

Green Premium Myth: A Case Study of the Financial Implication of Green Design on Shareholder Value

Article at a Glance

Premium - considering that at a 2% premium the saving to the property owner over the life of the property is in excess of R 122 million, of which 78 million or 64% relates to energy saving. This translates into an annual saving of over R6 million on operating expenditure of which R3.6 million is attributed to energy.

Further to this the study finds that the 2% capital cost premium of R 2,88 million can be offset by the saving on operating expenditure within the first year of operation. Therefore shareholder value increases from year one of operation. It is found that Return on Net Assets (RONA) is higher due to the impact on profit margin and when placed in a hypothetical simulation it is clear that the case study will enhance a property portfolio by offering a superior revenue stream whilst reducing the risk profile of the portfolio.

Hence, based on the findings of this study a capital cost premium is well worth the expenditure due to the long term sustainability of shareholder value created from a superior revenue stream influenced by lower operating expenditure.

**A Case Study of the Financial Implication of Green Design on Shareholder Value
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1. Background

Property development and investment has in the past always been analysed in terms of the capital expenditure required for the development of the asset. Viability of a project is generally based on the replacement value of the development. The operating costs are generally ignored when analysing the viability of projects. This results in projects being designed to minimise capital expenditure to the detriment of the Whole Life Cycle Cost (WLCC) of the project.

The consequence of this approach is that buildings that are developed have high maintenance costs resulting in reduced revenue streams due directly to the high maintenance costs that are transferred via levies and rentals to the end user resulting in lower occupancy levels and shorter lease periods increasing the risk profile of property portfolios.

With the shift in focus of the corporate world towards the global sustainability agenda there has been renewed focus on designing buildings that are more efficient and aligned to the global sustainability agenda. The value that is created from this paradigm shift is that the cost premium attached to “greener” buildings is miniscule when compared to the opportunity cost that is lost through increased operating expenditure.

The nature of sustainability has evolved to include both the design and construction of new buildings as well as retrofitting of existing buildings. International studies have shown the benefits from both a tangible and intangible view point. Tangible benefits include lower cost of ownership

and decrease in carbon emissions. Intangible benefits include increase in employee performance, wellness and health the “triple bottom line” as well as a decrease in “sick building syndrome”.

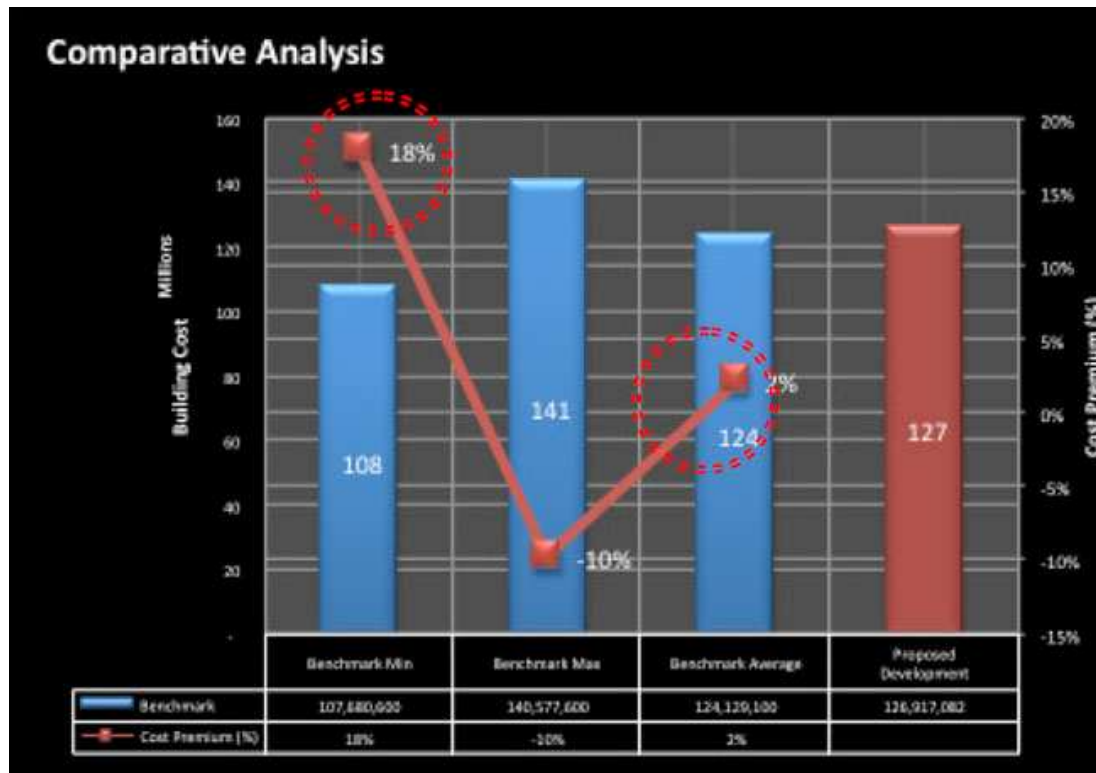
2. The Case Study

The case study is based on a mixed use development in the Gauteng region of South Africa. The development is a combination of office space (approx. 9,900m²), retail space (approx. 4,200m²) with basement parking covering a total construction area of approximately 22,200m². The building was designed along green principles to maximise energy utilisation, whilst ensuring a productive work environment for the occupants.

In this case study it is found that the design would have a long term positive impact on the potential revenue stream that the development will generate whilst being aware that there is a marginal cost premium attached to the capital expenditure.

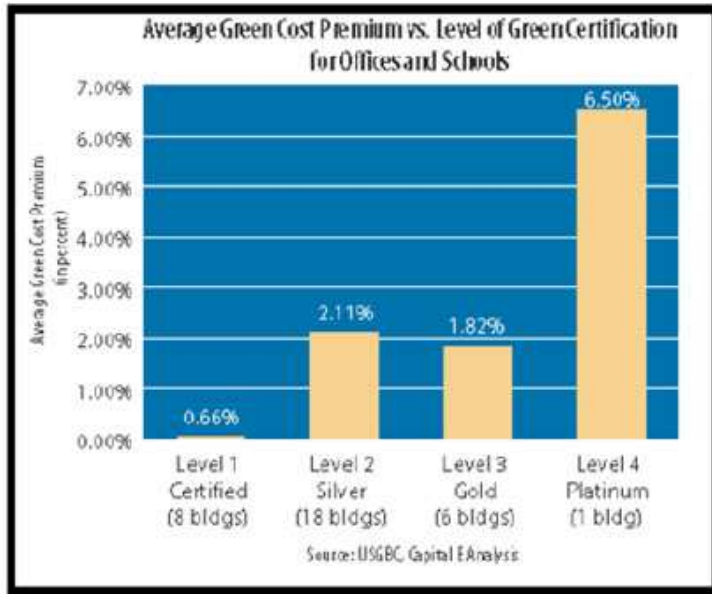
3. Understanding the Capital Cost Premium

A dataset of capital cost was developed to establish a benchmark average that could be compared directly to the case study. A maximum and minimum band was used to establish the limits of the benchmark. Figure 1 represents the findings of the capital analysis. Figure 5 charts the selected data from the table below. The building cost is shown on the left vertical axis and the cost premium on the right vertical axis. The chart shows that the case study has a 2% cost premium when compared to the average benchmark and this percentage increases to 18% when compared to the minimum scale of the benchmark. When compared to the maximum end of this building category it is clear that the proposed design has a negative premium (discount) of 10%.



The findings of the case study was verified by reference to a study carried out in USA as shown by figure 6 below where the “Green” cost premium ranged from 0.66% to 6,5% over a sample set of 33 developments.

Figure 2: Independent verification of Capital Analysis findings (extracted from Kats, G)



4. Offsetting the Capital Cost Premium

In a study conducted by Bakis, et al, 2003 titled, “Whole life costing in construction: The state of the art review”, the key models in use throughout the world were reviewed and are presented in figure 3 below.

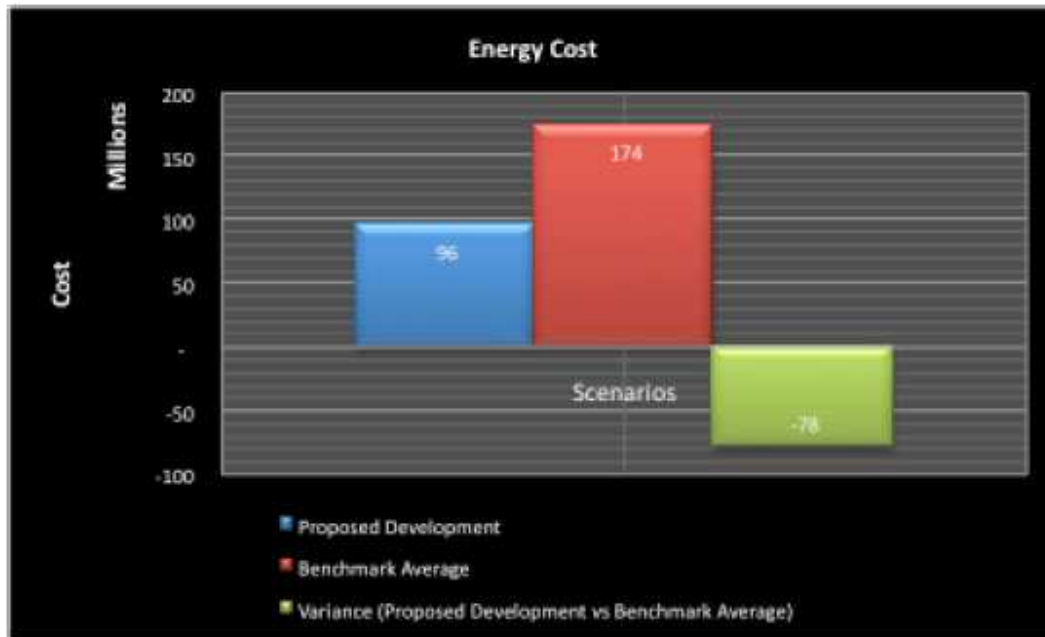
Figure 3: WLC Economic evaluation methods

Model	Characteristics
ASTM Model	Distinguishes between energy and other costs allowing the use of different discount rates
Bromilow and Pawsey (1987)	Distinguishes between periodic and continuous maintenance activities
Al-Hajj (1991)	Simplifies modelling by reducing number of cost items required.
Sobanjo	Cannot effectively handle non-annual recurring cost.
Kishk and Al-Hajj (2000a, 2000d)	Calculations are automated and optimised using algorithms

For the purpose of the case study the ASTM model was found to be most appropriate especially since it separated energy from other costs.

The energy cost saving provided the most convincing case for the proposed project with a conservative saving projection in excess of R 78 million.

Figure 4: Energy Cost



The 2% capital cost premium for the development when compared to the benchmark case (Ave) translates to a rand value capital cost premium of R2,800,000.

The whole lifecycle cost found that there is a saving of R122 million over the life of the building of which R78 million or 64% relates directly to reduced energy consumption. The WLCC translates into a monthly cost saving of R511,000. Hence the cost premium will be offset by the cost saving within the first year of the operational phase of the development. Therefore, after month 5 the proposed development will realise a higher revenue stream than the benchmark average.

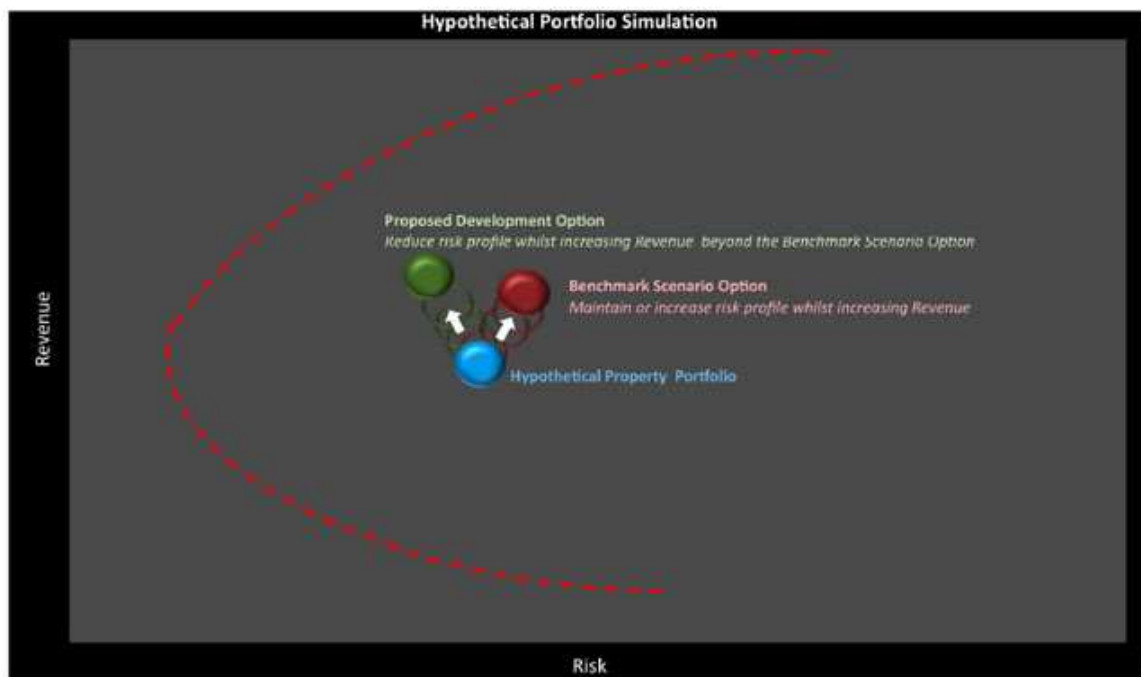
In a hypothetical "worst case" scenario if the case study is compared the Benchmark case (Min) the cost premium is 18% which translates to R19, 200,000 and would be offset within the third year of operation.

Beyond the quantitative benefit explained above the impact on shareholder value is broader.

The reduction in operating expense will translate to lower levies and rentals resulting in higher occupancy levels, elevated demand and ability to optimise pricing. The combined effect is a clear positive impact on shareholder value. This positive effect is confirmed if we look at Return on net Assets (RONA) with reduced operating expenditure, operating profit increases resulting in an increase in profit margin and resulting in RONA increasing.

Finally if we take a longer term view and place both the case study and the benchmark average within a hypothetical property portfolio and simulate based on the findings of the study the impact each scenario will have on the portfolio. Figure 3 illustrates that the case study will increase the portfolio's revenue stream whilst reducing the overall risk profile of the portfolio and the benchmark scenario will increase the revenue stream to a lesser degree whilst either maintaining the existing risk profile or increasing the risk profile.

Figure 1: Impact of scenarios on a hypothetical property portfolio



5. Conclusions

Hence ultimately the case study has financial benefits in the short term with a higher revenue stream within year one, a higher RONA ratio and enhances the overall performance of the entire property portfolio by producing a superior revenue stream and reducing risk simultaneously.