



Executive Summary:

Mapping as a Foundation for Spatial Redevelopment in Monwabisi Park

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

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December 17, 2008

Redevelopment Context

This project seeks to formulate macro-level recommendations for the long term spatial redevelopment of Monwabisi Park, an informal settlement of Cape Town, South Africa. These suggestions will focus around an in-situ style of upgrading that address the desires and needs of the community, while maintaining the organization and methods of large scale redevelopment efforts.

Monwabisi Park is located along the southern tip of Africa, in south eastern Cape Town, South Africa, and is a neighborhood of Khayelitsha. Meaning “New Home,” Khayelitsha was established in 1984 during the apartheid era in order to accommodate the growing influx of black workers to Cape Town. When apartheid ended, there were no longer regulations on the movement of black people, and people poured into metropolitan areas from the Eastern Cape seeking new jobs and better education opportunities. In many cases these migrants only set up temporary shacks with the intention of either returning to the Eastern Cape or moving into more permanent housing once they had saved enough money. These squatter camps quickly became both permanent and common place. Such was the case with Monwabisi Park.



Figure 1: Progression of Monwabisi Park's Population Expansion

In 1997 people began moving onto the Wolfgat Nature Reserve, where Monwabisi Park now stands. By 1999, inhabitants occupied more than a 2 kilometer stretch of parkland. As the population grew, residences expanded away from the roads and towards the nature reserve's boundaries. Since 2003 the population of Monwabisi Park has remained fairly stable and is now home to more than 20,000 people living on approximately 691,200 square meters of land (roughly .27 square miles). The vast majority of the land, approximately 87% has been used for residences. Roads, gardens, community centers, and recreational facilities received little, if any, consideration as people moved into the area. Without any formal planning or major roads, the Park is currently a maze of pathways and shacks. The vast majority of the park is also unlit at night which, in turn, increases the level of crime in the area.

In order to effectively address these issues, this project is part of a larger effort to spark a more comprehensive planning process which would work towards making Monwabisi Park a safer, more sustainable community with a higher standard of living. This larger effort is a combination of the students and faculty of Worcester Polytechnic Institute as sponsored by the Shaster Foundation and the Violence Prevention through Urban Upgrading in Khayelitsha (VPUU). This combination effort is reflected in *Envisioning Endlovini: Options for Redevelopment in Monwabisi Park*, a document containing the research and recommendations for the future of Monwabisi Park with respect to communication, water and sanitation, energy, economy, buildings, and macro-level redevelopment concerns, and can be found at www.wpi.edu/Academics/Depts/IGSD/People/jiusto.html.

This project was sponsored by the VPUU which is a partnership between the City of Cape Town and the German Development Bank; this organization seeks to prevent crime through urban upgrading. Instead of focusing its effort on stopping violence and crime through policing and criminal justice measures, the VPUU has chosen to focus on the factors which foster violence.

In bridging this gap, this project has three main goals. We sought to:

- 1) Utilize GIS to document the current social and physical conditions of Monwabisi Park in order to provide a foundation for future efforts
- 2) Bring the ideas of community residents to the forefront of redevelopment planning
- 3) Synthesize concepts and ideas for the future spatial redevelopment of Monwabisi Park in an effort to make the community safer and more sustainable.

In order to achieve these goals, it was necessary to determine not just what the local residents desired, but what motivated these desires. The question was not just what areas were dangerous, but why they were dangerous; not where the community members would put a school, but why; etc. Then, it was vital to evaluate these ideas based on what was feasible, and determine a set of principles and design criteria.

Methodology

In order to accomplish our goals our project was comprised of three major phases:



Figure 2: Three Major Phases of our Project

Gathering information about the existing conditions of Monwabisi Park entailed procuring as much electronic data from the City of Cap Town as possible, as well as gathering information from the community. In order to gather information from residents of Monwabisi Park, three main methods were employed: community mapping for current conditions, first-hand observations while walking through the park, and community mapping for envisioning the future, which occurred during two charrettes with influential community members.



Community mapping for current conditions was completed by presenting community members with maps of their area. The community members then identified key locations and areas on the map in order to accurately document what areas or features were important, as depicted in Figure 2. This data was then cross referenced by physically visiting a number of the sites recorded to verify that the information was correct. Once the existing conditions were gathered, community mapping for envisioning

Figure 3: Picture of Community Mapping Exercise with the Co-Researchers

took place. This mapping exercise was part of a larger charrette that involved an interactive exchange of ideas concerning large scale redevelopment of Monwabisi Park. This consisted of utilizing maps of the area to gather the community's perspective on the future of their community.

Having gathered information from the community and analyzed said data through GIS, city planners were interviewed in order to discuss possible ideas for spatial redevelopment. Based on the information we gathered, calculations on various aspects of redevelopment were made in order to determine the logistics and feasibility of new plans. For instance, the amount of existing open space available, and then the amount of land space that could be saved by using the more space efficient housing designs the WPI Buildings Team created; how much of the park could be accessible by fire trucks based on various road designs, and how much various road layouts would cost were all calculated.

Based on the current conditions, the future ideas of the community and the city, and our analysis, concepts for spatial redevelopment plans were developed. These plans attempted to balance the desires of the community with the options that the city personnel and our group viewed as feasible.

Findings

Through these research methods there were three major findings:

1) Lighting at night is inadequate and creates an unsafe environment

In many cases there are no barriers between shacks (fences or bushes for example), and people travel in whatever direction seems the most direct to get to their destinations. While this doesn't exclude walking on larger paths or roads, it generally results in walking between shacks through pathways that are fairly narrow (in many cases less than a meter wide).

During the day this is a reasonably safe practice, and people enjoy the sense of community this creates through frequent interaction. However, when the sun goes down this method of travel becomes infinitely more precarious. These narrow pathways are largely in shadows that make it difficult to know what, or who is nearby. The community has reported that rape, murder, and armed robbery are frequent in these poorly lit areas. Wider pathways would seem to rectify these problems, but in reality the wider roads are just as dangerous despite the open space and visibility they provide. Nearly all of these roads are poorly lit, therefore diminishing the benefit of the wider path.

2) The vast majority of the park cannot be accessed by emergency vehicles

Fires are a very real danger in Monwabisi Park. These fires can spread quickly due to the density and materials of the shacks in the area. Presently, one-third of the Park is inaccessible by fire trucks. On top of this limited accessibility, fire hydrants in the area are poorly maintained and difficult to find. This only amplifies the threat fire poses to this area.

3) There are limited public facilities within Monwabisi Park

Aside from informal taverns, the community has limited places for congregation or recreation. The Indlovu Centre is the only community center in the entire park. This center was the victim of one of the fires, which destroyed a youth center, crèche, clinic, guest house, and a partially built backpacker lodge. Aside from this center, there are only 11 crèches and ten churches throughout all of Monwabisi, while one section of the park alone is host to nearly 30 shebeens. This leaves residents travelling long distances into Harare or to the beach for recreation.

Recommendations

Community Centers

Recommendations for spatial redevelopment focus around the creation of community centers, roads, and potential relocation concepts that would make these recommendations possible. As there is currently only one community center within Monwabisi Park, it cannot service the entire community. Due to this deficiency, the community would benefit tremendously from the creation of more community centers, especially because each center would consist of at least a clinic, soup kitchen, crèche, and youth center. By placing a community center in each section the needs of the community would be better met, and it would be easier to gain support of community leadership to do so.

When determining potential locations for future community centers it is important to consider the following factors: location within each section, proximity to existing roads, number of potentially displaced shacks, and location with respect to known problem areas.

Presuming that each section is getting a community center, it is important to keep each facility centrally located within each section; this is because the community views this as the fairest location as it provides reasonable distance for access for all members of that section. It is also important to keep community centers centrally located in order to keep the center secure, and to make the community safer. If the new community center is located within the heart of the community it is easier for members to take ownership of it. The increased traffic to the centers within each section also means that there are more people there to prevent crimes of opportunity.

Proximity to existing roads is also an important factor in determining location. In order for new community centers to be built, it will be necessary to bring in large amounts of supplies. Roads provide access to centers, hence situating community centers along existing roads allows for the necessary access without the additional cost and difficulty of making new roads and displacing additional people.

Any open spaces that currently exist should also be noted, as they would be able to accommodate a new center with the least amount of shacks displaced. If these centers are isolated efforts (in that there are no immediate plans for new housing in the area), then relocation becomes a major issue. Community members are generally extremely reluctant to move their shacks unless doing so presents a direct benefit such as new housing or improved utilities.

The final consideration is creating a safe space around each center; utilizing an open area with the least amount of dark corners, far from the brush, and with accessibility to electricity for lights is essential. A location in each section that is along a major existing road, in a relatively central area, and away from dangerous areas, would be the best possible site for the future community center facilities.



Figure 4: Map Showing Potential Locations for Community Centers as Part of Redevelopment Seed in Monwabisi Park

Roads and Infrastructure

When developing a plan for a new system of roads in Monwabisi Park it is important to consider the existing roads and pathways as potential sites for development. Though these routes do not follow any particular grid system, they do provide a starting place for a network of travel within the Park. Using the existing roads displaces the least amount of residents during the construction process and maintains the community's sense of structure, thus ensuring that the residents feel like their surroundings are familiar. Utilizing a combination of straight and curved roads would create a road system that is expected to serve all the functions of the existing pathways in Monwabisi Park while increasing the safety and ease of transport. It is also intended that this plan represents an adequate balance between costs and improving the standard of living in the Monwabisi area.

Emergency vehicle access is very important consideration when designing a road network. According to a representative of the City of Cape Town's Department of Parks, a road that is 4.5 meters in width is enough space for a fire truck to navigate comfortably. It is not only important that the vehicles can fit down the roads and maneuver around corners, but also that the trucks can service all areas of the park. Thus, the roads will be 4.5 meters wide, and made of a compacted laterite surface, (consisting of a sub-base, surface, and concrete edging that maintains the road's shape and prevents erosion) that is able to support the weight of heavy emergency vehicles and serves as a fire break.

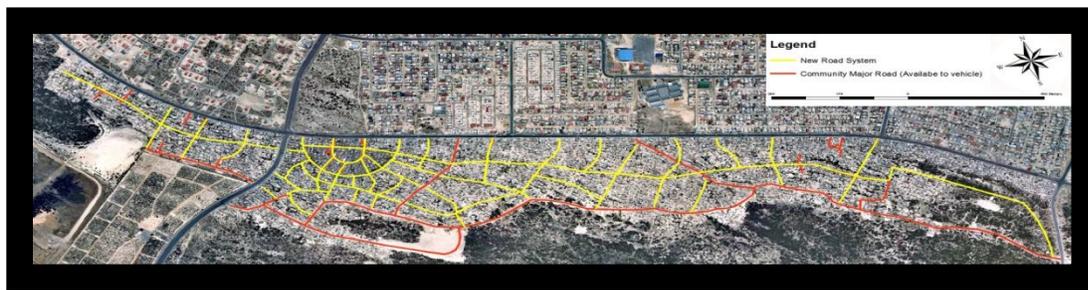


Figure 5: Map Showing the Current Roads in Red and Proposed Roads in Yellow for Monwabisi Park

Efficient Housing

Utilizing the three detailed residential housing designs provided by the WPI Buildings team we were able to calculate the amount of area that would belong to each new living space, including the free space that was worked into the designs. With this number we were able to compare the amount of space that would be saved by converting to one and even two story versions of each new housing design.

Dividing each area per house in the future plans by the area per house in the existing conditions; we can see what percentage of the existing footprint of the park will be used by the new housing plans. This then shows the amount of free space which can be used for roads, recreational areas, community centers and any other facilities that might be needed.



Figure 6: Map Showing the Amount of Space That Can be Saved by Incorporating Different Housing Options. The Area Shaded in Green is the Projected Condensed Housing Footprint.

Relocation

Relocation of people for upgrading of informal settlements normally lacks support from the community. This is because, in some instances people don't want to relocate in the first place, if they do agree to relocation, it is sometimes hard to get people to leave their temporary housing once construction of their new housing is complete, and in some cases, people just leave entirely once construction starts and move to a new area. When construction is over, the community is entirely different than before, and in many cases the change is not positive.

With such a high density of houses within Monwabisi Park, it is unrealistic to presume that new housing can be built entirely without relocation. With this in mind, community members were more willing to relocate given the following measures: improved housing, proximity to their current shack, improved utilities, single move, and the safety of the new area.

Single move relocation involves moving people out of their old dwellings directly into their final permanent dwellings. This process requires a few things in order to succeed, namely open space and efficient housing designs. New housing could be constructed in an open space in a manner which could fit into a large scale organizational plan while using less space than the shacks they are replacing, thus decreasing the overall housing footprint. As this method progresses, it has the potential create significantly more open space than the initial open area used.

With this in mind, Monwabisi Park has very little room to expand, as it is currently on a nature reserve. There are however two areas enclosed by the back border of the park which could serve as relocation sites. These sites are roughly the size of a redevelopment seed, a site of redevelopment that includes a community center, water facility, and clustered housing. If electricity and lighting were to be brought to the back of the park (a major community concern regardless of relocation because the entire southern region lacks electricity poles), then people could be shifted back into new housing, which would create more space than the original open areas had to offer. In this way, new houses could be built over time without any major relocation, and in doing so, would create excess free land for more space surrounding community facilities such as schools, soccer or recreational fields, industrial sites, and more community centers. As this progresses over time and major communal facilities are implemented, Monwabisi Park would move towards a more sustainable, safer community.