

GREEN BUILDINGS. WHO BENEFITS?

WORKING PAPER, OCTOBER 2014

INTRODUCTION

This working paper summarises recent action research at Neutral Territory. It follows the format of the Pawson & Tilley's realist evaluation cycle which seeks to iteratively test and improve theory.¹ It was written by Richard Parker with contributions from interns Josh Graham and Nathan Jamieson.²

EXECUTIVE SUMMARY

Neutral Territory evolved from the work completed under Suffolk's earlier Low Carbon Champion (LCC) initiative in 2010-13. The first organisation to join – Strident Technology Group – instigated extensive refurbishment to its Claydon Court premises.

The owners decided to differentiate their building in a very crowded property market by branding it as Neutral Territory. This simply means that they regularly measure and reduce their carbon emissions. This is then extended to include offsetting or balancing the remaining carbon to enable them to assert that Claydon Court is 'carbon neutral territory'.

The last twelve months has seen the steady refinement of the Neutral Territory brand including registering the appropriate trademark. Financial clarity has been improved by separating tenant invoice lines, charging for carbon balancing and clearly recouping carbon investment projects.

Further progress is now planned towards achieving the Neutral Territory vision i.e. making the market in low / zero carbon commercial property. As generating demand is a slow process the focus is to build supply by encouraging more properties to become Neutral Territory too.

This will be achieved by listing and rating all commercial properties within a defined geography and allowing visitors to search and select using a number of criteria. Visitors will be profiled on their environmental and commercial attitude to ensure results are likely to meet their needs.

Although Neutral Territory's primary aim is to support commercial property sector the benefits of green buildings apply to owner-occupiers too. Although the latter will not have to physically sell their space to themselves, the same financial and environmental benefits will accrue.

This idea is being tested in Suffolk and, if successful, will be rolled out to other counties. A county-based approach is important to build community and allows geographical separation in the event of any franchise offer.

THEORY: GREEN BUILDINGS. WHO BENEFITS?

The World Building Council usefully identify how the benefits of Green Buildings intersect for Owners, Developers and Tenants (figure 1). The literature suggested these can be grouped into five types of benefit.

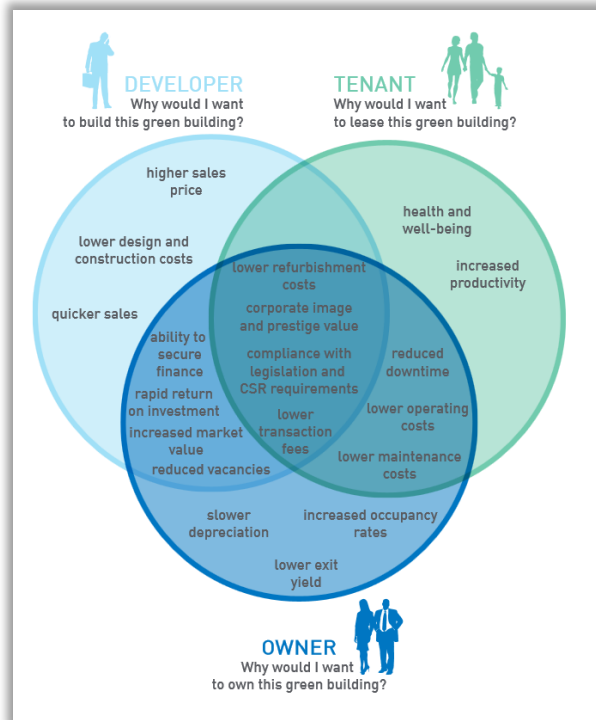


Figure 1. Green Building stakeholders.

Source: The Business Case for Green Buildings (WBC, 2013 p.11)

Lower Costs. Green building costs do not necessarily need to cost more, especially if included in the building development process from the start.³ Even if additional cost is associated with green buildings, the premium is not as high as typically perceived by industry.⁴ 78% of industry participants in the survey thought sustainable design added to first costs and estimated a premium of between 6-11%.⁵ Another survey found people expected it to be as high as 16%,⁶ but the review of over 30 projects worldwide saw the upfront costs ranging from 0.5% to 11.1%.⁵

Green buildings can therefore now be delivered at prices comparable to those for conventional buildings and these costs can be recouped through operational cost savings and, with the right design features, through a more productive workplace.⁷ Although much lower operating costs are possible these need effective management and collaboration between owners and occupiers.⁸

Higher Productivity. The motivations for retro-fitting older buildings are varied (figure 2) but resulting improvements in wellbeing and productivity deliver bottom line benefits.⁸ Healthier buildings reduce sick time and increase productivity and therefore provide an economic payoff.

This is estimated at 5% average productivity increase, for those staying in LEED-certified buildings (Leadership in Energy and Environmental Design), and 2.88 fewer sick days.^{8 9}

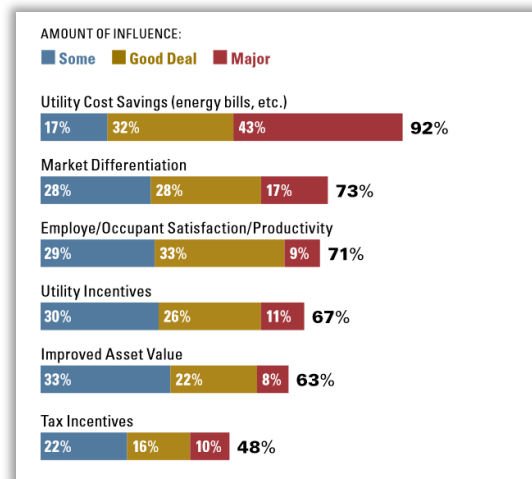


Figure 2. Influence Factors Behind the Business Case for Energy Efficiency Retrofit Activities.

Source: McGraw Hill Construction (2011)

Reduced Risk. Avoiding a risk of future legislation will increasingly be an issue for property owners (see figure 3). Risk mitigation of future value will benefit long term return on investment. This is unlikely to appeal to tenants but will to landlords and investors. Forward thinking property owners will want to address these issues sooner rather than later.¹⁰

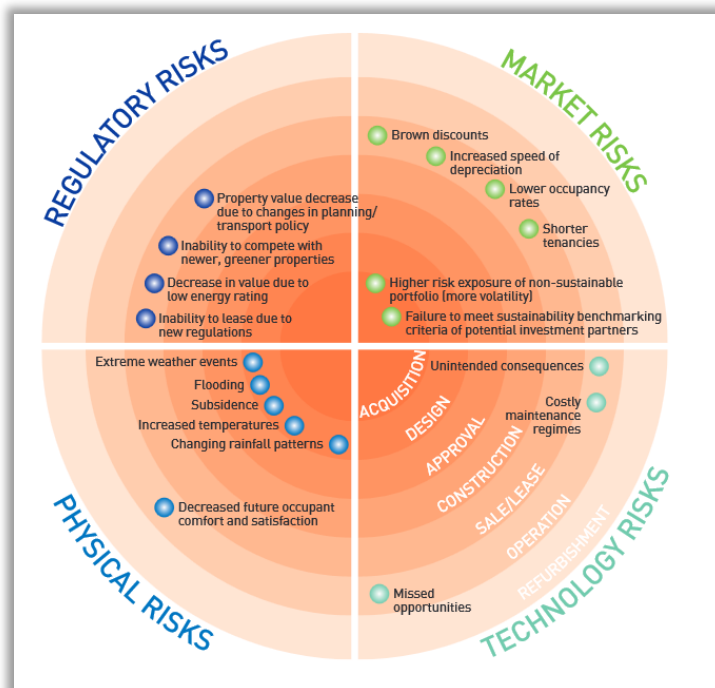


Figure 3. Risk Radar.

Source: The Business Case for Green Buildings (WBC, 2013 p.87)

Employee Wellbeing. Green buildings can boast other benefits such as convenient access to alternative transportation, favourable amenities for attracting / retaining employees.⁷ More enlightened business realise they need to appeal to younger workers.¹¹

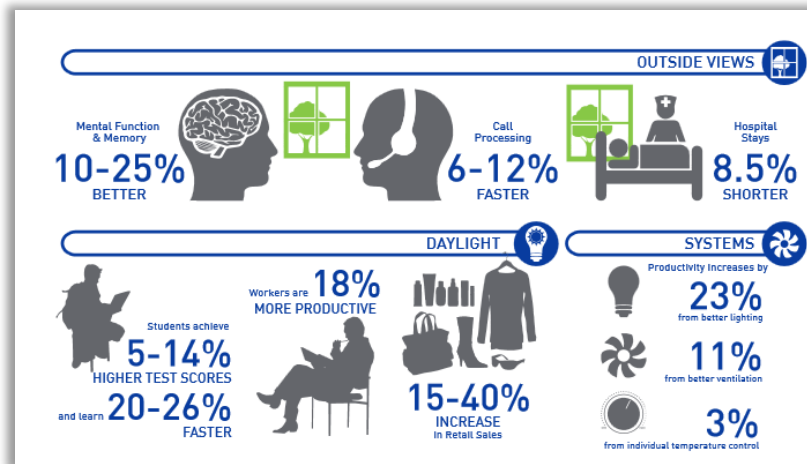


Figure 4. NPV analysis of the operational cost and productivity and health benefits of LEED certified buildings.
Source: The Business Case For Green Buildings (WBC, 2013 p.67)

Improved Image. A sustainable workplace presents a good image for clients and public, good image for owners / shareholders. Green certification results in a premium although not directly proportional to the level of standard.¹²

HYPOTHESES: WHAT MIGHT WORK AND FOR WHOM?

It is naïve to assume the above benefits will appeal to every organisation and the aim of our planned research is to identify what works for whom and in which circumstances. We make no apology for going back to our Wizard of Oz metaphor to segment our audience by environmental and commercial orientation.¹³ This a useful taxonomy which can be applied irrespective of organisation size or sector.

Miller, et al usefully suggest that in the extreme, tenants tend to look for two kinds of space: as cheap as possible (Tin Men) or high-quality space (Scarecrows). Those who fall in the middle are often in space they have either occupied a long time or they have placed greater weight on location and other features (Lions).⁹

The hypothesis we wish to test is that certain combinations of conditions will appeal to certain types of tenant. The suggested conditions can be mapped as below and suggest that:

- **Lower Cost.** Will appeal mainly to Tin Men and could be a sufficient condition if cost is the primary driver. Active management of low carbon properties by an intermediary such as Neutral Territory supports successful tenancy.
- **Higher Productivity.** Stressing productivity benefits will appeal mainly to Tin Men but will Lions too as this meets both financial and employee goals. Likely to be a necessary rather than a sufficient condition.
- **Reduced Risk.** Will appeal to owners only. Currently low impact but future legislation could make this a sufficient condition (i.e. unavoidable).
- **Employee Wellbeing.** A necessary condition for promoting youth appeal to start-ups or early-phase organisations where recruiting and retaining bright, young people. Likely to be sufficient when combined with a cost condition.
- **Improved Image.** Branding through Neutral Territory, World Land Trust or Suffolk Carbon Charter might support higher rents. A necessary condition only.

It is unlikely that any of the above will work in isolation but typically will combine to produce a successful or unsuccessful outcome. The task is therefore to identify contexts and outcome combinations which arise from actions and suggest the mechanisms which explain these. The small initial cohort means there is limited diversity and counterfactuals will be needed to gauge significance.



Figure 5. Commercial / Environmental Orientation mapped to Wizard of Oz.

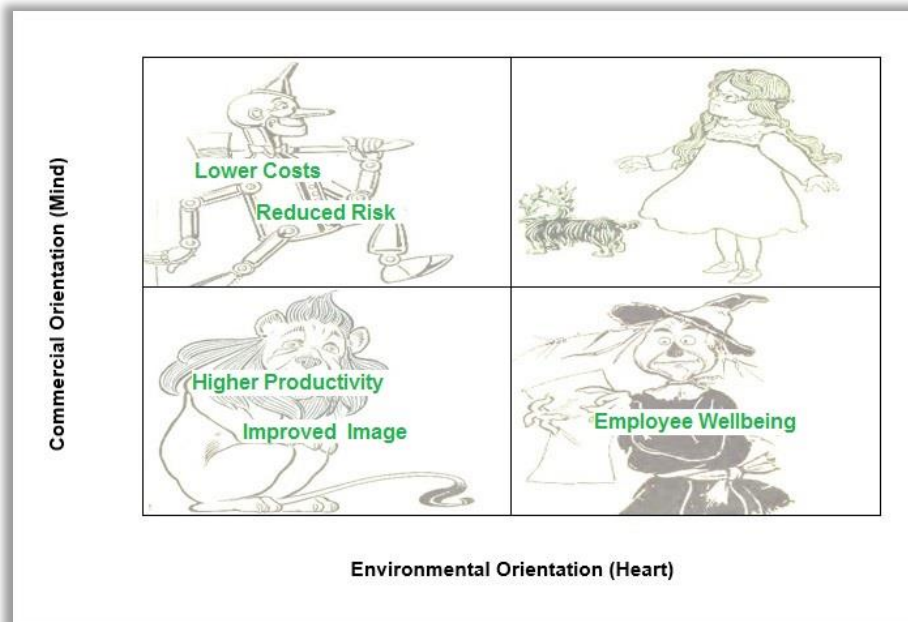


Figure 6. Green Building Benefits mapped to Wizard of Oz.

OBSERVATIONS: THE CLAYDON COURT EXPERIMENT

Changes Made. Claydon Court is a small converted barn complex based in Claydon near Ipswich. During 2010 and 2011 the owners spent £80k improving energy efficiency. This work was split down approximately as ...

- New low energy heat pump systems (£40k)
- External insulation (£20k)
- Internal insulation (£10k)
- Window replacements (£5k)
- Light replacements (£5k)

This reduced the EPC from G (rating 126) to B (rating 48) and is estimated to reduce carbon emissions from 129.2 Kg/Co2/m2/per year to 35.59 Kg/Co2/m2/per year i.e. a 72% reduction.¹⁴ This was good news for tenants who paid significantly lower energy bills; not so good for the property owner who had to finance the investment.

Ensuring energy cost savings match carbon project finance costs has been achieved by explicitly charging a surplus for the carbon investment project. Bolstered by research that suggests environmentally friendly buildings can command a 7% to 10% surcharge on market rates,¹⁵ Claydon Court owners are charging an average of £15psf for fully serviced office space plus a £1psf energy project surcharge i.e. a 7% uplift (figure 7). A US study of 10,000 buildings saw a 3% increase per sq foot than identical buildings, this is with all other aspects controlled.

The green buildings could expect selling prices of 16% above identical buildings. And for every dollar saved due to energy saving measures a further 18 dollars was added to the value of the building.¹⁶

Invoice		
NEUTRAL TERRITORY		
DESCRIPTION	NET PRICE	VAT
Base Rent	402.00	80.40
Carbon Reduction	37.00	7.40
Carbon Offset	5.00	1.00
Utilities	68.00	13.60
Service Charge	146.00	29.20
Cleaning	32.00	6.40

Figure 7. Clearly charging for low carbon commitments

When fully occupied this brings in £6k per annum which is the amortised write down of the £80k investment over 15 years. This was calculated at a low interest rate 2% but can be adjusted upwards in line with market rates.

A further charge has been clearly separate and charge for carbon balancing at £0.15 per square foot (figure 7). This brings in the £800 needed to balance the 50 tons emitted at the £15 per ton charged by World Land Trust.¹⁷

Results and Reactions. The cost changes made above have been implemented without issue. This suggests that existing tenants are prepared to pay a premium to work in a Green Building. The caveat here is that this model has not yet been tested on recruiting new tenants.

As yet, employee wellbeing has not been measured. The benefits to employees or company image are also hard to gauge and are subject to qualitative analysis. Both are part of the further research program.

A method to map current and future tenants for commercial and environmental attitude is also being devised.

PROGRAM SPECIFICATION: WHAT NEXT?

Developing the Neutral Territory offer will take three forms:

Mapping the benefits. Testing the above hypotheses by interviewing and coding evidence from existing tenants at Claydon Court. This will then inform the widening of the offer to other properties. This will be completed during Q4 2014.

Strengthening the brand. All tenants at Claydon Court will shortly be asked to follow the Measure – Reduce – Balance model to ensure that both property and tenants (the same if owner-occupied) are carbon neutral to a simple, voluntary standard (i.e. WLT Carbon Balanced). This too is scheduled for Q4 2014.

Widening the offer. Achieved by providing a directory of ALL small commercial property premises in Suffolk (approximately 200) including details of EPC rating, energy efficiency, wellbeing, etc. Visiting prospective tenants will be profiled by type and then be served with properties that best meet their specific needs.

The question remains on how to monetise this service. Initial thoughts revolved around a franchise offer which could work by valuing and selling franchises in each county. The franchise offer would add value by providing the listing software and supporting promotion to drive traffic.

NOTES

¹ Pawson, R. & Tilley, N., (1997) Realistic Evaluation, London: Sage

² Part of University of East Anglia's excellent 'Summer Project' internship programme.

³ Ellis, C. B. R. (2009) Who pays for green? The economics of sustainable buildings. EMEA Research

⁴ American Chemistry Council. (2003) Analyzing the Cost of Obtaining LEED Certification. Arlington, VA., as cited in Jackson, J. (2009) How Risky Are Sustainable Real Estate Projects? An Evaluation of LEED and ENERGY STAR Development Options. *Journal of Sustainable Real Estate*. Vol. 1 No. 1

⁵ Building Design and Construction. (2007) Green Buildings Research White Paper.

⁶ World Business Council for Sustainable Development. (2007) Energy Efficiency in Buildings, Business Realities and Opportunities.

⁷ Ellison, L., Sayce, S. & Smith, J. (2007) Socially Responsible Property Investment: Quantifying the Relationship between Sustainability and Investment Property Worth. *Journal of Property Research*. Vol. 24, No. 3

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- ⁸ Bernstein, H.M. and Russo, M.A. (2010) Business Case for Energy Efficient Building Retrofit and Renovation. *McGraw Hill Construction SmartMarket Reports*. Better Building Partnership. Green Lease Toolkit.
- ⁹ McGraw Hill Construction (2011)
- ¹⁰ Robeson, M (2012) Energy Evaluation & Solutions Ltd
- ¹¹ Carmody, C. (2010) Sustainable Practices Important to Retention, Attraction of Younger Workers. *Green Plus News*. Available at: <http://gogreenplus>.
- ¹² Addae-Dapaah, K & Chieh, S.J. (2011) Green Mark Certification: Does the Market Understand? *Journal of Real Estate*. Vol.3 No.1
- ¹³ Miller, Pogue, Gough, & Davis (2009) Green Buildings and Productivity
- ¹⁴ Parker, Richard (2013) Low Carbon Champions: An alternative evaluation.
- ¹⁵ Graham, J (2014) UEA internship project.
- ¹⁶ Eichholtz, P., Kok, N. & Quigley, J. M. (2009) Doing well be doing good? Green office building.
- ¹⁷ World Land Trust (2014). www.worldlandtrust.org