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Sustainable Building Solutions for Monwabisi Park, Cape Town

Chelsea Marie Travers
Worcester Polytechnic Institute

Robert T. Luscinski
Worcester Polytechnic Institute

Shanice Kamille Jones
Worcester Polytechnic Institute

Trevor Michael Olsen
Worcester Polytechnic Institute

Sustainable Building Solutions for the Redevelopment of Monwabisi Park, Cape Town

An Interactive Qualifying Project proposal to be submitted to the faculty of Worcester Polytechnic Institute in partial fulfilment of the requirements for the Degree of Bachelor of Science

Submitted by:

Chelsea Brown
Shanice Jones
Robert Luscinski
Trevor Olsen

Submitted to:

Project Advisors:

Prof. Scott Jiusto
Prof. Joseph Petruccelli

Project Liaison:

Mike Tremeer, ecoBUILD Technologies

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Abstract

In order to achieve the goals of redevelopment within the informal settlement of Monwabisi Park, Cape Town, there is a need for a comprehensive plan for redeveloped housing, community centres and community space. To develop this plan, our team wrote proposals for new housing, community centres, the ecoBEAM Technologies building methods and a children's playground. This plan emphasizes sustainability, community engagement and a minimally disruptive redevelopment process.

This project report is part of an ongoing research program by students of the WPI CTPC to explore and develop options for sustainable community development in the informal settlements of South Africa. For more information, please go to:http://www.wpi-capetown.org/

The following is an executive summary of a full project report that has been implemented as a website available at: http://www.wpi-capetown.org/projects/2009/buildings/

Problem Statement

Monwabisi Park, Cape Town is one of many informal settlements around the world. Informal settlements are home millions of people and present many challenges. These communities are the direct result of a worldwide urbanization movement. There is a trend of people migrating from rural to urban areas looking for opportunity. This movement is overcrowding cities, flooding job markets and creating temporary squatter camps. As people struggle to find opportunity, the camps have become permanent settlements. In Monwabisi Park, the quality of housing construction and the materials used are inadequate. Furthermore, there are not enough formal places designed specifically for people to meet, sick to receive care, children to play and/or guests to stay. For the residents of this community to reap the benefits of redevelopment, new housing and community centres are needed in each section of the settlement. To address these issues, there is a need for a comprehensive redevelopment plan for housing, community centres and community space.

Background

The community members of Monwabisi Park are currently living in self-built shacks made from materials that are readily available. The shacks are extremely versatile, inexpensive and can be built in a matter of days. Despite these benefits, the shacks face a variety of problems such as leaky roofs, poor insulation and inadequate ventilation. The community members of Monwabisi Park have a strong desire for improved housing (Garcia *et al.*, 2008).

Previous redevelopment efforts in other settlements in South Africa have focused on moving and relocating all residents, clearing the area and building new houses from ground zero. These homes are typically made from cinder blocks and are all either the same or extremely similar in design. In Monwabisi Park, the Shaster Foundation and WPI have begun using a new approach featuring community-engaged in-situ upgrading. This approach is grounded in the creation of redevelopment seeds. The goal of redevelopment seeds is to develop a community centre, new housing, roads and other necessary infrastructure in a small area. This approach provides a model for the rest of the area, improves the quality of living in the surrounding area, and involves minimal disruption of the community. Ultimately, the hope is that redevelopment seeds will grow incrementally and expand across Monwabisi Park as redevelopment efforts allow (Zonke, 2006).

The first redevelopment seed is located in Section C and is home to the Indlovu Project a community services organisation funded by the Shaster Foundation, a non-profit organisation dedicated to the redevelopment of Monwabisi Park. The Shaster Foundation (www.shaster.org.za) is building a guest house and community centre with the help of ecoBEAM Technologies a sound, sustainable and eco-friendly building method that allows for on-site construction and does not require electricity. The majority of construction work can be done with unskilled labour which provides opportunity for local employment and community engagement. Overall, ecoBEAM has developed a method of building that is robust and well-suited for implementation in informal settlements. EcoBEAM Technologies has been and will continue to be influential in redevelopment efforts (ecoBUILD, 2009).

Methodology

The goal of this project was to plan for the implementation of improved structures, both public and private, within the community of Monwabisi Park, Cape Town. In developing a partnership with community members and key stakeholders, the team aimed to provide a plan for sustainable, functional structures that better serve the community's needs. Project objectives were:

- Research and analyze the current conditions of housing, community centres and community space within Monwabisi Park
- Create a planning and building proposal for new housing
- Compile key ideas for developing community centres
- Create a how-to building manual for the ecoBEAM Technologies' building system
- Plan for the construction of a safe, eco-friendly playground to be built outside of the community centre at the Indlovu Project

In order to achieve these objectives, the team had to explore a variety of research methods. One of the first steps was to review research done by last year's WPI Cape Town Project Centre students. The team reviewed the results of interviews and charrettes (small community planning meetings) that were conducted at the settlement last year to gain a preliminary understanding of the current conditions and community needs. A preliminary understanding was essential in establishing the direction of our project. The team also looked at work done by last year's teams in order to analyze and determine possible locations for new community centres to be built (Garcia et al., 2008).

Field observation was a useful research method in developing an understanding of existing conditions. By walking through the settlement, the team learned first-hand the realities of the housing conditions. Although the Indlovu Project Centre is still under construction, the team studied it as a prototype. The team observed its workings and the demographic that it services. Also, the

team visited playgrounds in Monwabisi Park as well as in Harare, a neighbouring settlement. Through these visits the team gained inspiration for designs and layouts and watched children play in order to observe which elements were used most.

Hands-on experience was a vital method for developing an understanding of the ecoBEAM Technologies building system. With the assistance an ecoBEAM employee the team built a demonstration beam. Later, with the assistance of Robert Taylor, ecoBEAM construction manager at the Indlovu Project Centre, the team constructed a wall for demonstration purposes. By having the opportunity to construct a beam and wall, the team was able to reconfirm that this building method can be implemented with unskilled labour and gained a better understanding of how the system works.

To develop a realization of current conditions and community needs, the team interviewed community members and leaders. Buyiswa Tonono is an influential leader in the development of the Indlovu Project and a community member of Monwabisi Park. The team spoke with Buyiswa extensively on existing housing conditions, community needs, and the development of the community centre in Section C. From these conversations as well as talks with Di Womersley, CEO of the Shaster Foundation, the team developed an understanding of the need for community centres and also a better understanding of why certain services should be offered. During our visits to playgrounds in Monwabisi Park, the team spoke with various crèche workers. By speaking with community members who worked at crèches, the team learned what play elements children like, when they played, how often, and what changes they would make if they could rebuild the playground. This information was influential in the development of our plan for a playground.

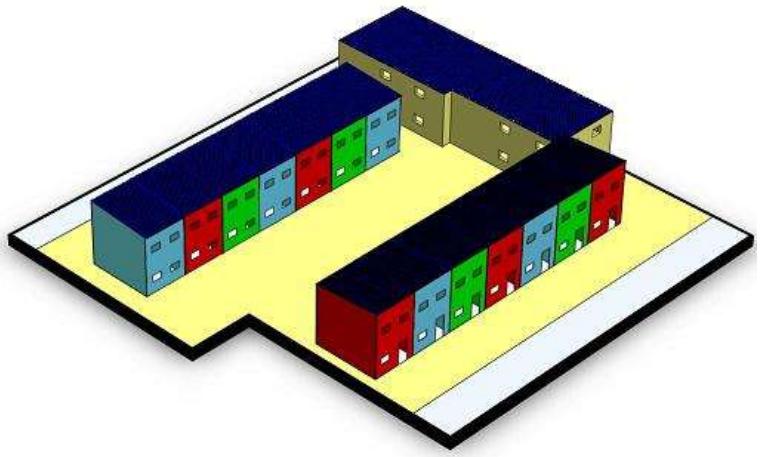
In addition to talking with community leaders and members, the team also spoke with several field experts. The team spoke with Mike Tremeer, CEO of ecoBEAM Technologies, about the local and global problem of housing as well as sustainable building principles. In working with Robert Taylor of ecoBEAM, the team took preliminary research and developed it into a logical plan for new housing. Robert helped the team learn what is practical for redevelopment efforts from a business perspective. The team also had extensive conversations with Dinny Laurence, an Australian lawyer, concerning the management and upkeep of the final housing system as well as the issues of ownership and rights and responsibilities.

In the final phases of our work, it became important to collaborate with other teams. While developing a plan for the initial site of new housing in the redevelopment seed, the team worked from spatial recommendations that were proposed by the Planning Team. Our team also interacted with the Water and Sanitation Team in determining a location for a playground near the Indlovu Project Centre and the proposed Water and Sanitation Facility.

Results and Recommendations

The following are descriptions of documents that the team has prepared during our time working in Monwabisi Park. These documents are a compilation of the research that our team has completed as well as our ideas and recommendations for redevelopment.

Through the methods outlined above, the team developed a proposal for new housing in Monwabisi Park. The proposal explains building theory as well as a number of critical considerations. It outlines proposed housing layouts as well as details relevant to cost, upkeep, management, tenure and rent. The team focused on and recommends a cluster housing option for this community. The benefits of cluster housing, specifically conserving space and cost, address many of the challenges that redevelopment efforts currently face. Furthermore, the proposal examines a location behind the community centre in Section C in great detail. This area has been identified by the Indlovu Project as the site for new housing in the initial redevelopment seed in Monwabisi Park. All parties, including the City of Cape Town, the Shaster Foundation and the Violence Protection through Urban Upgrading program (VPUU), involved are presently discussing the timing and process of this endeavor. The project would have to be privately funded and self-directed since the City of Cape Town does not have a policy to guide or the resources needed to support new housing in Monwabisi Park at this time. The goal is that this initial site will serve as a model for what housing redevelopment efforts ultimately hope to achieve on a larger scale across the entire settlement.

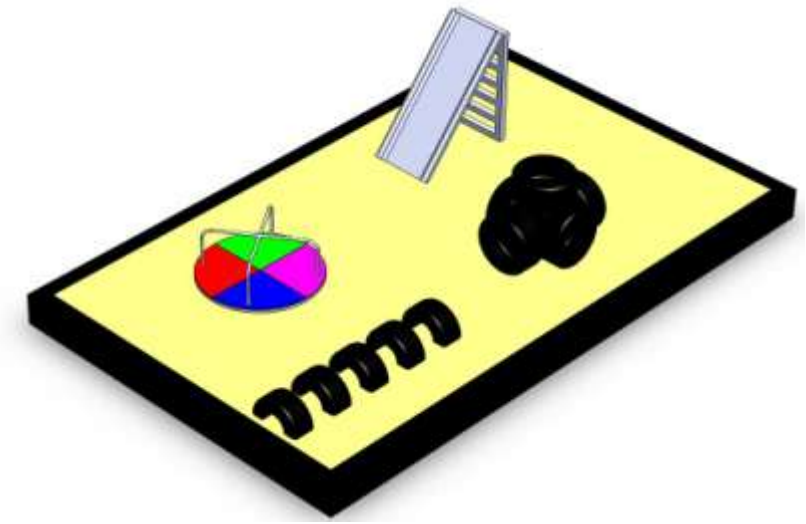


The team also compiled recommendations for developing new community centres in Monwabisi Park. The ideas outlined are a clear and complete plan of what should be taken into account when building a community centre. It was determined that community centres can provide space for community meetings, social events, a soup kitchen, guest rooms, health services and education. The team recommends that community halls and youth centres be built in every section of the settlement and that health centres only in Section A and Section C will sufficiently serve this demographic (Tonono, 2009).

Building off the knowledge our team gained through hands-on experience as well as conversations with Robert Taylor, the team compiled a picture-intensive, how-to *ecoBEAM Building Manual*. Since

ecoBEAM Technologies has created a building system that is a unique opportunity for local employment and community involvement, this manual not only serves as a visual aid, but also may help bridge any language gaps between the foreman and community members. While supervision of a skilled foreman is still a necessary requirement for the ecoBEAM building system, the manual can be used by workers with a broad range of education levels. Our team recommends that this manual be integrated as a training tool.

Through conversations with community leaders and working closely with this year's Planning and Water and Sanitation Teams, a location for a new playground was determined next to the crèche and youth centre in the Section C redevelopment seed. Due to other construction projects within the same area, the team was not able to move forward with the implementation of a playground during our visit. The team worked on a plan that describes the details of the construction and layout of this playground. Based on observations at Harare and Monwabisi Park playgrounds and conversations with crèche workers, the team recommends a merry-go-round and a climbing structure built from tires. The team also suggests that the playground be covered by a cloth awning to protect children from the sun's heat.



Conclusions

The team hopes that our research and work in Monwabisi Park will aid in the full and sustainable redevelopment of this community. The team aimed to fulfil the need for an all encompassing redevelopment plan by writing a proposal for new housing, suggestions for community centres, a manual for ecoBEAM construction and a plan for a new playground. The team is leaving ideas in the hopes that what is recommended will be further developed and taken into consideration when implementation is possible.

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