

Housing Industry Association

18 August 1999

Dr Don Gunasekera  
Building Performance Study  
Productivity Commission  
Locked Bag 2  
Collins St East  
MELBOURNE VIC 8003

Dear Dr Gunasekera

Thank you for the opportunity to make a submission to the Productivity Commission's Research Study, *Improving the Future Performance of Buildings*. As the peak industry organisation for the residential, construction and land development industry, HIA is keen to contribute its industry and environmental perspective to the Commission's work.

As the only building and construction industry association with a national structure, HIA is best placed to provide national leadership in presenting the industry's perspective on environmental sustainability. HIA is service organisation, firmly focussed on its 30,000 members who comprise housing and commercial builders, renovations and additions builders, trade contractors, developers, building manufacturers and suppliers, and many others.

HIA submits that the Commission's findings ought to be conscious of the need to maintain the access of small firms to the commercial construction sector. A significant issue for many small building firms is the importance of their work in the commercial construction sector. The sector is a significant source of employment for the building industry as a whole and provides a measure of employment stability when the residential sector experiences a cyclical downturn.

Small firms contribute a considerable innovative dynamism to the commercial construction sector. Small firms are more likely to adopt innovative solutions in addressing environmental sustainability, particularly where they can transfer their experience from the residential to the commercial sector. HIA is concerned that moves to improve environmental sustainability do not stymie innovation in the commercial construction sector.

A major priority for HIA over the next three years is to improve the environmental performance of Australia's built environment. HIA recently launched a major industry-driven environmental initiative, PATHE - Partnership Advancing the Housing Environment. The industry's leading firms, through HIA, are working with the Federal Government to develop and deliver PATHE initiatives that will enhance the environmental performance of housing.

Please find enclosed HIA's submission, which raises three key issues about increasing the future performance of buildings:

- the need for a market-driven approach to foster the adoption of innovation;
- the importance of an integrated environmental approach; and
- the importance of national consistency to efficient competition.

In many ways, HIA's environmental initiative, PATHE (Partnership Advancing the Housing Environment) exemplifies these three issues.

- PATHE's market-driven approach provides information to key market participants, directly targeting information failures. PATHE's approach emphasises environmental and affordability considerations at the same time, by focusing on the full cost of constructing, owning and running a building.
- PATHE's integrated approach is focussed on the full spectrum of environmental issues, rather than just energy efficiency. This integrated approach yields important synergies in reducing the 'environmental footprint' of a typical Australian building. While energy efficiency is significant, HIA suggests that the Commission's report would benefit from adopting a broader approach to environmental sustainability as a whole.
- PATHE's national approach seeks to redress the current fragmentation of development and planning regulation. The proliferating complexity of these inconsistent regulations, which vary between local government jurisdictions, add considerable costs to the industry in the form of fees, levies, delays and uncertainty. HIA suggests that the existing patchwork system of regulation is a significant barrier to the adoption of environmentally sustainable innovation.

While still in the early days of its implementation, PATHE represents a significant opportunity for the industry to deliver a process of cultural change, addressing many of the awareness issues that currently constrain the uptake of environmental sustainability.

I have enclosed for your information a copy of the PATHE strategy, *A Better Built Environment*, and a copy of the launch edition of the PATHE newsletter. If you have any questions about PATHE, please contact HIA's PATHE Business Manager, Mr Chris Thomson on 02 6249 6366.

HIA would be happy to work with officers of the Productivity Commission to develop a case study of PATHE's industry-driven approach to facilitating the market's uptake of environmental issues in the residential and commercial construction industries.

Yours sincerely  
HOUSING INDUSTRY ASSOCIATION LIMITED

Ron Silberberg  
Managing Director

Submission by the  
**Housing Industry Association**



Productivity Commission's  
Research Study

*Improving the Future  
Performance of Buildings*

August 1999

## Background

The Productivity Commission's Research Study, *Improving the Future Performance of Buildings*, was commissioned as a result of the Building & Construction Industries Action Agenda, *Building for Growth*. Recommendation 26 of the Action Agenda requested a Government study of procurement processes and the associated investment drivers in commercial construction. As the peak residential, building and land development industry association, the Housing Industry Association (HIA) was a key stakeholder in the National Building and Construction Committee (NatBACC) and worked closely with the Department of Industry, Science and Resources in the development of *Building for Growth*.

## Introduction

HIA is Australia's largest and most respected building and construction industry organisation. The profile of HIA's membership mirrors the structure of the industry.

- nearly 60 per cent of the membership comprises small builders (housing, commercial, renovations and additions builders);
- a further 25 per cent of the members are trade contractors; and
- the balance consists of large builders and developers, building manufacturers, suppliers and specialist providers of services.

As the only truly national industry association, HIA is best placed to respond to the industry's concerns as they emerge. The industry's business activities are expanding beyond traditional housing markets, and the borders between domestic and commercial markets have become blurred. This structural shift in the market has led to a demand for new services from industry associations, especially in the areas of occupational health and safety and environmental issues. Effective national coordination of service areas has become essential to provide a concentration of effort, to shape the policy agenda and to deliver effective services to members.

HIA is a service organisation, firmly focussed on its 30,000 members. More than 90 per cent of HIA members are small firms. These small firms, in particular, rely on HIA for advice and training to enable them to meet the challenges of the rapidly changing building industry. HIA's core service areas provide information, industry representation, professional development, networking and communication.

HIA's service focus means that it builds relationships with members. These relationships with members are HIA's most valuable resource, providing the source of HIA's credibility and authority. Members' suggestions and involvement at all stages of policy development provide HIA activities with a sharp commercial focus.

While many HIA members focus on the residential sector, the commercial construction industry is a critical source of activity for HIA members, from multinational building product manufacturers through to commercial contractors and developers.

The economic significance of the construction industry to HIA members is reason enough for HIA to prepare a submission to this study, but in addition, HIA is keen to contribute its industry and environmental perspective.

## **PATHE – Partnership Advancing the Housing Environment**

HIA has scoped and launched a major industry-driven environmental initiative known as PATHE. In May 1999, the Federal Environment Minister launched PATHE at HIA's annual convention in front of an audience of 1,100 of Australia's leading builders.

PATHE is a historic alliance between key industry, community and government leaders to enhance the environmental performance of housing. Initially concentrating on the three priorities of waste management, energy efficiency and improved environmental management practices, PATHE will demonstrate how voluntary collaboration can lead to innovative, effective environmental solutions. Through forging partnerships, PATHE represents a powerful force for delivering enduring cultural change.

The industry's leading firms, through HIA, are working with the Federal Government to develop and deliver PATHE initiatives. The involvement of such household names as Meriton Apartments, AVJennings, CSR, AGL and Pilkington in PATHE is indicative of industry's commitment to meeting the community's demand for environmentally sustainable housing.

PATHE's approach is broader than energy efficiency, focussing on the full spectrum of environmental issues. This integrated approach yields important synergies in reducing the 'environmental footprint' of a typical Australian building. While the issue of energy efficiency is significant, HIA suggests that the Commission's report would benefit from adopting a broader integrated approach to environmental sustainability as a whole.

An integrated environmental approach would also reflect the Federal Government's moves to introduce mandatory energy efficiency requirements into the Building Code of Australia for both commercial and residential buildings. HIA are involved in this work as a foundation member of the Australian Building Energy Council (ABEC). While this work is important, it only addresses one aspect of the environmental impact of building and construction.

### **Awareness barriers**

The extensive consultation with industry, government, research organisations and other stakeholders that informed the development of PATHE clearly pointed to a range of structural issues in the building industry which constrain the adoption of environmentally sustainable design features. This consultation suggested that these constraints are evident in both the residential and construction sectors. These barriers include consumer perception, industry search costs, the impact of a building's operation and a holistic approach to affordability.

#### **1.) Consumer awareness**

The first of these barriers is a demand issue. While the environmental awareness of consumers generally is growing, these consumption preferences are yet to percolate through to influence building decisions. The building and construction industry is fundamentally a service industry, so limited demand for environmental features, such as energy efficiency, will act to restrain the adoption of environmentally sustainable building designs.

## **2.) Industry information**

A second barrier to the uptake of environmental sustainability is a supply issue, the level of industry awareness. As an emerging issue, which is largely restricted to niche markets, responding to inquiries about environmental sustainability involves considerable search costs for mainstream builders. The search costs and the uncertainty involved in adopting a new approach means that many builders may recommend that their clients will get better value for money by conforming to conventional approaches to building. In addition, adopting new approaches involves an element of risk for the builder and many consumers are not prepared, or can not afford, to pay an appropriate risk premium.

## **3.) Building operation**

A third awareness issue in environmental sustainability is occupant behaviour. In many cases the environmental footprint of a building is as much influenced by the behaviour of the occupants, as it is by the structure itself. In many instances for a building to realise its environmental potential, requires a process of occupant education. This education process requires that the occupants be receptive to behavioural change and that the builder or other party has opportunity to impart this information.

## **4.) Timing of costs**

The fourth issue of awareness is affordability. Traditionally the building market has focussed on the initial cost of housing and construction. In many instances, environmental features, while yielding a stream of savings that generate a positive net present value, require an initial investment that increases the up-front cost of the building. The effective cost of a building is the sum of the up-front costs (including construction) and the ongoing stream of operating costs. In many instances, the traditional focus on the construction costs mitigates against making investments in future streams of savings. An often-cited rule of thumb is that every dollar spent on insulation can provide as much as twelve dollars in savings over the lifetime of the building. The focus on the up-front cost sees only the initial expenditure and not the stream of savings.

## **PATHE - raising awareness**

These four awareness issues collectively contribute to what the Issues Paper (pp 18) called the efficiency gap, ie “the paucity in the uptake of economically viable energy saving technology”. PATHE is working to reduce this efficiency gap. PATHE aims to demonstrate to consumers and builders the sound economic basis of many of these changes, through an ambitious three-year program of cultural change in the building market. Once the awareness barriers have been addressed by PATHE with information and awareness raising activities, these increases in efficiency will be relentlessly pursued in one of Australia’s most competitive industries.

PATHE will work with government and the community to increase the awareness of a range of environmental issues through initiatives such as:

- Every quarter more than 30,000 PATHE Newsletters will be distributed to the industry and key stakeholders to keep them informed about environment issues and to provide practical environment advice from others in the industry.
- The Millennium Village, a community of homes that will demonstrate GreenSmart practices, documenting the savings for both consumers and builders. The Village would also serve as a display center to inform consumers about all aspects of building including appropriate and efficient appliances.
- PATHE ReLeaf will provide mitigation sites, plots of vegetation to absorb the greenhouse gas emissions of a 'typical' Australian home.
- Recognition and promotion of leading edge practitioners of environmental building through the national PATHE GreenSmart Awards for Excellence in the Built Environment.
- The development of a range of on-site management guides providing practical advice on critical issues. Already available are guides on energy efficiency and stormwater management, while forthcoming topics include waste management and insulation.
- The establishment of PATHE networks in each state and territory at a capital city and regional level to facilitate piloting new projects, opportunities for government incentives, market development and the exchange and dissemination of information and ideas relating to Australia's built environment.
- Industry, through HIA, will assist Government in delivering consumer education material which promotes GreenSmart outcomes.
- The development of performance-based energy efficient standards in residential building.
- PATHE GreenSmart Building Software – integrating environment planning, estimating and energy tools. The package will allow the builder/designer to demonstrate to a homebuyer - the impact of their decisions on the home's environmental performance.
- Industry impact nights will equip builders and trade contractors to use their environmental skills as a marketing tool. The evenings will also introduce builders and trade contractors to PATHE products and systems.

### **Small business contribution**

With 140,000 small firms, the building and construction industry accounts for a substantial proportion of small business enterprises in Australia. A perennial issue for any examination of tendering and procurement issues is the opportunity that these small firms have to be involved in the process. With almost one third of all activity in the building and construction industry occurring in the commercial construction sector, the market represents a huge potential in terms of employment and turnover for many small businesses.

HIA suggests that the Commission's findings need to be conscious of the need to maintain the access of small firms to the commercial construction sector. A significant issue for many small building firms is the importance of their work in the commercial construction sector. The sector is a significant source of employment for the building industry as a whole and provides a measure of employment stability when the residential sector experiences a cyclic downturn.

Small firms contribute a considerable innovative dynamism to the commercial construction sector. Small firms are more likely to adopt innovative solutions in addressing environmental sustainability, particularly where they can transfer their experience from the residential to the commercial sector. HIA is concerned that moves to improve environmental sustainability do not stymie innovation in the commercial construction sector.

An issue of concern to HIA is to ensure that procurement systems do not stifle either the flow of work to, or the capacity for innovation from, smaller firms. In particular the growing use of the BOOT and BOT systems of procurement has the potential to limit competition to larger construction firms and as a result, risks stifling the adoption of innovative approaches in areas such as environmental sustainability.

### **The whole building approach**

Procurement approaches increasingly emphasise a 'whole building' approach. A good description of this whole building approach is presented in the *US Navy's Whole Building Design Guide* (<http://www.psic.org/navy-wbdg/index.htm>) which states:

*"Buildings are deceptively complex. At their best they provide shelter, encourage productivity and embody our culture. In the past we would confront this problem by analyzing the individual components and subsystems of each building type and try to optimize each of them separately. We have found that a new mode of thinking is required. It addresses the whole building and requires the integration of energy efficiency, appropriate mechanical equipment for comfort and IAQ [indoor air quality], optimized site design and the best use of both conventional and renewable energy sources.*

*The "whole building design" approach asks the members of the design and construction team to look at the materials, systems and assemblies from many different perspectives. The design is evaluated for cost, quality-of-life, future flexibility, efficiency; overall environmental impact; productivity and creativity and how the occupants will be enlivened. The fundamental challenge of whole building design is to understand that all building systems are interdependent. Through a systematic analysis of these interdependencies, a much more efficient and cost-effective building can be produced. The choice of a mechanical system, might, for example, impact the quality of the air in the building, the ease of maintenance, global climate change, operating costs, fuel choice, and whether the*

*windows of a building are operable. In turn, the size of the mechanical system will depend on factors such as, the type of lighting used, how much natural daylight is brought in, how the space is organized, the facility's operating hours, and the local microclimate."*

While HIA supports this the integrated approach that underpins the whole building design approach, as an industry organisation representing a large number of small businesses, HIA are concerned that such an approach not be introduced in a way that precluded the participation of small business. HIA would be loath to see a laudable objective, such as whole building design, implemented in such a way as to restrict competition. HIA suggest that the Commission's report should assess the likely implications of procurement, particularly emerging models of Government procurement, on the economic and innovative contribution of small business to commercial construction.

### **Case studies**

HIA notes the Productivity Commission's call for firms and agencies to identify case studies which can highlight aspects of building performance. HIA suggests that the Commission may want to also consider addressing Recommendation 23 of the Building & Construction Industries Action Agenda, *Building for Growth* by conducting a case study of the 'alliancing' method of constructing the National Museum of Australia. This alliancing approach may well provide a whole-of-project perspective that would encourage the adoption of environmentally sustainable approaches. If the Commission is interested in examining an environmentally sustainable refit of an existing building, the John Gorton Building in Barton, ACT would provide a useful example.

HIA would be happy to work with officers of the Productivity Commission to develop a case study of PATHE's industry-driven approach to facilitate the market's uptake of environmental sustainability in the residential and commercial construction industries.

### **Contractual chain – further barriers**

Figure 1 (pp 8) in the Productivity Commission's Issues paper provides a useful representation of the contractual chain that goes into the commercial building process. An important feature of this stylised chain is that it illustrates that the process of designing, building and occupying a building is divided into a complex network of individual decisions.

The Commission's report could usefully examine the implications of this contractual chain for the environmental performance of the building. The contractual demarcation between different aspects of a purchase decision, when multiplied across the many aspects of a building, can produce a series of individually rational decisions that in aggregate, delivers an inefficient building. Some of the implications that are suggested below include inefficient decisions, risk aversion and innovation aversion.

### **1.) Inefficient decisions**

HIA suggests that the first point that the contractual chain highlights is the division in responsibility, for example between a person purchasing an element of the building and the person who will subsequently be responsible for operating, maintaining and paying the running cost of this element. The most obvious example is lighting in a building. The most cost effective lighting to purchase is incandescent globes, but they are the least cost efficient to operate. The contractual chain divorces purchase decisions from the consideration of operating costs, so that a purchase decision that is rational in its limited scope, may not be rational in the context of the building's total (and environmental) cost.

### **2.) Risk aversion**

HIA suggest that the second point that the contractual chain model demonstrates is the potential for introducing a bias towards a cumulative risk aversion for the project as a whole. The network of interlinked decisions, where the output price of one decision feeds into other decisions as an input cost, opens the possibility that discounting present values for risk can be incorporated into a series of different decisions. This can generate a risk discount multiplier, where a discount is applied more than once, skewing the project as a whole away from risk.

Once again, the contractual demarcation between different aspects of a purchase decision, when multiplied across the many aspects of a building can produce a series of decisions, which are locally rational but sub-optimally for the building as a whole.

### **3.) Innovation aversion**

HIA suggest that the third point that the contractual chain model demonstrates is the potential for the risk discount multiplier to introduce a bias towards a cumulative innovation aversion for the project as a whole. Where a new environmental product, process or system is considered, in many cases there will not be sufficient experience of its use to quantify the degree of risk in implementing the innovation. Where this uncertainty has to be estimated, in order to calculate a risk discount, the estimate will invariably be a conservative one, simply because while penalty clauses are often applied to aspects of a building's performance not meeting contracted targets, there are rarely bonuses earned from exceeding performance targets. When an initially conservative risk estimate is fed into the contractual chain that generates a risk discount multiplier, the risk aversion for the project as a whole will be reinforced.

Clearly, the more complex the project, the greater will be the scope for the contractual chain to mitigate against the use of innovations such as environmental sustainability. The interdependent sequencing of individual purchase, design, construction and operation decisions can act to discourage the efficient operation of a commercial building.

## **Delivering environmental sustainability**

HIA considers it essential that environmental sustainability be delivered in way which is nationally consistent and not fragmented into parochial state-based regulations and local Government by-laws. Australia's experience with energy efficiency in the housing market provides a case in point.

The existing mandated approach to insulation in Victoria has resulted in a dramatic market shift from products which best perform, to products which cost the least. Similarly, the piece-meal approach by 177 individual Councils in NSW implementing varying energy efficient criteria, from the very onerous to the non-existent, has resulted in a compliant approach by the market, in which the main focus is to minimize costly approval delays, rather than pursue energy efficient initiatives. This lowest common denominator approach has again resulted in products being specified without any clear understanding of their ultimate use or benefit.

## **PATHE in Commercial Construction**

The four awareness issues that PATHE has identified as operating to constrain the diffusion and uptake of environmentally sustainable innovation in the residential construction industry are also applicable to the commercial construction industry. HIA suggest that in addition to these awareness barriers, in commercial building, the contractual process provide additional inertia, resisting the move towards environmental sustainability.

Voluntary industry-driven initiatives, such as PATHE provide the answer to the uptake of environmentally sustainable systems. PATHE's market-driven approach, to provide carefully targeted information to key market participants, directly address the current information failures. PATHE's approach emphasises environmental and affordability considerations at the same time, by focusing on the full cost of constructing, owning and running a building. PATHE has been designed and delivered for all HIA members, including those in the commercial construction industry.

HIA believes that to optimize the overall benefits for the Australian public, a national cultural change in the approach to energy efficiency must be catalysed within the building industry. PATHE will increase the market's awareness by addressing the efficiency gap. This national approach focuses on a performance-based approach, which fosters innovation rather than the existing model of passive compliance.

While still in the early days of its implementation, PATHE represents a significant opportunity for the industry to deliver a process of cultural change, addressing many of the awareness issues that currently constrain the uptake of environmental sustainability.