



Sustainable–Affordable Housing

***Submission to Inquiry into First
Home Ownership***

By

**Institute for Sustainable
Futures**

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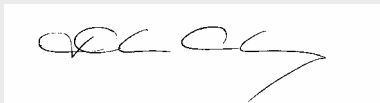
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Project Director's Approval of Final Report

I agree that this report reaches the standard set by the Institute for Sustainable Futures, University of Technology, Sydney.

Signed

A handwritten signature in black ink, appearing to read 'Helen Cheney', is written over a white rectangular background.

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INTRODUCTION

The Institute welcomes this opportunity to submit comments to the Commission's Inquiry evaluating the affordability and availability of housing for first home buyers. The Institute for Sustainable Futures is a self-funded research and consulting institute of the University of Technology, Sydney. The Institute's mission is to support and create change towards sustainable futures by working with government, industry and the community. Social sustainability, sustainable housing and sustainable urban infrastructure for energy, water and transport are all key parts of this mission.¹

This submission seeks to evaluate the affordability and availability of housing for first home buyers within the framework of ecologically sustainable development (ESD). It is in two parts.

- *Part I: Submission* provides the framework.
- *Part II: Comments on the Commission's Issues Paper* provides more details on this framework under the broad headings used in the Commission's Issues Paper.

PART I: SUBMISSION

Ecologically sustainable development (ESD)

Australian governments have agreed that the goal of ecologically sustainable development is "development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends."² The Institute seeks to apply this goal to housing affordability in the spirit of the *Environment Protection and Biodiversity Conservation Act 1999*. In the *Act*, the first principle of ESD is: "decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations"..³

The other principles in the 1999 *Act* are:

- (b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- (c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;
- (e) improved valuation, pricing and incentive mechanisms should be promoted.⁴

¹ More details about the Institute are available from its website <http://www.isf.uts.edu.au/>.

² Council of Australian Governments, December 1992, *National Strategy for Ecologically Sustainable Development*, Prepared by the Ecologically Sustainable Development Steering Committee. Available at <http://www.ea.gov.au/esd/national/nsesd/strategy/intro.html>, [accessed 11 October 2003].

³ Sect 3a of the *Act*. Available from <http://scaleplus.law.gov.au/html/pasteact/3/3295/0/PA000100.htm>, [accessed 11 October 2003].

⁴ *Environment Protection and Biodiversity Conservation Act 1999*, Sect 3a, as above.

Application to housing

These principles can be applied to the affordability and availability of housing for first home buyers. When they are applied, the terms “affordability and availability” can be seen to include:

- Affordability and availability both now and in the future;
- Affordability and availability of housing for all people, whether choosing ownership or public or private rental;
- Affordability and availability of housing for people of all ages and levels of physical ability and households of all sizes, cultures, compositions and income levels;
- Both the capital cost of the land and house and operating costs over the life of the house, particularly those costs built into the house itself, its location or its supporting infrastructure (e.g. Energy, water and transport costs for the house’s occupants);
- Impact of the social costs of different types and locations of housing on affordability for the whole community, including the cost of their effects on health, crime, community wellbeing, unemployment, poverty and security of tenure;
- Affordability of the environmental costs of different types and locations of housing, including the cost of their impacts on air and water pollution, greenhouse gas emissions, water catchments, biological diversity, land degradation, resource use and waste generation; and
- Affordability of any economic instruments used to value or price these social and environmental costs or to provide financial incentives to minimise them.⁵

Policies which take a narrow or short-term view of affordability and availability run the risk of creating the unintended consequence of reduced affordability or availability of housing for people other than first home owners or for all people in the future.

Mechanisms to assist first home buyers

Based on this framework and drawing on the detailed material in Part II, the Institute proposes the following criteria should be applied by the Productivity Commission to any mechanisms to assist first home buyers. Mechanisms to assist first home buyers should:

- Make housing more affordable for all people entering the housing market, particularly low income renters;
- Increase the flexibility and adaptability of housing to cater for changing household sizes, ages, cultures and levels of physical ability;
- Include disclosure of the lifecycle costs of owning and living in a home, not just the capital cost. The lifecycle cost should include at least energy, water and transport costs;

⁵ Environment Australia, 2003 *Criteria for Determining ESD Relevance*, Section 5, Activities which Involve Valuation, Pricing and/or Incentive Mechanisms, June. Available at <http://www.ea.gov.au/esd/national/epbc/criteria/index.html>, [accessed 11 October 2003].

- Include 'green' mortgages to assist the affordability of homes with higher capital cost but lower lifecycle cost;
- Assist the project home industry's transition to delivering housing that remains affordable over the longer term i.e. has low lifecycle cost; and
- Take account of the increasing application of economic instruments to reflect the external costs of housing on infrastructure, social problems and environmental damage.

Economic instruments, such as infrastructure charges and State greenhouse gas emissions benchmarks, will affect the future operating costs of housing built now, making sustainable housing more affordable than homes which ignore sustainable design principles.

Institute experience with sustainable housing

The Institute's capacity to explore these issues is based on its expertise across a broad range of complementary areas related to sustainable housing. Those areas most relevant to this Inquiry are summarised as follows:

- Expertise in analysing the range of costs and benefits associated with housing provision from a holistic perspective, with experience in various methodologies such as life cycle costing and cost benefit analysis.
- Detailed technical expertise across a range of areas related to the design and construction of sustainable communities, from urban scale to individual dwellings. Our expertise covers transport and land use planning, integrated resource planning, energy efficiency and greenhouse gas abatement, sustainable water management, sustainable sourcing of materials, waste avoidance, pollution prevention, productive and healthier indoor environments and social amenity. The institute is the author of the commonwealth government publication *your home*, a comprehensive and accessible guide to sustainable housing that won two national awards in 2003.
- Hands-on experience with the integration of sustainability into housing of a range of types and scales, within the context of affordability. Institute staff have consulted extensively within the institutional and residential property sectors. We have worked with several large residential property developers to integrate sustainability into their housing developments, have performed detailed resource efficiency audits of existing housing stock and have designed and evaluated residential retrofit programs such as Sydney Water Corporation's *Every Drop Counts* water efficiency program.
- Expertise in aspects of housing policy, in particular the current regulatory environment for housing development approvals and a firm understanding of the implementation aspects associated with making sustainable housing 'mainstream'. In 2002, we managed a study of the barriers and opportunities to 'mainstreaming' sustainable residential development for the NSW Sustainability Advisory Council, which involved extensive consultation with government, the development industry and social services groups.
- Institute researchers have extensive experience working with socially disadvantaged groups who are unable to afford home ownership and experience difficulty in the rental market. This experience includes working in diverse cultural and spatial settings including people living in remote communities, Indigenous people, low-income families and people from culturally and linguistically diverse backgrounds.

- The Institute understands the need to account for equity issues in policy and program development. For example, in the design of Sydney Water's *Every Drop Counts* household water efficiency retrofit program, the Institute incorporated a specific program element to provide low-income households with a free retrofit service. To date, approximately 100,000 low-income households have benefited from this.

PART II: COMMENTS ON COMMISSION'S *ISSUES PAPER*

1 RELATIVE COSTS OF RENTING VERSUS OWNING

A broad definition of affordability and availability of housing was adopted to ensure that the effects on all people were considered, regardless of whether they choose ownership or public or private rental.

In 1999, one quarter of all Australian households rented their home. The majority of renter households were renting from a private landlord. The rental sector grew at a faster rate than home ownership between 1986 and 1996. Many factors were behind this trend. Young people are now likely to start home ownership later in life and to remain renting for a longer period than in the past. This can be attributed to later family formation than in the past and longer periods spent studying. Higher Education Contribution Scheme (HECS) repayments and increased superannuation payments are competing with housing for household savings, while superannuation and other forms of wealth are competing with home ownership as a source of wealth in retirement. Sole-person and lone-parent households characterised by single incomes are becoming more common at a time when there is increased reliance on dual incomes to afford home purchase. Increased job mobility has increased the proportion of people renting through choice.⁶

The Institute understands that other organisations such as the Australian Council of Social Services are making submissions covering equitable treatment of renters in more detail.

⁶ Australian Bureau of Statistics, 2002a, 'Renter Households', *Australia Now*, available at www.abs.gov.au, [accessed September 17, 2003].

2 POPULATION AND DEMOGRAPHIC CHANGE

Housing needs are changing as household size decreases and household composition changes. Given the long lifetime of housing stock, affordability and availability of housing in the future will be affected by the flexibility and adaptability of housing built or renovated now.

The average household size has decreased from 3.7 people in 1981 to 2.7 in 2001. The average number of children in households with children, decreased from 2.4 in 1964 to 2.0 in 1994.⁷ Single parent households have increased by 53 per cent between 1986 and 2001. More people are living alone. Young adult children are remaining at home longer, an increase from 13 per cent of households in 1986 to 16 per cent in 2001. There has been a 40 per cent increase in couples with no children since 1986 and a two per cent decrease in multi-family households in this period to three per cent in 2001.

The increase in households of older people as the demographic pattern shifts to an older profile has major implications for housing needs. Many older people are remaining in their family homes longer. Others are moving to purpose-built self-care dwellings, with three per cent of older single people now living in this form of housing. Three per cent of couples with children, three per cent of couples without and six per cent of lone parents have adult relatives living with them in 2001, mostly their parents. The needs of this ageing market will require more flexible types of housing with disabled access as well as smaller, ground-floor apartments, increased self-care dwellings with living assistance and private rooms or self contained units at their children's home.

Overall, these factors have resulted in the number of households growing at a faster rate than the number of people. Between 1971 and 1996, the population of Australia increased by 40 per cent, from 12.8 million to 17.9 million. Over that period the number of households increased by 74 per cent, from 3.7 million to 6.4 million. Yet as Australian households became smaller, new houses got larger.⁸ Some of the implications of this trend are discussed in the next section on *Building, Land Use Policies and Building Controls*.

⁷ Australian Bureau of Statistics, 2002b, 'Smaller Households, Bigger Houses', Australia Now, available from www.abs.gov.au, [accessed September 17, 2003] and Hawley, J, 2003, 'Be it ever so humungous', *Sydney Morning Herald Good Weekend*, August 23, p.24–28.

⁸ Australian Bureau of Statistics, 2002b, as above.

3 PLANNING, LAND USE POLICIES AND BUILDING CONTROLS

Housing affordability is part of life affordability—the affordability of access to jobs, social interactions, goods and services. Providing cheap houses in which people will have to rely entirely on private car transport or have to pay high energy or water bills does not make life more affordable for people. The whole cost of living in the house over a long period needs to be taken into account in life affordability.

3.1 *Lifecycle costing and rating*

It is important for home buyers to understand the *life cycle* cost implications of the home they are purchasing. For example, homes that are not designed to be energy efficient can result in a major operational cost burden. Larger homes are more expensive to heat, cool and maintain than smaller homes and homes not built with durability in mind come with high maintenance costs attached.

For this reason, disclosure of a home's sustainability rating at the point of sale should be mandatory. This should first cover new homes, including 'off-the-plan' project homes and later include existing homes. Point of sale disclosure is particularly important for project homes, which account for 80 per cent of all new homes built⁹ and are generally seen as the most 'affordable' form of housing available. Many project home designs exhibit features which have adverse implications on life cycle costs including excessive floor area, large open plan areas, the use of materials which are not durable and designs which are not energy efficient. It is important that consumers understand this when they purchase a project home, so they can make a fully informed decision. These factors influence not only operational and maintenance costs, but also health and amenity and the long-term resale value of the home.

Aspects of the sustainability rating for a project home will vary depending on how it relates to the block of land where the home is located. For this reason, the houses in a project home village would have to be given a range of ratings, with clear information about how to site the home on each block to achieve the best possible rating in the range.

A rating system currently operates in the ACT, where disclosure of the National Home Energy Rating (NatHERS) of a home at point of sale is mandatory. This scheme requires almost all homes built after 1 July 1995 to comply with the Territory's minimum energy performance standard for residential property.¹⁰ Point of sale disclosure is one of several requirements under the *Energy Efficient Ratings (Sale of Premises) Act of 1997*.¹¹ The *Act* requires the disclosure of an existing dwelling's energy rating by vendors within advertisements and to purchasers prior to entering into a contract for sale¹². As this scheme progresses in liaison with the building industry, it is expected that many innovations will be incorporated to further reduce energy resource use within the Territory.¹³

Despite its merits, the NatHERS rating only takes the building envelope into account. The building envelope affects the energy needed to heat and cool the house, but not other energy uses such as

⁹ Hawley, J, 2003, 'Be it ever so humungous', *SMH Good Weekend*, August 23, p. 28.

¹⁰ ACT Department of Urban Services, 2002, *ACT House Energy Rating Scheme (ACTHERS): Guidelines for Quality ACT Residences*, Planning and Land Management Group, January, p. 11. Available at http://www.actpla.act.gov.au/qsd/acthers/acthers_guide.pdf, [accessed 21 October 2003].

¹¹ *Energy Efficiency Rating*, available at <http://www.heague.com.au/content/eer.htm> [accessed October 9, 2003].

¹² ACT Department of Urban Services, 2002, as above.

¹³ ACT Department of Urban Services, 2002, as above, p. 13.

lighting or refrigeration. New rating systems in the process of being implemented, such as BASIX¹⁴ and NABERS¹⁵, take a broader range of sustainability factors into account (including energy and greenhouse, water, materials, waste and transport). As well as operating and maintenance cost implications, these tools provide information on the health and amenity implications of a home. Linking these comprehensive tools with a requirement for mandatory disclosure at sale would provide the householder with a better picture of the 'value for money' of the house they intend to buy.

3.2 Costs and benefits of lifecycle costing and rating

Sustainability requirements in the housing approvals process are not something to be traded off to increase housing affordability. The costs to society of *not* implementing sustainability in housing are immense. As one example, poorly designed residential development (particularly new development in Sydney's north west sector) has led to excessive use of air conditioning, which is driving the need to expand electricity infrastructure because of increasing peak demand (see section below on Infrastructure Charges). This illustrates that diluting sustainability requirements for housing will ultimately lead to less affordable housing. It also illustrates that a definition of affordability that is limited to the capital cost of a new house is inadequate and misleading.

A recent Landcom study showed that incorporating energy efficiency into new housing stock can provide an instant return for the homeowner. In the study, two subdivisions were modelled and the extra capital cost of incorporating low energy measures into each dwelling was factored into a 25-year mortgage. For an 11,000 dwelling subdivision on Sydney's fringe, the modelled annual savings varied from \$390 for a detached five-bedroom house to \$150 for a two-bedroom apartment. For an 870 dwelling subdivision in an urban area (14km from the Sydney CBD), annual savings modelled varied from \$80 for a two-bedroom apartment to \$160 for a detached house.¹⁶

This study modelled energy only. Even greater opportunities for financial return can exist when other aspects of sustainability, such as water efficiency, are taken into account. The NSW Government estimates that households will save approximately \$500 annually on water and energy bills by meeting new water and energy efficiency standards that are came into force in July 2003, for new homes built in NSW.¹⁷

In addition, 'green mortgages' and other innovative financing mechanisms are an effective way to reduce any extra upfront costs to the consumer. Some banks and credit unions currently offer these. For example, Maleny Credit Union (MCU) considers shelter to be a fundamental human right and is currently developing a specific home loan product, the ECO Home Loan, designed to encourage the construction of environmentally friendly housing or the retrofitting of existing housing to make it less environmentally damaging.¹⁸ Bendigo Bank has released a green home loan and a green personal loan, the first in a series of environmentally friendly loans.¹⁹ More schemes are likely to develop. They are based on the principle that reduced operating costs increase the borrower's ability to pay, hence lowering the financial risk to the lender. In the USA this approach has extended to location efficiency

¹⁴ The NSW Government developed the Building Sustainability Index (BASIX) to rate the design potential of new residential buildings.

¹⁵ The Commonwealth Government developed the National Australia Building Environmental Rating Scheme (NABERS) to rate the operating performance of new and existing buildings of all types.

¹⁶ Landcom, 2003, *Energy Smart Solutions from Landcom: The Prince Henry Redevelopment Site Model*, May 2003, p. 8; and *Energy Smart Solutions from Landcom: The Edmondson Park Model*, May 2003, p. 8.

¹⁷ Peatling, S, 2003, 'Greener rules add \$10,000 to new homes', *Sydney Morning Herald*, September 19, p.1.

¹⁸ Edkins, L, 2003, 'Q and A with Louise Edkins, director of Eco-Logical Investment Services', *Ethical Investor*, 19 March 2003.

¹⁹ Bendigo Bank, available at www.bendigobank.com.au/public/, [accessed October 7, 2003].

mortgages which capitalise on the principle that building in an easily accessible area increases the capacity of the home owner to make repayments owing to decreased transport related costs²⁰.

It is possible to have a streamlined and efficient approvals process that also incorporates high standards in sustainable housing. Government, industry, financial institutions and the broader community must work together towards achieving this goal.

3.3 Transport Costs

The proportion of household expenditure used for transport varies widely with location and the accessibility of transport infrastructure, with car travel costing up to 25 per cent of household expenditure in parts of Western Sydney.

Providing public transport before people move into or build houses in new areas can ensure that new residents benefit from the lower cost of living by not needing to rely on cars. If people build houses before public transport infrastructure is provided, they will be more likely to build multiple car ownership, usage and parking into their housing plans and behaviour patterns. New areas must also be easy for people to walk or ride bicycles through and easy for public transport modes to use. This requires a renewed emphasis on grid-based streets with fewer cul-de-sac based layouts.

Usually, people purchasing new units in multi-residential housing are required to pay for both the apartment and any car parking facilities as one package. This does not take into account the fact that in many locations well served by public transport, car ownership will be less than one car per household. Instead, the provision of car parking should be separated from the cost of providing housing so that prospective buyers can choose whether they invest in a parking space or not. A buyer could buy a unit without a parking space at a lower cost. A reduction in car parking provision can significantly reduce the cost of providing housing overall, both because of the extra space needed for parking and because car parking underground is more difficult and expensive to construct.

Affordable housing needs to include mixed land uses to minimise the need to travel and maximise the usefulness of any one trip. Mixed land uses means that suburbs have land zoned both residential and commercial within walking or cycling distance or that the land is zoned for mixed use e.g. flats above shops and home offices. Information and communications technology, which creates work from home possibilities, can reduce the need to travel, delivering benefits for both affordability and the environment.

3.4 Health

Housing has many effects on health. In these comments, the Institute focuses on two of these: fitness and indoor air quality.

As well as being cheap ways to get around, walking and cycling are important for health and social wellbeing. Walking and cycling are ways to stay fit and healthy, reducing society's health care costs. Availability of accessible public transport can increase the number of people who build walking into their daily routine. People tend to walk to their workplace from bus stops and train stations, which are usually located further from offices than employer provided car parking.

²⁰ See <http://www.locationefficiency.com/>, [accessed October 17, 2003].

The air within a home can be more polluted than the outdoor air. CSIRO estimates that occupants of new homes may be exposed to many times the maximum allowable limits of some indoor air pollutants.²¹ The choice of interior finishes in a home can significantly impact on health, particularly when combined with poor ventilation. Many materials emit harmful pollutants over time, leading to headache, fatigue and chronic respiratory problems. Builders and designers can improve air quality by better design and careful product selection. Paying attention to indoor air quality in housing design has negligible impact on capital cost in most cases and provides long-term returns in avoided health costs.

3.5 Environmental costs

The Institute has previously reviewed studies of the external environmental costs of fringe and in-fill development, low versus medium density housing and different urban forms. This review revealed that each of these development types has a very different footprint on greenhouse gas emissions, urban air pollutants, water demand, materials use, waste, land degradation, water catchments and biodiversity.²² Such external costs will eventually affect the affordability of different types of housing for the community as a whole. As some of these costs are increasingly included in house purchase prices and operating costs, as is likely for carbon dioxide emissions, they will affect the relative affordability of different types of housing for individual home buyers, owners and renters. This implies that a more environmentally friendly house will increasingly be a more affordable house.

²¹ Institute for Sustainable Futures, 2001, *Your Home: Design for Lifestyle and the Future*, Commonwealth of Australia, Canberra.

²² Institute for Sustainable Futures, 2002, *Urban Consolidation Challenge, Review of Environmental Impacts*, report to the Total Environment Centre. Available at <http://www.tec.org.au/member/tec/projects/UrbanESD/susc.html/> [accessed 12 October 2003].

4 PERFORMANCE OF THE BUILDING AND LAND DEVELOPMENT INDUSTRIES

First home buyers in Sydney buy a remarkably small proportion (three to ten per cent) of new homes on the urban fringe.²³ They tend to start with units or smaller established houses. A similar though less pronounced pattern is likely in other capital cities. However, the urban fringe has a significant effect throughout the housing market because of its effect on housing supply. It is the place where the biggest steps can be taken towards affordable, sustainable housing because building sustainability into a new house design is invariably cheaper than renovating existing houses to make them more sustainable.

Volume-built (project) homes in 2003 account so far for 80 per cent of all new homes built.²⁴ Any consideration of housing and its affordability must consider the impact of project homes and volume builders on the building and land development industries. In this section, we refer to two main areas of concern. Firstly, we examine the trend for volume builders to construct increasingly larger houses. Secondly, we argue for further integration of sustainability considerations in the construction of project homes and refer to examples showing that sustainable housing can be affordable if constructed on a large scale.

4.1 *The trend towards increased house size*

As the cost of land in Sydney is so high, the main way in which volume (project) home builders distinguish themselves is by offering 'more'. In current practice, 'more' tends to translate to bigger houses. While the average size of a household has been steadily decreasing from 3.3 people per household in the 1970s to 2.6 in 2002, the average amount of space for each occupant in a new house has more than doubled since the early 1970s.²⁵ The Productivity Commission Inquiry provides a crucial opportunity to examine the practices of volume builders and to encourage them to focus on more appropriate ways of offering 'more value' to the consumer than simply offering bigger houses.

4.2 *Affordable sustainable project homes*

The collective quality of project houses has a significant environmental impact. There is a real need for the development and spotlighting of best practice models of sustainable project homes that incorporate a high standard of sustainability. Indeed, sustainability of a home is one way that volume builders can distinguish the quality of their products.

Project homes can be built sustainably on a large scale. Homes can be designed as a series of modules to be configured to suit the demands of varied climates, sites and living patterns or cultures. Such models lend themselves to flexibility and adaptability and so can suit changes in lifestyle and location. The *Capricorn*²⁶ set of project homes provides one example of a sustainable project home. Here, a number of different basic house modules are available and spatial adjustments can be made to the selected modules, although the building maintains its basic form. Designs are also adaptable to

²³ Pratley, Garry, 2003, *Presentation by Planning NSW to Kiparra Day*, Australian Property Institute, August 8.

²⁴ Hawley, J, 2003, 'Be it ever so humungous', *SMH- Good Weekend*, August 23, p. 28.

²⁵ Hamilton, C, 2002, *Overconsumption in Australia: The rise of the middle-class barrier*, The Australia Institute, p.vi.

²⁶ Prasad, D. and Veale, J, 1998, 'Capricorn 151', *The Royal Australian Institute of Architects Environment Design Guide*, May, p.1.

different street frontages, solar access requirements and for building approval submissions. By working with a small series of modules and by identifying and providing for a range of specific purchaser adaptations, the *Capricorn* homes are able to be built incorporating sustainability principles at least cost and on a large scale. Furthermore, although sustainability provisions in building designs do marginally increase the building cost, these costs are more than offset by savings in energy and water bills.²⁷

There are an increasing number of positive examples of sustainable project home developments that the building industry can look to as good or best practice examples. In NSW, the *eco* development in Victoria Park, Zetland is an award-winning example of a development incorporating many sustainable principles, with ventilation and stormwater initiatives and extensive parkland development. Whilst the apartments were priced up to 30 per cent more than other apartments in the area, the *eco* apartments were in greater demand than other developments on that site as well as many other urban sites in Sydney. This suggests that consumers value 'green' design principles.²⁸ The price difference partly reflected a premium return for innovation, rather than being entirely due to higher construction costs. The *Inkerman Oasis* development in Victoria exhibits similar 'green' design principles, but is also notable for its affordability. This award-winning development combines private and public housing in one complex, with optimal solar access for water and lighting systems, bicycle storage areas and sustainable water and landscaping innovations.²⁹

²⁷ Institute for Sustainable Futures, 2001, as above.

²⁸ Nicholls, S, 2003, 'The colour of money', *Sydney Morning Herald Domain*, August 21, p.2.

²⁹ City of Port Phillip, 2003, 'Sustainable Design Case Studies', City of Port Phillip Website, available at www.portphillip.vic.gov.au/sustainable_case_studies.html [accessed October 7, 2003].

5 INFRASTRUCTURE CHARGES

New housing is creating extreme peak loads on electricity networks. New house designs are more reliant on electrical heating and cooling than natural ventilation with passive heating and cooling. For example, peak use has increased from three times to 5.5 times off-peak use in new housing estates in western Sydney compared to older estates in the same region.³⁰ This is creating two infrastructure problems. It is contributing to price volatility in the National Electricity Market, which translates to higher average electricity prices. It is also creating very high and increasing capital expenditure requirements by electricity distribution network service providers for substations and distribution lines that will have low utilisation rates. This will translate into higher average electricity prices through regulated distribution tariffs.³¹ With average pricing, older housing is effectively subsidising new housing.³² Regulators are now considering how to remove this cross-subsidy by using pricing methods that would include some of the peak costs more directly in the prices paid by individual customers e.g. time-of-use, congestion and inclining block tariffs.³³ If implemented, these would make new houses less affordable on a lifecycle basis.

Similar issues exist with stormwater infrastructure. Increasing house sizes and decreasing block sizes have increased the area of hard surfaces, resulting in higher peak runoff from rain and the need for larger stormwater investments. Lower cost alternatives to traditional stormwater engineering are available, such as capturing stormwater and using it for water supply on-site. Water sensitive urban design involves the use of fewer hard surfaces to increase infiltration and reduce peak stormwater runoff. Both water sensitive urban design and on-site use of stormwater can reduce stormwater volume and hence the cost of space required for its retention.³⁴

Developer contributions under Section 94 of the NSW *Environmental Planning and Assessment Act 1979* are increasingly likely to reflect the cost that new houses place on already constrained systems, including water and sewage systems, electricity supplies and public transport operations.³⁵ Housing which is designed to minimise the drain on these systems will become more affordable as developer contributions and other price signals are increasingly used to signal real costs to consumers. Sustainable houses will become more affordable than houses that ignore sustainable design principles.

³⁰ Charles River Associates, 2003, *Impact of Air Conditioning on Integral Energy's Network*, report for Integral Energy, May 2003. Available at www.ipart.nsw.gov.au, [accessed 7 October 2003].

³¹ Independent Pricing and Regulatory Tribunal, 2003, *2004 Electricity Distribution Review – Preliminary Analysis*, Secretariat Discussion Paper, DP66, September, Available at www.ipart.nsw.gov.au, [accessed 8 October 2003].

³² Charles River Associates, 2003, as above, pp.14–30.

³³ SKM, 2003, *Reducing Regulatory Barriers to Demand Management, Avoiding Distribution Costs and Congestion Pricing for Distribution Networks in NSW*, Draft Report to IPART, July.

³⁴ White, S. and Campbell, S. 2002, *Integrated Water Service Provision: Opportunities and Implications on the NSW North Coast*, Healthy Rivers Commission of New South Wales, Occasional Paper OCP 1007. Available from http://www.hrc.nsw.gov.au/site/pubs_frame.html, [accessed 15 October 2003].

³⁵ For example, “an interim transport levy of \$15,000 per lot has been introduced at Elderslie, Spring Farm, Balmoral Road and Second Ponds Creek [in Sydney] to help fund essential transport infrastructure upgrades.” Minister for Planning, the Hon Dr Andrew Refshauge MP, *Legislative Council Questions and Answers*, Jan 31, 2003. Available at <http://www.parliament.nsw.gov.au/prod/lc/LCPaper52.nsf/0/6e0c5a0c0a665e0fca256ccb0004a05b?OpenDocument>, [accessed 17 October 2003].

6 TAXATION

Economic instruments to reflect environmental or social costs or financial incentives to minimise these costs will affect the future affordability of sustainable housing. For example, environmental tax reforms can reduce taxes on income and services while increasing taxes on environmentally negative resource usage. Alternatively, revenues from environmental taxes can be ear-marked for measures to abate the environmental problem.³⁶ In a housing taxation context, reforms that could support sustainable use of the environment could include providing discounts on stamp duty for sustainable building developments or the use of stamp duty revenue to fund sustainability programs.

³⁶ White, S. et al, 2001, *State and Local Taxes in Australia: Towards Sustainability*, Australian Tax Research Foundation, Research Study No. 35, p.7.