

Building green: financial costs and benefits



The Green Building Council of Australia defines a green building as one which “...incorporates design, construction and operational practices that significantly reduce or eliminate the negative impact of development on the environment and occupants with strategies for addressing:

1. Energy efficiency;
2. Greenhouse gas emission abatement;
3. Water conservation;
4. Waste avoidance, reuse and recycling;
5. Pollution prevention - noise, water, air, soil & light;
6. Enhanced biodiversity;
7. Reduced natural resource consumption;
8. Productive and healthier environments; and
9. Flexible and adaptable spaces”.

Buildings are a large consumer of raw materials and energy, creating a considerable ecological footprint and costs. Green buildings, with environmentally sustainable building elements, can deliver benefits to society by saving environmental resources. Although the concept of Environmentally Sustainable Development (ESD) and its environmental benefits have long been accepted, its financial implications are often neglected.

One common misconception is that ESD requires substantial initial outlays, but there is a plethora of evidence which suggests the contrary. The following overview of recent evidence focuses on the ‘financial’ costs and benefits. That is, the cashflow items relating to the development and operation of a building, whether on the part of the developer, financier or building users.

A division between costs and benefits, sometimes referred to as ‘split incentives’, has been seen as a disincentive to many green developments.¹ The perception is that the additional costs have been borne by the developer, but not by the end user, who instead reaps financial benefits. It has been suggested that this is primarily a result of developers tending to focus on initial costs, rather than costs over the lifecycle of the building. However, other evidence suggests that end users are willing to pay higher premiums for ESDs with the knowledge of reduced operating costs later.

Financial Costs

The costs of ESD vary with the type and level of sustainability features incorporated into individual developments, and with their development contexts. However, local and international data can provide an estimate of average costs. A number of studies have found that additional costs for ESD buildings can vary from 0.66% to 20% of construction costs. Their results are summarised in Table 1 overleaf.

A study undertaken in 2004 of 138 buildings across the USA found that a number of factors were significant to the cost of green buildings. The report found that the costs of constructing green buildings can vary in the same way as they do for conventional ones, that is, that green buildings can be achieved on both small and large budgets². More importantly, it was found that green initiatives should be incorporated from the onset of projects, including in initial budgets, to improve cost effectiveness³. Integrating ESD from the start of

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Table 1: Estimated Additional Construction Costs of ESD

Study	ESD Cost (% of const. cost)	Source
ING Bank, Netherlands	2%	Rocky Mountains Institute 2004
60L, Melbourne	5%	The Green Building Partnership 2004
Study of 33 projects certified as 'green' by United States Green Building Council (USGBC)	2% (can vary between 0.66 to 6.5 percent depending on type of certification)	Kats 2003
Comparison of 45 USGBC certified buildings to 93 conventional buildings	No significant difference in cost	Matthiessen and Morris 2004
Colorado Court energy and resource efficient affordable housing project, California	12%	Global Green USA 2004
Council House 2, Melbourne	20%	Melbourne City Council 2005

Source: Derived from Robinson 2005 : 3.

development, rather than as an additional feature at a later stage, can potentially add up to 3% of construction cost for specific enhancements⁴. Kats notes that as awareness, education and experience increases, the costs of integrating ESD elements should decrease, thereby reducing the cost disincentive factor for developers⁵.

Financial Benefits

While developers face the initial cost in the construction phase of a green building, research indicates this cost is generally recoverable through higher sale prices and rents. A green building's improved comfort, environmental benefits and reduced operating and maintenance costs can result in increased rent of between five and 10 percent, according to a study by Maguire and Robertson⁶. It also encourages higher tenant retention rates, due to the uniqueness of green buildings and their health and sustainability features.

The most notable benefits are to end users of ESD buildings who enjoy the financial benefits of reduced outgoing costs. This is often measured as a 'payback period', that is, the time taken to save additional construction costs from reduced operational expenses. A 2003 United States study reported that an average green building with an additional capital ESD investment of two percent would save approximately 20% of construction costs over a 20 year period, roughly equating to more than 10 times the initial investment. However, financial savings are only applicable to 30% of this figure (or six percent of total savings), with 70% (or 14% of total savings) attributed to productivity and health benefits⁷. Kats reports that on average, energy use is reduced by approximately 36% in green buildings⁸.

Other case studies indicate that payback periods can be quite rapid in relation to building lifecycles. The ING Bank, Netherlands, had a payback period of three months, with an annual saving of US\$2.9 million⁹. Similarly, Four Times Square, New York, is anticipated to have lower operating costs resulting in a three year payback period¹⁰.

A 2002 Canadian study outlines ten key reasons to build green, each of which carries some financial benefit for a developer. These reasons are:

- Capital cost savings: reducing mechanical/machinery components may lead to increased floorspace, and therefore increased income.
- Enhanced value: increased attractiveness due to superior indoor environments.
- Compressed schedule: an integrated team approach may result in fewer delays, and therefore more projects come in on time and on budget.
- Improved marketability: green buildings are a distinct product in the marketplace which can be used as a marketing tool for occupiers and builders.
- Improved public profile and community relations: green buildings as a demonstration of environmental responsibility.
- Publicity: green buildings generate interest and publicity, resulting in fewer costs for promotional advertising.
- Operational cost savings: savings in running costs can be used as a marketing tool to potential clients and tenants.
- Reduced liability risk: lower insurance premiums due to lower risk of illnesses associated with building sickness and indoor air quality.
- Future proofing: by reducing consumption of water and energy, increased costs or shortages of these resources will have a limited impact on occupants' outgoings.
- Higher building valuations: higher lease premiums may be obtained thereby providing a basis for higher valuations.

Aside from payback periods and lower outgoings, future savings can be made by ensuring the green building is 'future proof'. This shelters the building from any refurbishment required to meet future sustainability standards.

Indirect Financial Benefits

Benefits such as increased productivity, health, and residing in a marketable asset are not direct financial benefits, but they can contribute to financial benefits. Productivity benefits include reduced sick leave, increased quality of work, improved worker morale, increased productivity, lower staff turnover and quality staff recruitment. A majority of these directly convert into financial benefits: for example, lower insurance premiums due to better air quality in buildings, resulting in fewer health claims¹².

Another benefit, psychic income (income which cannot be converted into monetary terms), can arise simply from occupying a socially desirable asset - similar to occupying a 'trophy' property¹³. Benefits may include attracting potential employees¹⁴, or increased business due to a sustainable and ethical image¹⁵.

One benefit of particular relevance to public authorities is reduced demand for, and therefore reduced costs of providing, essential infrastructure services such as water and energy. Healthier working environments may also reduce the pressure on health care facilities by improving people's health. This sort of benefit may become more relevant in the future should carbon charges be applied or where jobs may be generated in material recycling industries¹⁷.

Barriers to ESD

One of the most significant barriers to the construction of green buildings is a lack of education and knowledge about their costs and benefits. Lack of green knowledge, such as where to obtain green products, green features and general approaches to green design inhibit the wider application of ESD¹⁸. Perceptions that financial costs are greater than benefits hinder the construction of green buildings, despite evidence to suggest that developers would recover costs through higher sale or rental rates.

Structural issues play a large role in the success and acceptance of ESD principles. The emphasis on short term gain rather than long term savings can act as a disincentive to developers, as well as inappropriate funding models, or limited access to capital for sustainable buildings¹⁹. Structural disincentives are also applicable to end users, with tax deductions for energy consumption and other business-related expenses.

Future directions

Recent literature indicates that there are minimal financial costs in implementing ESD, and that generally, these are recoverable by developers through higher sale prices or rents. Green buildings also generate other non direct financial benefits. Moreover, there are savings to be made with regard to infrastructure provision by governments.

Several factors are likely to be important in determining the success of green buildings. These include:

- Knowledge and education about green products and features, and their actual costs;
- Flexibility of green technology to achieve green buildings on a small or large budget;
- The integration of ESD elements from the onset of projects, rather than as additions later, to reduce ESD costs and effectiveness; and
- Structural issues such as life cycle costing and financial systems. ■

Footnotes

1. Madew 2006: 64
2. Matthiessen and Morris 2004: 18
3. Matthiessen and Morris 2004: 25-27
4. Matthiessen and Morris 2004: 25-27.
5. Kats 2003: 86
6. Maguire and Robinson 2000 cited in Robinson 2005: 2
7. Kats 2003: ii cited in Robinson 2005: 4
8. Kats 2003: 24
9. Rocky Mountains Institute 2004 cited in Robinson 2005: 3
10. US Department of Energy 2004 cited in Robinson 2005: 3
11. Cole 2002 cited in Madew 2006: 50-51
12. Mills 2001 cited in Robinson 2005: 4
13. Mills 2001 cited in Robinson 2005: 4
14. Kats 2003: 67
15. Madew 2006: 52
16. Kats 2003: 84
17. Madew 2006: 47
18. Madew 2006: 60
19. Robinson 2005: 1

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Heritage mechanisms - approaches and issues



In recent years, several reports have documented the range of heritage mechanisms used to recognise, protect and encourage the preservation of heritage items in Australia¹. However these studies have not categorised when and how heritage mechanisms might be used, or what distinguishes them. To consider in what contexts particular mechanisms might be applied, it is useful to identify three types of mechanisms - incentives, assistance and payments for heritage services.

Incentives

Incentives relate to measures which leave the choice regarding whether to invest or protect a heritage value up to the private owner. The object is to make it worthwhile for them to do the right thing - but the community carries the risk that the owner will not take up the offer. These are best used when there is latent commercial value in the retention or restoration of heritage.

Incentives are usually delivered in the form of minor tax breaks or fee exemptions to prompt property owners to maintain facades, repaint in heritage colours, and generally keep key heritage elements from deterioration.

Assistance

Assistance measures recognise that the average owner is unlikely to be moved to conserve heritage values because of a latent commercial or capital enhancement opportunity. More than marginal incentives are required to bring about the investment behaviour sought by the community. But there is still recognition that the owner is 'obliged' by the terms of the building's designation in a planning scheme or elsewhere to take primary responsibility for looking after these values.

Assistance typically takes the form of small, one off grants to help with restoration, provision of adaptive re-use entitlements (that is, scope to include otherwise non-compliant uses).

Payments for Heritage Services

Payments for heritage services recognise that there is little or no latent commercial value in heritage protection for the buildings or items in question; in fact, in these cases, the heritage designation would be seen as a clear burden which demonstrably curtails or denies development potential which may be available to neighbouring properties. In these instances, it is more common for the community (through Council or State or Commonwealth governments) to assume primary (financial) responsibility for ensuring satisfactory heritage outcomes (e.g. through outright purchase of the heritage property at an unencumbered price and kept or then re-leased or sold with a covenant requiring conservation, with the government bearing the loss in value). Alternatively, payments to owners of affected heritage properties, in recognition of the 'heritage services' delivered to the surrounding community, would be another means of recognising the impact on commercial values from a heritage designation.

Typically, these payments for heritage services would be provided in situations where there is a real risk that the item would be lost without intervention (usually in the case where growth and use prospects are limited) or where a heritage designation is given after development has commenced and this demonstrably affects commercial viability and prospects.

The Range of Mechanisms

The current suite of heritage conservation mechanisms used in Australia and some overseas examples are allocated to these categories in Table 1.

Table 1 - List of Heritage Conservation Mechanisms.

Incentives	<ul style="list-style-type: none"> ■ Property tax abatement ■ Income tax rebates or credits ■ Tax deductions ■ Stamp duty exemptions ■ Sales tax exemptions ■ Accelerated depreciation and government bonds ■ Capital gains tax exemptions
Assistance	<ul style="list-style-type: none"> ■ Entitlement grants ■ Discretionary grants ■ Performance grants ■ Direct loans ■ Loan subsidies ■ Revolving funds ■ Technical assistance ■ Labour and volunteers ■ Adaptive re-use (e.g. allowing non-conforming use) ■ Development bonuses
Payments for heritage services	<ul style="list-style-type: none"> ■ Payment or purchase from the tax base or endowment ■ Payment through a heritage levy on rateable properties ■ Effective payments through developer contributions (through Section 94 charges or development planning agreements) ■ Transferable Development Rights (TDR) ■ Granting additional or bonus floorspace (beyond the allowance in established controls)

It would be expected that ‘incentives’ will typically apply where heritage values are less significant and commercial imperatives or viability are highest, ‘payments for heritage services’ where heritage values are highly significant and commercial viability is weak, and ‘assistance’ mechanisms in the middle of these spectrums. This might be illustrated as shown in Figure 1 below.

Figure 1 - Commercial Value/Heritage Value/Appropriate Mechanism Matrix

		Heritage value	
		high significance	modest significance
Commercial viability	negative impact or poor commercial viability	Payments for heritage services	Assistance
	positive impact or unaffected commercial viability		Incentives

Issues with selected heritage conservation mechanisms

While many of the listed heritage mechanisms are applied in different contexts, some are more effective or robust than others. Some key issues are discussed below.

Tax Expenditures Vs Grants - Some of the discussion in recent literature regarding tax incentives and concessions refers to the major multiplier effects associated with these mechanisms. This may well be so, but the same multiplier effects can be generated by inducing the investor changes through grants rather than tax breaks.

Broadly, the reason that Treasuries in Australia generally prefer outlays rather than tax expenditures is that this is a more accountable and transparent deployment of community resources (taxpayer funds). Also, grants can be targeted more accurately.

Broad based tax concessions available to heritage listed properties tend to imply that a listing represents a negative for an owner. This is very often not the case (listing may not affect commercial prospects at all and in some cases it may add prestige not otherwise available). This is another reason for using more targeted incentives or assistance mechanisms.

Bonus Systems - Bonus systems offer the prospect of more intense or higher value development if the proponent is prepared to accommodate heritage features. Advocates of bonus systems believe that bonuses increase the overall value of a project and make the provision and maintenance of heritage aspects ‘worth it’, creating a so called ‘win - win’ situation.

Critics argue that bonus systems often compromise neighbourhood amenity and/or inhibit urban consolidation and/or produce unreasonable costs for the land owner,

depending on how the bonuses are determined. If the pre bonus level of permissible development is set in line with local environmental limits, granting of the bonuses is likely to mean that the local community will bear certain costs, for example, overlooking or overshadowing, or overloading of local infrastructure networks.

If, on the other hand, the pre bonus level of permissible development is set below environmental limits, persons owning or selling land will bear most of the cost, assuming a competitive market applies. The requirement to preserve heritage values in order to access the full development potential of a site would effectively amount to a tax on that marginal development capacity. This tax would be reflected in a lower residual land value (unless the developer enjoys a price making position, in which case the costs may be passed forward to end users). Looked at another way, environmental limits set arbitrarily (or artificially) below the true potential (and then enabling some developments to exceed them through bonus provisions) generates a general cost for other owners not able to access the bonuses, and is therefore economically inefficient.

Where restrictive ‘as of right’ conditions are set to make bonuses more attractive, but developers opt not to take up the bonuses, the result is under-utilisation of development capacity, leading in turn to higher costs in the development system and missed opportunities for urban consolidation or other intensification.

A further issue here is equity. Where a property owner of a heritage item is able to access development bonuses, the owner of the ‘normal’ next door property may be understandably aggrieved if he/she is denied access to these bonuses (notwithstanding the protection of heritage values enabled via the bonuses).

Another weakness of bonus systems is that they tend to be most attractive where and when the property market is strong and will therefore not have general applicability. Bonus systems have also been criticised as being imprecise and requiring intense negotiation upon each application adding costs and delays to the development process. Furthermore, it is difficult for bonuses to be applied in a comprehensive manner, as they are completely voluntary.

Negotiated Arrangements - Developers or owners may enter into a negotiated agreement with a Council with regard to the provision of ‘heritage services’ (i.e. protection and maintenance of a heritage property).

Due to the inconsistent basis upon which they are utilised, bonuses / relaxations can also be regarded as a negotiated arrangement, albeit on a more formalised basis (i.e. planning schemes can explicitly mention the bonuses ‘on offer’). Negotiated agreements are arbitrary and depend on the willingness of both the local government and the developer to enter into the agreement. As a result, this method of securing contributions offers limited certainty or consistency and may again take many person-hours of negotiation. A

system of case-by-case negotiations can be said to be open to abuse, if the processes are not transparent. The negotiated agreement mechanism is improved if framed as a clear set of guidelines around heritage protection through negotiated arrangements or planning agreements in different circumstances.

Transferable Development Rights

The Australian planning system has not typically recognised 'development rights' as such. These rights are only conferred when a Development Approval is issued. Generally speaking they are not inferred or granted via a planning scheme or Local Environmental Plan (LEP) designation. This philosophy has been pursued to avoid having to pay compensation for 'back zoning'. In the absence of a general system for capturing betterment, the obligation to compensate for back zoning would be disastrous, locking many planning authorities into a 'no change' stance on planning scheme reviews, notwithstanding the net community benefit on offer which might follow such a review.

Conceding on the notion of 'development rights' may unwittingly support the contention that properties should not be heritage listed unless the owners agree (presumably with some form of payment for their 'foregone rights'). It is important to maintain the community's prerogative to designate heritage values in planning schemes or LEPs, regardless of the impact on land values. The community would then offer incentives, assistance or payments for heritage services at its discretion, through the various politically accountable forums. Such a policy should only be abandoned if there was a universal system of betterment capture, in which case routine compensation for 'worsement' becomes possible.

In relation to heritage protection, the aim should be to identify requirements in strategic plans, and reflect these in statutory instruments, rather than relying on site by site negotiated outcomes.

Planning that Supports Heritage Conservation

There is a further category of 'action' related to heritage recognition and protection, and that is effective and early planning. Clear and certain development parameters are a key to good planning and providing unambiguous signals to owners, investors and developers. Some aspects of 'good planning' will include:

- Early identification of significant heritage properties or places through mapping and listing;
- Clear provisions relating to what can and can't be modified and what is possible on the heritage site (in planning instruments or support documents);
- Access to parallel design and development advice;

- Appropriate preservation of the heritage setting of an item or place (i.e. with clearly articulated buffer zones, view corridors or guidance about development on abutting properties, remembering that not all heritage items necessarily require curtilage protection); and
- Communication regarding the impact and intent of associated development controls. ■

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What is Value Capture?



Value or 'betterment' capture refers to a taxation, regulatory, partnership agreement or other public policy initiative designed to reserve, for community use, part of the uplift in land value which is created when the scope or intensity of development permissible on a site is increased by an approval authority. Unlike other forms of "development contribution" (user pays contributions and impact mitigation payments), the rationale for value capture payments has nothing to do with charges for beneficial infrastructure, or with compensating for the unanticipated effects of development. The rationale relies on the argument that the uplift in value is conferred by the wider community as opposed to being generated by the efforts of the development proponent or land holder per se. In this sense, the uplift in value is "unearned".

In part, the community creates this value by continuing to subsidise certain items of infrastructure which will service the area, like schools, police services and health facilities. The benefit offered by these community funded, as opposed to user funded, services will be capitalised into property prices. Other things equal, properties favoured with these services will be more valuable than those that are not.

This is, perhaps, most apparent when considering the value of non-urban land versus urban land, but it is also evident within urban areas to the extent that the benefits generated by community funded infrastructure are subject to distance decay. Land value uplift is certainly evident when public agencies intervene in an established urban area to provide a significant improvement in transport or other amenity funded from a broad tax pool. A good example of this is the betterment generated from major investments in rail infrastructure (metros, new stations etc).

As well as through its investments in infrastructure, the community creates part of the land value uplift through its collective 'design' and regulation of city growth and change, particularly in its determination that higher order uses shall not occur on a laissez faire basis but in a rationed and systematic way so as to maximise the overall social efficiency of urban development. In some respects, this publicly sanctioned rationing of 'development rights' is analogous to the rationing of water extraction, fishing, forestry and other licences, where unfettered economic activity is likely to lead to a net community disbenefit because of market failures.

Although retail, commercial, industrial and hospitality uses might come to mind when considering the 'higher order uses' subject to such licensing, they can be as simple as an approval to use residential land in a more intense way than what is standard or 'as of right' for the area in question, for example, by constructing flats or apartments. By constraining the supply points and supply volumes for these higher order uses, collective action creates the potential for monopoly rents (higher land values for sites with rights to be these supply points). Advocates of betterment levies argue that at least part of this unearned increment should flow back to the community for re-investment to the public good including, perhaps, the improvement of local infrastructure.

The idea of betterment capture was an integral part of early town planning legislation in Australia and the UK. More recently, formal betterment capture provisions have given way to negotiated arrangements for securing 'planning gain' for the community. The ACT is the only Australian jurisdiction to retain a formal betterment charge, facilitated by its unique leasehold land system. However, various Australian jurisdictions are examining hybrid development contribution arrangements which embody an element of betterment capture.

In discussing the policy basis for value capture, a key proposition is that a 'development right' has a value in its own right and this value is conceptually distinct from the

attributes of the particular piece of land which might host this right. In theory, 'development rights' can be auctioned off separately, that is, without reference to any specific piece of land. Indeed, this occurs in some overseas jurisdictions which feature 'transferable development rights', and in some Australian jurisdictions albeit in a more restricted way. For example, the Victorian Government's Docklands Authority sold development rights separately to land, with title passing over only upon completion of projects or stages.

In this context, betterment levies are akin to the Government's sale of licences to access other rent generating activities which are rationed for the sake of overall community well being and market efficiency, for example, as noted, radio frequency licences, TV broadcaster licences etc. An important observation here is that the licence has a market value independent from the circumstances or intentions of the bidders / purchasers. The equilibrium market value of the licence is determined by the present value of future earnings from operating the licence minus the costs, assuming a reasonably efficient operator. It is not determined by the capacity to pay of operators encumbered by various inefficiencies.

Thus, betterment reflects two factors. Firstly, the provision of taxpayer funded (as opposed to user funded) infrastructure to land. Secondly, the provision of a development right which is otherwise rationed for the sake of efficient urban development. Much of the recent commentary on betterment in Australia relates only to the first of these categories, even though it is arguably the junior partner in boosting land value upon rezoning.

Finding appropriate and practical value capture mechanisms deserves a higher place on the public policy agenda. All spheres of governance are seeking to improve their capacity to effect 'transformational' change in line with adopted regional and local plans and national priorities. Such transformational projects may include housing and business intensification in targeted activity centres, the creation of major urban nodes around new public transport infrastructure and the development of nationally significant precincts. Projects of this type have the potential to lift land values dramatically, by virtue of the focussed public sector planning effort and investment in infrastructure.

Ideally, part of this uplift in value would be captured by the community for reinvestment in local community facilities and services. Moreover, these transformational projects may be critical to the achievement of urban forms which can offer cities, regions and nations an important competitive advantage with tangible economic returns. Hence, any measure that can secure the delivery of these projects will be of strategic significance. ■

SGS News

SGS is pleased to announce that **Clive Attwater** (BSc (Env Studs) (Hons), MBA, MIMC) has become a Director of SGS. Clive has extensive experience in consultancy and government, specialising in urban economic analysis, regional development, market assessment, business and strategic planning, project and performance evaluation, and environmental management and assessment. Clive has been integral to SGS's practice since joining the firm in 2000. During this time he has managed the Hobart office and has also carried out projects in other states of Australia and in the Middle East. His long consulting career before joining SGS included a decade as principal of his own consultancy firm.

Jonathan Taylor is now an Associate Director of SGS. He joined the Canberra office in 2005 and is responsible for the design, project management and delivery of a variety of State, Territory and Australian Government consultancies. Jon has extensive experience in international development, Indigenous affairs, international education, and the conduct of economic and social analysis for public sector, multi-lateral and non-governmental organisation clients. He has undertaken projects throughout Australia including remote communities, and also internationally. Jon holds a Master of Economic & Social Studies (Development Studies), and a Bachelor of Arts (Hons.) (Geography).

Vigneshwar Maharaj has been appointed a Senior Consultant, in the Melbourne team. He is qualified in actuarial studies and finance and has been with SGS since 2004, initially in the Brisbane office and later moving to Melbourne. Vinnie specialises in economic modelling, impact assessments, use and development of input-output modelling, retail modelling, geographical information systems and spatial analysis, and data analysis. Vinnie has also gained significant experience in economic development, policy analysis (e.g. affordable housing), infrastructure charges, strategic land use planning, feasibility studies, and study of industry clusters.

Ed Wensing, Liz de Chastel, and Harry Perlich have recently joined SGS.

Ed Wensing, (BA (Hons), LESD Cte.) has joined the Canberra office as a senior consultant. Ed is an experienced strategic planner and policy analyst who has extensive involvement in the public, private and tertiary education sectors. Ed specialises in public policy analysis, strategic thinking and planning and program monitoring, evaluation, reporting and improvement. Before joining SGS in July 2008, Ed held senior positions in government with responsibility for policy development, program administration and implementing legislative changes. He was also a Director of his own planning and land management consultancy for several years.

Also joining the Canberra team as a senior consultant is **Liz de Chastel** ((BTRP (Hons), Grad Cert Mangt, CMPA, CPP.) Liz is an experienced strategic and policy planner with over 25 years experience in three states/territories covering urban and regional issues, policy development and project management and legislation, related to the built environment. Prior to joining SGS Liz was National Policy Manager with the Planning Institute of Australia's National Office.

Liz's policy development has covered social, environmental, transport, housing and land use planning and more recently climate change mitigation and adaptation issues. She has extensive knowledge of the land development process, state/territory and regional planning, and the requirements for the provision of service infrastructure.

Harry Perlich (B.Arts (Hons) PhD (Economics)) is a Senior Consultant in the Sydney office. He has a strong background in economic quantitative analysis, economic reporting, particularly regarding housing markets, GIS mapping of Census data, business report writing and academic research. Prior to commencing at SGS, Harry worked as an economic analyst at Stockland. He has also worked in a range of other public and private sector organisations.

Urbecon

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