Towards sustainable building design principles for medium density, middle income housing in Gauteng.

by

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I dedicate this to Beatrix and all young children; they deserve a bright future on a beautiful and healthy planet.

This study uses the Harvard method.

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ABSTRACT

Towards sustainable building design principles for medium density, middle-income housing in Gauteng.

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This dissertation addresses the current need for information specific to the sustainability of middle-income, medium density houses in Gauteng (FOURways house). The research explores principles and assesses tools that will assist in achieving more sustainable development of the FOURways house. The research identifies that if development in this sector is to be sustainable, information must be accessible to users as well as professionals. This requires clarity of information, which avoids exclusion due to scientific jargon. This research is qualitative and therefore no calculations are made comparing initial capital investment versus long term cost savings.

The concept of sustainability in domestic buildings is explored as principles that contribute towards achieving a sustainable living environment. Since the principles provide a broad background of information, the CSIR prototype "sustainable building assessment tool" (SBAT) has been adapted as a tool to introduce the topic of sustainability for discourse. A graphic representation of the adapted SBAT developed as a flower metaphor illustrates the extent to which a house is sustainable, or not.

It is proposed that the adapted SBAT document be used as an introduction at the project onset to the topic of sustainable building design. The principles can be followed to achieve the aim and finally the result can be tested using the adapted SBAT table and diagram.

This proposal was tested on a case study of the representative FOURways house. The principles checked and the adapted SBAT table and diagram illustrate that the building does not satisfy the requirements for a sustainable domestic building. Furthermore the case study revealed that current developments do not make use of sustainable principles.

Accepting that the FOURways house is a role model to the lower income groups (six earlier Living Standard Measure groups), sustainability in this housing sector urgently requires attention if sustainability is to be achieved across the range of domestic housing in South Africa.

EKSERP

Op pad na volhoubare ontwerpbeginsels vir middel-digtheid, middel-inkomste behuising in Gauteng.

deur
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Hierdie verhandeling spreek die huidige gebrek aan inligting spesifiek tot die volhoubaarheid van middeldigtheid, middelinkomste huise in Gauteng (FOURways huise) aan. Die studie ondersoek beginsels en identifiseer middele wat sal help met die ontwikkeling van 'n meer volhoubare FOURways huis. Die studie beklemtoon die balangrikheid van inligting wat deur gewone mense sowel as beroepslui verstaan kan word. Dit benodig eenvoudige presentasie van die konsep sonder die gebruik van wetenskaplike terme wat die inligting buite die bereik van gewone mense sal plaas. Aangesien die ondersoek kwalitatief is, is daar geen berekenige wat kapitaalbelegging vergelyk teen opsigte van eindelik langdurige besparings.

Die konsep van volhoubaarheid in huishoudelike geboue is ondersoek in die vorm van beginsels wat bydra tot 'n volhoubare lewensomgewing. Aangesien die beginsels 'n breë agtergrond van inligting lewer, word die WNNR prototipe "sustainable building assessment tool" (SBAT) (gereedskap vir waardebepaling van volhoubare geboue) aangewend om volhoubaarheid as 'n besprekingspunt in die bouproses in te lei. Die oorspronklike SBAT is aangepas vir gebruik aan die FOURways huis. 'n Grafiese voorstelling van die aangepaste SBAT is ontwikkel in die vorm van 'n blom-metafoor om die volhoubaarheid van 'n huis te illustreer.

Die voorstel is om die aangepaste SBAT as inleiding tot die onderwerp van volhoubaarheid in die bouomgewing te gebruik. Die beginsels kan gevolg word om die

doel te bereik en die aangepaste SBAT-dokumente toets die resultaat met die aangepaste SBAT-tabel en SBAT-diagram.

Die voorstel is getoets op 'n praktykgeval wat die gemiddelde FOURways huis verteenwoordig. Die aangepaste SBAT-tabel en -diagram illustreer dat die voorwaardes vir 'n volhoubare huishoudlike gebou nie bereik word nie.

Die studie aanvaar die FOURways huis as 'n veteenwoordigend vir die vorige ses LSM groepe, en vind dat volhoubare ontwikkeling in hierdie huis-sektor dringende aandag nodig het as volhoubaarheid oor die hele reeks woongeboue in Suid Afrika bereik wil word.