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Bound, M. and Flemmer, C.

Occupants' perspectives of a five green star certified school building

Green Buildings and their Occupants

Buildings have a significant global environmental impact; they use about 33% of the world's energy and 30% of its raw materials. They produce 35% of mankind's greenhouse gas emissions and 35% of its solid waste. In an effort to improve their sustainability, organizations such as the New Zealand Green Building Council (NZGBC) use rating tools to assess the overall environmental impact of buildings. The Green Star rating tool gives credits to a building in each of eight weighted environmental impact categories (totaling 100 points) and also an innovation category (worth 10 points).

Green Star Building and Fitout Environmental Impact Categories and Credits*								
Management	Indoor Environment Quality	Energy	Transport	Water	Materials	Land use and Ecology	Emissions	Innovation
10	16	25	10	10	19	5	5	10

* Weightings are only approximate – they vary depending on the building type

A building is termed 'Green' if it has a score greater than 45 and is gets a Four Star rating (score 45-59) signifying 'Best Practice', a Five Star rating (score 60-74) signifying 'New Zealand Excellence' or a Six Star rating (score 75+) signifying 'World Leadership'. To get a building Green Star certified requires registration with NZGBC and submission of extensive information on the building. The cost of certification depends on the building value; for projects under 3 million dollars, it costs \$18,000 (excluding GST) with discounts for NZGBC members.

The advantages of certified Green Buildings are:

- Lower operating costs from better energy efficiency, the use of natural light and natural ventilation and lower water use
- Improved health and productivity of occupants
- Higher rents and selling prices than conventional/traditional buildings
- Lower tenant turnover
- Higher occupancy rates
- An improved corporate image

The down side of Green Buildings is that they have higher design and construction costs – although this is offset by lower operating costs and greater occupant productivity over the use of the building. This is significant because the occupants' salaries over the building's life far outweigh the initial high build cost of a Green Building.

Another down side of Green Buildings is that not all aspects of a building's 'greenness' please the building occupants. Post occupancy evaluation (POE) is a way to measure the satisfaction of building occupants using survey questions. It shows that the provision of natural light and fresh air that earned the building Green Star points do in fact improve health and productivity but only

please the occupants if glare, draughts and humidity are controlled. Similarly, energy efficiency and careful space utilisation earn Green Star points but may leave the occupants with poor temperature control and cramped, noisy workspaces. It is clear that a balance is needed between buildings with little environmental impact and satisfied building occupants.

Traditional buildings have had hundreds of years to develop into standard designs that offer increasing comfort to the occupants. Green Buildings are still in their infancy but with the use of POEs to fine tune the green rating tools, they too can achieve both occupant satisfaction and a more sustainable construction industry.