

## **Robert Samuels 1999**

### **Living in the City and Greenhouse Gas Abatement**

The significance of the relationship between energy use, the built environment and the quality and sustainability of the ecological environment (or, ESD) is now being recognised by a growing number of designers and built environment practitioners (Samuels & Prasad, 1994). Nonetheless, other more immediately pressing, global, problems continue to dominate consciousness - civil wars in developing and post-communist nations, long-term unemployment and escalating crime rates in post-industrial nations, and the consequences of endemic inequities in the distribution of wealth the world over. At the same time, increasing climatic disruptions and signs of global warming, severe droughts, floods and tornadoes, and protracted and exaggerated El Nino climate inversions continue to be considered as 'within the norm', and business continues as usual, with the precautionary principle discussed, in principle, but rarely acted upon, and Rio commitments such as the Climate Change Convention signed and ratified - but policies for its implementation not yet apparent. Short-term concerns continue, as before, to outweigh the long-term, latent or potential issues. This is a mind-set which seems to be a part of human nature. Neither should this global attitude be expected to change by the middle of the 21st century, despite projections that both CO<sub>2</sub> equivalent emissions and the world's population might have doubled by 2050. If the consumption habits of these 10 billion people are similar to those of contemporary post-industrial nations today, global warming and climatic disruption will, in all likelihood, be on a scale unimaginable today, and quite possibly irreversible.

Within this scenario for the early 21st century, an urban lifestyle will be an inevitability for a majority of the world's population. Urban populations are multiplying at about twice the global rate of increase, particularly in developing countries, although even the population of a city like Sydney is increasing at about 40,000 annually. It is expected that population growth in Sydney will be in the order of 1 million (*ie* from 3.5 to 4.5) in the next 20 years (Metropolitan Planning in Australia, 1994). If quality of life and quality of environment are not to be relinquished for future generations, an urban solution, or, better, *resolution*, must be given immediate and continuing consideration, in both developed and developing countries. It is not feasible, here, to reflect on urban *resolutions* for all countries, and the viewpoint elaborated here relates to post-industrial nations (Australia in particular) which have adopted an anglo-american planning philosophy. Nations with massive high-density residential cities (such as Hong Kong), or massive squatter encampments encircling their CBDs (such as in South America) will demand unique resolutions.

## **Sustainable Urban Resolutions**

One major element of any sustainable urban management approach in Westernised post-industrial cities is the integration of place of residence (and all its supporting facilities such as schooling, shopping, clinics, sport etc) and place of employment/work. The goal is to produce a low-movement society, with consequent benefits in terms of minimising transportation infrastructure, maximising air quality and lifestyle quality, and, most importantly, reducing impacts on global climate stability via reductions in carbon and nitrogen emissions. The principal strategy is consolidation - involving the intensified utilisation of inner urban areas, and the decentralisation of urban facilities to, and the densification of, outer suburban areas. Principal tactics include mixed use zoning, dual occupancy, multiple occupancy (work from home), infill, re-use of industrial sites, and the juxtaposition and integration of public transportation and high density residential localities. Ultimately, the aim is to have a compact urban environment, with more people living on less land and moving less between their various activities - to re-create the village in an urban setting. The focus of attention is on establishing strategic employment centres outside the CBD, limiting fringe development while aiming for metropolitan travel efficiencies via public transit systems in existing suburban districts, and building medium-density housing complexes in established inner city areas - with existing (if ageing) service infrastructure.

There has been a major change (albeit almost unmentioned in the literature) in the nature of Australian central business districts (CBDs) in cities such as Sydney and Melbourne in the past few years. This involves the adaptive re-use of empty office and warehouse buildings, vacant since the 80's office building boom burst during the recession in the early 90's (with a concomitant drop in CBD land prices). The general intention is to provide high density, high rise, *central city living* - ie to rapidly and radically increase the *residential* component of the CBD.

In Sydney, in 1991, there were 3 residential units approved for development, while in 1993 over 2,000 were approved, all of which were in buildings comprising more than 50 units; similarly, there were 3 building approvals for residential units in 1991, but 626 in 1993 . The city council is clearly implementing policies designed to increase the city's permanent resident population. New building codes are streamlining the conversion and re-use of existing buildings - floorspace ratios and ceiling height restrictions (from 4m to 3m) have been eased in order to entice developers, who can now get more units per area than previously, and strict adherence to building height limits are being waived. In order to magnify the social and community nature of the CBD, footpath cafes have been encouraged

(186 approvals in 1993, compared with zero in 1989), all new city buildings must now have active uses on their street frontage, and vacant buildings are being targeted for arts and community organisations. George st., the major downtown Sydney avenue, is being studied at present with the idea of converting it into a tree-lined boulevard with pavement cafes on a widened footpath and, possibly, a light-rail system running down the median strip. The aim is to enliven the city and, particularly, to bring it to life afterdark (Living City, 1994).

There is, simultaneously, a 20-year development plan for an area on the very edge of the Sydney CBD - Pyrmont/Ultimo, and although a medium density, low-rise, community-oriented 'urban village' accommodating some 15,000 people is the ideal technically being striven for, already there are clear signs of high-rise developments encroaching, with two substantial residential buildings already completed, and a third recently submitted for development approval. A three-towered high-rise casino building is also being proposed but serious objections are being raised. Just how serious remains to be seen. If past trends are anything to go by, the area will be deemed too valuable for a community sensitive, affordable, urban village style development, and the land owners (the State government and CSR) and developers alike will be seeking to maximise profits not to achieve sustainability and equity.

The potential lifestyle and ESD advantages of increasing the residential population of the CBD are many. People can live close to employment opportunities, and can forego using their cars for much of the time - with concomitant benefits in terms of greenhouse gas (GHG) emissions. No added transportation infrastructure is required - people can walk or use the existing transit systems which serve the CBDs at present - again with GHG implications. An enhanced use of the public transit systems will not only ensure its economic viability but also enhance the security of users of those systems particularly afterdark when, traditionally, use falls below natural security levels. Similarly, animating and populating the CBD zone afterdark will naturally enhance the security of all users of the city; and the increased productivity and health/well-being of people who do not need to waste several hours travelling to and from work every day, and the decreased stresses associated with this, can be substantial. Most importantly, vacant buildings incorporating massive amounts of latent carbon subsidies or energy embodiment can be re-used and, presumably, the construction of other new buildings can be foregone, while greenfield urban fringes, and wetlands and wilderness areas - which act as carbon 'sinks' - can be retained and preserved. Energy-environment lifecycle savings in this scenario can be substantial.

Demographically, this trend to smaller dwellings (CBD units) is also appropriate. By the year 2006 the traditional family of two adults and children will have fallen to around 25% of all

household types, while about 75% of all households will be without children, with an increasing amount of single person households - given the increasing ageing of post-industrial populations (NHS, 1991). People are also marrying later, having fewer children, living together and having no children, and divorce rates are rising. Moreover, by 2006 almost 60% of Australian women are expected to be in paid employment. This means that there will be an *increasing number of smaller households*, and housing provisions will ultimately attempt to satisfy the market (albeit with some lag). Average household size in Australia decreased from 3.55 in 1961 to 2.88 in 1986, and must be about 2.5 now. Thus, small CBD apartments might well satisfy the requirements of a large segment of the urban populations of advanced nations in the 21st century. Over 85% of the Australian population is already urban, with over half of that number living in the six State capital cities.

### **Unresolved issues in this projected CBD scenario.**

- ◆ *who* are the people who will live in the CBD?

Will it turn out to be an investment strategy for people with more disposable income than they need, or for wealthy overseas investors; will it be a yuppie (young urban professional) and dinkie (double income, no kids) playground unaffordable by the general population?

Will CBD living suit families with children - will schools proliferate in the area, will there be outdoor facilities (public and private) where children can play, and will they have adequate sunlight and also be safe? A recent and controversial Japanese study (New Scientist, 13 August 1994) claims that young women living above the 5th floor of high-rise residential blocks suffer proportionately more miscarriages than those living on lower floors, with the lowest incidence being on the ground floor. It is suggested that lifestyle factors are implicated, *viz* that the higher up they live the more reluctant they are to go out, and that the sedentary habits work against good health. Follow-up studies are in progress.

Will CBD living turn out to be a new form of retirement living?

Will people use the city afterdark or, rather, retreat into their tower units, where exclusive internal facilities such as gyms, pools, roof gardens, and cafes will remove them from the common throng below?

Will the poor air quality of central cities increase respiratory ailments of resident populations?

- ◆ As for sustainability and greenhouse abatement, there has quite clearly been no consideration given to these issues by the city council and developers alike. Minimisation of energy latent in the new buildings is not a concern. Massive structures require reinforced concrete and steel, and alternative construction methods are not part of the brief or the

philosophy. Neither is any consideration given to use of re-cycled materials, or to the ease of disassembly (for later demolition and re-use of materials). Indeed, one development planned for the new Paddy's market in Sydney's China Town, which ran into funding problems, was preparing to demolish 16 uncompleted floors, using lasers to cut through about \$70 million worth of reinforced concrete, for dumping (The Bulletin, June 1, 1993). In the 'downtown' Kent st. area, which seems to be acquiring the character of *the* residential precinct of Sydney CBD, two ex-office buildings are being upgraded into prestige apartment buildings. The Esso building (now called Highgate) is being given a substantial upgrade and revamp, with seven floors of penthouse type floors being added. Similarly, the refurbishment of the old IBM building (now called Observatory Tower) involves the addition of 7 new storeys. Clearly, there can be little advantage here, in ESD terms, by refurbishing rather than constructing anew.

◆ Operational energy efficiency concerns are also not apparent. The CBD buildings will be air-conditioned. It will be expected, and provided. The buildings face any which way. External shading is not apparent. The chance to clip on sunspaces (as has been done with some success in several French high-rise buildings, for instance), also seems to have not been considered.

◆ Waste and water minimisation and management are, similarly, not issues that developers of CBD prestige buildings would consider as important criteria.

◆ Moreover, the prestige locations and high land prices will inevitably result in unit prices being elevated. The Esso building unit prices start at around A\$300,000 and penthouses are going for \$3.5 million and more. Being unaffordable for the bulk of the population, they will continue to migrate to the urban fringe, exacerbating transportation, photochemical smog and greenhouse-gas emission problems.

◆ Until traffic is diverted around the city, and inner CBD traffic calmed, with priority given to the pedestrian wherever feasible, city living will not become amenable for the vast majority of people, particularly for families with children. Here we should take the opposite of Corbusier's advice. In his *City of Tomorrow* tract (1929) he said: "the family is a cell...a given number of such cells...make a manageable colony"; and "a city made for speed is made for success". He also said "there need be no limit to the number of motor vehicles, for immense covered parking areas linked by subterranean passages would collect together the host on wheels which camps in the city each day and is the result of rapid *individual* transit" (original italics). Again, Corbusier recommends "immense parks", "vast open spaces reached by underground passages". Given contemporary concerns with surveillability and security,

personalisation and community participation, and public transport with traffic calming, Le Corbusier's ideas are not only terribly dated but are quite dangerous as far as personal well-being and climate change potentials are concerned.

Neither the council nor developers seem to have considered GHG abatement in their CBD living strategy for Sydney. Commercial concerns are once again driving this new movement of people to the centre of the city. Indirectly, benefits will accrue. But once again it appears that a chance has been foregone to improve the quality of the environment, to help ensure intergenerational equity (that future generations will enjoy at least as good conditions as we do now), and help Australia meet its Rio Climate Change Convention commitment (stabilising CO<sub>2</sub> levels by the year 2000). Environmentally benign design, solar efficiency, and ecological sustainability are not yet priorities. The biggest challenge for the 21st century will be changing attitudes.

## References

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