitan Development Program 2007, Section 3, p 31, Figure 3.5: Sydney Region Dwelling Production - Existing Urban and Greenfield Areas (1981/82 - 2011/12)
- <sup>5</sup> Housing Industry Association, *Restoring Housing Affordability – the housing industry’s perspective*, Housing Industry Association Ltd, Australia, July 2003.
- <sup>6</sup> UDIA, 2009. (Urban Development Institute of Australia) *The 2009 UDIA State of the Land : National Land Supply Study*, p.11
- <sup>7</sup> The median price for a house in Sydney is given as: \$651,000 in B.Gora, *Sydney house prices worse than London or New York*. Sunday Telegraph, 30 May 2010;  
And as:  
\$637,600 (September 2011) in 8<sup>th</sup> Annual Demographia International Housing Affordability Survey, Dec 2011, p.41, <http://www.demographia.com/dhi.pdf> [Accessed 6 March 2012]
- <sup>8</sup> Moran, A., 2011. *Access to land at root of soaring house prices*. Herald Sun 4 March 2011, Source available from <http://www.news.com.au/access-to-land-at-root-of-soaring-house-prices/story-e6frefgc-1226015695123>, [accessed 1 June 2012]
- Moran, A., 2011. *Our Building Regulations Need A Major Overhaul*. Herald Sun 9 December 2011, Source: available from <http://www.heraldsun.com.au/business/our-building-regulations-need-a-major-overhaul/story-fn7j19iv-1226217642509>
- <sup>9</sup> UTA - 1 (Urban Taskforce Australia), *Policy Agenda*, [http://www.urbantaskforce.com.au/index.php?option=com\\_content&view=article&id=1198:fact-sheet-getting-sydney-back-on-track&catid=41:policy-agenda&Itemid=36](http://www.urbantaskforce.com.au/index.php?option=com_content&view=article&id=1198:fact-sheet-getting-sydney-back-on-track&catid=41:policy-agenda&Itemid=36) [accessed 2 June 2012]
- <sup>10</sup> UTA - 2011 (Urban Taskforce Australia) *Making it work Initial submission by the Urban Taskforce to the preliminary stage of the Planning Review*. August 2011  
[http://www.urbantaskforce.com.au/index.php?option=com\\_content&view=article&id=29&Itemid=43](http://www.urbantaskforce.com.au/index.php?option=com_content&view=article&id=29&Itemid=43)
- <sup>11</sup> HIA, 2003. *Restoring Housing Affordability – the housing industry’s perspective* Housing Industry Association Ltd, Australia, July 2003,
- <sup>12</sup> Macfarlane, I., 2006. Address to the House of Representatives Standing Committee on Economics, Finance and Public Administration 2006.
- <sup>13</sup> *Residential Building Activity In Sydney An Overview and Seven Case Studies*. Prepared by Applied Economics for NSW Treasury, May 2010,
- <sup>14</sup> Vallejo, J., 2008. *Camping out to claim land*. Daily Telegraph 15 November 2008
- <sup>15</sup> Pollard, K., 2010. *Buyers camp out to stake a claim at Warralily*. Geelong Advertiser, 11 August 2010
- <sup>16</sup> Pike, B., 2010, *Crowds camp out at Oran Park to stake their claim at new housing development*, Macarthur Chronicle, 26 March 2010, <http://macarthur-chronicle-camden.whereilive.com.au/news/story/crowds-camp-out-at-oran-park-to-stake-their-claim-at-new-housing-developmen/>, [accessed 5 June 2012]
- <sup>17</sup> Squires, R., 2011, *Sydney’s land lottery*, Sunday Telegraph, 27 February 2011, <http://www.dailytelegraph.com.au/property/sydneys-land-lottery/story-e6freztr-1226012554896> [accessed 5 June 2012]
- <sup>18</sup> Perinotto, T., 2007. *Land hoarding a problem*. Australian Financial Review, 2 August 2007
- <sup>19</sup> The median price for a house in Sydney is given as: \$651,000 in B.Gora, *Sydney house prices worse than London or New York*. Sunday Telegraph, 30 May 2010;  
And as:  
\$637,600 (September 2011) in 8<sup>th</sup> Annual Demographia International Housing Affordability Survey, Dec 2011, p.41, <http://www.demographia.com/dhi.pdf> [Accessed 6 March 2012]
- <sup>20</sup> Demographia, 2010. *Demographia Residential Land & Regulation Cost Index:2010* <http://demographia.com/dri-full.pdf>, [accessed 3 June 2012]
- <sup>21</sup> See: <http://www.heritage.org/Research/Economy/wm1906.cfm>

- <sup>22</sup> Edward L. Glaeser and Joseph Gyourko, *Rethinking Federal Housing Policy: How to Make Housing Plentiful and Affordable* (American Enterprise Institute, 2008), p.78.
- <sup>23</sup> Edward L. Glaeser and Joseph Gyourko, *Rethinking Federal Housing Policy: How to Make Housing Plentiful and Affordable* (American Enterprise Institute, 2008), p.78.
- <sup>24</sup> "RBA says land shortage driving house prices," *Adelaide Now*, 17 August 2007, <http://www.news.com.au/adelaidenow/story/0,22606,22260763-5005962,00.html>.
- <sup>25</sup> Donald Brash, Introduction to the 4<sup>th</sup> *Annual Demographia International Housing Affordability Survey*, <http://demographia.com/dhi4-preface.pdf>.
- <sup>26</sup> [http://www.rba.gov.au/Speeches/2008/sp\\_so\\_270308.html](http://www.rba.gov.au/Speeches/2008/sp_so_270308.html).
- <sup>27</sup> Australian Financial Review 8 August 2006 quoting CB Richard Ellis
- <sup>28</sup> eg Sydney Morning Herald 5 March 2010, *Aircraft jobs fly south as Boeing Plant Closes*; Sydney Morning Herald 30 June 2010 *240 to lose jobs when yoghourt plsnt shuts*
- <sup>29</sup> <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/3101.0Main%20Features3Dec%202009?opendocument&tabname=Summary&prodno=3101.0&issue=Dec%202009&num=&view>
- <http://www.theage.com.au/national/suburban-sprawl-costs-billions-more-20090716-dmxx.html>
- <sup>31</sup> Sydney Morning Herald, *Complaints soar as gas, electricity prices increase*, 17 November 2009.
- <sup>32</sup> <http://www.ipart.nsw.gov.au/files/Fact Sheet Water 4 - Review of SWC prices from 01 July 2008 - Jennie Cooper - 10 July 2008 - WEBSITE DOCUMENT Version.PDF>
- <sup>33</sup> *State of Supply Report 2008*, Australian Government National Housing Supply Council, table 3.9, page 58
- <sup>34</sup> CIE Report, 2010 [on line]. Source. Available from <http://www.metroplansydney.nsw.gov.au/Portals/0/pdf/AlternativeGrowthPaths.pdf> [accessed 6 March 2012]
- <sup>35</sup> T.Recsei *Sydney Growth Paths* March 2012 <http://sosnsw.blogspot.com.au/> [accessed 22 June 2012]
- <sup>36</sup> Jacobson, S., 2011. *Crisis looms as first-home buyers priced out of market*, Sydney Morning Herald 28 March 2011, <http://news.domain.com.au/domain/real-estate-news/crisis-looms-as-firsthome-buyers-priced-out-of-market-20110327-1cc0o.html> [accessed 27 March 2012]
- <sup>37</sup> Cranston. B., 2010. *22 per cent rise in past year of homeless in Sydney*. Courier Mail 25 February 2010, <http://www.news.com.au/breaking-news/per-cent-rise-in-past-year-of-homeless-in-sydney/story-e6frfku0-1225834529426> [accessed 27 March 2012]
- <sup>38</sup> "Seventy per cent of under 35s in Sydney will be excluded from the housing market", *True nature of Australia's housing supply crisis exposed in new report, Homes for All*. News.com.au, AAP April 5 2012, 1.49 pm. <http://www.news.com.au/money/property/true-nature-of-sydneys-housing-supply-crisis-exposed-in-new-report-homes-for-all/story-e6frfmd0-1226319120810>
- Accessed 6 April 2012
- <sup>39</sup> Homes for All: Executive Summary, McKell Institute [http://mckellinstitute.org.au/wp-content/uploads/2012/04/McKell\\_HomesForAll\\_A4\\_EXEC.pdf](http://mckellinstitute.org.au/wp-content/uploads/2012/04/McKell_HomesForAll_A4_EXEC.pdf) Accessed 6 April 2012
- <sup>40</sup> Hazel Easthope, Andrew Tice & Bill Randolph, *The Desirable Apartment Life?*, City Futures Research Centre, University of NSW, Housing and Urban Form Workshop (W05), 2009 Housing Researchers' Conference, Sydney, Australia
- <sup>41</sup> <http://www.kmc.nsw.gov.au/www/html/24-news.asp?n=1651>
- <sup>42</sup> <http://www.ahuri.edu.au/publications/p70392/>
- <sup>43</sup> *The Desirable Apartment Life*, Hazel Easthope, Andrew Tice, Bill Randolph' City Futures Research Centre, University of New South Wales, August 2009.
- <sup>44</sup> [http://www.fbe.unsw.edu.au/cf/research/cityfuturesprojects/higherdensity/DP0223388WorkingPaper5\(DesirableAptatmentLife\).pdf](http://www.fbe.unsw.edu.au/cf/research/cityfuturesprojects/higherdensity/DP0223388WorkingPaper5(DesirableAptatmentLife).pdf)
- <sup>45</sup> <http://hornsby-advocate.whereilive.com.au/news/story/strong-survey-response-confirms-kuring-gai-s-high-rise-hatred/>
- <sup>46</sup> [http://www.acfonline.org.au/custom\\_atlas/index.html](http://www.acfonline.org.au/custom_atlas/index.html)
- <sup>47</sup> Demographia, *Housing Form in Australia and its Impact in Greenhouse Gas Emissions: An Analysis of Data from the Australian Conservation Foundation Conservation Atlas* (2007)

- 
- <sup>48</sup> [http://www.acfonline.org.au/uploads/res/res\\_atlas\\_main\\_findings.pdf](http://www.acfonline.org.au/uploads/res/res_atlas_main_findings.pdf), Figure 1
- <sup>49</sup> Manfred Lenzen, Christopher Dey, Varney Foran, *Energy requirements of Sydney Households*, *Ecological Economics*, 49 (2004) 375-379. See table 4.
- <sup>50</sup> Paul Myers, EnergyAustralia, with Rachel O'Leary and Rob Helstroom, *Multi-Unit Residential Building Energy & Peak Demand Study* NSW Department of Planning (October 2005), *Energy News VOI 23 no 4 Dec 05*
- <sup>51</sup> Perkins, Alan, Hamnett, Steve, Pullen, Stephen, Zito, Rocco and Trebilcock, David(2009), *Transport, Housing and Urban Form: The Life Cycle Energy Consumption and Emissions of City Centre Apartments Compared with Suburban Dwellings*, *Urban Policy and Research*, 27: 4, 377 — 396
- <sup>52</sup> RailCorp letter 28 October 2007 in response to a Freedom of Information application by the author
- <sup>53</sup> Hodgetts, C.J.B. (2004) *Urban Consolidation and Transport*, Masters Thesis (Melbourne, University of Melbourne).
- <sup>54</sup> B. Birrell , K. O'Connor, V. Rapson, H. Healy, *Planning Rhetoric Versus Urban Reality*, Melbourne 2030, Monash University Press, Victoria, 2005, pp. 2-17
- <sup>55</sup> M. Melish, *Moore sticks to her community mandate*, *Australian Financial Review*, 24-28 March 2005
- <sup>56</sup> Peter Hall, *Cities in Civilisation*, Weidenfeld and Nicholson, London, 1998; *Cities of Tomorrow*, 3rd Edition, Blackwell Publishing
- <sup>57</sup> <http://www.demographia.com/db-msajtwtime2000.pdf>
- <sup>58</sup> <http://economix.blogs.nytimes.com/2011/10/14/world-of-commuters/>
- <sup>59</sup> Wendell Cox, *New York Commuting Profile: From Monocentrism to Edgeless City*, <http://www.newgeography.com/content/001721-new-york-commuting-profile-from-monocentrism-edgeless-city>
- <sup>60</sup> For data see *Air Quality Criteria for Particulate Matter, US EPA/600/P-99/002aC, April 2002, Third External Review Draft, Volume II*, page 284 on particulates associated with a reduction of life of 1.31 years and US Bureau of the Census, *Statistical Abstracts of the United States, 1999* which gives the number of traffic accidents as 42,400.
- <sup>61</sup> Florian Lederborg et al, *City Living and urban upbringing affect neural social stress processing in humans*, *Nature*, 474, 498-501, (23 June 2011)
- <sup>62</sup> Kristina Sundquist, Golin Frank, Jan Sundquist, *Urbanisation and incidence of psychosis and depression*, *British Journal of Psychiatry* (2004), 184, 293-298.
- <sup>63</sup> Maas J, Verheij RA, de Vries S et al. *J Epidemiol Community Health* published online 15 Oct 2009
- <sup>64</sup> Bill Randolph, *Children in the Compact City. Fairfield (Sydney) as a suburban case study*, University of NSW, Paper Commissioned by the Australian Research Alliance for Children and Youth, October 2006
- <sup>65</sup> Sydney Morning Herald 13 February 2006
- <sup>66</sup> UMR Omnibus Results, UMR Research, Wellington, March 2009
- <sup>67</sup> R. D. Putnam, *Bowling Alone*, Simon and Schuster, New York, 2000, p. 283
- <sup>68</sup> Average of % who have served as officer or committee member of local group and % who have attended a public meeting on town or school affairs.
- <sup>69</sup> J. Wilkinson, *Agriculture in the Sydney region: historical and current perspectives*, NSW Parliament, Feb 2011.