The Black River Corridor: Visions for Restoration and Recreational Use

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.

ABSTRACT

The goal of this project was to aid the City of Cape Town in creating a vision for park and recreational spaces throughout the Black River Corridor to ultimately improve the ecological and socioeconomic potential of the river. By documenting river conditions, talking to stakeholders, and researching river revitalization processes, we developed visions for the area. A pathway route and potential economic opportunities were recommended for an interdepartmental task force to continue with a multi-phase revitalization project.

This project report is part of an ongoing research program by students and faculty of the WPI Cape Town Project Centre to explore and develop options for sustainable community development in South Africa. For more information please go to:

http://wp.wpi.edu/capetown/

The following is an executive summary of a set of project reports that have been implemented as a website available at:

http://wp.wpi.edu/capetown/homepage/projects/2011-2/river/

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MISSION STATEMENT

In its present state, the Black River is a river of problems. Decimated by many types of pollution (Figure 1), the river is largely unusable by the communities around it. Even small amounts of direct contact with the river can cause serious health problems. The river is further afflicted with invasive plants and species (Figure 2). As a result, the river is a detriment to the region when it could be an asset.

Figure 1: Pollution behind Oude Molen Eco Village near the N2 Highway.

The goal of our project was therefore to aid the city of Cape Town in creating a vision for park and recreational spaces throughout the Black River Corridor to improve the socio-economic potential of the river. The principal outcomes of the project were deciding the best location for a pathway, highlighting sections along the pathway for park development, and presenting visions for future economic and recreational opportunities.

Figure 2: Water Hyacinth with visible litter

BACKGROUND

Rivers are natural waterways that run through cities all across the world. They are often accompanied with economic developments such as factories and plants which, while creating jobs, also pollute the water. As a result, many urban river restoration efforts have evolved in a post-industrial world.

Located in Cape Town, Western Cape, South Africa, the Black River is part of the greater Salt River catchment system, which drains water from both Table Mountain and the Cape Flats into Table Bay. As a river system with many contributors, the Salt River catchment has served as an outlet for much unwanted waste. Consequently, some sections of this catchment are highly polluted. The Black River, despite its uncleanliness, holds great potential for communities along its course, and the city as a whole.

Although it is only a few kilometres, the Black River flows through a wide range of Cape Town communities. The waters of the Black River flow through the affluent Southern Suburbs, the low-income areas in the Cape Flats, and the industrialized areas in the eastern City Bowl and Northern Suburbs. The variety of neighbourhoods that the river flows through presents a multitude of opportunities for uses of the river.

POTENTIAL

There is a lot of potential to develop the area in connection with existing city assets. Several nearby stadiums, golf courses, and private businesses can all contribute to the success of the area. A developing urban park area, called the Two Rivers Urban Park (Figure 3), can serve as a recreational outlet for nearby residents. The Black River and the surrounding river corridor can also be used to connect people who have traditionally been separated. All of these factors can combine to help make the Black River corridor a better place for the people of Cape Town, but this will not happen without a significant effort to improve the area. Rehabilitating the Black River should be an integral part of the success of any plan to advance the communities around the river. Due to high levels of pollution, however, the Black River can hardly be utilized by anyone in its current state.

The Black River is currently a detriment to the region when, it could be an asset.

HISTORY

The Black River hasn't always been in the harsh condition that it is in today. It was an important source of water for herd animals, and remained mostly unchanged through the mid-20th century. With the construction of the Black River Parkway and canalization of the river to prevent

Figure 3: A Two Rivers Urban Park entrance

flooding, the path of the Black River that we know today was created. The Black River is a mostly human-engineered river; its current course is caused by dredging that was intended to prevent serious flooding. Historically, it would have looked like a series of low lying wetlands that would flood together during winter. In 1943, the City of Cape Town took preventative measures to control the flooding by canalizing most of the river (Aikman Associates, 2002). This method disrupts local ecosystems but prevents the weather from destroying the area's infrastructure. Because of dredging and pollutants from further upstream, the river has declined in health until it reached its current condition. Despite canalization of the river, the river can overflow its banks during the heavy rains of winter. As the seasons change, however, the rains dissipate and the flow of water through the Black River is reduced. The water depth becomes extremely shallow during the dryer summer months, only reaching roughly 30 cm in height. This very dynamic water height scenario poses many problems for traditional aquatic navigation, and limits the ability of people to traverse the Black River.

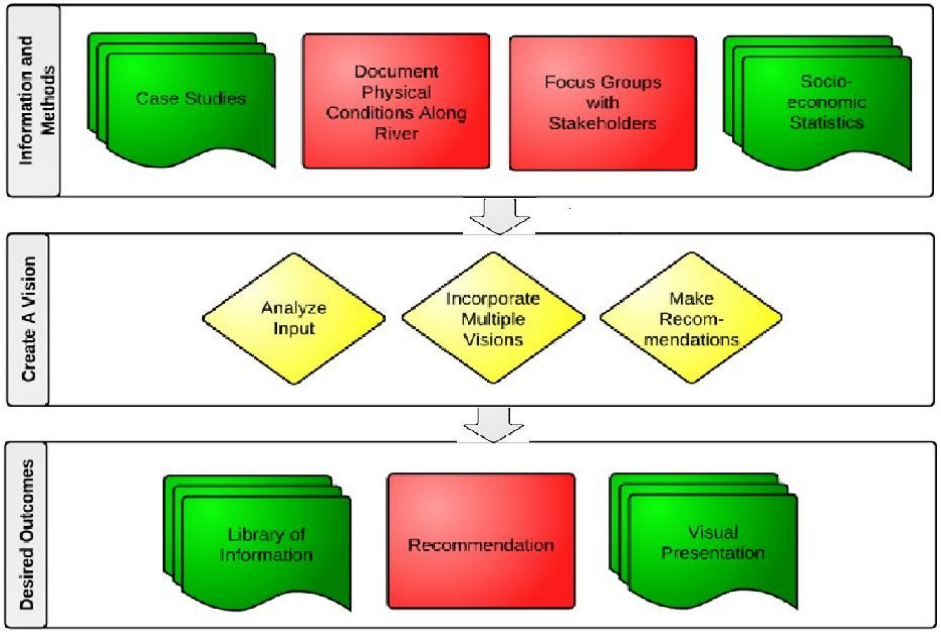

Figure 4: Methodological Plan of Collecting Information, Creating a Vision, and Finalizing Results

METHODOLOGY

To create a vision for park and recreational spaces throughout the Black River Corridor, we established the following objectives:

1. Research urban river restoration efforts in other cities.
2. Document the conditions along the Black River.
3. Assess opportunities for clean-up and recreational use of the river.
4. Propose a vision for a non-motorized transportation pathway through the corridor.
5. Make recommendations for an interdepartmental task force to move forward with the project.

Previous Urban River Restorations

We first researched successful urban river restoration stories, examining factors that made rivers desirable to their respective communities, and drawing ideas for the Black River. Pertinent information that we identified includes:

- Recreational opportunities achieved on the rivers
- Steps taken to make the rivers usable for recreational use
- Sources of funding for restoration efforts
- Lessons learned from revitalization projects

We created a library of information on river restoration for the city to utilize. All the case studies have geographical, social, or political parallels to the Black River.

Documenting Conditions

To learn the best areas for pathways and parks and to assess clean-up opportunities, the team walked the length of the river, documenting both physical and ecological conditions (Figure 5):

- Areas of exceedingly high pollution by visible pollution in water and on banks
- Approximate amounts of river flow
- Man-made structures along banks like bridges, highways, and railroads
- Vegetation and wildlife in river and on banks along with invasive species

As well as social conditions:

- Economic class of residents who live around the river
- Frequency and type of usage by residents from desire lines

The present river conditions were explored to understand obstacles and opportunities in revitalizing the corridor.

Figure 5: Documenting river conditions at Oude Molen Eco Village

Figure 6: Learning about obstacles along the Black River from David, a community member of Maitland Garden Village

Assess Opportunities

To learn about the various visions surrounding the river, the team conducted interviews, attended stakeholder meetings, and spoke with community members along the Black and neighbouring rivers. We wanted to respond thoughtfully to the many different visions of stakeholder groups in hopes that a collective effort on the river will be established. We spoke with community members from Maitland Garden Village (Figure 6) and Oude Molen Eco Village to understand how the river affected their lives and how it could be improved. It was useful to speak with representatives from TRUP, since the pathway would be incorporated in their future plans for the park as well. We also spoke with representatives from the Rondebosch and Mowbray golf courses that are located along the river, they line a very significant portion of the river and are potentially major private sponsors of the river restoration process The provincial government and the city of Cape Town also helped outline different

visions that would benefit the city through economic opportunities. To help assess the task of cleaning up and maintaining a polluted river, we also spoke with representatives from the Friends of the Liesbeek River. They emphasized how community awareness was a key component in restoring the Black River, and how that could be accomplished through a pathway. (Winter, 2011)

VISION FOR A NON-MOTORIZED TRANSPORTATION PATHWAY THROUGH THE CORRIDOR.

Supported both by experts on the ground as well as examples presented in the case studies, the team synthesized a vision for a non-motorized transport pathway along the Black River. The team looked at the desire lines along the Black River to plan the route of the pathway. Desire lines are imaginary lines that represent pedestrian's desire to move from one point to another, indicated by informal dirt pathways, or clearings through tall grass. (Burgess, 2011) After establishing the route of the pathway, the team considered security for each section as well as pathway amenities, such as benches and bird hides to attract people and encourage the use of the path. We articulated these visions in the form of a coffee table style pathway book, as well as a detailed presentation.

RECOMMENDATIONS FOR AN INTERDEPARTMENTAL TASK FORCE

After establishing a vision for a pathway that would encourage public interest in the river, the team considered the next steps that would lead to a full river restoration. These suggestions were heavily derived from the case studies and interviews with experts, as well as identified gaps in current research on the river. The team also outlined a list of deliverables to assist the task force as it progressed, including the entirety of the research gathered by the team.

Figure 7: Important Case Studies (L to R) were the South Platte, Bronx, and Leisbeek Rivers

RESULTS & ACCOMPLISHMENTS

KEY FINDINGS FROM CASE STUDIES

Two rivers were identified that related closely to the Black River. These two rivers were the South Platte River in Denver, Colorado, USA, and the Bronx River in New York City, New York, USA. They both shared similar traits to the Black River, and the restoration efforts of these rivers gave critical insight into how to revitalize an urban river.

The South Platte River (Figure 7, left) before it underwent a restoration closely resembled the Black River in its present state. It was a seasonal river that became very shallow in the summer, but caused flooding issues in the winter. It also ran through a heavily industrialized area. The regeneration of this river started as a community based effort with the formation of the Platter River Development Committee. This all volunteer committee garnered support for the project by taking influential members of the public on tours of the river. Once the river was in the minds of the public, they were able to make heavy use of volunteer planting and clean-up efforts. Today the South Platte thrives both ecologically and economically, and contains over one hundred miles of trails. (Renn, 2008)

The Bronx River (Figure 7, middle) also had a lot in common with the Black River. The Bronx River has been so extensively modified by humans that it was impossible to return it to its natural state. The Bronx River restoration was truly community driven. Restoration efforts began with youth and church groups organizing small scale litter clean-up operations. These efforts drew public attention and eventually the Bronx River Alliance was formed. This group has initiated many improvements, including the replanting of native species and the establishment of multiple pedestrian trails. These trails have transformed the Bronx River into a popular recreation destination in the surrounding urban area. (Renn, 2008)

Another river once polluted that meets up with the Black River is the Liesbeek (Figure 7, right). It also went through a restoration process. The Friends of the Liesbeek River have explored the recreational potential for a riverside pathway. Along the river, a pedestrian pathway winds through a grassy park area while a bicycle path provides a more direct path through the park. The bicycle path provides a middle ground between the direct, albeit loud and potentially dangerous, roadways for motor vehicles and the scenic, meandering pedestrian pathway.

NON-MOTORIZED TRANSPORTATION PATHWAY

The path will run along the length of the river, but removed several meters from its edge (Figure 8). Leaving space between the river and the path allows for people to see the river while walking and will let people lounge close to the river without interruption from people using the path. Keeping the path off the edge of the river also allows people to use the

Figure 8: Non-motorized transportation pathway route along the Black River

path closer to winter, when rains can cause river levels to rise considerably. The pathway will connect communities that have previously been isolated by both physical and social barriers. A public recreation area that is open to people of many communities also serves to integrate them in an unimposing way. The construction of the pathway may allow people who have been isolated since the beginning of apartheid era politics to mix with those of other areas.

Residents from communities in the Cape Flats have had their movement hindered by obstructions such as railroads and highways (Figure 9). This causes communal separation and hinders potential for economic growth. A pathway around these obstructions serves to increase people's accessibility to new areas and to new people and opportunities. The pathway will join with existing pathways along the Elsieskraal River and use the existing footbridge over the Black River itself to connect the communities of Pinelands and Maitland with Observatory, Mowbray and Rondebosch on the opposite side of the River. Connecting these communities may create new business opportunities and stir economic development of the areas.

Figure 9: N2 Underpass vision with security lights, pathway ,and signed space

Figure 10: Hazendaal Park vision as public access point for pathway and location for microenterprises

Stops Along the Path

In this section, we walk along an area of open space with great potential for a park and walk and another area where the pathway would connect different communities. These stops are important because of the great potential they hold for the success of the pathway and economic opportunities they possess from visions.

Hazendal Park

The proposed starting point for a non-motorized transport pathway along the river is near the Hazendal rail station. This point is significant because it marks the confluence of the Vygekraal and Elsieskraal Rivers. This is beneficial to the Black River pathway because it opens up potential opportunities for a multi-river pathway network

The site is very open for the most part, with good visibility in all directions. Lights would be required to ensure safety along the path at night, as well as keeping the N2 underpass well lit. Apart from lighting, the area should be relatively safe, with close proximity to Hazendal rail station that will have security personnel.

It also serves as a public access point for the path (Figure 10). In addition, this spot provides access from Hazendal rail station and the community of Hazendal itself. There is a large vacant lot adjacent to the river that provides multiple development opportunities. The main vision for this space is a park and walk, similar to the park and walk areas along the Liesbeek Pathway. This

would provide a place for pedestrians to store their vehicles while using the path. Another possibility for this area is a small playground. In addition to these permanent fixtures, this location could serve micro-enterprises by providing a weekly bazaar site for artisans.

TWO RIVERS URBAN PARK: OUDE MOLEN AND MAITLAND GARDEN VILLAGE

The second half of the river runs straight through Two Rivers Urban Park (Figure 11). There are many entrances into this area, including an existing Two Rivers Urban Park archway located in the parking lot of Vincent Palotti Hospital. It is also possible to enter from Oude Molen Eco Village, Perseverance road, and the Valkenberg pedestrian bridge. The pathway in this location runs along the river as well as making a circuit for people to enjoy the wetlands. This area enjoys a diverse ecological system that could be the site of multiple bird hides.

Across Perseverance road, the path will continue along the river behind Maitland Garden Village. This spot would serve as an excellent recreational venue for residents of the community to relax. Existing Two Rivers Urban Park framework documents have suggested an informal "kick-around" field at the edge of the driving range, protected from golf balls by a barrier system.(Shepherd, 2006)

CONCLUSION

FUTURE OPPORTUNITIES AND RECOMMENDATIONS

Appoint a river restoration expert.

The expert could serve as a sort of human database, not necessarily containing all the answers, but knowing how to point people with questions in the right direction and understanding the common themes in various river restoration projects.

Increase the community's involvement and awareness of the river.

Make the river as accessible to the public as possible by creating a path along the river. The role of the task force in this will be to push the project forward. Another important step is to increase awareness of the general public. Funding is critical in restoration projects and often although some capital is required to start, continued operations and restoration thrive through community support.

Begin construction of the pathway at Two Rivers Urban Park.

The pathway could be created in conjunction with the on-going development of TRUP. This area also has relatively few obstacles to construction—there are existing bridges to allow for passage across the Black River and the M5 which could be utilized for the pathway and there are no private developments that would have to be circumvented along this area.

Determine the causes of pollution in the river.

This could come in the form of a point-source, such as a pipe from a factory spilling effluent into the river, or it could be in the form of a line-source, such as runoff from a highway that runs along the side of the river. Only after these sources of pollution are identified is it possible for them to be neutralized.

Develop an environmental education program about the river.

In the case of a group of people chronically contributing to the pollution problem, it is necessary to develop an education program to stop this. By educating the people who live and work along the river, particularly in the upstream areas, the river health can be improved in a sustainable manner.

Improve riverside informal settlements

These areas of low-income informal housing pose a unique threat to the health of an adjacent river. Although the people of that community may depend on the river, they must be able to use it sustainably. Even if they aren't actively abusing the river, urban runoff in these environments is far worse than formalized urban areas. By upgrading and formalizing these areas and controlling policy regarding river usage, the level of impact these areas have on river health can be mitigated, and community well being can be improved.

Figure 11: Two Rivers Urban Park vision

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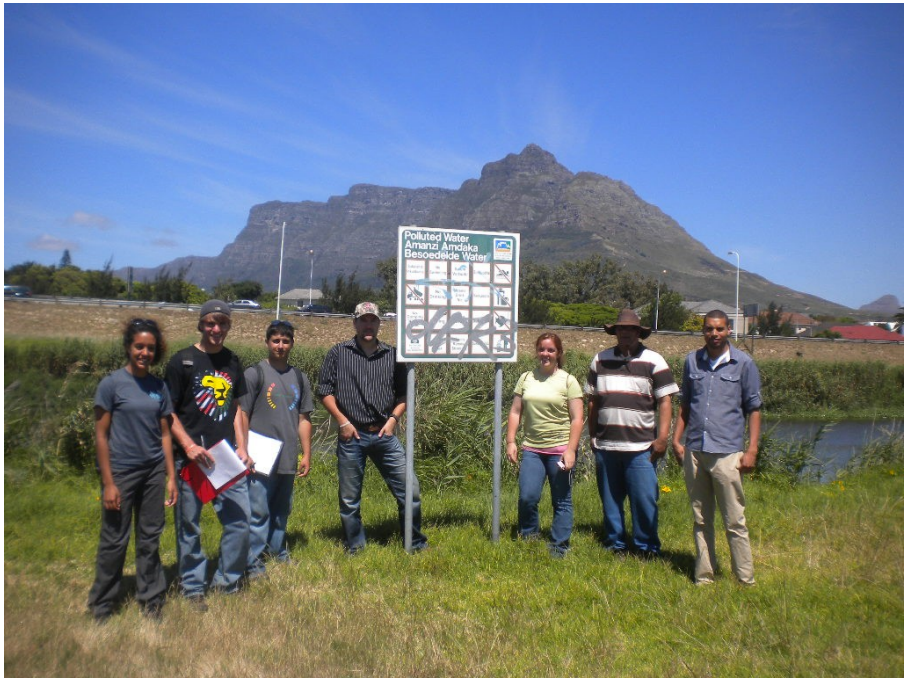

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