



Patron in Chief
John Landy AC MBE
Governor of Victoria

Tasma Terrace
4 Parliament Place
East Melbourne
Victoria 3002

Web: www.nattrust.com.au
Email: info@nattrust.com.au

T (03) 9656 9800
F (03) 9650 5397

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SUBMISSION TO THE GOVERNMENT ENQUIRY INTO A SUSTAINABILITY CHARTER

by the Landscape Committee of the National Trust (Victoria)

This submission supports the insertion in the Government's Sustainability Charter of a requirement that an Ecological Footprint Statement be included in all residential planning permit applications.

The importance of addressing ecological sustainability in the residential sector was highlighted in the recent report to the New South Wales Government, which concluded "The committee believes that stronger measures in the residential sector are needed to impose behavioural change and abate rising consumption" (*Committee Report on Energy Consumption in Residential Buildings. Final Report, 2004*. Available on <http://www.parliament.nsw.gov.au/prod>). While the discussion in this submission focuses primarily on the situation in Victoria, particularly Melbourne, the principles enunciated are applicable Australia-wide.

Pressure on the environment from the residential sector arises not only from population growth and diminishing household size, down from 3.9 in the 1940s to 2.6 in 1991 (*Australia's State of the Environment Report, 1996*, p. 3-7), but also from lifestyle choices. These include the preferred size and style of housing, and the way in which those houses are located in the landscape in and around our towns and cities. The Ecological Footprint (EF) is a way of measuring the impact of households on environmental sustainability, expressed in terms of the number of hectares required to support an individual lifestyle. The Victorian Environment Protection Authority reports that in 2004 the average EF for an Australian was 7.7 gha (global hectares) per capita: for a Victorian it was 8.1, reflecting not only high brown coal use for electricity generation, but also long distances driven and high household energy consumption. Globally, only 2.2 gha per capita is available. Clearly Australians, and particularly Victorians, are consuming more than their share of the world's resources, their economy is not environmentally sustainable, and there is an urgent need for measures to restrain demand.

Most methods of calculating the EF for individuals or households only take account of few factors, usually power use for heating, lighting and cooling, water consumption and transport requirements. If an EF statement is made mandatory for planning applications, this limited view might be acceptable for small developments such as house extensions, but for larger proposals such as apartment blocks, detached houses and residential subdivisions a much wider range of impacts should be assessed. These should include the embodied energy in buildings and infrastructure, and the effects of associated land use change on energy use, biomass and biodiversity. The applicant should also be required to identify possible offset measures to reduce the ecological impact.

Some environmental reporting requirements for residential developments already exist. For example many states require statements of energy efficiency standards and potential water use, either to ensure that mandatory benchmarks are met, or to support advisory or incentive schemes, such as star energy rating for electrical appliances or the Victorian Government's

“Water Smart Gardens and Homes Rebate Scheme”. Such measures play an important role in informing consumers about the most obvious aspects of the EF of individual dwellings. This public education role is reinforced in the ACT, where developers of new homes and vendors of existing ones are required to advise potential purchasers of a property’s energy requirements at the point of sale. Environmental responsibility can be a good marketing tool. The “GreenSmart Estate” accreditation of the Sandhurst Club Estate at Skye, on the south-eastern outskirts of Melbourne, is widely publicised. In this residential subdivision the developers have taken a proactive approach to environmental sustainability, with installation of solar powered public lighting, use of recycled water for public parks and toilet flushing, and provision of a recreational path network to encourage pedestrian activity.

Residential development and cultural heritage

The impact of residential developments on cultural heritage aspects of environmental sustainability is an issue of particular concern to the National Trust of Australia (Victoria). This component of the EF is much harder to evaluate than use of power, water and transport, but as the Government’s own Environmental Sustainability legislation asserts, the fact that something is uncertain or difficult does not mean it should not be done.

Residential development has an impact on the built heritage, both individual buildings and precincts, and the quality of broader cultural landscapes. Most major cities in Australia are growing rapidly. Recent figures for Victoria suggest a requirement for 349,400 additional dwellings in Metropolitan Melbourne by 2020, with a further 33,250 in the Geelong region (*Urban Development Program Annual Report for 2005*, DSE, 2005). Consequences of this will include increasing pressure for change in the historic streets and buildings of the inner city, on the landscape around the edges of the city, and on small towns attracting the sea- and tree-changers in search of rural life within easy travelling distance of the Central Business District.

Historic streets and buildings contain embodied energy, and CSIRO calculates that their demolition may represent a loss equivalent to about 15 years of operational energy use (AGO, *Your Home Technical Manual, Section 3.1 Embodied Energy*, 2003). Replacement buildings incorporate further embodied energy though there is debate over how this should be quantified. For example, the Australian Greenhouse Office lists possible elements as:

- Energy used to transport materials and workers to the building site
- Just the materials for the construction of the building shell, or all the materials used to complete the buildings, such as bathroom and kitchen fittings, driveways, outdoor paving, etc.
- The upstream energy input in making the materials (such as factory/office lighting, the energy used in making and maintaining the machines that make the materials, etc.)
- The embodied energy of urban infrastructure (roads, drains, water and energy supply)

Rather than demolish and rebuild, an environmentally preferred option may be adaptive reuse, defined as finding a new use for the existing building. The Australian Greenhouse Office suggests that this can save up to 95% of the embodied energy in the original building (AGO, quoted in *Adaptive Reuse*, Department of Environment and Heritage, 2004, p.4). The National Trust is generally supportive of adaptive reuse provided it protects the building’s heritage values.

While energy savings achieved through adaptive reuse can be estimated, it is more difficult to assess the broader contribution of retention of heritage buildings to environmental sustainability. There is however strong anecdotal evidence that protection of heritage helps to reduce the EF of households because it helps to make urban areas pleasant places to be. David Yencken, first Chairman of the Australian Heritage Commission explained this when he wrote that “Historic buildings and areas from other eras provide us with a diversity of building forms which give character and charm to our cities and countryside. Once destroyed, they can never be replaced” Yencken, D.G. 1985 *Australia’s National Estate: the Role of the Commonwealth*, AGPS, Canberra, quoted in Pearson, M and Sullivan, S. (1995) *Looking after Heritage Places*, Melbourne University Press, Melbourne, p.14). The recognition of

heritage give interest and amenity to the local area, in turn encouraging pedestrian activity, reducing car use, and supporting public transport.

The environmental cost of suburban sprawl has been addressed in several studies (eg Newman and Kenworthy, 1999 *Sustainable Cities: Overcoming Automobile Dependence*. Island Press, Washington DC). Compared to inner city dwellings, the EF of suburban households is often high, reflecting higher demand for energy for heating, lighting and cooling in the larger, detached buildings; high water use in gardens and sometimes swimming pools; and the costs of transport by private vehicles in an environment where public transport is rarely either efficient or economic.

A complete measure of the EF of residential subdivisions should include assessment of the impact of loss of previous land uses. An obvious example is the agricultural activity that is displaced to locations away from the city so that products have to be transported further to consumers. In Australia many of the best market garden soils were located around places where cities developed, to be lost as cities spread. Melbourne for example has extended across the once much prized sandy soils of first Brighton, then Keysborough and Moorabbin and now Cranbourne. As a result the city now imports much of its vegetable supply from other parts of the state such as the Snowy delta four hundred kilometres away.

Melbourne's spread has also obliterated historic landscapes like the orchards of Doncaster and devalued the amenity and setting of the few heritage buildings that have been preserved. The result is both a cultural loss, and also a displacement of recreational opportunity. Activities which once took place in the outskirts of the city, like picnics in the bush, now require participants to drive fifty or a hundred kilometres to the Dandenongs (themselves rapidly undergoing urbanisation), the Brisbane Ranges or Philip Island, further enlarging the household's EF.

Sea- and tree-change impacts

Where the inner city becomes less attractive due to poor building design and traffic congestion, and suburbs consume the urban fringe landscape, many people seek to live in outlying towns. This sea- or tree-change phenomenon has led to rapid growth in many places around the coast and in the more attractive landscapes within a hundred kilometres or so of the CBD (DSE, *Atlas of Regional Victoria*, 2006). New rural householders include retirees, commuters and second home owners.

Transport forms a major component of the EF of commuting households, the members of which may travel several hundred kilometres each week. Although bus and rail services link some towns, like Bendigo and Ballarat, with the city, the provision of freeways ensures that the majority of journeys are by private cars. The travel component in the EF of households with second homes may be less than that of commuters because the journey is only made at weekends, but other aspects such as embedded energy, power and water use in the second home are all additional to those of the primary residence. Second homes now make up more than half the dwellings in many Victorian coastal townships like Anglesea and Airey's Inlet (Census Data 7 August 2001). Although only intermittently occupied the fluctuating demand from second homes can cause problems for infrastructure that has to be designed to cope with peak period, leaving excess capacity at other times. This is particularly true for water supply systems, which have to service populations that increase by 200% or more in summer, a time when inflows to reservoirs are low.

Over the past decade the rural life-style or farmlet option, with a single house on a block of up to 20 hectares or so outside the existing town boundaries, has become increasingly popular. Although some properties rely on tank water and septic tank sewerage, reducing the water supply and treatment component of the EF, this is offset by a high household transport demand, with multiple vehicles necessary to allow travel to schools, shopping and recreational activities. Furthermore, rural roads and long driveways plus the needs of property management encourage most householders to run at least one "gas-guzzling" four-wheel-

drive. Farmland in attractive rural scenery is particularly at risk of conversion to rural lifestyle properties, a process that not only causes direct loss of agricultural produce, but also places remaining nearby farms at risk by distorting rural land prices (Barr, N. Future Agricultural Landscapes *Australian Planner*, 40(2) 2003). Diversion of land from productive farming can bring offset benefits in the EF. Many owners plant trees to revegetate their land, increasing the biomass and biodiversity potential of the land. Dams excavated to provide visual amenity also encourage wildlife, though they can diminish runoff into waterways, adversely affecting instream biota.

Conclusion

Procedures to encourage high environmental performance and reduce the ecological impacts of industrial and agricultural activity in Australia are now well developed. It has been possible to achieve relatively high levels of compliance with legislation to reduce environmental impacts because there are many situations where a clear win-win outcome can be demonstrated, for example through reduction in power use in factories, or water and chemical use on farms.

It is proving harder to convince the residential sector that change is not only necessary, but also beneficial. Australian electricity prices are low compared to those in other parts of the world, so there is little incentive to reduce consumption. Water, too, is relatively cheap, though campaigns to reduce use have been extraordinarily effective in this sector. Other environmental costs related to housing are less obvious. The cost of the embodied energy in building is not made clear to the purchaser of a property, and the incremental creep of distances driven to work or recreation has fooled consumers into absorbing them without complaint, though with escalating petrol prices the reality is now being driven home.

Preparation of an Ecological Footprint statement for all residential development will help to educate property purchasers, making them aware of the environmental, as well as the financial, consequences of their decisions. It will also underline the rationale for government regulation and incentive schemes that encourage a more environmentally sustainable approach to the provision of housing. Together they will promote the behavioural change advocated in the recent publication from the Victorian Department of Sustainability and Environment, *“Learning to live sustainably: Victoria’s approach to learning based change for Environmental Sustainability”* (DSE Draft September 2005).

Australia is one of the most urbanised countries in the world, with over 75% of us living in the major cities. To make this lifestyle sustainable, and to ensure that our cities remain as pleasant for our children and grandchildren as they have been for us, we have to change the way we build our homes and find better ways to accommodate them in a landscape we all treasure.

Landscape Committee – National Trust of Australia (Victoria)
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Contact person details:

Wendy Dwyer
Conservation Co-ordinator
Landscapes, Gardens & Trees
National Trust of Australia (Victoria)
9656 9823 (direct)
wendy.dwyer@natrust.com.au