Implementing Energy Efficiency & ESD from a Development Perspective

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1.0 INTRODUCTION

This note discusses the difficulties currently being experienced in implementing Ecological Sustainable Development (ESD) from a development perspective. It looks at what motivates developers and examines what is needed, either through mandatory measures or incentives to change the development culture in Australia.

The note draws on experience from a number of current and recently completed projects and incorporates input from developers. It also includes discussion on the evolving outcomes of current industry initiatives aimed specifically at changing development processes and culture in Australia. The note focuses on new buildings.

The way in which new buildings are financed and delivered generally differs significantly from retrofit projects being undertaken by building owners. Building owners can more easily factor long term operational costs of their buildings into their retrofit project financing. Typically, building developers are not the long-term owners, operators or tenants of the buildings that they deliver. Their projects are normally sold before or soon after completion to unrelated parties such as property trusts, superannuation funds, and other investors. It is this discontinuity in development and ownership of new buildings that creates perhaps the single biggest challenge to the uptake of ESD for the property industry.

2.0 ADDRESSING ATTITUDES AND INDUSTRY CONFUSION

"We don't need that green design stuff, electricity is so cheap here". How many times have we heard that statement? Or the other old chestnut: "Green design adds too much to the project cost, let's just have a normal commercial design".

These pervasive industry "business as usual" attitudes have prompted a number of responses over recent years. There have been inquiries by Parliamentary Committees, reviews by the Productivity Commission and a plethora of well meaning industry association initiatives set up to promote and try to advance a "green building" agenda. New bodies have been formed with the sole objective of "greening" the built environment. Yet, despite this activity, and the not insignificant resources being put towards the initiatives, the uptake of energy saving technology, ESD design principles, changed delivery mechanisms, and other sustainable building solutions, has remained marginal. While there are examples where the incorporation of new design methods and technologies has demonstrated savings, improved building amenity, and increased occupant productivity, there remain significant barriers to the

up-take of ESD principles and technologies, particularly in the commercial and developer-driven sectors.

Seriously wanting to change the way industry delivers Australia's stock of buildings, two organizations, The Warren Centre (TWC) at the University of Sydney and the Cooperative Research Centre for Construction Innovation (CRC CI) have felt it was time for something to be done. Both organizations have similar aims and objectives relating to the built environment, and both work very closely with significant building industry business partners.

During the latter half of 2003, these two organisations held a series of independent, but parallel workshops in Sydney on the issue of why energy efficiency and ESD more generally was not being seriously included in Australia's building projects. Also driving the agenda of both organizations was the apparent confusion within industry over the "tools" currently available for rating the design and operation of buildings against "green" objectives. Both organisations asked participants to look ahead 20 plus years, and imagine what an ideal built environment would be. Participants were then tasked with looking for pathways to achieve that "ideal" situation. The one issue that kept coming up related to the "barriers", real or imagined, that exist throughout all phases of all construction projects. The message was clear – unless these barriers can be removed, significant adoption of ESD measures in new buildings was unlikely.

Considerable work has been done both in Australia and internationally to identify these barriers.

3.0 THE BARRIERS

A review of international studies will quickly show that the barriers being mentioned in Australia are not dissimilar to those being highlighted in other economies. The identified barriers range across legislative and standards frameworks, institutional and organizational structures, politics, financial and taxation treatments, and behavioural and cultural attitudes, including simple entrenched "traditional" ways of doing things, and a general reluctance to change. Also frequently mentioned in international references are a lack of awareness, additional financial costs and a stated absence of client demand (UK Government Consultation Paper on Sustainable Construction, 1999).

It is interesting to note that survey responses generally indicate that industry has the capability to deliver ESD, and that technology itself is not a barrier. The barriers are more insidious. They are embedded in the cultures and approaches that have been nurtured within the industry. These include inappropriate, or absence of appropriate (mandating) legislation and development regulations, a lack of enforcement powers, lack of enabling finance mechanisms, lack of general awareness within industry, perceived risks (and complexity), and inadequate education across all vocational levels in the industry. These issues combine to make it all too hard for developers to do other than their "business as usual" developments. All to often they say with almost unanimous voice that, "there is no client demand".

While it seems that knowledge of technologies itself is not a barrier, what is lacking within the practitioner community is an understanding of the processes, the relationships, and the very psychology surrounding ESD ethics, and the culture of interdisciplinary integration within the development industry (see Case Study 1). The UK Environment Agency sums up the reluctance to change as being due to "the tendency of an immature industry to wait for change to be driven by need".

Case Study 1. – A Voluntary Organisation's Office Redevelopment and Retrofit Opportunity

Despite considerable effort by some stakeholders, and early discussion with the developer and his team, the building owner's governing body insisted on first proving a commercial development proposition. Only after a standard design with commitment by tenants was shown to be viable, would the body consider adding ESD, and then only if that could be shown to be at no additional cost. As expected the outcome is a standard commercial development with many of the existing building service inefficiencies carried through into the completed project. A huge opportunity to demonstrate best innovative practice, and bleed off significant educational and training benefits for members was lost. Reuse of the existing base building structure, and some lighting controls are the only examples of ESD that made their way into the project.

In this example, the critical barriers were a lack of serious commitment to sustainability by senior executives, ignorance of ESD principles on the part of a number of individuals, failure by the proponents to fully appreciate the entrenched management culture, and the absence for the developer of a credible tool with which to demonstrate that inclusion of ESD is commercially viable. The barriers were reinforced by a pervading culture that "electricity is so cheap here that we don't need that ESD stuff".

Barriers exist across all segments of the industry and at all stages of the project delivery process. Many can be attacked at the practitioner level, and readers are referred to BDP Environment Design Guide (EDG) note GEN 40, *Implementing ESD* by Ceridwen Owen (Owen, 2001) for a discussion on barriers and the strategies and actions which the design professional can employ to overcome those within their more immediate sphere of influence. The design professional *can* effect change, and should not underestimate the power of their leadership in the advancement of a sustainable agenda.

Generally, overseas research suggests that barriers cannot be removed without some government intervention – the need for regulation and market incentives is mentioned frequently. The UK Construction Industry Council observes that "industry is looking to the Government to ensure that an appropriate regulatory framework is in place and that research is undertaken and implemented to provide for on-going competitive progress" (UK Government Consultation Paper on Sustainable Construction, 1999).

4.0 THE CHALLENGE

The vast majority of Australia's built environment is still being delivered via processes and thinking that is traditional, repetitive, and focused only on initial capital costs. For developers, the market tends to impose a focus on the reduction of initial capital costs at the expense of whole of life operational costs, and improved occupant productivity. The general impression is that sustainable design options are expensive,

risky, complex and uneconomic, and that sustainability is still a fringe issue not foremost in the minds of future owners and tenants.

If we are serious about reducing the overall environmental impact of buildings, particularly greenhouse gas attribution, governments and industry must agree on new mechanisms that will change the way developers view, and financially account for their projects.

This note recognises that the primary driver to any development is, and will always be the desire to "make a profit". If we are serious about reducing the overall environmental impact of buildings, particularly greenhouse gas attribution, governments and industry must agree on new mechanisms that will change the way developers view, and financially account for their projects.

There are sufficient studies to demonstrate that over the whole of life of a building, those designed from the very beginning with a deliberate intent of energy efficiency, resource care, low environmental impact and improved amenity, cost less, have substantially greater occupant productivity, and thus should have more attractive resale values (UK Government Consultation Paper on Sustainable Construction, 1999).

Thus, the biggest barrier seems to relate to how we finance the development of new buildings. There are two aspects to this issue. The first relates to the capital cost of implementing ESD in a project, or the difference in capital cost between a "straight commercial" building and a "green" building. The second relates to mechanisms for factoring the whole of life savings from implementing ESD, particularly energy savings, into the initial capital cost and the financing of the building development.

This note proposes a four pronged, interdependent approach to the changes needed if sustainable buildings are to be profitable for all concerned. Resources, commitment and effort must be balanced across all four approaches. Removing barriers in one area will achieve little without overcoming those in the other focus area. The four focus areas are:

1. The need for vast improvements in education and awareness;
2. Mandating certain levels of ESD requirements, and compulsory operational performance disclosure;
3. Economic modelling tools, new financial products, taxation, and accounting structures that mainstream whole of life financing; and
4. The adoption of new development delivery mechanisms.

4.1 REMOVING THE BARRIERS – EDUCATION AND AWARENESS

The only way to overcome the claim that the market doesn't want ESD, is to publicly demonstrate that ESD is not only desirable, ethical and a responsible use of resources, but that it is profitable to both developers and to future owners and tenants. The very first step in overcoming any of the barriers is thus to establish stakeholder confidence that energy efficiency and ESD are worthwhile investments. Education is the

vehicle to achieve this, but can only work if implemented in concert with removal of barriers in the other three main focus areas.

While governments have embraced the need for education to achieve sustainability, only limited progress has been made on any level. The Australian Building Energy Council (ABEC) Education Study carried out in 2002, found a disturbing absence of policy commitment to the inclusion of sustainability in university faculties, and TAFE colleges responsible for the education of building and construction practitioners (ABEC 2002). A survey of practitioners themselves found an equally disturbing lack of understanding of ESD, and importantly a sense of inability to influence decisions on ESD by some key practice areas (eg quantity surveyors and structural engineers). Best practice examples were found and publicised, but the overall conclusion was that there is room for vast improvement.

These findings are all the more disturbing coming as they do more than five years after Engineers Australia, the Academy of Technological Science and Engineering and the Australian Council of Engineering Deans, sponsored and published the findings of a major review of engineering education - *Changing the Culture: Engineering Education into the Future.* The resulting report clearly articulated the "need for a culture change in engineering education, ultimately to extend throughout the profession" (IEAust, 1996). Sustainability and environmental concerns were prominent in the review's recommendations.

This lack of progress can be attributed to a number of issues - a lack of vision or awareness at faculty management levels, the absence of clear national education policies, and the ever present "shortage" of resources and funding. Despite these global inhibitors action can and should be taken within local teaching units.

Engineers Australia, in its "Building & Construction Task Force Report" (IEAust, 2001) noted some of the key elements which needed to be further integrated into undergraduate education, continuous professional development, and professional practice generally as:

- Passive and energy efficient design and practice;
- Reinventing and reintegrating the design and procurement process around clearly defined energy performance and other ESD targets;
- Better integrated design teams: engineers (structural, mechanical, electrical), architects, energy and environmental consultants;
- Communication and management skills for sustainability;
- Inculcation of a culture of energy auditing, reporting and continuous improvement;
- Highlight the need for progressive substitution of greenhouse intensive energy sources with less greenhouse intensive energy sources;
- Widespread teaching of new sustainable energy technologies and new energy arrangements in buildings, such as Energy Performance Contracting and Delivered Energy Services;
- Proactive integration of energy efficiency into existing buildings via retrofitting.

It does not need national education policy to start incorporating these elements holistically into existing courses.

Case Studies
It is widely recognized that the publication of case studies is an excellent way to convey an understanding of energy efficiency and ESD from specific projects to the general community and to practitioners. ABEC has published a series of energy efficiency case studies on its website. These are now available through the Australian Green Development Forum (AGDF) website (www.agdf.org.au), and are a good source of information on designs for specific site conditions. However, case studies rarely give detailed financial information. More importantly, they do not provide any analysis of the finance mechanisms or profitability on installed equipment elements, or design features. Therefore they are of little help in convincing developers to adopt ESD practices at the critical stages of project inception.

Case studies that show how new financial products and measures can benefit all concerned, and particularly show how and when profit can be drawn by the inclusion of energy savings solutions and ESD in building designs are urgently needed.

Having said this, it is recognized that it is not always possible to isolate energy savings where they are derived from particular design elements (eg cross ventilation, increased thermal mass) that are integrated into the design of the building. In these circumstances, case studies need to emphasise how the integrated design process achieved financial outcomes. Wherever possible they should compare the integrated solution with traditional "standard commercial" designs through modeling.

4.2 REMOVING THE BARRIERS – MANDATING ESD REQUIREMENTS

The Prime Minister, in his post Kyoto statement of November1997, gave notice to the building and construction industry that it should act to implement voluntary reforms or the Government would impose a totally mandated energy reduction environment. Industry's response was to establish ABEC. Soon after formation, ABEC proposed a dual reform process in response to the Government statement.

Essentially this dual reform process comprised:

1. Elimination of worst practice through the imposition of mandatory minimum energy performance standards through the Building Code of Australia; and
2. The adoption of a voluntary regime by industry whereby every building would eventually be rated against an accepted energy performance standard, and registered through an industry owned system that was credible and highly transparent.

The first part of the reform is being implemented, albeit slowly. In 2001 Engineers Australia recommended that the introduction of mandatory minimum energy performance standards into the Building Code of Australia (BCA) be accelerated. Further, it argued that each energy related component of a Code standard be immediately introduced upon approval by the Australian Building Codes Board (IEAust, 2001). To date the Board has released amendment No.12 for Class 1 buildings (single dwellings) and plans to implement the minimum energy performance requirements for residential Classes 2 to 4 by the end of 2004. Amendments for Class 5 buildings (office and commercial premises) are not expected to be implemented until the end of 2005.

The second part of the original dual reform process has stalled, and therein lies a serious danger. Without implementing the second reform, the overall average of building energy performance will actually fall back to a point that just exceeds the mandated minimum requirements. The reasons for this backwards slippage were very well put in the Engineers Australia Building and Construction Task Force Report (IEAust, 2001).

While significant effort is underway by sectors of the building and construction industry to promote and sell "green" buildings, there is as yet no unified coordinated industry approach. This is necessary to convince the community that "green buildings" buildings are actually achieving reductions in energy consumption, minimising their resource use, minimising their impact on biodiversity, improving amenity, and increasing occupant productivity. The debate rages in the media that self interest has overtaken the agenda, and that sectors of the industry are simply painting their current operations, with a few easily implemented changes, as "green". It is claimed that there is little progress in achieving any real improvements across the total built environment.

Mandating "best practice" is simply not an option – it is impossible. However, what can be mandated is a regime that requires auditing, and/or rating of operational performance against industry agreed standards, and the publishing of results. Such a system was proposed by ABEC in the second part of its dual reform proposal.[1]

A similar system is already being implemented in the UK where from 2005 all commercial building owners must report their energy use on an annual basis. Occupants, and the general public, will be able to see how buildings are performing, and, more importantly, what building owners and managers are doing to improve energy efficiency. Such public disclosure will raise awareness of just how energy efficient different buildings really are.

4.3 REMOVING THE BARRIERS – WHOLE OF LIFE FINANCING

The biggest inhibitors to the inclusion of energy efficiency and ESD improvements in buildings occur at the very inception of a project. This is a phase where early decisions that are taken by a developer are strongly influenced by the need to prove a bankable project within the current (traditional) procurement and delivery process in Australia.

Let's not overly criticize developers. They are risk takers and often innovators. Naturally they expect and indeed rely on appropriate compensation for conceptualising a project, investing their time and for their exposure to the many development risks. Investors want a quick return on their investment. This leads developers to focus their design intent on outcomes that meet a particular short term market demand, usually based on issues such as location, attractiveness, rental prospects and future sales potential. Rarely do such issues as minimising energy

[1] *ABEC proposed that building owners participate in a voluntary registration scheme whereby the operational performance of buildings would be rated against an energy and greenhouse standard, and the results would be published on the ABEC registered building website with various levels of public and restricted access.*

consumption, maximising efficiency, increasing occupant productivity and reducing greenhouse gas output receive more than momentary consideration. These are issues that future owners or tenants will have to face and make whatever improvements they can. However, unless there has been significant thought given to these issues at the inception and design phases of a building project, the scope for future owners or occupants to make improvements is often very limited.

The design costs for a typical high-rise commercial building represent something in the vicinity of 0.02 per cent of the total, whole of life costs associated with that building. However, design input may represent 5 to 10 per cent of the initial development and delivery costs of a building. What a developer may consider as a significant increase in the developer's design costs, is in reality a negligible increase over the whole of life cost of a building. Thus there is often pressure from developers to reduce design input, particularly as innovation leading to energy and other efficiencies is seen as adding to a developer's costs. Thus we see the start of the incorrect notion that "green" buildings cost more.

Regardless of whether it costs more or not, a financial mechanism is needed that transfers at least some of the whole of life savings of energy efficient and ESD design, back to the development phase, thus reducing the developer's costs, and removing any argument that there is additional cost. The increase in the end value to all should encourage the adoption of "green" design practices.

One mechanism for reallocating risk is the Energy Performance Contract (EPC) (see 4.4 Removing the Barriers - New Delivery Mechanisms). This approach usually involves innovative financing by a third party, however this service is currently entirely focused on energy conservation measures and retrofit to existing facilities, and is not yet readily applicable to new developments. The problem of applying the EPC approach to new developments relates to the obvious absence of a benchmark against which to measure savings – there is no "before" for a before and after comparison. The application of EPC mechanisms to new developments requires the use of modeling comparisons with associated high risks.

Nevertheless, the concept of providing finance for "green" development initiatives that can be repaid through later savings, and increased property value needs to be further explored. Work in the ACT has shown measurable increases in property values for energy efficient dwellings in the residential sector (Energy Partners, 2003) .

4.4 REMOVING THE BARRIERS – NEW DELIVERY MECHANISMS

The Engineers Australia Building and Construction Task Force Report (IEAust, 2001) identified the need for a reinvention of building design and procurement processes in order to extend responsibilities and returns to all stakeholders and to better incorporate consideration of both economic and environmental impacts and costs across the life cycle of a building.

The Building & Construction Task Force Report noted that sufficient resources of architectural and engineering design knowledge and the technological tools to achieve

Project Team Partnering

Project Team Partnering requires all parties in the process of delivering a building to enter into an agreement that gives them all a share in defined outcomes of the project. The primary aim of partnering is to avoid an adversarial environment where parties seek to blame and gain through contract variations and litigation. Partnering may be short term with outcomes related to construction savings (under budget, under time, fewer OH&S occurrences, waste minimisation, etc), or longer term improvements where savings in resource use eg. energy, are factored in. Those responsible for initiating, project managing, designing, contracting and construction of a project would normally partner to achieve a better outcome.

Long Term Alliancing

Long Term Alliancing avoids the cost of tendering for team formation on every new project. For instance once a project team has delivered a successful project under a partnering arrangement that team stays together for other similar projects, further enhancing their skills and ability to be innovative. Following a review into the construction Industry in the UK the Government there has directed that departments use successful team alliances repeatedly for public sector projects.

Fig 1. Mechanisms for Development – Inception & Design Stages.

innovation already exist. Existing guidelines, such as those of the Property Council of Australia, also provide scope and processes to deliver good energy efficient buildings within the current bounds of reasonable budgets. But, as the report notes these opportunities are often not identified or acted upon.

The report advocates that new approaches to the building design and procurement process, particularly a range of new delivery mechanisms, are required. The mechanisms discussed in the Building and Construction Task Force Report that can facilitate improvements and result in more sustainable whole of life outcomes include those detailed in Fig 1.which is more related to inception and early design stages, Fig . 2 which refers to the selection of design and management consultants, and Fig 3. which refers to the delivery stages of a project (these figures are extracted from the Task Force Report).

Qualifications Based Selection (QBS) for designers

Because developers are motivated to minimise their development costs (ie. those costs incurred on a project up until hand over and sale to a new owner/property manager), designers are frequently selected on the basis of lowest fee for a defined design task. Fee competition has significantly lowered the margins on design work for the building design professions with a consequent reduction in staff training, research and development and innovation within their practices. Fee-based tenders are often predicated on using low cost staff to deliver as much repetitive design (from previous work) as can be used on a new project. This serves to inhibit consideration of new technologies, geographic considerations, user preferences or education of project teams.

QBS requires clients to select their designers solely on the basis of their qualifications for the project. No fees are discussed until the preferred designer is chosen and given substantial details of the project. If, after negotiation, the preferred designer's fee for the project is beyond the client's budget the second ranked designer is asked to consider the detail of the project and negotiate a fee. QBS allows designers the opportunity to develop and discuss alternative designs with the client and to 'sell' the whole of life benefits of energy efficiency and other innovations for sustainability to the client. Australian Auditors General and the Australian Competition and Consumer Commission have agreed that QBS provides for probity and meets competition requirements.

(Australian Council of Building Design Professions, Qualifications Based Selection).

Fig 2. Mechanisms for Development – Selection of Consultants.

The mechanisms described in Figure 3 are new concepts for development, and are yet to be adopted in Australia. Essentially they require the removal of significant components of design and delivery from the developer's project, and therefore ownership. These components are then designed and installed by a third party that continues to own the installations, and provides a service (eg. light or climate) to the new owners/tenants either under performance contracts, or for a monthly service fee. Adoption of these mechanisms has shown significant reductions in operational costs in overseas examples, but requires careful design integration, and the availability of third party service providers, of which there are very few at present in Australia.

Energy Performance Contracting

Energy performance contracting is one means of improving energy efficiency in new buildings. Performance contract relationships provide incentives to the architects and engineers to design energy-efficient buildings.

Performance contracting requires an up-front investment in additional professional services during design for coordination between disciplines, computer modeling and energy analysis, compliance checking during building commissioning, and operational measurement and verification. The cost of the additional services is recovered through future energy savings that become the performance rewards for the designers.

Energy performance contracts usually focus on lighting, water heating and air conditioning. Once the building is operational, it is necessary to check that patterns of operation meet the design intent and that the targets are achievable. If the patterns are significantly different from those assumed during design, the target is adjusted.

Verification of targets and measurement of building performance are essential elements in energy performance contracting, first to determine if the building meets design targets, and then to record building performance. The responsibility for measurement must be independent and acceptable to both the owner and the designers, as penalties and rewards hinge on the findings.

Performance contracts are included as part of the general agreement between owner/ developers and designers. Having performance targets available from the start allows designers to effect meaningful changes in fundamental building characteristics such as building form and siting.

(Riddell, S. Energy Performance Contracting for New Buildings)

Fig 3. Mechanisms for Development – New Initiatives.

Delivered Energy Services (DES)

Many components of a building that are traditionally included within a developer's construction brief become the main cost inputs for the eventual owner or occupier. Lighting, heating, cooling, air conditioning, floor covering and window treatments are examples where a developer will traditionally consider only the initial capital cost of installing the components in the developer's project and not give adequate thought to the whole of life costs and other impacts. If these equipment components were not included in the developer's project but contracted to a third party by the new owner or occupier significant savings can be achieved. The third party provider will contract to deliver the required service to the new owner or occupier at a competitive price with energy prices associated with traditional designs. However, the third party provider will seek to gain the highest efficiencies from the plant or equipment that is installed in order to minimise energy costs and thus maximise his return. The net result can be significant reductions in building energy consumption over the life of the building. Furthermore, construction and delivery costs would be reduced for the developer.

Inclusion of Delivered Energy Services in a project will, of course, require changed design considerations and very close teaming with the third party DES provider during design.

(Hawken, P. Lovins, H. Lovins, A. - Natural Capitalism 2000)

Fig 3. (cont) Mechanisms for Development – New Initiatives.

5.0 PROGRESSING THE AGENDA

Probably the biggest current failing of the industry is its inability for "whole of life" considerations to be factored into "front end economics" of a project. If mechanisms for overcoming this one issue could be found and implemented, the development industry would have achieved a significant outcome.

However identification of barriers is not difficult. The really hard task facing the development industry is to identify "what it must *do differently* to eliminate the barriers so that energy saving technologies, and ESD more generally, become universally adopted by developers" (The Warren Centre, December 2003).

Case Study 2. – Commercial Office Redevelopment, BRISBANE

Features:

- Australian Green Development Forum members in business partnership to achieve best practice
- Passive solar design - photovoltaics and solar hot water (including heat tracers);
- Natural light - new age skylights with mirrors;
- Sunshade structures, thermosiphon wall and double-glazing;
- Energy efficient lighting and appliances; dimmable lighting;
- Air cooled air conditioning units (as opposed to water-cooled);
- Dimmable lighting; worm farms and recycling bins;
- Waterless urinals; AAA rated shower heads; rainwater harvesting;
- Digitally-controlled heating and cooling equipment;
- Plantation pine where possible used in work stations and other fittings;
- Bio-filters and plantings to improve internal air quality;
- Break out spaces and other social features for staff; disabled access;
- Waste reduction during construction – 80% of demolished materials recycled; and
- Educational and instructional facilities for visitors to explain process.

The biggest barriers faced by the developer were getting development application through council and changing the attitudes of engineering consultants wanting to use minimal effort traditional solutions. These were overcome through team discussion, and partnership arrangements with shared values and outcomes, agreed at the very inception of the project.

The Warren Centre (TWC)

Aware of the significant outcomes of barrier removal for the wider community, as well as commercial benefits for developers and building owners, The Warren Centre at Sydney University is exploring the possibility of facilitating a major industry led project on overcoming these barriers. Before committing to a project TWC needs strong signals from industry that such a project is needed and would be funded from a mix of government and industry sources. TWC has identified a significant pool of influential industry leaders and researchers keen to participate in such a project.

Industry Associations

The "green" buildings agenda in Australia is very active and diverse. Over the past three years two industry associations with similar aims and objectives, but with somewhat different market foci have gained support from the building and property industry.

The Green Building Council (GBCAus): Launched in late 2002 with strong funding support from the NSW and Victorian Governments, and the Federal Department of Defence, the GBCAus (www.gbcaus.org.au) has built an influence base with the central city high rise office sector. The recent release to the market of the GBCAus "Green Star" Office Design Rating tool now makes green design more achievable for high rise commercial building. The "Green Star" tool allows an environmental evaluation of the design of a new office building, or a base building office retrofit which can then be promoted to the market. . Other tools eg the Australian Buildings Greenhouse Rating (ABGR) for energy/greenhouse rating, must be used to rate the actual performance of a completed and operational building.

The Australian Green Development Forum (AGDF): Focusing on the wider urban development market and with a philosophy of encouraging partnership to achieve green developments without compromising the business case is the AGDF (www.agdf.org.au). AGDF is not in the business of developing tools for the design and performance rating of buildings or other developments. Instead, it aims to educate its members to enable them to make informed decisions about which tools to use when developing projects or comparing different designs, materials or delivery mechanisms. The members and activities of the Australian Building Energy Council (ABEC) have largely been absorbed by AGDF through an agreement reached between the two organizations in mid 2003.

Peak Industry Council
Australian Sustainable Built Environment Council *(*ASBEC): Recognising that there will always be a number of industry and practitioner based associations involved in promoting a "green" built environment, and that no one organisation will be able to satisfy the needs of everyone, the CRC CI has mobilised industry to set up an overarching peak Council to be known as ASBEC. Along with some thirty or more other associations, AGDF and GBCAus support the formation of ASBEC, and are expected to be founding members of this new peak council.

It is through ASBEC that industry will influence research and development for "green" innovation, achieve cohesion and guidance on current rating tools and provide direction on future finance and delivery mechanisms.

6.0 WHAT CAN YOU DO?

All building design practitioners have an ethical obligation to address the issues of energy and water efficient design, and to make every effort to move the construction industry towards the delivery of more sustainable buildings.

In response to your ethical obligation, you should at least consider and act on each of the following:

- Encourage your colleagues and clients to consider energy and water efficient, ESD, and renewable energy options in all design, management, retrofit and procurement activities and support your colleagues and clients in incorporating these considerations into their daily work practices;

- Encourage your organisation to undertake regular energy and water audits of its own building operations and to implement viable recommendations;

- Recommend that your organization joins either the Australian Green Development Forum (AGDF), or the Green Buildings Council of Australia (GBCAus), or join one of these organizations yourself, as an individual, and participate in its activities and its governance;

- Encourage a processes for continuous environmental improvement within your own organisations – for example, encourage the implementation of Environmental Management Plans for your organisation's operations, and encourage your enterprise to enter into initiatives such as the Australian Building Greenhouse Rating Scheme (ABGRS);

- Review your own professional competencies in light of the rapidly changing field of energy, environmental and greenhouse best practice and how these developments might relate to your own activities;

- Encourage and facilitate multidisciplinary teamwork, and integrated design - and appoint one of your team to act as the 'energy and ESD' ombudsperson in each of your project or task activities; and

- Speak up and let your professional body know if you identify any areas of commercial and professional knowledge that you think should be more broadly communicated to the building design professions. **Get involved!**

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Biography

David Hood is a Chartered Professional Engineer with over thirty years experience in senior engineering and management positions in both the public and private sectors. He is currently Chairman of his own consulting engineering practice specialising in the areas of sustainability, “green buildings”, energy efficiency policy, and global engineering infrastructure. He is a Director of CBD Energy Limited, a public company providing energy solutions to the building and manufacturing industries. David is also actively involved with industry and professional associations promoting the improved energy performance of buildings, and sits on a number of industry and university advisory boards.