The Business Case for Sustainable Buildings – ‘Green Premium’...

...in the Market Place and Operational Cost Savings which can Result | Nick Hayes

November 2012
Sustainability Costs More...?

Innovation and market forces driving costs down

Putting a Price on Sustainability

Cost Premium for LEED Buildings

<table>
<thead>
<tr>
<th>BREEAM Score</th>
<th>Unclassified</th>
<th>Pass</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
<td>25%</td>
<td>40%</td>
<td>55%</td>
<td>70%</td>
</tr>
</tbody>
</table>

% Increase in Capital Cost

- Poor
- Typical
- Good

BRE Trust / Cyril Sweet

% Increase in Capital Cost

- Certified: 0.8%
- Silver: 3.5%
- Gold: 4.5%
- Platinum: 11.5%

Innovation and market forces driving costs down
# Sustainability Delivers Value...?

<table>
<thead>
<tr>
<th>Legal / Compliance &amp; Financial</th>
<th>Business Assurance and Viability</th>
<th>Reputation and Brand Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Regulations</td>
<td>Business Continuity</td>
<td>CSR</td>
</tr>
<tr>
<td>EPC and DECs</td>
<td>Business Interruption</td>
<td>Differentiation</td>
</tr>
<tr>
<td>CRC</td>
<td>Future proofing</td>
<td>Competitive advantage</td>
</tr>
<tr>
<td>Corporate Reporting</td>
<td>Fuel price certainty</td>
<td>Recruitment and retention</td>
</tr>
<tr>
<td>Planning requirements</td>
<td>Climate Change</td>
<td>Productivity</td>
</tr>
<tr>
<td>Environmental compliance</td>
<td>Market Value</td>
<td>Sickness Reduction</td>
</tr>
<tr>
<td>Renewable energy targets</td>
<td>‘Licence to trade’</td>
<td>Value of the Brand</td>
</tr>
</tbody>
</table>

*Sustainability as a proxy for risk*
What Drives Green Development?

Greater indoor air and environmental quality
Corporate environment commitment
Value of public relations and free publicity
Greater workforce productivity
Operational cost savings from energy efficiency
Attraction and retention of quality workforce
Greater overall building value
Higher occupancy rates
Operational cost savings from water efficiency
Reduction of greenhouse gas (GHG) liability

% of Respondents

The market view
Making the Business Case

Aligning Financial Modelling with Business Drivers

- Balancing CapEx and OpEx
- Sustainable Buildings
- Reduce Waste, Reduce Cost
- Use of a Whole Life Cost Model
Delivering a Sustainable Solution – Aviation Sector

Demonstrating value with Whole Life Cost

Case Study Review and Benefits / Savings

- Review of Motors for Baggage Handling System at Gatwick Airport
  - Compared new PMM technology vs existing motors

- Benefits / Savings
  - 39% more energy efficient with similar carbon footprint
  - Initial premium recovered in 2 years
  - £1m NPV saving in 15 years in energy savings alone at current prices
  - Reduce exposure to future energy price rises
  - Easier maintenance
  - Facilitates pan airport automatic control
  - Better conveyor braking
  - Lower spare stock requirements

Analysis of Whole Life Costs

<table>
<thead>
<tr>
<th></th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs (£)</td>
<td>1,821,534</td>
<td>1,589,687</td>
<td>1,162,953</td>
<td>2,043,121</td>
</tr>
<tr>
<td>Energy Costs (£)</td>
<td>8,383,944</td>
<td>10,777,924</td>
<td>13,942,028</td>
<td>11,793,006</td>
</tr>
<tr>
<td>Replacement Costs (£)</td>
<td>520,839</td>
<td>697,103</td>
<td>675,499</td>
<td>699,280</td>
</tr>
<tr>
<td>Maintenance Costs (£)</td>
<td>467,973</td>
<td>423,711</td>
<td>428,153</td>
<td>510,276</td>
</tr>
<tr>
<td>Total Whole Life Costs (£)</td>
<td>11,194,290</td>
<td>13,470,425</td>
<td>16,658,633</td>
<td>15,045,683</td>
</tr>
<tr>
<td>Ranking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Value in Excess of Rank 1 (£)</td>
<td>2,276,135</td>
<td>5,464,342</td>
<td>3,851,392</td>
<td></td>
</tr>
<tr>
<td>% in Excess of Rank 1</td>
<td>20.33%</td>
<td>48.81%</td>
<td>34.40%</td>
<td></td>
</tr>
</tbody>
</table>

Graph showing the total cost (£) for each option:
- Option 1: SEW P MM
- Option 2: SEW
- Option 3: LS
- Option 4: Siemens

The Business Case for Sustainable Buildings November 2012 7
Dual Currency Model

Business case must reflect the business

An approach to compare various design options developed through modelling of whole life cost for financial and carbon impact
Value and Impact of Green Buildings

**Value of Occupying Sustainable Buildings**

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Benefit Cost (€/m²/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Saving (EPC D to B)</td>
<td>24</td>
</tr>
<tr>
<td>Water Saving (Part L to BREEAM VG)</td>
<td>1</td>
</tr>
<tr>
<td>Sickness Reduction (39% reduction)</td>
<td>180</td>
</tr>
<tr>
<td>Productivity Improvement (5% increase)</td>
<td>690</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>895</strong></td>
</tr>
</tbody>
</table>

**Other Benefits to Occupier**
Brand, CSR, Recruitment and Retention

**Other Benefits to Investor**
Marketability, longer life, stable cashflows

**Impact of Green Development**

- Goodwill / Brand Equality: Increased Slightly 69% / Decreased Significantly 31%
- Employee Comfort: Increased Slightly 62% / Decreased Significantly 13%
- Ability to Attract Talent: Increased Slightly 53% / Decreased Significantly 7%
- Employee Well-Being: Increased Slightly 49% / Decreased Significantly 13%
- Employee Health: Increased Slightly 25%
- Ability to Retain Talent: Increased Slightly 50% / Decreased Significantly 19%
- Workforce Productivity: Increased Slightly 56%
- Occupancy Levels: Increased Slightly 62%
- Property Value: Increased Slightly 49%
- Total Renovation time: Increased Slightly 57% / Decreased Significantly 7%
- Permit Processing Time: Increased Slightly 86%
- Insurance Rates: Increased Slightly 93%

*Deloitte & Lockwood Report July 2008*

The link between people and buildings is key to achieve and demonstrate benefits
Market View

Sustainability Approaches in New Zealand; Australia and the USA
New Zealand

- PCNZ/IPD launched inaugural NZ Green Property Index in November 2012
- A measure of investment performance across Green Star rated office buildings

**Green Star A Grade: Rated vs Non-Rated**

<table>
<thead>
<tr>
<th>Net Income / sqm</th>
<th>CapEx / Sqm</th>
<th>Capital Return</th>
<th>Cap Rate</th>
<th>Total Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>$366</td>
<td>$56</td>
<td>1.6%</td>
<td>8.0%</td>
<td>9.5%</td>
</tr>
<tr>
<td>$358</td>
<td>$72</td>
<td>-1.7%</td>
<td>8.1%</td>
<td>6.2%</td>
</tr>
</tbody>
</table>

**Rated vs Non-Rated Office Buildings**

- PCNZ/IPD launched inaugural NZ Green Property Index in November 2012
- A measure of investment performance across Green Star rated office buildings

A new asset paradigm has been created
Australia

- A study of the Financial Performance of Green Office Buildings in Australia. Published September 2011
- A portfolio of NABERS / non-NABERS rated and Green Star / non-Green Star rated office buildings

Green Premium – International Case Studies

Building Better Returns Research Report, 2011

High value premium for green buildings
Results of a range of studies with the US over differing time frames and locations
Although high range in scale consensus that sale and rental premiums exist

<table>
<thead>
<tr>
<th>Report</th>
<th>Rental Premium</th>
<th>Sale Price Premium</th>
<th>Occupancy Rate Prem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller et al (2008)</td>
<td>9%</td>
<td>None</td>
<td>2-4%</td>
</tr>
<tr>
<td>Eichholtz et al (2010a)</td>
<td>Energy Star: 3.3% LEED: None</td>
<td>Energy Star: 19% LEED: None</td>
<td>NA</td>
</tr>
<tr>
<td>Eichholtz et al (2010b)</td>
<td>Energy Star: 2.1% LEED: 5.8%</td>
<td>Energy Star: 13% LEED: 11.1%</td>
<td>NA</td>
</tr>
<tr>
<td>Pivo &amp; Fisher (2010)</td>
<td>2.7%</td>
<td>8.5%</td>
<td>NA</td>
</tr>
<tr>
<td>Fuerst &amp; McAllister (2011)</td>
<td>4-5%</td>
<td>25-26%</td>
<td>Energy Star: 1-3% LEED: None</td>
</tr>
</tbody>
</table>

Building Better Returns Research Report, 2011

Rental and sales premiums across the board
The Case for Green vs Non-Green

- Green buildings to become the market norm
- Stronger tenant demand
- Lower vacancy rates
- Lower tenant churn
- Strong tenant profile

Green Buildings

- CO₂ emissions need to be reduced 80% by 2050
- Increased disclosure of energy efficiency
- Assets more likely to meet future legislation
- Assets less likely to require retrofit investment

- Anticipating future legislation

Improved financial performance

- Stronger rental income
- Increased capital value growth
- Lower operating costs

Meeting market demand

- Lower total cost of risk
  - Increased resilience to energy prices
  - Ability to adapt to climate change
  - Higher investment returns

Lower total cost of risk

- Higher vacancy rates
- Higher tenant churn
- Weaker tenant profile
- Lower rental income
- Reduced capital value growth
- Increased rate of depreciation
- Higher operating costs

- Future legislation impacts
- Reduced financial performance
- Higher total cost of risk
- Accelerated obsolescence

- Non-Green Buildings

- Functionally outdated underperforming asset
- Does not meet market demand
- Higher vacancy rates
- Higher tenant churn
- Weaker tenant profile
- Lower rental income
- Reduced capital value growth
- Increased rate of depreciation
- Higher operating costs

- CO₂ emissions need to be reduced 80% by 2050
- Increased disclosure of energy efficiency
- Assets more likely to meet future legislation
- Assets less likely to require retrofit investment
# Who Pays and Who Gains?

## Stakeholder Benefits

<table>
<thead>
<tr>
<th></th>
<th>Investors</th>
<th>Developers</th>
<th>Designers</th>
<th>Contractors</th>
<th>Occupiers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduced Costs</strong></td>
<td>Capital costs</td>
<td>Maintenance costs and of capital costs, plus cheaper refits and faster lets</td>
<td>Design time and snagging</td>
<td>Resource use and waste on site</td>
<td>Maintenance &amp; operational costs and downtime in using building</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Maintenance &amp; operational costs and downtime in using building</td>
</tr>
<tr>
<td><strong>Reduced Risks</strong></td>
<td>Reduced risk on capital</td>
<td>Letting voids</td>
<td>Quicker planning permission</td>
<td>H&amp;S, pollution liabilities and time savings, no over run penalties</td>
<td>Asset value risks and H&amp;S liabilities</td>
</tr>
<tr>
<td><strong>Higher Returns</strong></td>
<td>Faster return of capital</td>
<td>Increasing net lettable area and higher rents and occupier retention</td>
<td></td>
<td>Repeat work due to satisfied clients</td>
<td>Improved staff productivity</td>
</tr>
<tr>
<td><strong>Satisfaction</strong></td>
<td></td>
<td>Personal satisfaction / intellectual challenge</td>
<td>Personal satisfaction / intellectual challenge</td>
<td>Personal satisfaction / intellectual challenge</td>
<td>Improved staff satisfaction / retention</td>
</tr>
<tr>
<td><strong>Image</strong></td>
<td>Demonstrable performance for SRI FTSE4 good eligibility</td>
<td>Profile &amp; distinctive buildings on market</td>
<td>Repeat work due to satisfied clients</td>
<td>Improved image to clients and improved public image</td>
<td>Improved image to clients and improved public image</td>
</tr>
<tr>
<td><strong>Experience Gained</strong></td>
<td>Future marketability</td>
<td>Future marketability</td>
<td>Future marketability</td>
<td></td>
<td>Future marketability</td>
</tr>
<tr>
<td><strong>Business Flexibility</strong></td>
<td>Flexibility of investment potential</td>
<td>Flexibility of letting / sale potential</td>
<td>Flexibility of building use</td>
<td>Flexibility of building use</td>
<td></td>
</tr>
</tbody>
</table>

### How do we make this work in practice?