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there are tremendous opportunities to implement initiatives to contribute to a sustainable built environment," comments Noir.

To achieve its greater objectives of social equity and environmental stewardship, Woolworths invested about R10-million in sustainable initiatives for its distribution centre, with a payback period of possibly less than ten years being expected. The distribution centre makes use of a massive grey water system, which ensures that no potable water is used for flushing toilets, and a rain water harvesting system and borehole water treatment system, which provides most of the building's water needs and the landscape irrigation needs for almost ten months of the year. The warehouse makes use of intelligent lighting technologies and solar panel water heaters.

SMALL-SCALE GREEN

Sustainable green building on a smaller scale is becoming more apparent and is spurring innovation in South Africa.

On practising green architecture, architect and founder of Eco Design Architects & Consultants, based in Cape Town, **Andy Horn**, has drawn up a manifesto for green architecture.

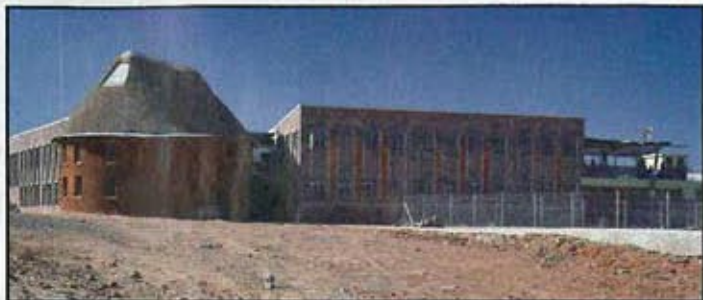
The manifesto proposes six broad principles for a greener approach to architecture, and these are, firstly, socioeconomic principles, or the promotion of social, economic and cultural upliftment; secondly, land principles, ensuring use that is respectful and in symbiosis with the local environment and its resources; thirdly, water principles, affirming the protection, conservation, efficiency and reuse of water; fourthly, energy principles, guaranteeing the conservation, efficiency, and renewable use of energy; fifthly, health principles, focusing on nonpolluting environments and healthy materials; and finally, holism principles, ensuring the use of holistic principles and intrinsically recyclable processes and materials.

Horn and his team of architects and consultants have been involved in a number of smaller sustainable green projects, such as the Nieuwoudtville caravan site upgrade, which, in 2005, won a silver medal



ENSURING SUSTAINABILITY

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GREATER COMFORT, LESS ENERGY USE

Seven Fountains primary school makes use of solar panels and passive solar design with insulated brick to improve thermal comfort, while reducing energy consumption

in the Holcim Awards for sustainable construction in Africa and the Middle East. He also works on projects assisting other architectural practices in going green, such as East Coast Architects, responsible for the Seven Fountains primary school in Shayamoya, near Kokstad, in KwaZulu-Natal.

The school, funded by **Oprah Winfrey's** Angel network, makes use of a grey water system, uses see-saws and merry-go-rounds to pump water, and has landscaped gardens that supply vegetables for school meals. The school also makes use of solar panels and passive solar design with insulated brick to improve thermal comfort, while reducing energy consumption.

Horn assisted on the technical and training side of the use of adobe earth brick and natural plasters for a large two-storey multipurpose classroom. The use of adobe brick for building not only helps to regulate temperature, but was made locally, using local materials, thereby cutting down on transport costs and providing 34 local unemployed women with skills training and employment.

Smaller buildings and residences are often more thorough in implementing the principles of sustaina-

bility. "We are seeing a significant amount of truly exceptional work happening at grass roots level," confirms Noir.

BENEFITS OF GOING GREEN

The most obvious benefits of implementing sustainable green building are those of lowering the impact on the environment and curbing emissions, as well as lowering the costs of operating a building by cutting costs of water and electricity.

What is now emerging as a major benefit of working in a green building is the fact that a more sustainable green built environment increases productivity. "Studies in the US are showing that employees working in green buildings display an increase of up to 20% in productivity, and green hospitals are typically dis-

charging patients on average two days earlier than patients with similar conditions recovering in conventional hospitals," relates Noir.

Green buildings eliminate 'sick-building syndrome', and staff, working in places with more fresh air and natural light where there are less toxic emissions from materials used, are becoming more productive, proactive and interactive.

Also important to realise, however, is that the way in which a building is inhabited is important. The efficiency of a green building is nullified if the users insist on wasting water or use an air conditioner irresponsibly. In many instances, a change of management policy needs to be implemented to allow people to exploit the benefits of occupation of a green building.

FUTURE GREEN

Green building in South Africa has yet to reach its full force, and is certainly gathering momentum.

There are substantial projects in the pipeline, such as an eco industrial park in Lanseria, with 150 warehouses, which is a vast scheme that could have a ripple effect in the market.

Eskom is also looking into a new office block, and it is likely that this could be a leading example of energy efficiency, as sustainability of the building is said to be a high priority for the State-owned utility.

"Built-environment professionals have the ability to act sustainably and overcome perceptions of people who are sceptical of efforts of implementing green building. Consultants, architects and designers must be adamant in ensuring that comfort and convenience are not compromised, because a sustainable green building that can be delivered at no loss of profit or convenience is sure to be embraced," concludes Noir.

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