

URBAN WATER BALANCE OF A MORE SUSTAINABLE COMMERCIAL LABORATORY AND OFFICE BUILDING

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This paper describes the urban water balance of a more sustainable commercial laboratory and office building located in the eastern suburbs of Auckland, New Zealand. The building was designed to significantly reduce the demand of potable mains water drawn from the city's reticulated infrastructure, to better manage the negative effects associated with urban stormwater runoff, and to reduce the amount of sewage sent off-site. Monitoring results are presented as an integrated urban water balance with discussion about the inputs to the system, followed by the demands put on the system, and finally the discharge from the system

Water-sensitive features, such as low-flow appliances, rainwater re-use and waterless toilets, have drastically reduced the building's reticulated water demand. For the past year, all water use in the building has been monitored and this paper presents the results of this data, concluding that despite research activities requiring the use of large volumes of mains water, the building is still showing savings in the demands in makes relative to commercial office buildings.

The water-related wastes that are discharged to the environment are also monitored. The flow through the building's stormwater treatment train, consisting of a 70m bio-retention swale and an 18 m² raingarden in series, is measured, showing that during a typical storm event, less than 10% of the water that fell on the building's carpark was discharged off-site to a stormwater pond. Waste-water sent off-site is significantly reduced by the use of composting toilets.

Title: Critical review of market incentives associated with the use of sustainable building assessment tools

Abstract:

Commercial buy-in to sustainable urban development is essential to ensure the long-term viability of urban environments in a planet of limited natural resources. To address this, many assessment tools have been developed either to assist in the more ecologically sustainable design of new commercial office buildings or to rate the performance of existing buildings. Advocates promoting use of design-stage tools in the commercial building sector have focused on logical arguments that point to sustainable construction being a “win-win” situation that results in a rationally economic business case.

This paper begins by challenging these advocacy arguments from the perspective that the market is allowing assessment tools to be used in promoting alternative business strategies that may not be resulting in significant improvement towards ecologically sustainable urban development. An analysis of the potential for these tools to be used as marketing tools rather than as design guidance highlights a market failure in that the rate of financial return of benefits associated with improving sustainability performance metrics, such as reduced energy usage, is much less than that of intangible perception-oriented benefits such as increased goodwill, property value, and sale ability.

Examining the use of the United States Green Building Council’s LEED tool demonstrates that its ability to be used as a marketing tool rather than as a design tool may be encouraging observable trends towards minimum possible sustainability achievements. Successful use of this alternative strategy allows stakeholders of commercial buildings to reap the high-value intangible benefits of perceived sustainable development at a potential cost in terms of the real tangible benefits of ecologically sustainable building design. In response, emphasis on sustainability assessment in commercial buildings needs to be placed on ongoing measurement of real-world performance metrics as opposed to checklist-oriented design tools.

Keywords: sustainability assessment tools, market incentives towards sustainability, commercial building design

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