Thinking about the value of property from a sustainable perspective

Lynne Armitage

Bond University, Lynne_Armitage@bond.edu.au

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Dr Lynne Armitage

Dip Surv, PG Dip Urban Studies, M Environmental Planning, PhD
FAPI (CPV) FRICS Reg Valuer NSW and Queensland CEnv

Associate Professor of Urban Development
Mirvac School of Sustainable Development
Bond University Gold Coast Queensland

In 1997, a survey (Armitage 2001) of 1800 valuer members of the Australian Property Institute – then AIVLE – asked respondents to rank the relative importance of some 80 nominated characteristic factors of the property market which they considered ‘very important’ when valuing investment grade property. Unsurprisingly, the top five factors were:

- Comparable transactions 75%
- Lease terms and conditions 71%
- Location 69%
- Tenure 59%
- Contamination 54%

Only when the added response of ‘important’ was added did any reference to environmental consideration receive mention: then it appeared at number 35 – ranked equally with ‘point in the business cycle’ by over 55% of respondents. The purpose of this observation is not to suggest valuers did not give sufficient consideration to environmental aspects but to highlight the way we as a community have shifted our view of our relationship with the environment, with valuers being those who take responsibility for interpreting such sentiments by converting them into terms of dollar values.

In every sense, sustainability is an idea whose time has come. What we are now witnessing globally is the adoption and internalisation process which Senge (1994) characterises as being the phase where we move from a shared vision which is powered by common caring to a sense of ownership which in turn calls forth an active response and commitment or, more simply, perhaps by a recognition of self interest and a diminishing range of alternative options.

Whilst an undercurrent of concern for our treatment of the environment has been compounding for a generation though often politically marginalised, most recently our
quantitative appetite has been fed by the release of the Stern Review (2006) on the economics of climate change. It unequivocally states:

- the scientific evidence is now overwhelming: climate change presents very serious global risks, and demands an urgent global response
- there is still time to avoid the worst impacts of climate change if strong collective action starts now.

Stern 2006

The fundamental concept we, as a profession, are addressing is one we know to be at the core of our professional motivation: that of managing our relationship with our environment, more specifically in the context of economic use and exchange, tempered by concepts of corporate social responsibility and triple bottom line. But there is a long way to go before we can operationalise this aspiration beyond the limits of our familiar comfort zone.

For the valuation profession to reconceptualise its view of property to incorporate considerations of sustainable practices within the property market, it is necessary to investigate the way we currently view such activity and consciously recognise the impacts of such initiatives on property value. To develop our understanding of the relationship, this paper considers the context of sustainable practice and theory in the area of the built environment in Australia, and discusses a number of mainly recent and predominantly international studies from governments, professional property organisations, academia and professional firms which have been investigated and reviewed. These findings are structured under three principal sections, viz:

1. What is sustainability?
2. Where are we now? What is being done by others?
3. What do we need to do now?

1. What is sustainability?

In 1987, the Brundtland Report (Our Common Future – UNEP World Commission on Environment and Development 1987) was released by the United Nations. It is considered a seminal work highlighting the environmental problems facing the planet and stressing a growing awareness of the need for global environmental action formulated through realistic proposals of environmentally sustainable development (ESD). Tangible outcomes, consequential upon the report, include such subsequent international agreements as the Montreal and Kyoto Protocols and Agenda 21 – which further enshrined ESD as an operational framework for policy and practice in the business and broader community.

It recognised the synergies between economic, social and environmental issues and argued that, for the benefit of human well-being, there was a need for the integration of these elements into policies which promoted sustainable development. The Commission defined sustainable development as: ‘development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.’ (Brundtland 1987)
It identified the requirements for sustainable development under seven themes:

- A political system that secures effective citizen participation in decision making
- An economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis
- A social system that provides for solutions for the tensions arising from disharmonious development
- A productive system that preserves the ecological base for development
- A technological system that can search continuously for new solutions
- An international system that fosters sustainable patterns of trade and finance
- An administrative system that is flexible and has the capacity for self-correction.

(Brundtland 1987)

As discussed in a yet to be released draft review of the Brundtland report, progress in the area of economic development (UNEP 2007), over the last 20 years is variable. There have been many international agreements signed since the Rio Convention on Biological Diversity in 1992 and the Kyoto Protocol on Climate Change in 1997 and even the very recent (September 2007) Sydney APEC ‘Affirmation’, many with a now broader range of stakeholders involved in international decision-making, positive social change is occurring in many parts of the world and, for example, enrolments in education have risen internationally. Yet resource consumption continues to increase, inequality continues unabated and the sustainable development agenda still lacks clear objectives or effective champions.

**Economic perspective**

Focussing on the first three themes identified above by Brundtland – political, economic and social – and concentrating on the realms of property and the built environment, there is a growing recognition and acceptance that the capitalist economic focus on the resource factors of capital, labour and land as represented by studies of traditional economics, and also of labour and welfare economics, needs to be more equally complemented by that of environmental economics as Pearce and Turner (1970) discussed. Considering the environment as an economic good, protecting it from unpaid use is problematic as, in large part, the environment is a shared resource and this ‘non-excludability’ makes its use and regulation difficult to identify, monitor and regulate. Concurrently owners/guardians of such shared resources have little benefit from seeking to provide the stewardship to counteract the depletion and degradation of the resource. In contrast to corporate production, the scale and indivisibility of environmental resources generates resource use and management issues with which we are now being confronted where the closure of the unprofitable activity – on a global scale, as opposed to at the level of the firm – is an option we as a species are keen to avoid.

The public management of environmental resources has the virtue of a longer term perspective which values the need for the stock of resources to be conserved in quantities
sufficient for future generations and a range of pricing techniques exist (See Appendix 1) by which the value of natural resources can be assessed, with taxation being one of these means of shifting the burden of the negative environmental effects (Pigovian taxes) and which may also achieve a shift in resource allocation, thereby reducing demand.

**Political and social perspectives**

From the political and social perspective, there is an emerging recognition that markets will not function well without clear and protected property rights. Such property rights need to be secure, indefinite, enforceable and legally transferable (Panayotou 1992) and acknowledge the status of the present and future generations. The usual contemporary approach is the intra-generational view, as recognised for example in the provisions of the Kyoto protocol, which distributes property rights enshrining the principle of occupation. In the context of emissions this favours rich nations as eco-taxes accrue eventually to the owners of emission rights (the polluting nations) themselves. A different approach, which would more likely favour the poor, would be to allocate an equal share of permits to everyone regardless of their level of emissions. (Keyzer and van Veen 1997) In the case of climate where no state or individual has yet seized sovereign rights over the regulation of eco-system services this might be possible. The relatively low spending on energy intensive goods by the poorer countries would strengthen the link between environmental policy and poverty alleviation.

However, as Pezzey (1992) recognises, the needs and rights of future generations deserve an equal stance to those of the living generation – a feature which many traditional societies can be considered to value more highly than many more economically dynamic societies. A system which recognises only the rights of the current generation is unlikely to consider the impact of the persistence of its own environmental degradation. Gerlagh and Keyzer (2001) assert that to alleviate this problem a trust fund could be established entitling all members of present and future generations to an equal monetary claim over the use of natural resources. Such a trust fund would act as a transfer mechanism to redistribute income across the generations, arguably as did feudalism in some societies, but with questionable community benefit.

This redistribution is an example of the principle that it is the polluter who should pay for the negative impact by internalising its cost as part of its production cost. Thus a generation which uses more resources than it is entitled to will compensate future generations for the degraded environment. Such a trust fund approach can only succeed if the current generation recognises and accepts responsibility for its activities and the compromises this entails. It must be recognised that it is political will which has the power to operationalise such a response rather than technical feasibility.
2. Where are we now? What is being done by others?

From the property perspective, there is a strong recognition and acceptance of a shift towards intervention to promote the culture of sustainability from property investors, occupiers, developers and the professions but it is the practical aspects of these issues which will need to be understood before they are able to effect real change.

Whilst the terms sustainability, sustainable development (SD) and corporate social responsibility (CSR) are widely used there is, not surprisingly, some confusion for the majority of people who are not experts in these areas and the Brundtland review’s widely recognised definition of sustainability has been presented already. Property professionals are well used to accepting the genuine boundaries of their professional roles and responsibilities and professional indemnity ensures this focus is not blurred. In Australia, there has been increasing public awareness of broad environmental issues after a very slow start, compared for example to the lead from the European Community and the United States. In September 2007, the APEC summit provided a pre-election focus, in the media if not in the broader community, as an international driver for government and industry to issues associated with climate change but this is emphasis needs to be expanded to the triple bottom line perspective of balancing environmental and social issues with economic ones. More recently, the election in November 2007 of a new federal government is anticipated to provide the framework for more sensitive environmental policies to be developed across the country.

Sustainable development and the cycle of property

Sustainable development can be thought of as
‘a process for growth that understands, invests in and maintains not just financial resources, but human, social and environmental resources, all at the same time.’
(Heywood et al 2007)

To achieve this, the damaging consequences of merely trading one aspect off against the other must be avoided and the need for compromise must be recognised – which only a cultural shift in people’s perceptions of what is acceptable can resolve. At the level of the individual as well as that of the community or nation, it is necessary to deliberately seek to balance economic, environmental and social benefits and costs when faced with options.

Triple bottom line is often represented using either of two commonly accepted models (O’Riordon et al 2001): the three pillars model or the Russian doll model as illustrated in Figure 1 below. The three pillars model views sustainability as the merging of social well-being, economic enterprise and environmental integrity whereas the Russian doll model places economic capital at the core as the basis of wealth creation which drives the engine of development and both are constrained by environmental and social considerations. In each case, these three dimensions are often expanded to include a fourth - government and other institutional frameworks - which are required to make sustainability work.
In March 2005, a sustainable development strategy paper (United Kingdom 2005) was presented to Parliament as a framework for a long-term agenda. It enshrined four priorities:

- A ‘one planet economy’: sustainable consumption and production
- Confront the greatest threat: climate change and energy
- A future without regrets: protecting our natural resources and enhancing the environment
- Span from local to global: creating sustainable communities and a fairer world.

![Figure 1: Representations of Triple Bottom Line](image)

Source: Heywood et al 2007

It specified a number of guiding principles with TBL credentials— including living within environmental limits, achieving a sustainable economy, promoting good governance) and, in respect of the government approach to corporate social responsibility, envisaging ‘businesses taking account of their economic, social and environmental impacts, and acting to address the key sustainable development challenges based on their core competencies wherever they operate – locally, regionally and internationally.’


Applying these principles to property through adopting the lens of the property lifecycle, some impacts of sustainability were identified (Heywood 2007) for each stage as shown in Appendix 2: Impacts of sustainability on the property lifecycle. Here, a range of property professions were discussed in relation to the way in which their workday practices translate these principles in to their operational reality at the various stages of the property lifecycle with which they have involvement and which is just what many of the present ranking tools also do. For example, under the ‘property’ grouping – which includes inter...
alia valuation, facilities management, asset management, commercial management – the three main areas of influence were considered to be concept/asset initiation, planning and procurement, and occupation and use including refurbishment.

Turning specifically to the valuation field, valuers are duty bound to comply with International Valuation Standards as adopted in Australia by the Australian property Institute (API) and hence to reflect the market’s interpretation of the impact of sustainability on price or value. When a professional opinion is given, it is devoid of any personal prejudice regarding the significance of sustainability, as is the case with any other aspects of the market. However, in order to perceive the emerging reality of the market’s awareness of the impact of sustainability on worth, price and value, valuers must upskill by understanding the principles of sustainability.

Valuers will be required to broaden the range and depth of their existing expertise into some currently unfamiliar and, possibly, uncomfortable territory to interpret the valuation implications of an increasing range of triple bottom line issues and to recognise the synergies and interrelated nature of aspects previously viewed in isolation. For example, this might include the emerging influence of low carbon buildings which offer reduced operating costs (financial aspect), improved working conditions (social) and valuable carbon credits (environmental) whose traded worth is still in flux. In the context of development and investment strategies, advice which members of the ‘property group’ are likely to be called upon to supply will extend to many of the issues identified in Appendix 3: Widening valuers’ TBL horizons.

By 2006, practitioners’ perceptions of sustainability had shown some improvement compared to the 1997 survey (Armitage 2001) discussed above. An international online survey of 47,000 property practitioners (Dixon et al 2007) addressed many of these concerns in the context of the professions related to property and the built environment and 10% of the sample chose to respond. The survey sought to assess the extent of respondents’ use of information relating to sustainable development, to identify and prioritise action to access relevant information regarding SD, and to provide such as an online resource.

Property firms and industry associations are also researching the impact of sustainability on property with ‘green’ being seen as ‘good for business.’ (Corps 2005) This Canadian study showed a clear link ‘between the market value of real estate and its environmental friendliness.’ It found that greener buildings can:

- Earn higher rents and prices
- Attract tenants and buyers more quickly
- Cut tenant turnover
- Cost less to operate and maintain
- Benefit occupiers
- Improve productivity.
From a European perspective, King Sturge (2007) takes a strong, almost coercive, approach to the need for all participants in the property market to prepare for the coming changes likely to ensue from climate change. It identifies four targets for property investors, developers, financiers, occupiers and policy makers:

- Prepare for climate change and increased weather uncertainty and extremes
- Expect increased property insurance, litigation, maintenance and energy costs
- Recognise that legislative change will lead changes in the property market at an increasing pace
- Accept corporate social responsibility as a reality and conformity is not longer optional e.g. requiring carbon footprinting for buildings as a benchmark.

The King Sturge report provides a comprehensive coverage of relevant European Union directives in areas of energy performance of buildings for both existing and new buildings; waste, electrical and electronic equipment directives; and environmental liability directives and discusses sustainability policies and initiatives for 24 countries across the EU, country by country, and details a comprehensive range of sustainability assessment tools for building sustainability including checklists for the public and private sector, for asset managers, designers and developers: overall a very comprehensive resource, though not unique.

Jones Lang LaSalle (2007), for example, asserts that sustainability is ‘becoming a mainstream requirement for most property owners and tenants in Australia’s CBDs’ and discusses current legislative requirements and where this is likely to lead. It considers sustainability as ‘not yet being a significant factor’ in valuation models (Jones Lang LaSalle 2007:2) from the perspective of most owners, investors or valuers but anticipates ‘it will be reflected in purchase yields, net returns to owners and in property valuation…in the near future.’ It recognises the leading role of all tiers of government in Australia which specify industry leading accommodation standards, controlled emission standards and other performance requirements often framed within a legislative or preferred supplier context.

It is understood (Armitage, personal communication 2008) that there is currently research being undertaken by the South Australian government to review the activities of state governments across the country which is likely to confirm the widely held view of the exemplary role government exhibits across a range of sustainability metrics.

Whilst there may be extensive incorporation of TBL assessment in many government and corporate policies, this approach is not yet embedded in the property investment market overall as revealed in a number of surveys of investor attitudes to green buildings over the last decade. (Sayce, Ellison and Parnell 2007:641) The option of measures to promote the adoption of more sustainable practices is mooted through the introduction of fiscal incentives. Currently the business case for investment in sustainable property rests on reducing risk as opposed to enhancing return. The opportunity to reward sustainable practices in property investment and management is an option worthy of further investigation.
Whilst much of the available literature deals with commercial investment property, a major study of industrial property (Jayne, Mackmin and Syms 2007:374) reported recently a survey which highlighted imperfections in the nature of the property market preventing valuers from being able to identify how factors, such as compliance with controls over environmental contamination, affect or do not affect market value. Value theory (Turvey 1957, cited in Jayne et al) suggests ‘rental value can be ascertained residually’ and that whilst legislative compliance has the potential to increase costs of occupying industrial property, the ability to pass on or absorb this impact will tend to vary with the strength of the individual property or the state of the market. One of the paper’s conclusions was to confirm the widely held view that ‘improved management practices would suggest that better environmental management may result in better rents and values.’ (Joyce et al 2007:376)

Similar sentiments were expressed recently by Borger (2007), Director of Leighton Properties Australia, speaking at an API professional development seminar event discussing the impact of developing A-grade office towers with a green-star rating of five in respect of the liability for outgoings. He commented that there appears to be a growing practice of leases to be structured gross of outgoings to ensure the benefit of the efficiencies in outgoings reverts to the building owner/investor and as such contributes to the reduction in outgoings overall and possibly is reflected by the market in a strengthening of the capitalisation rate.

3. What do we need to do now?

It is simple and self evident - in theory: All we need to do is shift our mental models and move to a shared vision. Easier said than done but recognition is one of the first steps along this path. Senge (1994) recognises the need for a cultural shift: ‘shared vision is—must be—compelling, or it’s not likely to be either shared or possess any of the other characteristics needed.’

Senge propounds that shared visions:
- Change people’s relationship with the enterprise—it’s no longer ‘theirs’, but ours. This allow those previously mistrusting to begin to work together.
- Create a commonplace image, identity, purpose and set of operating values.
- Compel courage—and new ways of thinking and acting. Establish overarching goals. Foster risk-taking and experimentation.
- Foster long-term commitment.

Senge 1994

These factors may speak to the great power of an idea whose time has come. But Maslow once observed that shared purpose and vision were the most striking common characteristics of high performing teams. In the absence of a great dream, pettiness prevails and a shared vision is not just ‘an idea’, but ‘a force in people’s hearts.’ (Senge 1994)
Looking forward in the international property arena, last year an ‘agreement to address the interrelationship of sustainability and value’ was launched and its intent captured in a memorandum entitled the ‘Vancouver Valuation Accord’. (2007) This Canadian initiative brought together valuation, appraisal and related industry leaders in property as signatories to a formal expression and commitment to advance understanding, knowledge, education and practices about valuation and sustainability.

Recognising the increasing need and demand for the business case for sustainability to be established where valuation plays a crucial role and embracing the initiative that valuers no longer wish to ignore sustainability, the Accord is a commitment to:

- Reviewing how sustainability relates to the practice and standards of valuation.
- Working with stakeholders to promote awareness of and competency in the appropriate methods of addressing sustainability in valuations and worth appraisals.
- Working with those within and outside the valuation professions worldwide, to educate and inform about sustainability and its relationship to value and worth.
- Regular reporting of the collaborative progress via an agreed secretariat set up for that purpose, and targeting a full report on progress at the GLOBE 2010 Conference in Vancouver, Canada.

Source: Vancouver Valuation Accord 2007

In Australia, we are not quite so advanced along the sustainability highway, perhaps waiting to review the impact of international initiatives before committing to action. Whilst we are not short of experts, nor are we short of ideas - but we do need leadership. Government at the federal and state levels and educational institutions are all well placed to seize this opportunity to take the thought leadership to promote such positive outcomes. In September this year, the Australian federal government will release its major policy initiative – the Garneau Report – and it is anticipated that carbon market trading is likely to be promoted as one of the options with its early introduction progressively introduced over the next few years. Whilst the impact of these innovations cannot yet be foreseen in detail, they are certain to require new models of thinking to be successful in effecting change.

Professional bodies can achieve this through raising professional awareness; governments are in the process (however long it may take) of legislating for changing practices via performance standard upgrades etc.; universities are replete with degrees offering a full range of ‘green’ credentials through virtually every faculty; and industry associations can promote a green agenda through lobbying and each individual can become more knowledgeable of sustainability issues and commit to acting in their own and in the community’s best TBL interest and do it, sooner - not later.
References


UNEP (2007) GEO-4 Chapter 1: Environment for Development’ Draft 1

Appendix 1: 
Approaches to the valuation of natural resources

1. Use value:

In circumstances where the end use of the natural resource is clear, as in the case of drinking water, timber or tourism generated by a forest, and each has a functioning market, the valuation of the resource can be imputed from the prevailing market prices of these uses. This includes both the production function approach and the defensive expenditure approach as detailed below.

- The **production function method** identifies the marginal contribution of the natural resource to the production of the commodity being marketed. For example: the benefit of water to crop production (Freeman 2003, Archaya and Barbier 2002).
- The **defensive expenditure method** assigns a price to a natural resource which is equivalent to the cost of maintaining its productivity by fixing the damage from the emission of pollutants and resource degradation (Tiezzi 2002).

2. Surrogate markets:

Where there is no functioning market for the end-use, a surrogate market may be generated.

- **Hedonic pricing** is the method which values the presence of natural resources by, for example, comparing the prices of houses with otherwise similar characteristics under different environmental conditions (Taylor and Smith 2000) to assess the impact of that change in circumstance.
- The **travel cost method** measures the value of a recreational site by surveying travellers on the economic costs they incur when visiting the site from some distance away (Pendleton and Mendelsohn 2000) though issues of cost versus value may impinge.

3. Stated preferences:

Another approach is to identify stakeholder preferences to elicit additional information with these techniques including the contingent valuation and conjoint stated preference methods.

- The **contingent valuation method** seeks information on willingness to pay from survey questionnaires and interviews (Kolstad 2000, Mitchell and Carson 1989).
• The **conjoint stated preference methods** use experiments which involve contingent, dependent ranking, or contingent choice, among alternatives that provide different levels of non-market goods (Roe and others 1996)

Source: derived from UNEP 2007 GEO-4 Chapter 1 ‘Environment for Development’ Draft 1, September 2007
## Appendix 2: Impacts of sustainability on property across its lifecycle

Derived from: Heywood 2007:8

<table>
<thead>
<tr>
<th>Property stage</th>
<th>Social</th>
<th>Environmental</th>
<th>Economic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept/asset initiation</td>
<td>A safe, secure integrated development, rural regeneration, public access</td>
<td>Maintain and enhance natural amenity and biodiversity.</td>
<td>Improved land and asset values, simulate local investment, intrinsic value and non-tangible assets of open space amenity</td>
</tr>
<tr>
<td>Planning and procurement</td>
<td>Provision of local labour, development of local skills through training initiatives; quality urban design and public realm; planning sustainable communities; community involvement at the design stage</td>
<td>Minimise energy demand through renewable energy supply; minimise environmental impact; increase use of recycled materials; use ethically sourced products and services; provide for enhanced public transport and walkability</td>
<td>Local economic regeneration; responsible and profitable growth; attracting investment and building local capital</td>
</tr>
<tr>
<td>Construction</td>
<td>Better design; respect for people; minimisation of disruption, noise, dust, light; considerate contractors scheme</td>
<td>Carbon amelioration; waste minimisation; maximise recycling; develop Construction Environmental Management plans</td>
<td>Use of local suppliers and labour; quality of design and materials as an agency tool or selling feature</td>
</tr>
<tr>
<td>Occupation and use (including refurbishment)</td>
<td>A better quality of life; built to last; clean, working and friendly</td>
<td>Energy efficient operation; effective maintenance; occupier recycling schemes; use of greywater etc.</td>
<td>Use of local suppliers and contractors; increase in occupier productivity through sustainable facilities management/ workplace management</td>
</tr>
<tr>
<td>Demolition and remediation</td>
<td>Minimisation of disruption: noise, dust, light; considerate contractors’ scheme; improved amenity</td>
<td>Maximise recycling; minimise waste to landfill. Onsite remediation; creative use of demolition waste</td>
<td>Improved spatial use; improved land value and economic uplift from urban uplift; presumption in favour of development on brownfield sites promoting shorter planning period</td>
</tr>
</tbody>
</table>
Appendix 3: Widening valuers’ TBL horizons

<table>
<thead>
<tr>
<th>Development or investment issue</th>
<th>Potential focus of advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Protection and enhancement of the natural environment</td>
<td>✓ Recognition of local, regional and global benefits of effective environmental management strategies and their potential to impact on the economic performance of a property or portfolio</td>
</tr>
<tr>
<td>• Sustainable use of resources</td>
<td>✓ A more broad-ranging understanding of techniques and materials available to improve resource efficiency for constructing, operating and regenerating buildings</td>
</tr>
<tr>
<td>• Reduction of waste generation and the responsible disposal of waste</td>
<td>✓ Understanding on-site waste management systems and alternatives as an operational outgoing</td>
</tr>
<tr>
<td>• Reduced energy consumption</td>
<td>✓ Assessing the triple bottom line impacts of low energy consumption of building materials, services and fuels; impact of same on total occupancy cost, tenant attraction and retention</td>
</tr>
<tr>
<td>• Sustainable land use and transportation planning and management</td>
<td>✓ Reflect the benefits and costs of location and accessibility regarding its proximity to cycle paths, walking tracks and public transport for occupiers, visitors and service providers</td>
</tr>
<tr>
<td>• Sustainable design practices and whole life costing</td>
<td>✓ Recognise and measure the long term benefits of sustainable design on building operation and occupier satisfaction</td>
</tr>
<tr>
<td>• Community development and social inclusion</td>
<td>✓ The ‘contextual fit’ of a property in its local and broader community will need to be recognised as an emerging market factor</td>
</tr>
</tbody>
</table>

Derived from Heywood 2007:19
Appendix 4: Garneut Review Terms of Reference 2007

To report to the Governments of the eight States and Territories of Australia, and if invited to do so, to the Prime Minister of Australia, on:
1. The likely effect of human induced climate change on Australia’s economy, environment, and water resources in the absence of effective national and international efforts to substantially cut greenhouse gas emissions;
2. The possible ameliorating effects of international policy reform on climate change, and the costs and benefits of various international and Australian policy interventions on Australian economic activity;
3. The role that Australia can play in the development and implementation of effective international policies on climate change; and
4. In the light of 1 to 3, recommend medium to long-term policy options for Australia, and the time path for their implementation which, taking the costs and benefits of domestic and international policies on climate change into account, will produce the best possible outcomes for Australia.

In making these recommendations, the Review will consider policies that: mitigate climate change, reduce the costs of adjustment to climate change (including through the acceleration of technological change in supply and use of energy), and reduce any adverse effects of climate change and mitigating policy responses on Australian incomes.

This Review should take into account the following core factors:
_ The regional, sectoral and distributional implications of climate change and policies to mitigate climate change;
_ The economic and strategic opportunities for Australia from playing a leading role in our region’s shift to a more carbon-efficient economy, including the potential for Australia to become a regional hub for the technologies and industries associated with global movement to low carbon emissions; and
_ The costs and benefits of Australia taking significant action to mitigate climate change ahead of competitor nations; and
_ The weight of scientific opinion that developed countries need to reduce their greenhouse gas emissions by 60 percent by 2050 against 2000 emission levels, if global greenhouse gas concentrations in the atmosphere are to be stabilised to between 450 and 550 ppm by mid century.

Consult with key stakeholders to understand views and inform analysis. A draft Report is to be distributed for comment by June 30 2008. The final Report is to be completed and published by September 30 2008. Interim draft reports on particular issues may be released before that time for public discussion. The Report will embody the independent judgments of its author.