

PRESERVING THE PROJECT RETURN

– An Analysis of Costs and Incentive and Non-Incentive Offsets for Improving Sustainability Performance in a Residential Development.

About the Author

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Confidentiality Limitations

Due to the commercially sensitive nature of the information on which the analysis detailed in this report was performed, the identity of the participating developer, referred to throughout as the Developer, has been kept confidential. Additionally only percentages, rather than specific dollar amounts of costs and revenue are disclosed.

EXECUTIVE SUMMARY

Sustainable communities have been defined as places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents; are sensitive to their environment; and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all.

While the benefits of such an approach to the delivery of new communities are obvious, the uptake by residential developers has been limited, primarily due to a number of market and non-market barriers to adoption beyond boutique special purpose developments. Principal of those is the classic split incentive, the real world experience that the residential homebuyer will not pay more for a more sustainable home, yet is happy to reap the benefits, especially those related to lower operating expenses. While in order to deliver the more sustainable home, the developer must accept a lower project return. Not a financially sustainable option.

Historically the cost of improved sustainability performance has been the focus, however there are a number of points in the development process where delivering a higher sustainability standard may provide returns that have not previously been accounted for. Specifically the impact of increased sales rates, increased promotion and public awareness and access to proposed incentives such as ‘green door’ development approvals which give priority to development with sound sustainability credentials.

Additionally, by exploring and modelling incentives for residential developers to improve sustainability performance from around the world, it is also possible to ascertain what impacts these incentives may have on project return, therefore allowing for informed and targeted lobbying of Governments.

This project provides an analysis of costs and incentive and non-incentive offsets for improving sustainability performance in a residential development using two financial performance metrics. The traditional Internal Rate of Return (IRR) and an additional in-house metric utilised by the participating Developer, the Value Add (VA).

In all over 21 different offset scenarios have been modelled, with only one, the Section 94 construction cost offset, able to fully counter the impact on IRR and VA of development cost increases. The tax credit for 8% of allowable construction cost increases was the least effective, unsurprising, given the limited range of construction costs for which it could be applied and therefore limited revenue impacts.

One of the most encouraging results was the impact of an increased sales rate. A modest increase in sales rate of 2% increase over the first three months returned an IRR only 120 basis points (-4.1%) below the base case. The effect is further enhanced when combined with other offsets such as reduced selling and marketing cost. It demonstrates that there are means, already within the control of a developer, which can preserve the project return.

In order to crystallise this potential, recommendations are made in the following areas:

- 1** Improve the communication of sustainability features to purchasers
- 2** Increase the understanding in the general population of benefits of more sustainable homes
- 3** Use the Developer's position within industry groups to lobby for a number of incentives in the following order of preference:
 - Section 94 redistribution to the project
 - 'Green-door' expedited development approvals
 - Sizable rebates per dwelling

While the classic split incentive of costs being met by the developer and benefits accruing to the purchaser remains, there will be no wholesale, voluntary adoption of more sustainable residential development.

Project input has been sought from a range of sources, indirectly through published research and directly through engagement with property industry players including in-house specialists of the Developer, the Property Council of Australia the Residential Development Council of Australia and the Green Building Council of Australia.

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1 SETTING THE SCENE FOR SUSTAINABLE RESIDENTIAL DEVELOPMENT

The building sector captures both residential and commercial activity that takes place within our built environment and houses nearly 60 per cent of Australia's economy in terms of contribution to gross domestic product (GDP)¹. The commercial sector comprises 11 major economic sectors and the residential sector comprises the following building classifications that make up the vast majority of residential buildings in Australia²:

- Class 1a (i) — detached houses;
- Class 1a (ii) — attached dwellings; and
- Class 2 — buildings containing two or more sole occupancy units.

It is estimated that the residential sector accounts for 74 CO₂-e Mt or 13% of Australia's Greenhouse Gas (GHG) emissions profile³.

In considering the abatement opportunity within the residential sector, the Centre for International Economics focussed on retrofitting “rebuilding” the existing building stock to achieve a 48% efficiency gain at a technical cost saving of \$113 per tonne of GHG emissions abated through the following measures:

- lighting — substitution of energy inefficient with energy efficient light fittings;
- refrigeration — substitution of less efficient with more efficient fridges and freezers;
- hot water — adoption of more efficient appliances, improved fittings and reduced water use;
- standby electricity — adoption of devices that achieve low standby energy use;
- space heating — adoption of more efficient heating appliances and improvements in the thermal envelope, achieving 7-star energy rating; and
- cooling — adoption of more efficient appliances (as well as gains from thermal envelope improvements)⁴.

These are obvious areas for focus in the delivery of new residential buildings.

Beyond energy efficiency are the broader, but often overlooked benefits of delivering a more sustainable residential built environment.

Sustainable communities have been defined as places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents; are

sensitive to their environment; and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all⁵.

It stands to reason that new housing stock and communities should seek to deliver these same outcomes in sustainability performance.

2 BARRIERS AND THE NEED FOR DEVELOPER INCENTIVES

Incentives address the barriers which are hindering the wholesale delivery of improved sustainability performance in the residential real estate market.

1.1 The Barriers

Whilst focussing specifically on energy efficiency, the Centre for International Economics (CIE) identifies the presence of market and non-market barriers that prevent the building sector from investing in opportunities to improve sustainability performance⁶. Those barriers and how they are experienced in new residential development are described below:

- **Information gaps** – parties are often unaware of the options available to them. This is true on both the part of the developer and that of the homebuyer.
- **Information asymmetries** (adverse selection) — even when information is available, it can be difficult for both the developer and the homebuyer to determine which options are ‘good’ and which are ‘bad’. Specialist (read: expensive) advice is often required. When the costs of making poor choices are sufficiently high, which is most certainly the case for a developer, this may lead the decision maker making no choice at all. This is a real barrier to the adoption of new technology, as residential developers are traditionally building on past experiences, taking a new product forward and upsetting the successful ‘formula’ is a difficult move, especially when your brand is based on quality and long-term warranties are offered.
- **Split incentives** – where the costs and benefits of an investment to improve sustainability performance accrue to different parties. The costs to improve the sustainability performance of a new home are met by the developer. The benefits, in reduced utility costs, healthier spaces and better quality of life are received by the homebuyer. That the developer is unable to recover these increased costs from the homebuyer, acts as a significant deterrent to action.
- **Unpriced externalities** – the CIE describe an externality occurring when an economic activity causes costs or benefits to third parties, that is where the producers and consumers

in a particular market either do not bear all of the costs or do not reap all of the benefits of the economic activity. This is certainly the case where the developer delivers a more sustainable home, one that uses less electricity, that is constructed with recycled content products with waste minimised to conserve resources and other such initiatives. The environment and the future users of those resources benefit. The cost of these benefits is not recovered by the developer.

- **Bounded rationality** — the opposite problem of incomplete information is having too much information. Where too much information is available, as is certainly becoming the case as new products and approaches emerge on a daily basis, decision makers often revert to ‘Rules of Thumb’ rather than more complete decision making processes. This can mean opportunities are overlooked or undervalued, which as individuals may not be significant, but can combine to become so.
- **Regulatory problems** – there are certainly significant regulatory barriers to more sustainable residential product, especially when exploring district approaches such as trigeneration where both strata and energy market regulation prevent a developer locking future residents into an energy supply contract, often scuttling the financial viability of such a significant investment. Also over regulating building standards can have perverse impacts, such as the six star NatHERS rating requirements of which there is anecdotal evidence of homes constructed with reduced windows or little natural ventilation in order to reach the standard.

1.2 The Government Response and the Need for Incentives

Government response to date has typically been to focus on closing information gaps and asymmetries and provide financial incentives to overcome upfront costs and accelerate uptake of sustainability options. However these financial incentives are focussed only on the owner of an existing home and are not accessible by the residential developer. Examples of Government and Government-mandated energy utility funded programs that a home owner can access include rebates for water efficient washing machines, fridge buyback programs, solar panel installation rebates, feed-in tariffs for domestic renewable energy and free ceiling insulation.

Governments are also moving quickly to regulate for increased sustainability performance as evidenced by July 2009 release of the Council of Australian Governments (COAG) National Strategy on Energy Efficiency⁷. “Making buildings more efficient” is one of the key themes of the Strategy which will see the following measures progressed in the residential space:

- Significantly increase the stringency of energy efficiency provisions for all new residential buildings in the Building Code of Australia (BCA) and broaden coverage of efficiency requirements. Minimum energy efficiency standards will be upgraded to 6-stars (NatHERS), or equivalent, nationally in the 2010 update of the BCA to be implemented by May 2011.
- Phase in mandatory disclosure of residential building energy, greenhouse and water performance at the time of sale or lease, commencing with energy efficiency by May 2011.
- Address the opportunities that can be derived from building lot or precinct level layout that support appropriate solar access to living areas, solar hot water, and solar photovoltaic systems for new buildings.
- Provide and promote information on energy efficient housing options.

Whilst regulated standards do level the playing field for base case sustainability performance, there has been little consideration of the fundamental barriers confronting developers of new residential stock. The approach is regulatory with the developer to absorb the cost of compliance. Australian research identified very few incentives for developers to move ahead of or beyond legislation⁸. This was a position supported by property industry bodies, who acknowledged a lack of Government action in incentivising developers⁹.

1.3 Types of Incentives

For examples of incentives for developers to deliver improved sustainability performance it was necessary to look internationally. The programs detailed below is by no means an exhaustive list, but serves to inform the type of incentives available as a basis for determining IRR value in the development process.

1.3.1 Taxation Based Incentives

Federal Government Energy-Efficient New Homes Tax Credit for Home Builders (US)

First established in the 2005, extended in 2008 and again in December 2009, the Energy-Efficient New Homes Tax Credit for Home Builders enables tax credits of up to \$2,000 for builders of all new energy-efficient homes built to prescribed energy performance standards¹⁰. A home with annual heating and cooling energy consumption which is at least 30% below the annual level of heating and cooling energy consumption of a comparable dwelling unit and constructed in accordance with the International Energy Conservation Code qualifies for \$1000. The building envelope component improvements must account for at least one-third of

the reduction in energy consumption. A home 50% below a comparable and with the building envelope improvements accounting for one-fifth of savings qualifies for \$2000¹¹. Unused current-year credits may be carried back one year or forward up to 20 years. This is acknowledged as a considerable tax benefit¹².

Sales and Use Tax Exemption for Energy-Efficient Products (US)

The State of Connecticut offers an exemption from the state's sales and use tax for “residential weatherization products” including programmable thermostats, window film, attic and wall insulation, spray foam insulation, water pipe insulation, natural gas furnaces and windows that meet the federal energy star standard. The exemption to applies to a property owner, a tenant, or a contractor, and whether the products are to be used in existing real property or new construction, but only for sales made by Connecticut retailers¹³.

Corporate Income Tax Credit for Green Buildings (US)

Although no longer accepting applications, the State of Maryland Green Building Tax Credit program provided a credit against a taxpayer’s corporate income tax of 6% to 8% of total allowable construction costs for a building that meets Leadership in Energy and Environmental Design Green Building Rating System (LEED) standards. Actual certification was not necessary, simply a demonstration that criteria were met¹⁴. Non-residential and residential multifamily buildings of at least 20,000 square feet, on a qualified brownfields site, or in a priority funding area, and not in a wetlands area were eligible and allowable construction costs related to three types of alternative energy sources: photovoltaics (PV), wind turbines and fuel cells for either the green whole building, a green base building, or green tenant space¹⁵.

1.3.2 Rebates and Subsidies

Roseville Electric - Residential New Construction Rebate Program (US)

Roseville Electric, located in Placer County, Sacramento, California, a municipal owned utility servicing 52,000 residential and business customers¹⁶, has established the Residential New Construction Rebate Program. Builders of residential homes can access a rebate of up to \$8,600 for each new home that complies with the prescribed standard in excess of legislated requirements and installation of grid-tied photovoltaic (PV) systems¹⁷. It’s worth noting that Section 136 of the US Code Service - Energy conservation subsidies provided by public utilities, energy conservation subsidies provided by public utilities either directly or indirectly, are non-taxable¹⁸.

Section 94 contribution exemption – for consideration

Section 94 of the *Environmental Planning and Assessment Act 1979 (NSW)* provides for a requirement of property developers to make a contribution towards provision or improvement of amenities or services, known commonly as Community Infrastructure Levies.

The contribution can be in the form of dedication of land free of cost, or the payment of a monetary contribution or both. As an intended purpose of Section 94 contributions is to provide for provision or improvement of amenities or services, the appropriate application of the funds to this purpose will impact on the sustainability of the development.

If a developer were able to retain Section 94 contributions and apply them directly to improving the sustainability performance of the development, the objectives would still be met. This is not an incentive currently available but has been identified in discussions as an attractive incentive, the impacts of which should be modelled.

1.3.3 Procedural Advantages

Expedited Permitting for Green Buildings (US)

Section 8.108.050 of the Santa Monica Municipal Code, Priority plan check processing for LEED certified buildings¹⁹, provides for priority plan check processing by all City departments for all new and qualifying existing buildings, that are registered with the United States Green Building Council for, and are actively pursuing certification under the LEED standards, including LEED for Homes (LEED-H), LEED for New Construction (LEED-NC), and LEED for Core and Shell (LEED-CS). The Council reserves the right to impose a fine on projects that receive priority plan check processing, but then fail to achieve LEED certification.

2 DEVELOPMENT FINANCIAL REVIEW

The development analysed is a multi unit residential development comprised of a mix of 164 one, two and three bedroom apartments.

2.1 Financial Performance Metrics

Two financial performance metrics are utilised by the Developer: the traditional project Internal Rate of Return (IRR), being the discount rate which generates a zero net present value; and, an in-house Value Add (VA) metric.

The VA metric is based on the concept of time value of money and captures the timing of profits – a key driver in value creation. It measures the movement in the Net Present Value (NPV) of a projects cash flow between the commencement of the project and the completion

of the project using a predetermined discount rate. The VA metric provides a mechanism for the Developer to assess the impacts of changes to cash flow totals and timing between forecast and actual.

2.2 Development Costs

Elements of total development costs are presented as percentages in Figure 1. Construction costs including labour and materials are by far the largest cost component, with land cost the next largest.

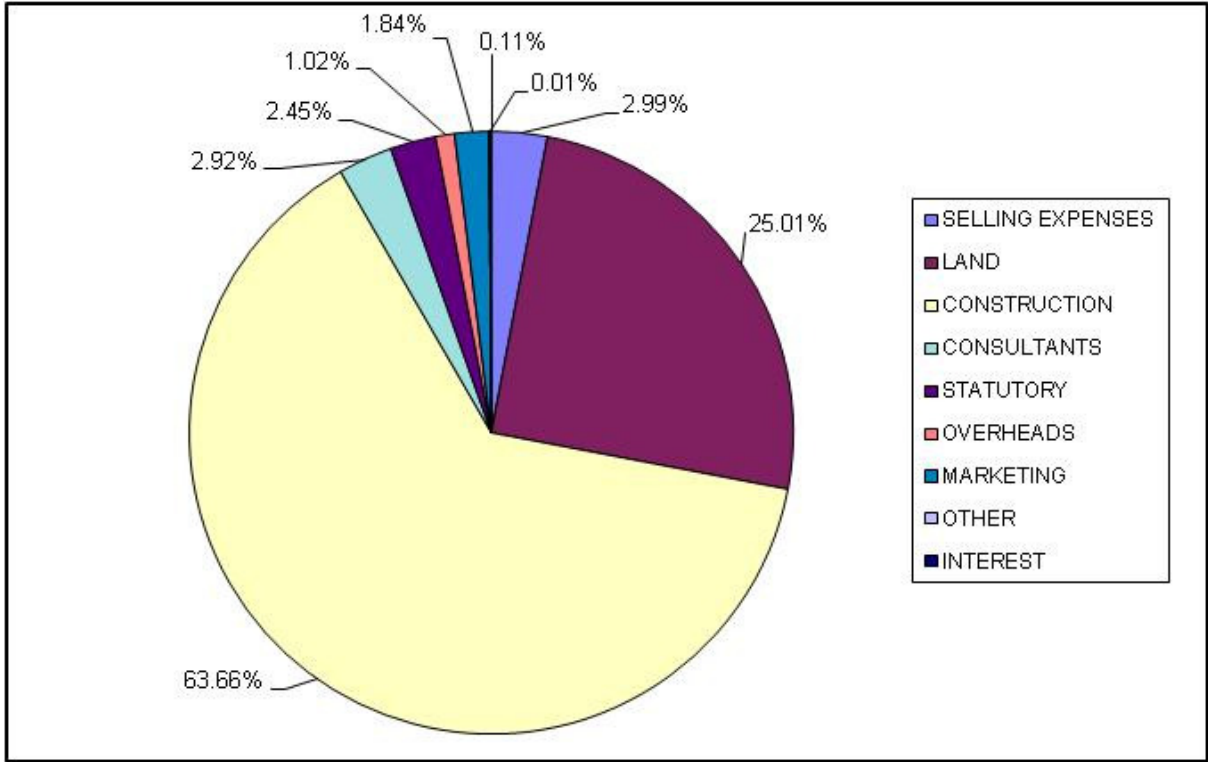


Figure 1: Percentage cost breakdown

2.3 Adjustments in the Model

These costs were extracted from a project tracking report and verified with the project team. Given some variances between the figures in the project tracking report and those in the feasibility model, it was necessary to undertake a number of adjustments within the feasibility model utilised for the scenario modelling. Where costs were higher or lower, the necessary change was made to the line item in the feasibility report and the difference spread equally across all months. It is acknowledged that this is unlikely to reflect the actual timing impact of the variation, but with the information available it was not possible to pinpoint exact timing of the variations.

2.4 Base Case IRR and VA

The project is returning an IRR of 29.34% and VA of \$5.6 million.

3 IMPROVING THE SUSTAINABILITY PERFORMANCE

3.1 Performance Rating Tools

3.1.1 Green Star – Multi Unit Residential v1

The Green Building Council of Australia (GBCA) launched the Green Star – Multi Unit Residential v1 rating tool on 2 July 2009 to promote the design and construction of high-performance green residential developments²⁰.

All GBCA Green Star rating tools evaluates the green attributes of building projects based on nine categories²¹.

- Management
- Indoor Environment Quality
- Energy
- Transport
- Water
- Materials
- Land Use & Ecology
- Emissions
- Innovation

The Green Star rating is determined as a percentage score by summing the credits awarded against each initiative in each category, then applying a category environmental weighting factors and each resultant total category score summed including any innovation credits awarded²².

Green Star ratings are awarded for scores of 45 or more as follows:

- Star Green Star Certified Rating (score 45-59) signifies 'Best Practice'.
- Star Green Star Certified Rating (score 60-74) signifies 'Australian Excellence'.
- Star Green Star Certified Rating (score 75-100) signifies 'World Leadership'.

Numerous Government bodies have moved to mandate Green Star within the develop process and a means of meeting their sustainable development objectives.

However it should be noted that the GBCA's suite of Green Star rating tools are voluntary. The GBCA acknowledges there is great value in utilising the Green Star tools as the performance measurement mechanism within an incentives framework and advocates that governments lead by example and incorporate Green Star into their own building requirements²³.

With this is mind, it is considered appropriate that the Green Star rating (minimum 4 stars) be set as the baseline for developer incentives and therefore the benchmark for the development under analysis.

3.1.2 Developer Standards

The Developer also has a number of in-house sustainability commitments outside of Green Star. These were also included in the requirements to be delivered to improve sustainability performance however the specifics of the commitments and the required standards, beyond the actual changes required for improved sustainability performance detailed herein, cannot be disclosed.

3.2 Requirements to Achieve Improved Performance

To determine the costs to achieve a 4 star Green Star rating and the additional Developer commitments, it was first necessary to determine what additional inclusions would be required.

A review of the Green Star – Multi Unit Residential (“MUR”) v1 tool was undertaken, with credits to be pursued identified. In consultation with Developer in-house specialists²⁴, a number of areas were identified where the selection of materials or additional features would deliver the higher performance required.

It was not within the scope of this project to perform a certifiable Green Star MUR assessment, as to do so would have required specialist and costly technical modelling, particularly in the energy, water and emissions categories. Certain assumptions were developed in consultation with the Developers design group²⁵ to allow an indicative performance score to be determined.

1. That increasing insulation levels, external shading, the energy efficiency of lighting and installation of ceiling fans would achieve the Conditional Requirement for Energy - *To meet the conditional requirement, the average thermal performance of the dwellings must be improved by 10% compared to the regulated thermal performance standard in the relevant jurisdiction.*
2. Also that the development having no central HVAC system, use of relatively energy efficient packaged air-conditioning units for heating and cooling, use energy efficient lighting, gas hot water service, exhaust systems, eco-lift system, no pool/sauna/spa and use of gas cook tops would likely achieve a 20% reduction on Green Star Greenhouse Gas Emissions benchmark.
3. That upgrading fixtures and fittings to six star WELS rating and dual plumbing of 'purple pipe' recycled water would achieve 3 credits under Occupant Amenity Water and a Discharge to Sewer credit.

The materials or features modifications required to achieve the required sustainability performance are detailed in Table 1 below.

Table 1: Changes to construction to achieve a 4 star Green Star Multi Unit Residential v1 rating.

Wages - Green Star Manager	Appointment of a dedicated Green Star Accredited Professional on project team to manage process including preparation of Building Users' Guide and submit rating.
Aluminium Windows	Inclusion of low-emissivity glass in windows to control heat transfer and improve thermal performance to achieve Conditional Requirement for energy and reduction in Greenhouse Gas Emissions of 20% on Green Star benchmark.
External Louvers & Screens	Inclusion of additional louvers and screens to increase shading and improve thermal performance to achieve Conditional Requirement for energy and reduction in Greenhouse Gas Emissions of 20% on Green Star benchmark.
Pergolas & Sunshades	Inclusion of additional sunshades to increase shading and improve thermal performance to achieve Conditional Requirement for energy and reduction in Greenhouse Gas Emissions of 20% on Green Star benchmark.
Insulation	Inclusion of additional ceiling, wall and floor thermal and noise insulation to increase thermal performance and noise performance to achieve Conditional Requirement for energy and reduction in Greenhouse Gas Emissions of 20% on Green Star benchmark. Also Internal Noise Level credit.
Carpenter Labour & Materials	All engineered wood products contain no formaldehyde.
Bathroom Fixtures	Increase WELS rating of all fixtures and fittings to 6 star WELS rating.
Carpet	Use of low VOC carpets as specified in Green Star and upgrade choice to achieve 1 point, eco-content, high durability, responsible supplier, supplier take back.
Tiling	Use of low VOC adhesives in tiling as specified in Green Star.
Painting	Use of low VOC paints as specified in Green Star.
Plumber & Drainer	Replacement of 30% of the total cost of PVC content with a non-PVC alternative.
Electrical Installation	Installation of ceiling fans in at least 95% of all apartments. Energy sub-metering for substantive energy uses within the building and smart metering for the consumption of electricity, water and gas in all apartments. Installation of a single shut down switch in all apartments. Upgrade of energy efficiency of lighting.
Mechanical Services	Upgrade to ensure all HVAC refrigerants have an Ozone Depletion Potential (ODP) of zero and a GWP100 of 10 or less.
Landscaping	Scheme improved to 2 points on ecological calculator.

In additional to construction cost increase, cost increases should also be expected in consultants to the development project to undertake additional tasks associated with Green Star design and certification as detailed in Table 2.

Table 2: Changes to consultant costs to achieve a 4 star Green Star Multi Unit Residential v1 rating.

Architects Fees	To account for additional requirements of Green Star design and provide necessary documentation for certification.
Structural Engineer	To provide additional advice, oversight of delivery and necessary documentation Green Star certification.
Electrical Engineer	To provide additional advice, oversight of delivery and necessary documentation Green Star certification.
Mechanical Engineer	To provide additional advice, oversight of delivery and necessary documentation Green Star certification including pre-commissioning, commissioning, and quality monitoring are contractually required and done in exact accordance with appropriate guidelines.
Hydraulic Engineer	To provide additional advice, oversight of delivery and necessary documentation Green Star certification.
Environmental Consultant	To provide additional advice and necessary documentation Green Star certification. The Developer Green Star professional will manage the bulk of the Green Star management and submission process.
Facade Engineering	To provide additional advice, oversight of delivery and necessary documentation Green Star certification.

3.3 Costs to Achieve Improved Performance

Given the inability to model specifics, particularly around the increased level of shading, insulation, low-emissivity glass, an alternative approach to determining cost increases was required. With input from Developer architects²⁶ and construction²⁷ professionals it was determine at percentage increase could be applied to specific elements with a fair degree of confidence.

However, one key outcome from these discussions was the identified need to differentiate cost increases to supply of the product, fit of the product or both supply and fit. For example, inclusion of low-emissivity glass would be an increased cost to supply, not fit.

The Developer generally employs a supply and fit arrangement, costs in project tracking report reflect this total cost. Therefore in order to apply an increase to the supply, fit or supply and fit elements, it was first necessary to determine the likely breakdown between the supply and fit costs. To do this the industry accepted Labour and Material Trade Ratios were applied²⁸ to the construction costs.

Each identified element was then determined to be a supply, fit or supply and fit item. For supply only items, an agreed percentage increase was applied to the calculated supply cost. For fit only items, and agreed percentage increase was applied to the fit cost. For supply and fit items an agreed percentage increase was applied to both elements.

As it is not possible to disclose specific construction costs, a summary only of increased costs as a percentage off base is provided in Table 3 below.

Table 3: Modelled construction cost increases.

Cost Element	Percent Increase
CONSTRUCTION	3.54%
CONSULTANTS	10%

For the purpose of modelling the changes in construction and consultant costs were equally apportioned over all periods. The reality would be different and the timing would impact on the IRR, it was however not possible to accurately predict when the cost increases would occur.

The modelling showed an IRR of 26.94%, a decrease of 240 basis points (-8.2%) from the base case and a VA of \$4.2 million a decrease of \$1.4 million (-25.3%).

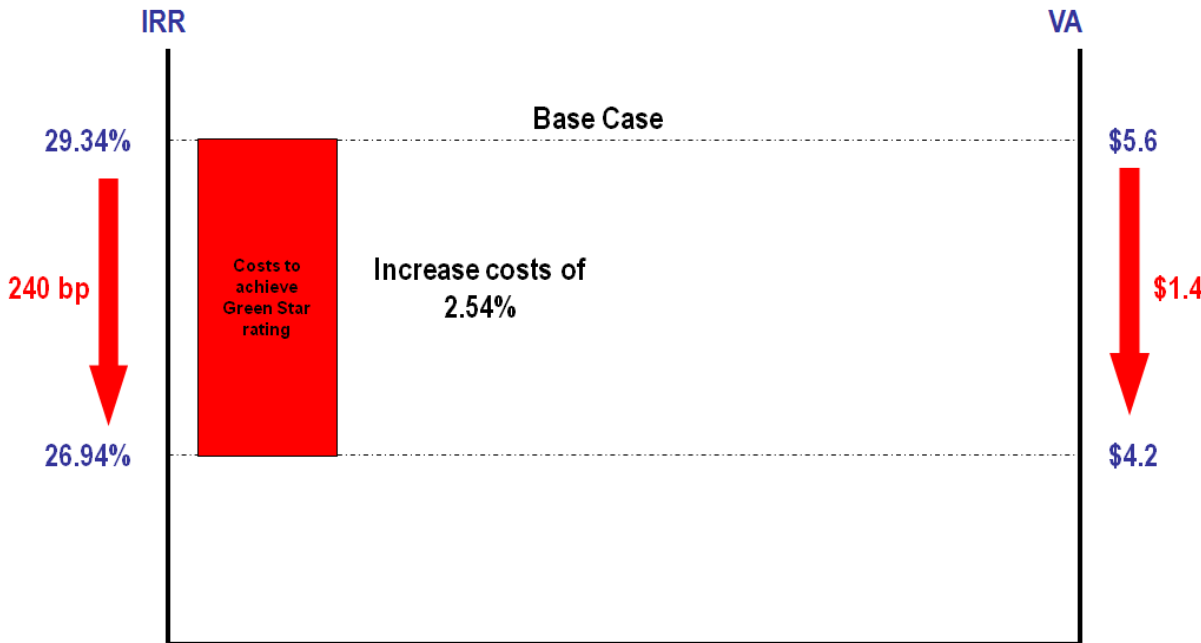


Figure 2: Impact of improved sustainability performance on financial base case.

4 OFFSET SCENARIOS

A complete list of modelled offset scenarios and financial performance is provided in Appendix 1.

4.1 Incentive Impacts

2.1.1 Federal Government Energy-Efficient New Homes Tax Credit for Home Builders (US)

The Developer feasibility model utilised does not allow for consideration of corporate tax credits to be applied as a project level. Assuming the tax credit applied to the individual project would be experienced as an increase in sales revenue, an increase in sales revenue of \$2,000 per apartment was modelled. Given the acknowledged impact of the time value of money, the timing of the credit is critical and three difference scenarios were modelled: a lump sum payment in advance, an equal monthly payment and payment in arrears.

The best case scenario was to receive the \$2000 credit per apartment as a lump sum in advance, delivering an IRR of 27.29%, up 35 basis points (1.3%) on the Green Star scenario but still 205 basis points (-7%) below the base case. The VA is \$4.4 million, \$0.21 million (5.0%) up on the Green Star scenario but \$1.2 million (-21.5%) below the base case.

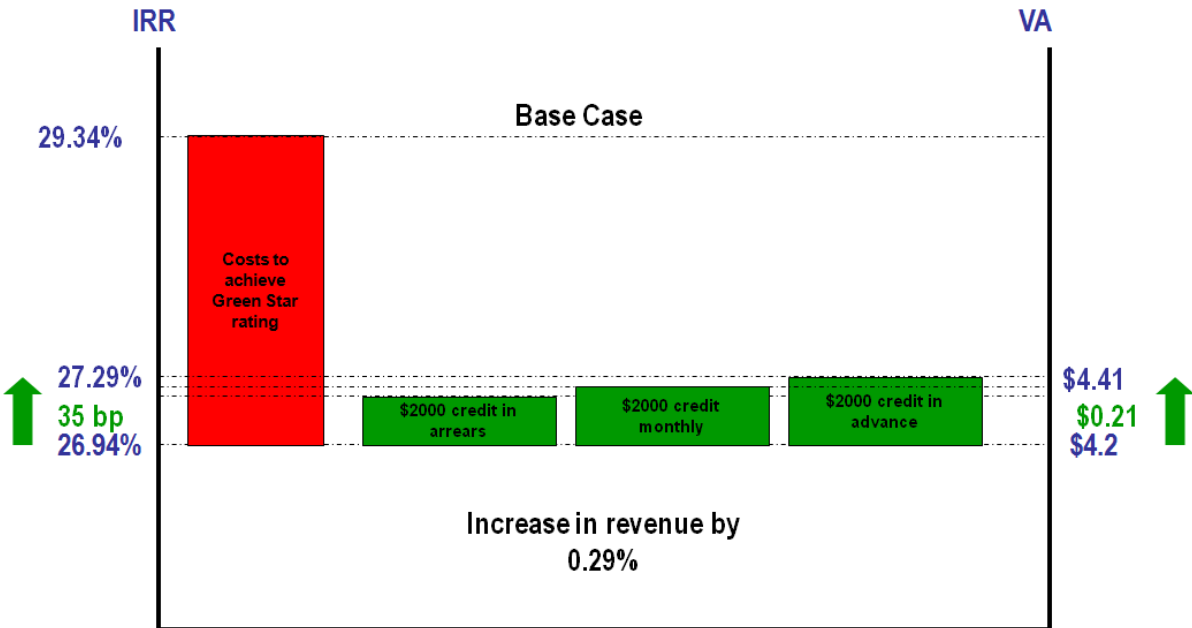


Figure 3: Impact of \$2000 income tax credit

4.1.1 Sales and Use Tax Exemption for Energy-Efficient Products (US)

In order to model the impact of the sales tax exemption, construction materials considered to contribute to energy efficiency were identified, see Table 4. To determine a cost to model, the amount from the project finance report was apportioned based on the Riders Digest and then a 10% discount applied. This resulted in a total reduction in construction costs of 1.77%.

Table 4: Construction materials considered to contribute to energy efficiency

Aluminium Windows	Insulation	Plumber & Drainer
External Louvers & Screens	Bathroom Fixtures	Electrical Installation
Pergolas & Sunshades	Painting	Mechanical Services
Lift Installation		

This resulted in an IRR of 28.03%, up 109 basis points (4.0%) on the Green Star scenario but 131 basis points (-4.5%) below the base case. The VA is \$4.9 million, up \$0.65 million (15.5%) on the Green Star scenario but \$0.77 million (-13.7%) below the base case.

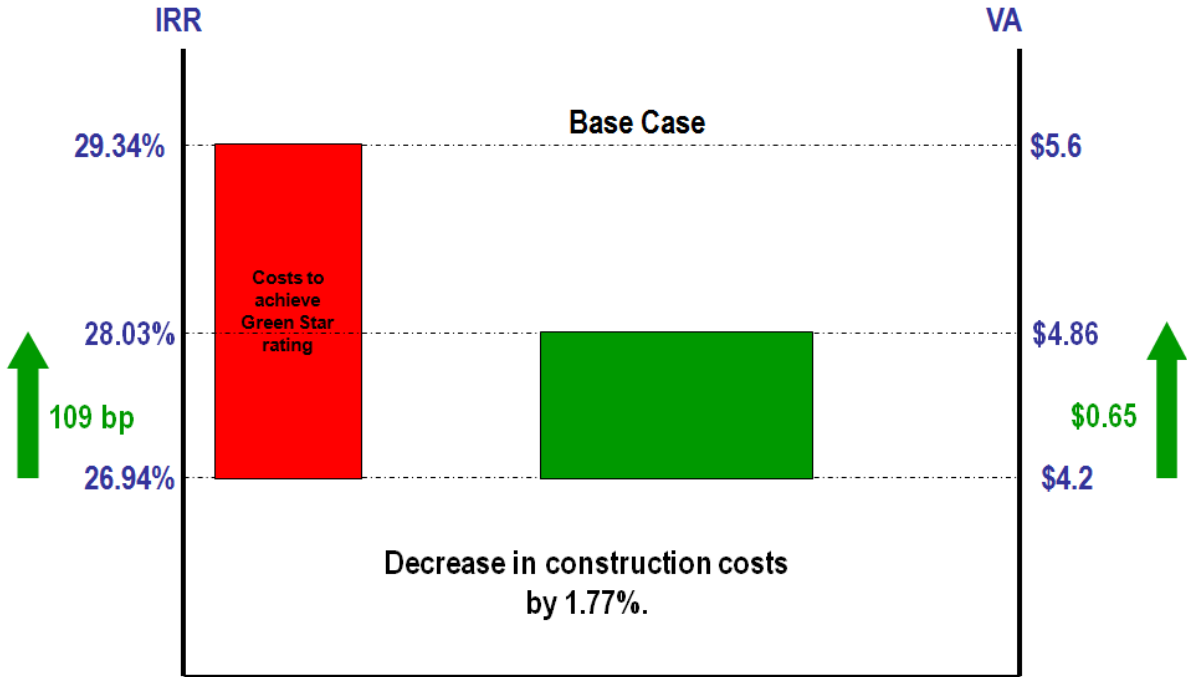


Figure 4: Impact of sales tax exemption.

4.1.2 Corporate Income Tax Credit for Green Buildings (US)

Whilst similar to the Federal Government Energy-Efficient New Homes Tax Credit for Home Builders, the tax credit value is calculated based on the construction costs, not the number of units delivered. As with noted in modelling the previous tax credit, the Developers feasibility model does not allow for consideration of corporate tax credits to be applied as a project level.

The State of Maryland Green Building Tax Credit applied only to allowable construction costs related to three types of alternative energy sources: photovoltaics (PV), wind turbines and fuel cells. Although none of these technologies was included in the Green Star scenario, in order to determine the potential impact of such an offset an alternative application was modelled. A tax credit, to the value of 8% of increased construction costs associated with meeting the Green Star standard was calculated an added to revenue, an increase of 0.13%. Again as timing is important, payment in advance, in equal monthly instalments and in arrears

was modelled. The best case scenario, credit received in advance made little impact on the Green Star scenario costs. An IRR of 27.09%, was up 15 basis points (0.6%) on the Green Star scenario but 225 basis points (-7.7%) below the base case. The VA of \$4.3 million, is up \$0.09 million (2.1%) on the Green Star scenario but \$1.33 million (-23.7%) below the base case.

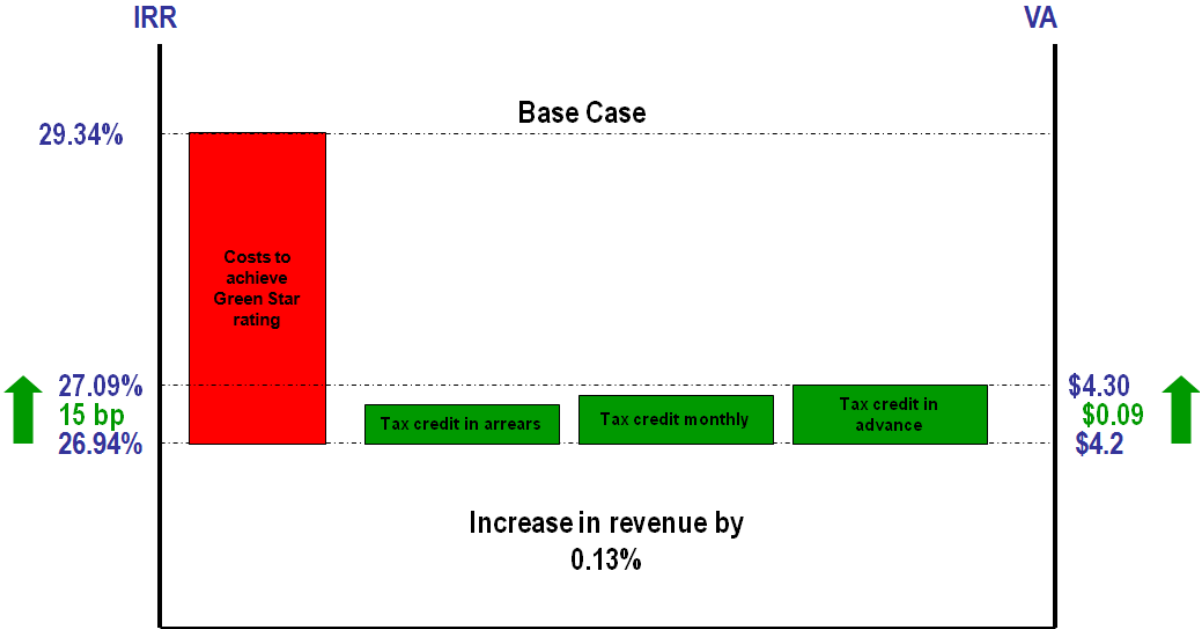


Figure 5: Impact of tax credit for allowable construction costs.

4.1.3 Roseville Electric - Residential New Construction Rebate Program (US)

Again it was necessary to model this scenario as increased sales revenue, with an increase of \$8,600 per apartment modelled. Payment in advance, in equal monthly instalments and in arrears was modelled.

The best case scenario, rebate received in advance resulted in an IRR of 28.44%, up 150 basis points (5.6%) on the Green Star scenario, but 90 basis points (-3.1%) below the base case. The VA of \$5.1 million is up \$0.9 million (21.6%) on the Green Star scenario, but remains \$0.5 million (-9.2%) below the base case.

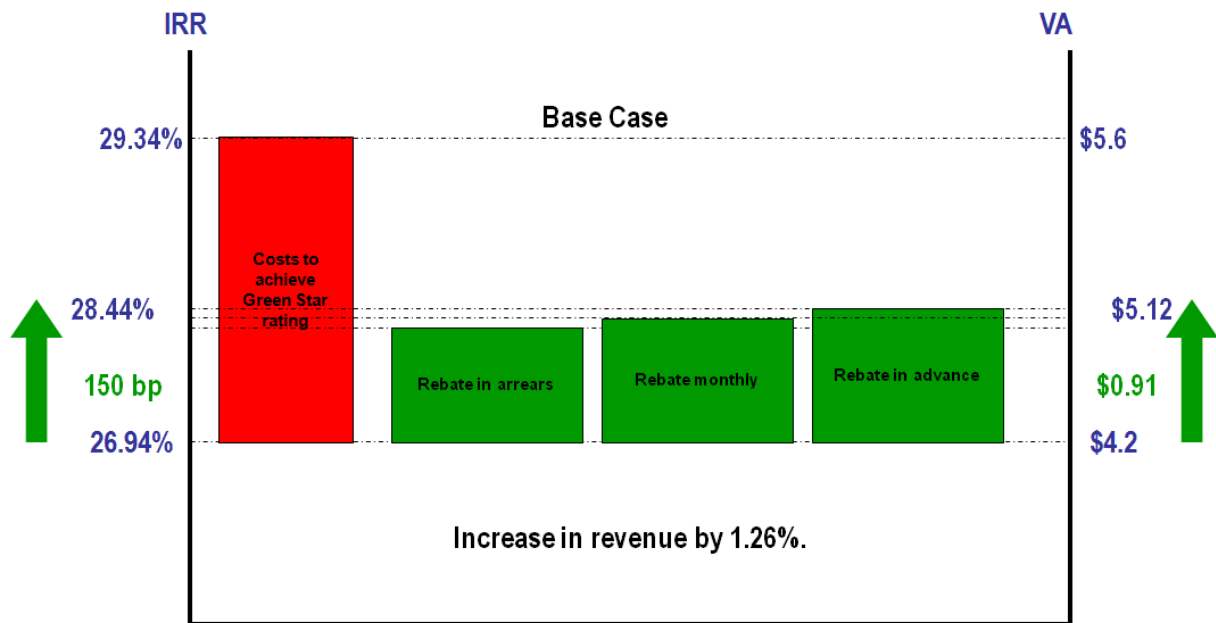


Figure 6: Impact of \$8,600 rebate.

4.1.4 Expedited Permitting for Green Buildings (US)

Expedited permitting allows for lowering of holding costs associated with the land. On advice from Developer specialists²⁹, it was determined the best means of modelling this was to shorten the time period between acquisition of land and commencement of construction. This period was shortened by two months.

This resulted in an IRR of 28.37% up 143 basis points (5.3%) on the Green Star scenario but 97 basis points (-3.3%) below the base case. The VA of \$4.8 million is up \$0.6 million (13.4%) on the Green Star scenario but remains \$0.9 million (-15.3%) below the base case.

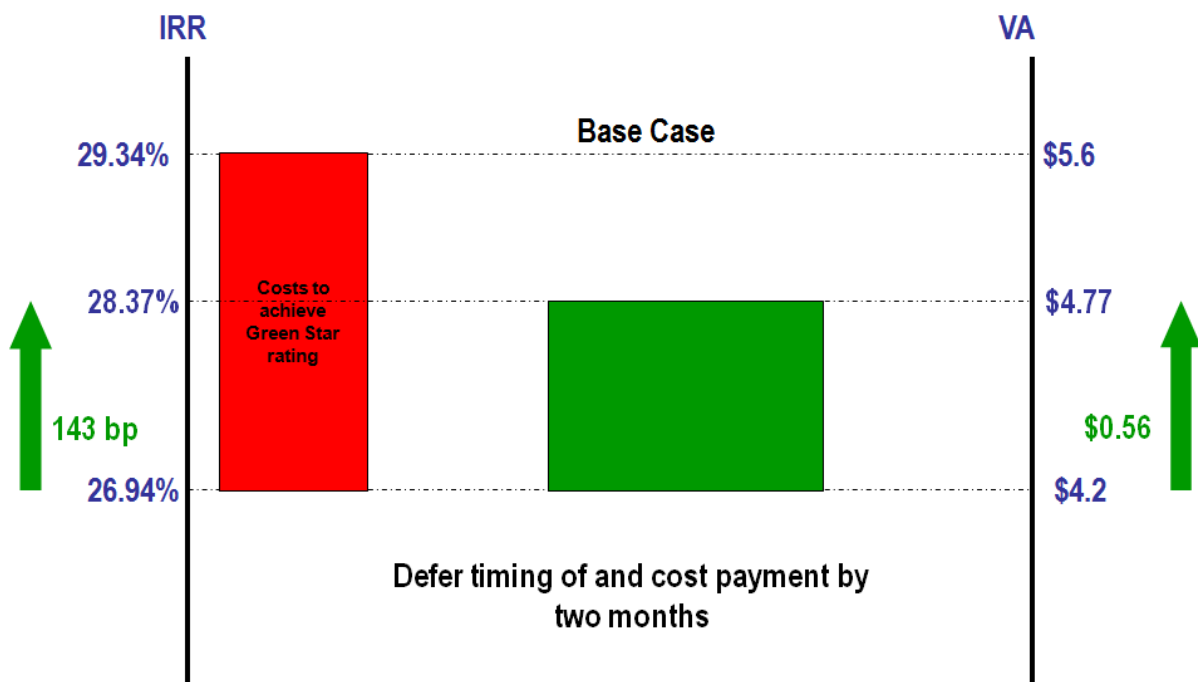


Figure 7: Impact of expedited permitting.

4.1.5 For consideration - Section 94 contribution exemption

The Section 94 contributions for this development were 1.34% of total development costs. To model the impact of the Section 94 contribution exemption, the Section 94 amount was removed from Statutory Costs and deducted from Construction Costs.

This resulted in an IRR of 29.83% exceeding the base case scenario by 49 basis points (1.7%) the VA of \$5.8 million exceeded the base case scenario \$0.2 million (4.0%).

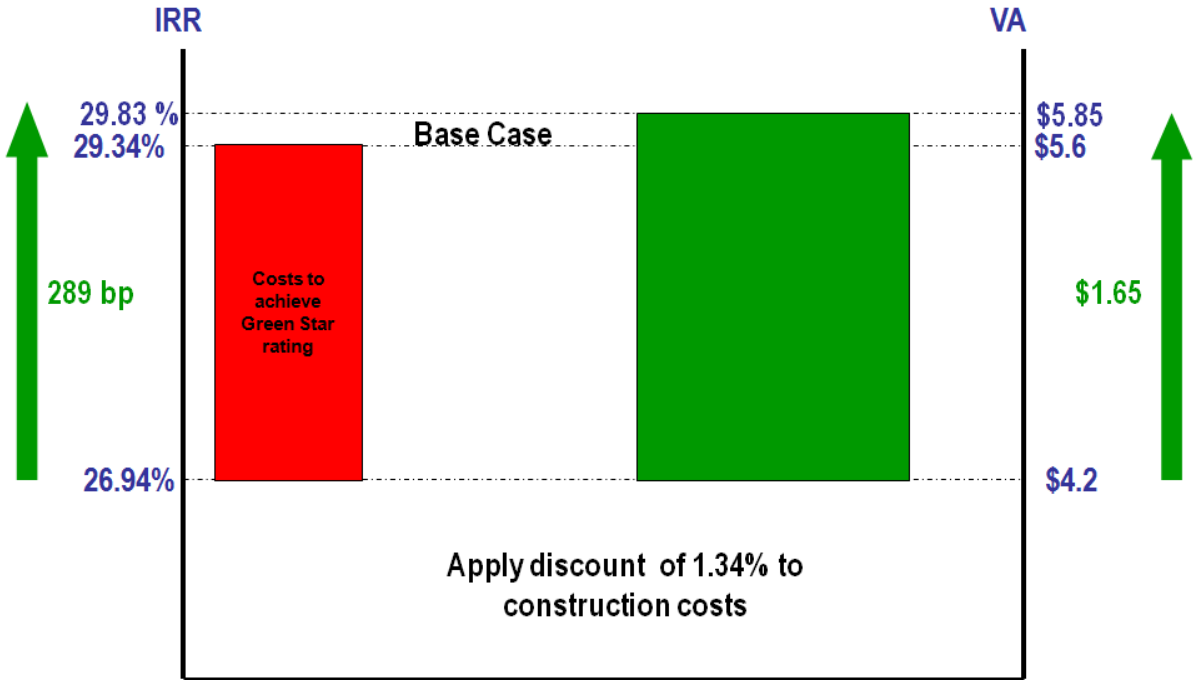


Figure 8: Impact of Section 94 contribution exemption.

4.2 Non Incentive Impacts

4.2.1 Increase sales rate

It is generally accepted and certainly shared as the experience of the Developer that improved sustainability performance does not lead to an increase in sales price. However, it is similarly acknowledged that sustainability performance is a ‘tie-breaker’ issue in the decision making process, which may mean buyers choose the more sustainable product over a readily comparable less sustainable product. Assuming that the area sales rate remains the same, this could lead to an increase in sales rate for the more sustainable product.

A conservative 1% increase in monthly sales rate was applied for the first three months. This increased the average sales rate from 7% to 10% and shorted the selling period by four months. When a 2% increase in monthly sales rate was applied for the first three months, the average sales rate increased to 13% shortening the sales period by a further two months.

Table 5: Modelled sales timing changes

	Original - monthly percent	1 percent increase	2 percent increase
Month 1	1%	2%	3%
2	65%	66%	67%
3	10%	11%	12%
4	9%	9%	9%
5	4%	4%	4%
6	2%	2%	2%
7	2%	2%	2%
8	2%	2%	1%
9	1%	1%	
10	1%	1%	
11	1%		
12	1%		
13	1%		
14	1%		
Average	7%	10%	13%

The 1% increase in sales rate resulted in an IRR of 27.63%, up 69 basis points (2.6%) on the Green Star scenario but still 171 basis points (-5.8%) below the base case. The VA is \$4.5 million, up \$0.3 million (7.7%) on the Green Star scenario but \$1.1 million (-19.5%) below the base case.

The 2% increase in sales rate resulted in an IRR of 28.14%, up 120 basis points (4.4%) on the Green Star scenario but still 120 basis points (-4.1%) below the base case. The VA is \$4.8 million, up \$0.6 million (13.2%) on the Green Star scenario but \$0.9 million (-15.4%) below the base case.

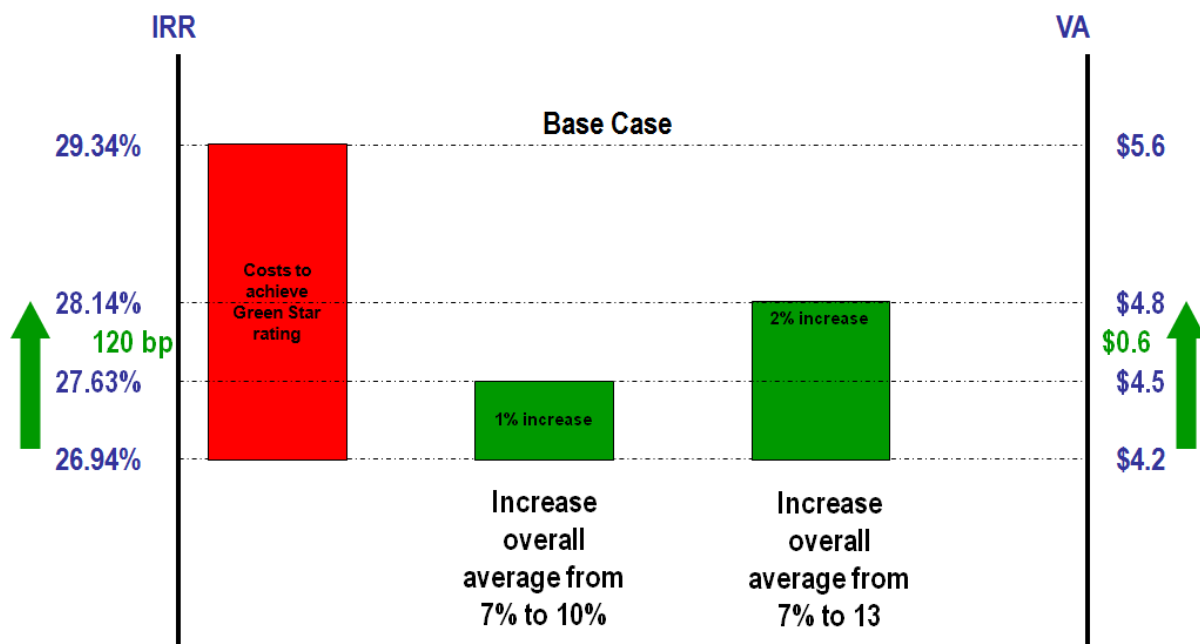


Figure 9: Impact of increased sales rate.

4.2.2 Reduced marketing and selling expenses

Again, whilst acknowledging improved sustainability performance does not lead to an increase in sales price, it is conceivable that promoted well, the improved sustainability performance may generate an additional level of interest in the property resulting in greater word-of-mouth promotion or exposure through other channels such as media. This may allow for a slight reduction in marketing and selling costs. The project financial report was analysed for items where it was felt savings could be realised (Table 6), resulting in an overall reduction of 3%. Selling costs which included agents' costs and commissions was reduced 10%.

Table 6: Modelled sales and marketing cost changes

	Percent Change
MARKETING	
Adv Design - Press	10%
Mkt Mat Des - Direct Mail	10%
Mkt Mat Des-Brochures	10%
Conslt - Public Relations	10%
TOTAL MARKETING	3%

This resulted in an IRR of 27.25%, up 31 basis points (1.1%) on the Green Star scenario but still 209 basis points (-7.1%) below the base case. The VA of \$4.4 million is up \$0.2 million (4.4%) on the Green Star scenario but remains \$1.2 million (-22.0%) below the base case.

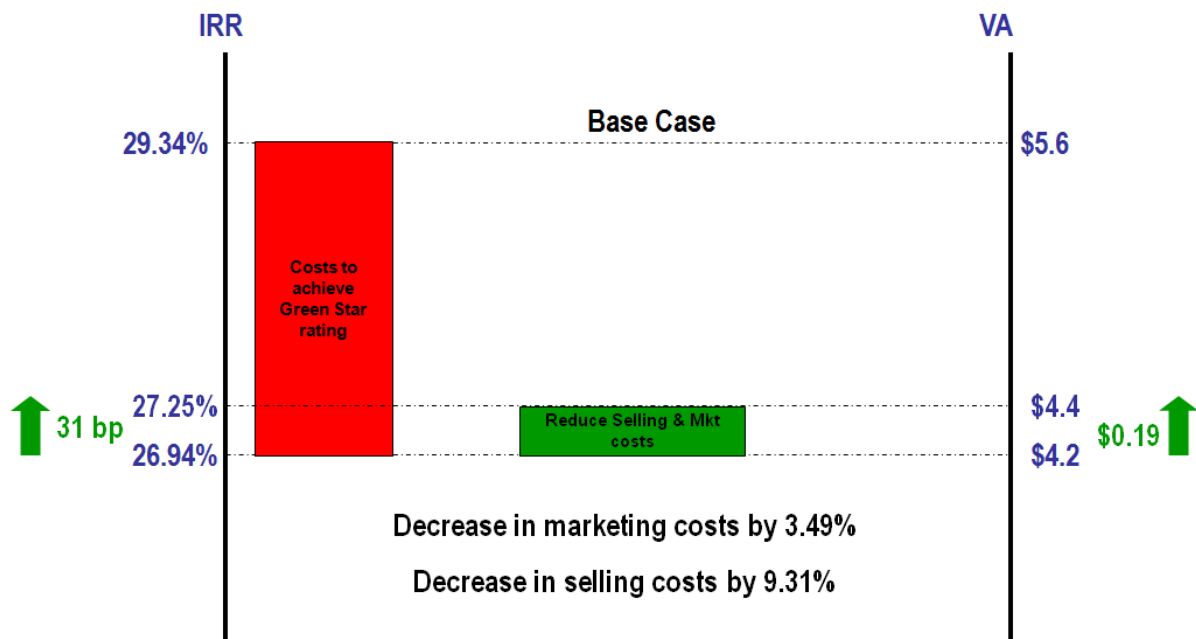


Figure 10: Impact of reduced marketing and selling expenses.

4.2.3 Achieving a Sales price uplift

To inform project discussion, it was worthwhile to model what price increase would be necessary to recover costs incurred in realising the Green Star scenario. A 1% and a 2.5% uplift in sales price were modelled.

A modest 1% increase per unit resulted in an IRR of 27.98%, up 104 basis points (3.9%) on the Green Star scenario but 136 basis points (-4.6%) below the base case. A VA of \$4.9 million, up \$0.7 million (15.5%) on the Green Star scenario is \$0.8 million (-13.7%) below the base case.

A 2.5% sales increase unit resulted in an IRR of 29.52%, exceeding the base case scenario by 18 basis points (0.6%). The VA of \$5.8 million exceeded base case by \$0.2 million (3.6%).

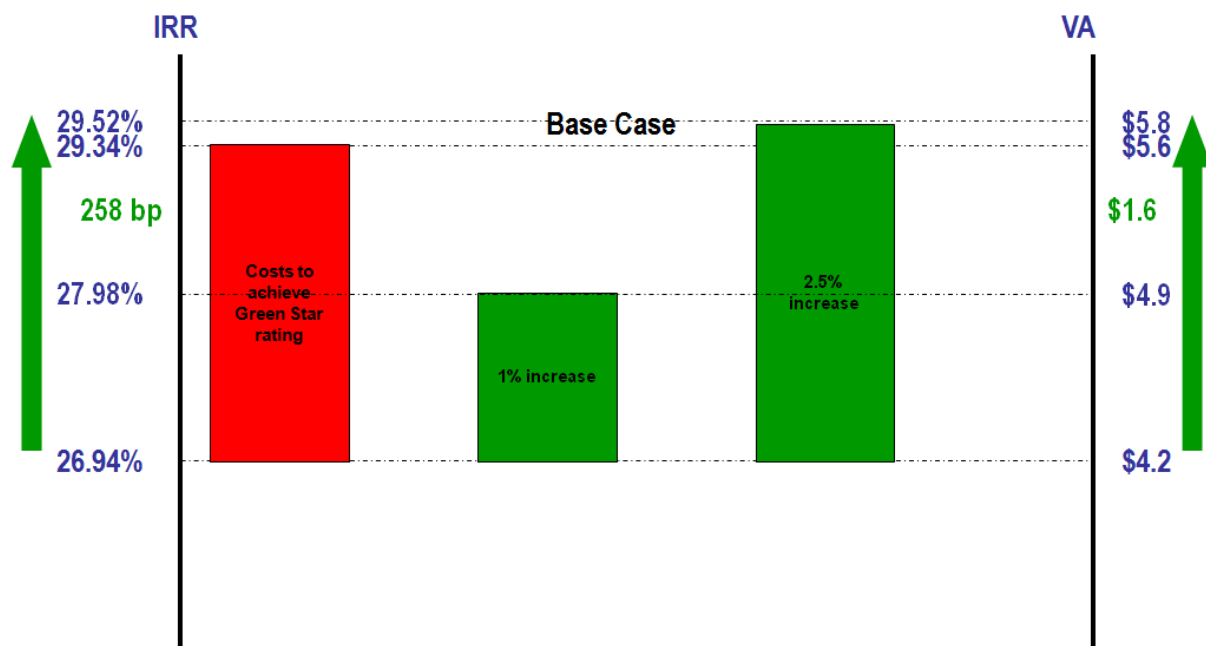


Figure 11: Impact of achieving a sales price uplift.

4.3 Combined Offset Scenarios

A number of combined offset scenarios were modelled based on the likelihood of the offsets occurring concurrently, or where incentive based, what was considered a possibly palatable incentive to propose.

In modelling these combined scenarios, it was noted that the impact on IRR and VA was in fact cumulative, so that improvements from the Green Star scenario could be added to determine the impact of multiple scenarios.

4.3.1 Sales Rate Increase + Marketing and Selling Cost Savings

As the increased sales rate and reduction in sales, marketing and selling costs would be felt concurrently, their combined effect was modelled.

The 1 percent sales rate increase plus the reduced marketing and selling costs resulted in an IRR of 27.95%, up 101 basis points (3.7%) on the Green Star scenario but 139 basis points (-4.7%) below the base case. A VA of \$4.7 million, up \$0.2 million (12.2%) on the Green Star scenario is \$0.9 million (-16.2%) below the base case.

The 2 percent sales rate increase plus the reduced marketing and selling costs resulted in an IRR of 28.46%, up 152 basis points (5.6%) on the Green Star scenario but 88 basis points (-3.0%) below the base case. A VA of \$4.9 million, up \$0.7 million (17.6%) on the Green Star scenario is \$0.7 million (-12.1%) below the base case.

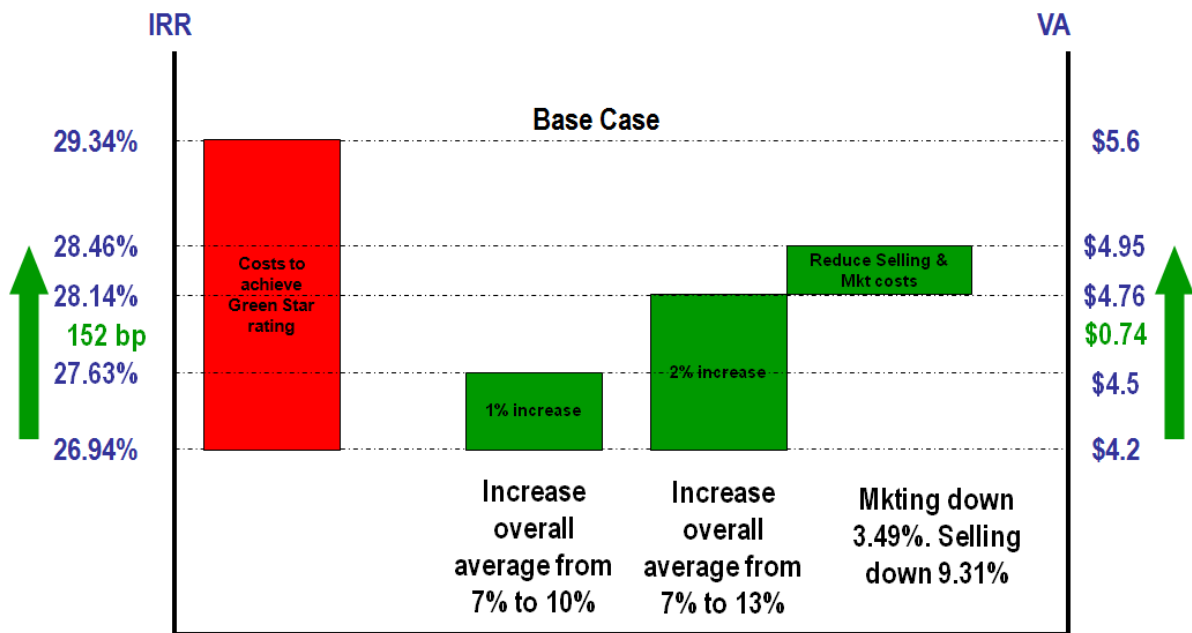


Figure 12: Impact of sales rate increase + marketing and selling cost savings.

4.3.2 Increased Sales Rate + Tax Credit

The combined effect of the lower of the two modelled increases in sales rate (1%) and the \$2000 tax credit per apartment as a lump sum in advance was modelled.

This scenario resulted in an IRR of 27.99%, up 105 basis points (3.9%) on the Green Star scenario but still 135 basis points (-4.6%) below the base case. A VA of \$4.7 million is up \$0.5 million (12.8%) on the Green Star scenario but remains \$0.9 million (-15.8%) below the base case.

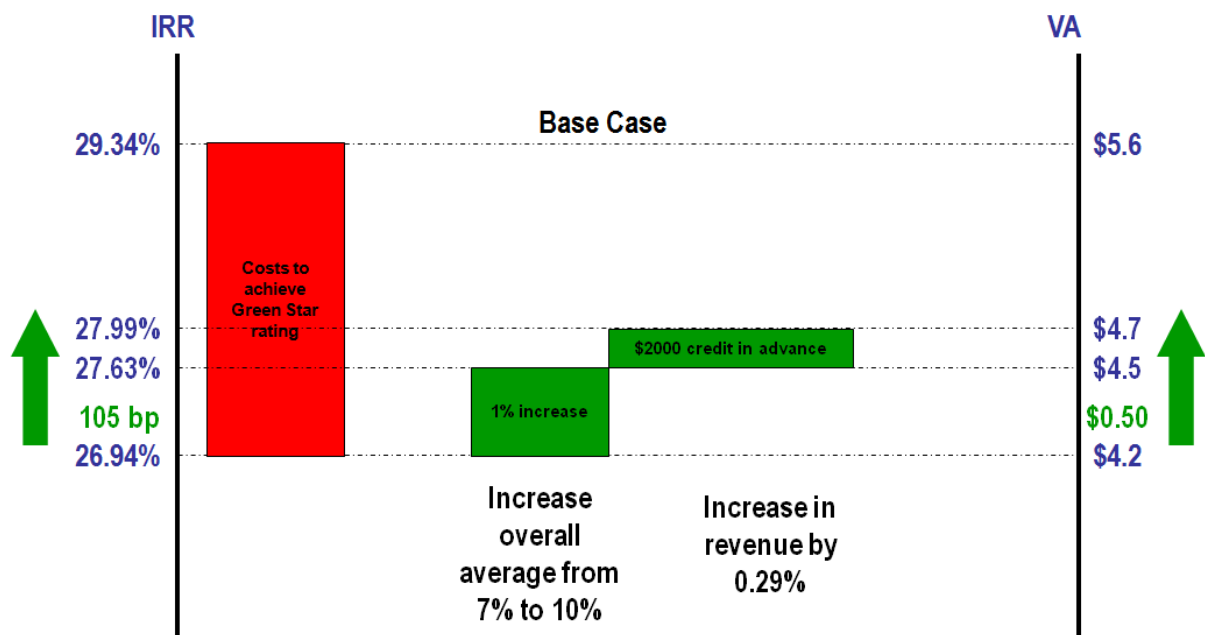


Figure 13: Impact of sales rate increase + tax credit.

4.3.3 Increased Sales Rate 1% + Expedited Approvals

The combined effect of the lower of the two modelled increases in sales rate (1%) and the impact of the expedited approvals process was modelled.

This resulted in an IRR of 29.14%, up 2.20% on the Green Star scenario is only 20 basis points (-0.7%) below the base case. A VA of \$5.1 million, up \$0.9 million (21.1%) on the Green Star scenario is \$0.5 million (-9.5%) below the base case.

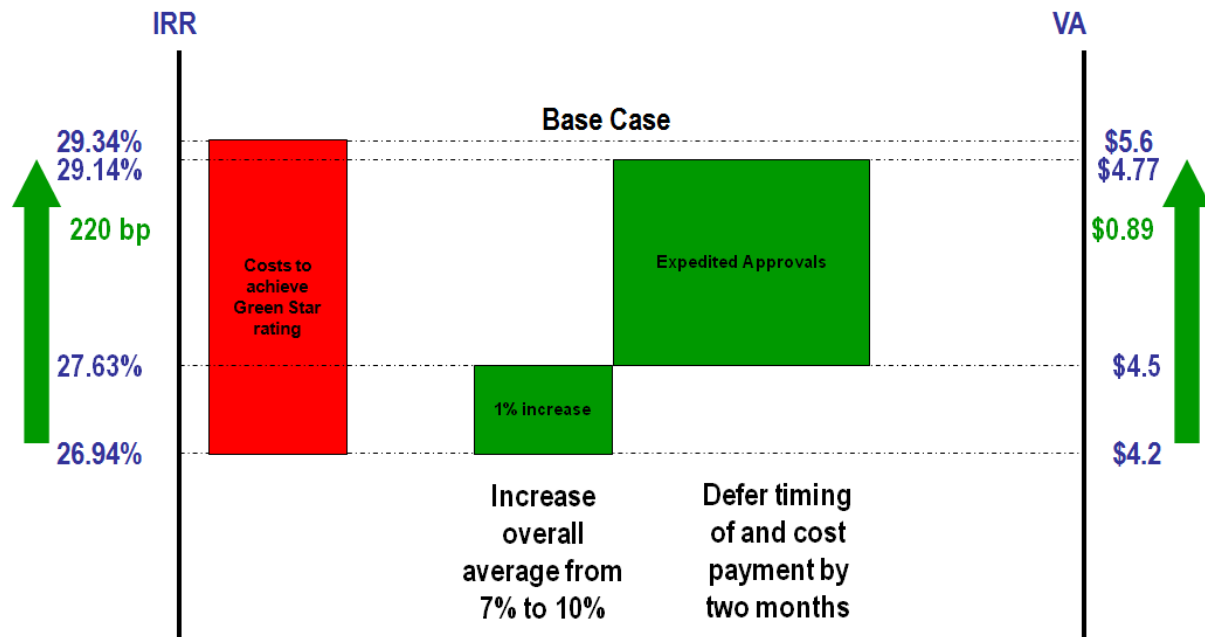


Figure 14: Impact of sales rate increase + expedited approvals.

5 DISCUSSION

In all over 21 different offset scenarios have been modelled, the impacts from best to worst are presented in Table 7, with the Section 94 construction cost offset the best, exceeding the base case IRR by 49 basis points (1.7%) and VA by \$0.2 million (4.0%). The only non-price increase offset scenarios to do so.

The least effective was the tax credit for 8% of allowable construction cost increases received as a lump sum in arrears being 228 basis points (-7.8%) below the base case IRR and \$1.4 million (-24.0%) below the VA. This is unsurprising, given the limited range of construction costs for which it could be applied and therefore limited revenue impacts. And this assumes the Australian tax system and the Developers internal treatment of tax would allow for the full credit to be felt at the project level.

Table 7: Ranked offset scenarios

	IRR Change (basis points)	IRR Change (%)	VA Change (\$)	VA Change (%)
Section 94 construction cost offset	49	1.7%	222,979	4.0%
Increased sales price 2.5%	18	0.6%	201,450	3.6%
Increased Sales Rate 1% + Expedited Approvals	-20	-0.7%	-535,277	-9.5%
Increased Sales Rate 2% + Reduced Selling and Marketing Costs	-88	-3.0%	-684,113	-12.1%
\$8600 rebate per dwelling (in advance)	-90	-3.1%	-515,948	-9.2%
Expedited Approvals	-97	-3.3%	-861,074	-15.3%
\$8600 rebate per dwelling (monthly)	-109	-3.7%	-605,024	-10.7%
Increased Sales Rate 2%	-120	-4.1%	-870,073	-15.4%
\$8600 rebate per dwelling (in arrears)	-127	-4.3%	-688,849	-12.2%
Sales tax exemption for energy efficient products	-131	-4.5%	-773,135	-13.7%
Increased Sales Rate 1% + \$2000 tax credit in advance	-135	-4.6%	-887,163	-15.8%
Increased sales price 1%	-136	-4.6%	-773,926	-13.7%
Increased Sales Rate 1% + Reduced Selling and Marketing Costs	-139	-4.7%	-912,420	-16.2%
Increased Sales Rate 1%	-171	-5.8%	-1,098,380	-19.5%
\$2000 income tax credit (lump sum in advance)	-205	-7.0%	-1,212,961	-21.5%
Reduced Selling and Marketing Costs	-209	-7.1%	-1,238,218	-22.0%
\$2000 income tax credit (received monthly)	-209	-7.1%	-1,233,677	-21.9%
\$2000 income tax credit (lump sum in arrears)	-213	-7.3%	-1,253,171	-22.3%
Tax credit for 8% of allowable construction cost increases (in advance)	-225	-7.7%	-1,334,018	-23.7%
Tax credit for 8% of allowable construction cost increases (monthly)	-227	-7.7%	-1,342,860	-23.8%
Tax credit for 8% of allowable construction cost increases (in arrears)	-228	-7.8%	-1,351,181	-24.0%
Green Star Costs	-240	-8.2%	-1,424,177	-25.3%

One of the most encouraging results was the impact of an increased sales rate. The very modest increase in sales rate was tested with a number of parties³⁰, with all agreeing that such an increase was not unrealistic with focussed marketing efforts. For a 2% increase over the first three months, or an increase from 7% to 13% overall to be only 120 basis points (-4.1%)

in IRR and \$0.8 million (-15.4%) in VA behind the base case is exciting. It demonstrates that there are means, already within the control of the Developer, which can preserve the project return.

When an even more cautious 1% increase in sales rate over the first three months is combined with an expedited approval process (modelled as a two month shortening of land holding costs) the project return is within 20 basis points (-0.7%) off the IRR and \$0.5 million (-9.5%) VA of the base case. This provides a strong justification for a non-financial incentive that councils can offer to developers to encourage more sustainable residential development.

However, with the 2% increased sales rate over the first three months combined with reduced selling and marketing cost, both within the control of the Developer and not reliant on external incentives, an IRR within 88 basis points (-3.0%) and VA within \$0.7 million (-12.1%) can be achieved. Such actions combined with efforts to control additional construction costs have the strong potential to protect the original base case return.

It is necessary to discuss the development cost modelling, in that although it was 'stress tested' with a number of parties, there were many assumptions drawn, particularly in the extent of initiatives required to achieve the conditional energy requirement under Green Star. Ideally, if cost and timeframes permitted, more detailed energy modelling and cost planning would be undertaken. It was also noted in discussions that many of the substitute items should not necessarily increase in price as a result of being 'more sustainable' and in fact the Developer's purchasing power could enable price parity in many respects. This should also be the case with project consultants, appropriately briefed and contracted at commencement, additional costs should be kept to a minimum. The research would also benefit from greater analysis of revenue impacts of the international financial incentives modelled. The modelling performed herein does not attempt to accurately reflect the intricacies of the different incentives in application, but rather, as intended, provides an indication of different incentive impacts.

Similarly in the application of the feasibility model itself there are avenues for improvement. For example, when there was an increase in the development costs, this increase was applied equally across all periods of the construction timeline. This was because the timing of individual cost items was not readily available and to obtain and model these specifics would have significantly expanded the scope of this study. This is an acknowledged weakness of the modelling and creates a level of uncertainty worthy of further investigation. If one of the

bigger development cost items was to increase significantly and be incurred in one period alone, this would certainly impact the IRR and VA.

6 RECOMMENDATIONS FOR ACTION

All of the incentive and non-incentive offsets have a demonstrated impact on the project IRR and VA, only the scale and timing of the different scenarios determining which has the biggest effect.

There has certainly been a lot of public discussion on what ‘the Government’, at all levels should do to improve the sustainability performances of new residential developments. What this modelling demonstrates so clearly is that both developers and multiple levels of Government have a role to play to achieve this outcome.

To crystallise this potential the following is recommended:

1. Improve the communication of sustainability features to purchasers – through the production of easily understood materials with benefits quantified, improving the training of sales staff so that they are better able to communicate benefits and include them in the discussion of features and undertake benchmarking of competing product on sustainability performance so that accurate comparisons can be drawn.
2. Increase the understanding in the general population of benefits of more sustainable homes – through dissemination of information through the Developer’s internet and also through advocating investment from Government in a broad-scale, sustained public awareness programs.

Both of these measures would likely divert purchasers from other competing less sustainable product delivering the necessary increase in sales rate. Of course it will be the early movers that realise the greatest benefit.

3. Use the Developer’s position within industry groups to lobby for a number of incentives in the following order of preference:
 - Section 94 redistribution to the project
 - ‘Green-door’ expedited development approvals
 - Sizable rebates per dwelling

As part of its lobbying position, the costs of improved sustainability performance and its impact on project return will need to be clearly articulated. It will be necessary to break down

and apparent belief within Australian Government that providing information will address all barriers to improved performance, without regard to the financial reality facing developers.

As is evidenced by the snapshot of incentives detailed herein, other Governments have been far more proactive in providing financial incentives that would have a material impact on preserving and possibly enhancing project return.

While the classic split incentive of costs being met by the developer and benefits accruing to the purchaser remains, there will be no wholesale, voluntary adoption of more sustainable residential development.

APPENDIX 1

	IRR (%)	IRR Change (basis points)"	IRR Change (%)	VA (\$)	VA Change (\$)	VA Change (%)
Original	29.34%			5,632,000		
Green Star Costs	26.94%			4,207,823		
<i>Change to Original</i>		-240	-8.2%		-1,424,177	-25.3%
Initiative Modelled						
\$2000 income tax credit						
\$2000 income tax credit (received monthly)	27.25%			4,398,323		
<i>Change to Green Star Costs</i>		31	1.1%		190,501	4.5%
<i>Difference from Original</i>		-209	-7.1%		-1,233,677	-21.9%
\$2000 income tax credit (lump sum in advance)	27.29%			4,419,039		
<i>Change to Green Star Costs</i>		35	1.3%		211,216	5.0%
<i>Difference from Original</i>		-205	-7.0%		-1,212,961	-21.5%
\$2000 income tax credit (lump sum in arrears)	27.21%			4,378,829		
<i>Change to Green Star Costs</i>		26	1.0%		171,007	4.1%
<i>Difference from Original</i>		-213	-7.3%		-1,253,171	-22.3%
Sales tax exemption for energy efficient products						
Sales tax exemption for energy efficient products	28.03%			4,858,865		
<i>Change to Green Star Costs</i>		109	4.0%		651,043	15.5%
<i>Difference from Original</i>		-131	-4.5%		-773,135	-13.7%

Increased sales price						
Increased sales price 1%	27.98%			4,858,074		
<i>Change to Green Star Costs</i>		104	3.9%		650,251	15.5%
<i>Difference from Original</i>		-136	-4.6%		-773,926	-13.7%
Increased sales price 2.5%	29.52%			5,833,450		
<i>Change to Green Star Costs</i>		258	9.6%		1,625,628	38.6%
<i>Difference from Original</i>		018	0.6%		201,450	3.6%

Tax credit for 8% of allowable construction cost increases						
Tax credit for 8% of allowable construction cost increases (in advance)	27.09%			4,297,982		
<i>Change to Green Star Costs</i>		15	0.6%		90,160	2.1%
<i>Difference from Original</i>		-225	-7.7%		-1,334,018	-23.7%
Tax credit for 8% of allowable construction cost increases (monthly)	27.07%			4,289,140		
<i>Change to Green Star Costs</i>		13	0.5%		81,317	1.9%
<i>Difference from Original</i>		-227	-7.7%		-1,342,860	-23.8%
Tax credit for 8% of allowable construction cost increases (in arrears)	27.06%			4,280,819		
<i>Change to Green Star Costs</i>		11	0.4%		72,996	1.7%
<i>Difference from Original</i>		-228	-7.8%		-1,351,181	-24.0%

\$8600 rebate per dwelling						
\$8600 rebate per dwelling (monthly)	28.25%			5,026,976		
<i>Change to Green Star Costs</i>		131	4.8%		819,154	19.5%
<i>Difference from Original</i>		-109	-3.7%		-605,024	-10.7%
\$8600 rebate per dwelling (in advance)	28.44%			5,116,052		
<i>Change to Green Star Costs</i>		150	5.6%		908,230	21.6%
<i>Difference from Original</i>		-90	-3.1%		-515,948	-9.2%
\$8600 rebate per dwelling (in arrears)	28.07%			4,943,151		
<i>Change to Green Star Costs</i>		113	4.2%		735,329	17.5%
<i>Difference from Original</i>		-127	-4.3%		-688,849	-12.2%

Expedited Approvals

Expedited Approvals	28.37%			4,770,926		
<i>Change to Green Star Costs</i>		143	5.3%		563,103	13.4%
<i>Difference from Original</i>		-97	-3.3%		-861,074	-15.3%

Section 94 Rebate

Section 94 construction cost offset	29.83%			5,854,979		
<i>Change to Green Star Costs</i>		289	10.7%		1,647,156	39.1%
<i>Difference from Original</i>		49	1.7%		222,979	4.0%

Increased Sales Rate

Increased Sales Rate 1%	27.63%			4,533,620		
<i>Change to Green Star Costs</i>		69	2.6%		325,798	7.7%
<i>Difference from Original</i>		-171	-5.8%		-1,098,380	-19.5%
Increased Sales Rate 2%	28.14%			4,761,927		
<i>Change to Green Star Costs</i>		120	4.4%		554,104	13.2%
<i>Difference from Original</i>		-120	-4.1%		-870,073	-15.4%

Reduced Selling and Marketing Costs

Reduced Selling and Marketing Costs	27.25%			4,393,782		
<i>Change to Green Star Costs</i>		31	1.1%		185,960	4.4%
<i>Difference from Original</i>		-209	-7.1%		-1,238,218	-22.0%

Combined - Increased Sales Rate + Lower Sell & Mkt Costs

Increased Sales Rate 1% + Reduced Selling and Marketing Costs	27.95%			4,719,580		
<i>Change to Green Star Costs</i>		101	3.7%		511,758	12.2%
<i>Difference from Original</i>		-139	-4.7%		-912,420	-16.2%
Increased Sales Rate 2% + Reduced Selling and Marketing Costs	28.46%			4,947,887		
<i>Change to Green Star Costs</i>		152	5.6%		740,064	17.6%
<i>Difference from Original</i>		-88	-3.0%		-684,113	-12.1%

Combined - Increased Sales Rate + tax credit

Increased Sales Rate 1% + \$2000 tax credit in advance	27.99%			4,744,837		
<i>Change to Green Star Costs</i>		105	3.9%		537,014	12.8%
<i>Difference from Original</i>		-135	-4.6%		-887,163	-15.8%

Combined - Increased Sales Rate + Expedited Approvals

Increased Sales Rate 1% + Expedited Approvals	29.14%			5,096,723		
<i>Change to Green Star Costs</i>		220	8.2%		888,901	21.1%
<i>Difference from Original</i>		-20	-0.7%		-535,277	-9.5%

REFERENCES

- ¹ CIE (Centre for International Economics) 2007, *Capitalising on the building sector's potential to lessen the costs of a broad based GHG emissions cut*, prepared for the ASBEC Climate Change Task Group, Canberra & Sydney.
- ² AGO (Australian Greenhouse Office) 1999, *Australian Residential Building Sector Greenhouse Gas Emissions 1990–2010*, Canberra.
- ³ CIE (Centre for International Economics) 2007, pg 12.
- ⁴ CIE (Centre for International Economics) 2007, pg 19.
- ⁵ Communities and Local Government (2003), *Communities and neighbourhoods, What is a sustainable community?* [Online] <http://www.communities.gov.uk/archived/general-content/communities/whatis/>. Accessed 8 October 2009.
- ⁶ CIE (Centre for International Economics) 2008, *Improving energy efficiency in the building sector: barriers and policy remedies*, prepared for the Property Council of Australia, Canberra & Sydney.
- ⁷ Council of Australian Governments (COAG) (2009) National Strategy on Energy Efficiency July 2009. Canberra ACT.
- ⁸ Green Building Council of Australia (GBCA) (2009) GBCA Green Guide to Government Policy. Sydney, Australia.
- ⁹ Kakas, C. Executive Director, Residential Development Council of Australia. Pers comms via meeting Monday, 23 September 2009.
- ¹⁰ Database of State Incentives for Renewables & Efficiency (DSIRE) (2009) Energy-Efficient New Homes Tax Credit for Home Builders. [Online] http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US41F&re=0&ee=1. Accessed 22 September 2009.
- ¹¹ United States Code, Title 26. Internal Revenue Code, 45L New energy efficient home credit. [Online] <http://www.dsireusa.org/documents/Incentives/US41F.htm>. Accessed 22 September 2009.
- ¹² Watson II, Ralph S. Harvesting Tax Benefits of Green Building Incentives. *Journal of Accountancy*; Aug 2009, Vol. 208 Issue 2, p44-48, 4p
- ¹³ State of Connecticut, Department of Revenue Services (2007) SN 2007(4) 2007 Legislation Affecting the Sales Tax on Home Weatherization Products <http://www.ct.gov/drs/cwp/view.asp?a=1514&q=384952>
- ¹⁴ Maryland Energy Administration, Green Building Tax Credit Overview [Online] <http://energy.maryland.gov/incentives/business/greenbuilding/documents/GBTFAQ04-04-08.pdf>. Accessed 24 September 2009.
- ¹⁵ DSIRE (2009) Income Tax Credit for Green Buildings (Corporate). [Online] http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CA154F&re=0&ee=1. Accessed 24 September 2009.
- ¹⁶ City of Roseville, Roseville Electric Profile [Online] <http://www.roseville.ca.us/electric/about/profile.asp>. Accessed 24 September 2009.
- ¹⁷ DSIRE (2009) Roseville Electric - Residential New Construction Rebate Program. [Online] http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CA154F&re=0&ee=1. Accessed 24 September 2009.

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- ¹⁸ United States Code Service, Title 26. Internal Revenue Code, Section 136 Energy conservation subsidies provided by public utilities. [Online] <http://www.dsireusa.org/documents/Incentives/US31F.htm> Accessed 22 September 2009.
- ¹⁹ Santa Monica Municipal Code Chapter 8.108 Green Building, Landscape Design, Resource Conservation and Construction and Demolition Waste Management Standards http://www.qualitycodepublishing.com/codes/santamonica/view.php?topic=8-8_108&showAll=1. Accessed 21 September 2009.
- ²⁰ Green Building Council of Australia (GBCA) (2009) *Green Star - Multi Unit Residential v1*. [Online] <http://www.gbca.org.au/green-star/rating-tools/green-star-multi-unit-residential-v1/1930.htm>. Accessed 26 September 2009.
- ²¹ (GBCA) (2009) *What is Green Star?* [Online] <http://www.gbca.org.au/green-star/green-star-overview/>. Accessed 26 September 2009.
- ²² (GBCA) (2009) *Green Star rating calculation* [Online] <http://www.gbca.org.au/green-star/what-is-green-star/green-star-rating-calculation/1542.htm>. Accessed 26 September 2009.
- ²³ Madew, R. Green Building Council of Australia, Chief Executive. Pers comms via meeting Thursday, 15 October 2009.
- ²⁴ Developer. National Technical Director, Design. Pers comms, numerous.
- ²⁵ Developer. National Technical Director, Design. Pers comms, numerous.
- ²⁶ Developer. National Technical Director, Design. Pers comms, numerous.
- ²⁷ Developer. Estimating Manager, Construction. Pers comms, numerous.
- ²⁸ Rider Levett Bucknall (2008) *Riders Digest – Sydney, Canberra, Newcastle and Western Sydney 2008*. Rider Levett Bucknall, Seaford, Victoria.
- ²⁹ Developer, CEO, Pers comms 20 November 2009.
- ³⁰ Developer. Marketing & Customer Relations Manager, Victoria and CEO Development Australia, Pers comms numerous.