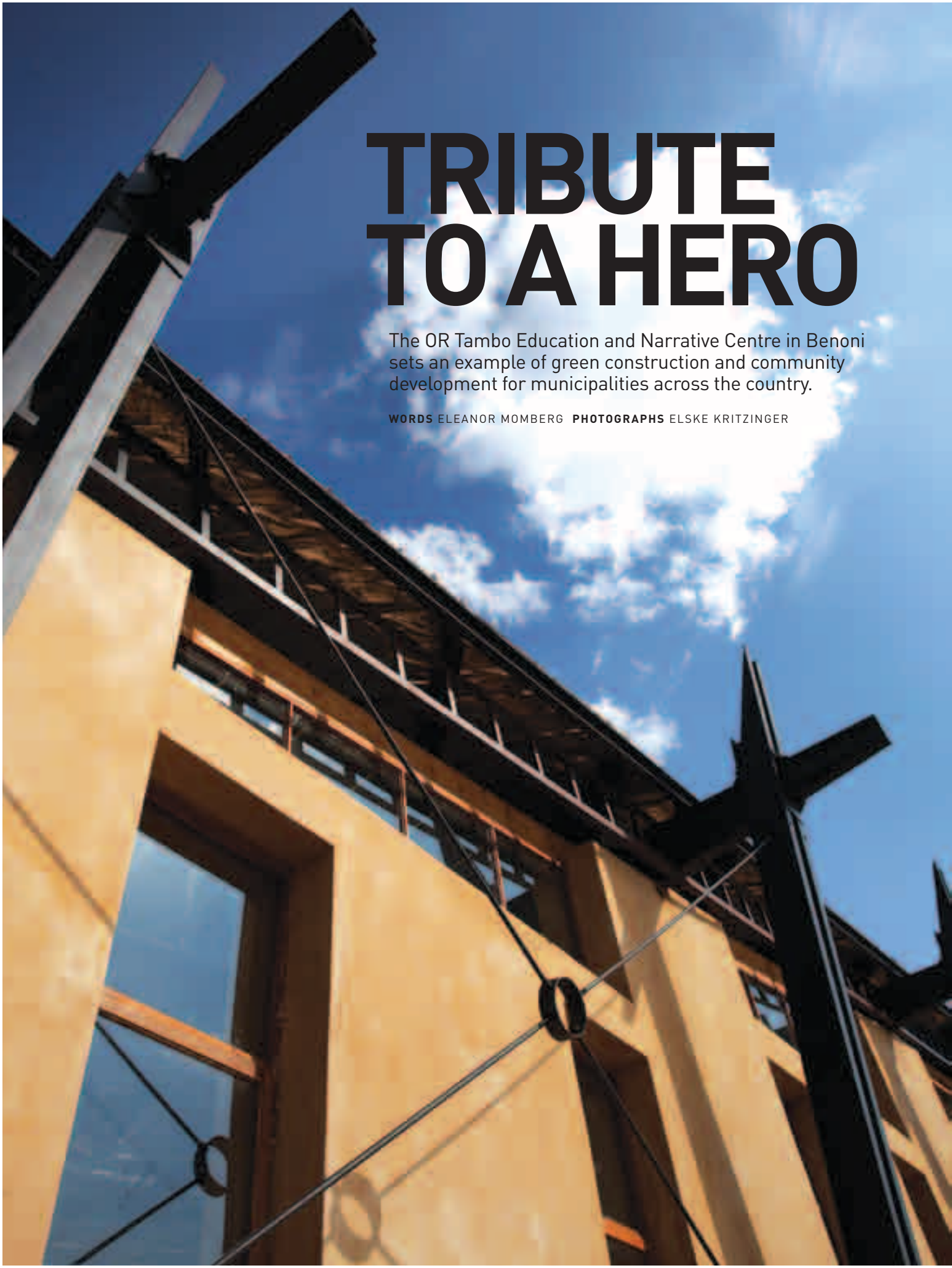


TRIBUTE TO A HERO

The OR Tambo Education and Narrative Centre in Benoni sets an example of green construction and community development for municipalities across the country.

WORDS ELEANOR MOMBERG **PHOTOGRAPHS** ELSKE KRITZINGER

NUTSHELL

Location Leeupan, Wattville township
Size of property 260 ha
Cost Phase 1: R42 million; Phase 2: R20 million
Construction periods Phase 1: 1 October 2010 – April 2012;
Phase 2: 1 July 2012 – 30 June 2013

INTRODUCTION

"An opportunity like this only comes when clients want to experiment, commit to the environment and invest in alternate technology," says Tunde Oluwa, who heads the design team for the OR Tambo Narrative and Environmental Centre in Benoni.

Oluwa speaks with passion about the project that has served as a learning curve in environmental construction for the team.

The Centre dedicated to Oliver Tambo, one of the African National Congress's (ANC) founding members, resembles an oasis of modern development amidst the poverty and squalor of the surrounding squatter camps. "It will attract more tourists and could become the first major tourist attraction in Ekhuruleni," says Lebo Ramashala, Ekurhuleni Metro environmental spokeswoman.

FROM A SLOW START

The idea for the project was first mooted in 2003 when the municipality approved the rehabilitation of the Leeupan and Esselen Pan as wetlands, says Jaco Burger, Ekurhuleni Metropolitan Municipality project manager. An environmental education centre was to be constructed to educate local children how to care for the environment. Recreation facilities would also be constructed and the area declared a nature reserve.

The project was on hold for two years until 2010 when the Council approved funding of approximately R70 million over a three year period for the development.

"In those two years we picked up a lot more experience and knowledge in terms of sustainability. We have been able to do a lot of research collaboration with specialists," says Oluwa.

Burger says the idea to merge the environmental education centre with OR Tambo's legacy followed a Council decision to honour his contribution, not only to South Africa but also to the ANC. The narrative centre details the ANC's history to the disbanding of the National Party in 2005. This was the perfect site to construct the centre as it is only 500 m from where Oliver and Adelaide Tambo are buried. A walking trail to the graveyard will form part of the tourist attraction.

THE PAN

Constructed on the bank of the Leeupan, the development has been welcomed by residents who see it as an opportunity to create small businesses to improve their lives. In exchange, children will be taught to protect the environment.

"The Leeupan was over-fished, abused and had become a dumping ground. It used to be the location of lovely wildlife, fauna and flora and other organisms," says Oluwa. "It was essential that in order to clean the pan, one had to educate the local community. So that is where the idea for the original environmental centre came from – to teach Wattville occupants how they related to the pan and it to them. This idea then developed into the construction of a general education centre."

The bioremediation of the pan over the past two years - which had been contaminated with acid mine water, sewage and the like - has already resulted in the return of flamingos, crabs and other small creatures.

BRINGING THE ELEMENTS TOGETHER

The Highveld landscape and pan were used as design influences and supported by the use of natural materials. Oluwa, at the time a director of MMA Architects, says this project, utilising traditional construction methods, is unique in many ways. It will assist in determining the viability of alternative methods and serve as a point of reference for the green architecture industry in South Africa.

The narrative centre's walls contain "truth windows". "These are so that people can see the materials we used to construct the building," says Oluwa. Outside the meandering walls are wood and steel poles. "We wanted them to resemble the reeds from the pan," says Mojgan Solati, an Iranian architect at the time from MMA Architects.

A caretaker's cottage is also being constructed as a sustainable construction show house. The technologies used includes: Trombe wall (a sun-facing wall which absorbs heat during the day and slowly releases it into the room at night), a cob earth floor, aluminium louvers for shading and polycarbonate cladding, which is heat-insulating for winter months and reflective for summers.

Solati added her indigenous knowledge of windcatchers to the design of the caretaker's house. "All the houses in Iran have windcatchers. We are using one in the house as an experiment to determine what we can improve with future projects," said Solati. The structure includes several ducts through which wind flows into the house to cool it during the day. Once the ducts are closed, the room remains warm.

The environmental centre comprises three pavilions. Marked with upside-down steel roof trusses resting on steel columns and cob earth floors, the walls are constructed of straw bale. All the straw bale walls were plastered with cow dung

and mud by local women using traditional methods. Ramashala said local men were initially tasked with plastering the straw bale walls but the quality of their work was not up to scratch. Local women – who traditionally perform this maintenance task - were then recruited. "They did a neater, more professional job," according to Ramashala.

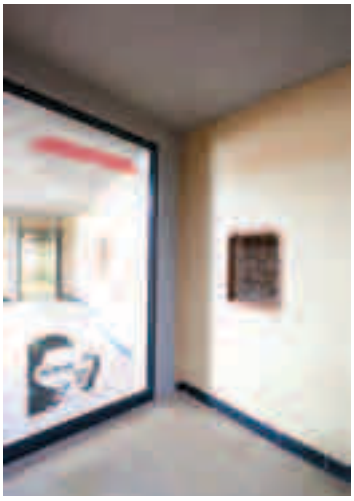
Balconies sloped according to the seasonal height of the Sun helps to keep the buildings cool in summer and warm in winter. Warm air is also absorbed from the roof and delivered to the units via a series of ducts.

Geothermic earth tube technology is being used to heat and cool the buildings. A technology regularly used in Europe and the US, this alternative to air conditioning uses the earth's subterranean temperature to either warm or cool a building. Air is drawn into earth tubes situated behind the retaining tubes and either warmed or cooled, depending on the temperature of the tubes underground, and delivered into the rooms via fans or ducts.

Recycled materials utilised and obtained from industries close by include wood, steel and rocks. Urbanite slab off-cuts from a local factory are used for seating in the gardens and amphitheatre.

Once completed, harvested rainwater will be used to irrigate indigenous gardens and for the flushing of toilets. Grey water will be recycled and reused in the






gardens. "Water from the pan will only be used in serious droughts," says Burger.

Flower boxes with indigenous plants line the pathways to the amphitheatre and environmental centres. Besides the environmental education centre and the narrative museum, the project includes an outdoor amphitheatre and five multi-purpose workshops where local artists can ply their trade.

A RECIPE WORTH PASSING ON

The project was a learning curve for the municipality. "We had to write the recipe book...It has worked out more expensive for us, because there were no recipes for mud bricks, or the correct combinations of lime and cow dung to make the perfect plaster or compressed earth walls."

The development has been documented for future generations, says Burger. This included photographing and noting each recipe used during construction for a manual on how to build green, and a video to assist future generations.

"This project shows that you can use sustainable construction techniques and utilise materials to save energy. This is what responsible construction is about. It also shows that you can use traditional construction methods for more modern design, aesthetics and configuration. Everything has been thought out in great detail to optimise the use of energy," says Oluwa.

PHASE 2

A special maintenance and cleaning manual is being compiled by the contractors for the municipality. Implementing it will be the responsibility of the on-site caretaker. During Phase 2, set to cost an estimated R20 million, the community's urban

THIS PROJECT SHOWS THAT YOU CAN USE TRADITIONAL CONSTRUCTION METHODS FOR MORE MODERN DESIGN, AESTHETICS AND CONFIGURATION.

SUSTAINABILITY FEATURES

Design: It is built into the slope with an undisturbed view of the pan and roof gardens to assist with cooling.
Building methods: Straw bale walls, earth floors, stone and urbanite walls, cob walls, rammed earth construction.
Water: The tank farm captures rainwater for use within the centre, indigenous gardens utilising harvested rain water.
Energy: Solar energy, heating via earth tubes, Trombe walling, installation of vents for cooling, glazed windows.
Recycling: Grey water will be recycled. All other waste materials are to be recycled.




agricultural project to the west of the Centre will be expanded and retained as an example of sustainability within the planned reserve. Part of the civil works includes upgrading the stormwater inlets east of the pan and erosion control slopes.

"Urban farming is part of the history of the area but livestock numbers need to be controlled." The Gauteng provincial agriculture department will assist with livestock improvement and the reintroduction of indigenous cattle, goats and chickens, while a greenhouse will supply seedlings for farming and gardening. The park and recreational facilities will include conservation zones, picnic and braai areas, sports fields, nature trails, walkways and piers.

A NEW STARTING POINT

Ramashala hopes that the Centre will break down "historial fear" boundaries between the local residents and those visiting the Centre.

Burger believes that the construction of this centre will serve as an example of green building for municipalities across the country.

"Personally, this was the beginning of a journey for me. All my subsequent buildings are going to have an aspect of sustainability in them. One needs to communicate to clients and others in the industry that no matter what you do, it is important to think in terms of sustainability and conservation; to think more responsibly," concludes Oluwa.

SOURCEBOOK

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- **Bio Remediation** Avantu Solutions 011 803 1361 www.avantu.com
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- **Rainwater harvesting** Peacefull Scapes Kristen Kallesen 082 600 6091
- **Roof covering** Cebron 011 314 4439
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