



Site Specific

In a home that both embraces and respects its natural environment, 'treading lightly' proved a formidable creative fuel

The beauty of this house is that it evolved from the nature of the site,' says architect Derick Britz of the contemporary metal and glass home that he designed for Melissa and Dan Brown in Helderfontein Estate, a Century Property development that subscribes to green design principles and sustainable building solutions. Located in the north of Joburg in Fourways, the estate borders the Jukskei River and its gently rolling parkland is characterised by striking rock formations, diverse indigenous flora and rich birdlife. The Browns' site is especially unique in its situation next to a green belt populated by large, dramatic boulders. 'As my objective is always to

design a structure in a way that will best partner with its environment, it was imperative for me to remain sensitive to the natural beauty of these immediate surrounds,' he explains. Melissa and Dan couldn't have found an architect with a view more in line with their vision and that of the estate. Having moved to South Africa from the United States five years ago, the couple are still in awe by the beauty of the country and the abundance of space. "When we saw the stand for the first time we realised that its splendour lay in its natural terrain and we were determined to integrate this into the architecture of our home,' says Dan. Many hours were spent researching 'tree houses' on the Internet which led to the

investigation of mid-20 Century American homes. One in particular, a California-based design by architect Rudolph Schindler, appealed to them in the way in which it unified with its surrounds. Further research enlightened them to a style of post World War One architecture termed Atomic Ranch which cemented the vision for their home. "What we really enjoyed was the way in which the use of readily available, affordable materials such as glass and steel instilled in the homes a sense of honest integrity that seemed fitting to their environment,' explains Dan.

After the first architect they commissioned failed to empathise with their ideas, the Browns resumed their search

a morning surveying the stand exploring possible solutions to the multi-faceted challenge. The design needed to respond to the topography of the site within the boundaries of a public street and an adjacent green belt simultaneously establishing an unrestricted flow of space between exterior and interior. In addition, it would need to meet the estate's demands for energy efficiency. The Browns went with Derick's initial sketch which called for a metal I-beam framework in which generous sheathes of glass would engage the indoors with the outdoors. 'Floating the structure using steel pillars anchored to the natural boulders on site enabled us to achieve the first objective which was to leave as small a footprint as possible,' explains Derick. Thus the ecologically-sensitive area to the south of the stand with its rocks, veld plants, grass and trees remained relatively undisturbed.

it reduces raw material wastage created by amongst other things the mixing of concrete and the erection of wood scaffolding. In addition, as a framework for supporting glass walls, steel construction assists with regulating the humidity within an interior and unlike painted walls, glass does not emit volatile organic compounds. By establishing a transparent thoroughfare in the open plan living area that extends from the north elevation to the south, the steel framework achieves the desired seamless flow between the structure and its surrounds. This feeling is especially pronounced in the main bedroom where a wall of glass confronts the green belt, expanding the southern boundary and enhancing the sense of open space. "With the doors open you can practically step into what feels like the Kruger Park bush,' says Dan describing how he and Melissa wake up to this inspiring vista every morning.

In response to the estate's ethos promoting homes that are geographically and climatically appropriate, Derick employed certain passive design principles of which orientation is fundamental. 'Put simply,' he explains, 'passive design demands orientation of a building in a way so as to make use of the specific local climate for heating and natural ventilation'. The house has been situated so that the living and sleeping areas face north and therefore receive warming winter sun that streams in through the glass panels. Absorbed during the day, the trapped heat is emitted at night to offset the cooler outdoor temperature. As the main bedroom faces south Derick counteracted its situation by including a band of clerestory windows on the north wall through which the sun penetrates. In summer when the sun is harsh the angle of the roof pitch functions together with the eaves to deflect unwelcome solar radiation. Similarly the structure utilises passive cooling. In summer the openings in the living area to the north, west and south enable the expansive space to cool down by creating sufficient cross ventilation to discharge unwanted heat.

Successful application of passive heating and cooling principles in tandem with the use of double glazing ensures that the structural envelope doesn't overheat in summer and retains interior warmth in winter. The double glazing specified for house Brown comprises two panes of glass between which a vacuum is created preventing heat loss. An aluminium framework guarantees an airtight composition.



for an architect who appreciated what Helderfontein had to offer and who wasn't going to 'rip out the trees and boulders to put a square box in and call it a house' explains Dan. Soon after they met Derick and, impressed by the way in which his designs consistently embodied a vernacular respectful of the Highveld, asked him for a design. He began the project by spending

Though Derick acknowledges that steel is more expensive than masonry and requires detailed planning and skilled labour for quality execution, as a building material he cites its many advantages: it is 98% recyclable making it one of the most sustainable materials, its off-site manufacture of components allows for quicker erection time and enhanced quality of assembly, and



In summer the glass filters the sunlight, reflecting harmful UV rays whilst allowing optimum light transmission. Double glazing is considered cost prohibitive but Dan feels the comfort they experience as a family is worth the three or four years he estimates it will take to offset the cost of the initial investment. A firm advocate, Derick comments, "Because of its far reaching insulating qualities I believe double glazing should by law be applicable to all residential developments and it should be perceived as a long term investment in improving the quality of those inhabiting the home."

In realising not only a smaller but a softer footprint, a large part of the project's success is owed to the landscaping. Neil Puntis and his team from Pools and Landscapes by Nature worked according to the plans to harvest those rocks, shrubs, plants and trees that needed to be cleared to make way for the structure. Certain trees however were retained including a magnificent wild olive that makes for a striking living sculpture on the covered patio. In addition to reinstating all the fauna that was removed, new plants and trees were introduced in keeping with the indigenous riverine species that occur along the banks of the Jukskei and other Highveld river systems. Trees include a variety of deciduous and evergreen species such as mountain cabbage, white karee and coral tree, and plants, chosen for the way in which their colours establish a changing palette, include pink sage, bush violet, red hot pokers and paintbrush lilies. 'Depending on the seasons, the selection flowers and comes into leaf at different times creating a shifting landscape that can be appreciated throughout the year through the home's large openings,' informs Neil. Perhaps the most handsome features of the interior are recycled. Beyond the threshold the street level entrance ascends to the rest

of the home via a staircase made from sections of reclaimed oak wine barrels, and similarly in the main bedroom a robust weathered wood frame that was once part of a car shipping crate supports one end of the bathroom partition wall. This industrious approach to wood continues in the open plan living area where regular pine planks have been used on their profile to create a surprisingly durable, cost effective floor. "The strength of the slab is tripled by its laminated construction," explains Dan. By far the aspect of the home that Dan is most proud of is its energy savings. Opting for gas instead of solar power, Dan has installed two gas geysers at a cost of R8000 each which ensures an on demand hot water supply that isn't weather dependent. He has two cylinders at the ready and replaces one every six weeks at a cost of R750. The initial outlay and running cost of the VecPower gas design was initially the most attractive aspect of going with gas," explains Dan. "Paying pennies however to have as much piping hot water on demand as we can use without the necessity of storage tanks and therefore eliminating the havoc a burst geyser can cause has got to be the best kept secret in South Africa!"

"It's imperative for the public to drive awareness of this issue because," he remarks candidly, "the manufacturers certainly can't achieve it," and adds, "Markets are driven by people's demand not clever slogans and going green has to be driven by us because it's the right thing to do, it's economic and it's clever."



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