

# THE EMERGING ROLE OF A LANDSCAPE BASED STRATEGY IN THE SOUTH AFRICAN BUILT ENVIRONMENT: A CASE STUDY OF THE JOHANNESBURG WEMMER PAN PRECINCT

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Keywords: Landscape urbanism, landscape architecture, green infrastructure, Corridors of Freedom, Wemmer Pan

## Abstract

Past spatial planning practices have left Johannesburg with sprawling, low-density areas of settlement, lacking viable public transport systems. The “Corridors of Freedom” approach to urban renewal is one of the ways in which the City of Johannesburg (CoJ) wishes to transform entrenched unsustainable settlement patterns that have kept many marginalised communities at the outskirts of the city, away from economic opportunities and access to jobs and growth. The CoJ envisages a compact city which is energy efficient, provides residents with greater access to the inner city and economic opportunities, promotes social cohesion and creates a vibrant urban environment. This urban strategy is focused around a Transit Orientated Development agenda but it tends to overlook the importance of landscape as a fundamental basis for sustainable urban form generation. The paper considers the importance of landscape as a primary ordering device in the strategic planning of Johannesburg and suggests that it will continue to develop as a driver for economic, ecological and social regeneration. The discussion draws on landscape urbanism theory and the Wemmer Pan Precinct case study to support the argument and illustrate how the precinct’s landscape, under threat due to pollution, when understood within the context of other CoJ urban design strategies, becomes a fundamental structuring element and catalyst for the sustainable urban development of the area.

## 1. Introduction

Previous spatial planning initiatives have left Johannesburg with unsustainable urban settlement patterns that rely on inefficient transportation systems to move people around. The majority of working class and poor citizens are still living on the fringes of the city, commuting daily, often at considerable cost with long distances to access work and economic opportunities. The “Corridors of Freedom” approach to urban renewal as conceived by the City of Johannesburg (CoJ, 2013) is one of the ways in which the CoJ wishes to transform entrenched settlement patterns that have kept many marginalised communities at the outskirts of the city. Future growth in and around these corridors is envisaged as medium to high-rise residential developments growing around transit nodes, gradually decreasing in height and density as it moves further away from the core. Social infrastructure, schools, clinics, police stations and government offices are proposed to be strategically located to support the growing population.

For the average Johannesburg resident, the option to live in close proximity to public transport facilities with easy access to the city and to make use of an improved transport system can be a life-changing experience. The idea behind the Corridors of Freedom is therefore to usher a new era of access (in all its connotations) and a choice for residents to work, stay and live within the same space without the inconvenience and high costs of travelling over long distances every day. This urban strategy is driven by a Transit Orientated Development (TOD) (Calthorpe, 1993) agenda with its backbone being the Rea Vaya Bus Rapid Transport (BRT) system. This approach is valid and will encourage use of the public transportation facilities and new development, but unfortunately it tends to overlook the importance of landscape as an essential form giving strategy to structure precincts within the corridors and a necessary component of healthy and sustainable urban form.

Using a case study<sup>1</sup> methodology, the paper will contend that by using landscape as the departure point and building on the Corridors of Freedom agenda, a thriving living environment can be created in the Wemmer Pan precinct that will systematically alter current negative perceptions of the area and encourage people to move into it. It is argued that this approach would lead to the regeneration and densification of the area and secure the landscape as a catalyst for future urban development. The paper will explore this normative

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<sup>1</sup> Case studies are widely used in most professions, including medicine, law, engineering, business, planning and architecture. Case studies have a long and well-established history and are frequently used in landscape architecture education and research, and practitioners have also utilized them to a more limited extent. “As the profession develops more of its own theory and knowledge base and communicates this more broadly, the case study method promises to be an effective way to advance the profession” (Francis 2001:15)

position through the lens of landscape urbanism theory and the presentation of the Wemmer Pan case study to address issues and unlock inherent and innovative possibilities for the precinct.

## **2. Landscape: the basic building block of sustainable urban design**

“Humans’ survival as a species depends upon adapting ourselves and our ...settlements in new, life-sustaining ways, shaping contexts that acknowledge connections to air, earth, water, life, and to each other, and that help us feel and understand these connections, landscapes that are functional, sustainable, meaningful, and artful” (Spirn, 1998:26).

### **2.1 The notion of landscape**

The concept of landscape has multiple meanings and many different disciplines are involved in its study.

According to Antrop (2014:2),

The origin of the word landscape comes from Germanic languages. One of the oldest references in the Dutch language dates from the early thirteenth century and ‘lantschap’ (‘landschap’) refers to a land region or a specific environment. It is related to the word ‘land’, meaning a particular territory, but its suffix –scap or -scep refers to land reclamation and creation, as is also found in the German ‘Landschaft’ (‘schaffen’ = to make) (Zonneveld, 1995), and also to the English –ship, pointing to a relationship (Olwig, 2002). In the 16th century the concept is broadened and includes a historical region or territory as well as the visual aspects that characterise it. The shift in meaning from ‘organised territory’ to ‘scenery’ is obvious. Olwig (1996) argued that landscape ‘need not be understood as being either territory or scenery; it can also be conceived as a nexus of community, justice, nature, and environmental equity’. Thus, landscape is also the scene of action and an expression of human ideas, thoughts, beliefs and feelings.

Indeed there has been much critical engagement around the idea of landscape as process or entity, and as a consequence there has been a trend of re-conceptualizing it. Crouch suggests that at the “centre of these challenges and opportunities is the rethinking of landscape as process rather than object; subjectively ‘in the making’ rather than as an assemblage of physical features” (Howard, 2013:119) as in the viewed picturesque sense. Wylie (2007) is clear about this point and argues that when the concept of landscape is divested of assumptions regarding observation, distance and spectatorship, it “ceases to define a way of seeing, an epistemological standpoint, and instead becomes potentially expressive of being-in-the-world itself: landscape as milieu of engagement and involvement. Landscape as ‘lifeworld’, as a world to live in, not a scene to view” (Wylie, 2007:149).

Shannon (2011:626) contends that “over the course of the twentieth century, there has been a change from landscape as a negotiated condition between ‘natural’ and ‘artificial’, towards landscape as a richer term, embracing urbanism, infrastructure, strategic planning, architecture and speculative ideas; landscape has evolved from the pictorial to the instrumental, strategic and operational”. Amidon (2012) adds that as we move forward in the era of sustainability, landscape will continue to emerge as an engine for economic, ecological and social revitalization. She suggests that client and consumer-driven priorities such as efficiency, affordability, multi-functionality and resiliency will be balanced within the design and planning of meaningful places. “Landscape and urbanism will serve as a laboratory for applied models of economic and ecological change in an energetic return to their deep, tangled roots in the fusion of art, environmental infrastructure and social staging” (Amidon, 2012:24).

Among the authors articulating this newfound relevance of landscape and making claims for the potential of it as a model for urbanism, is architect and educator Stan Allen. He emphasises that

Increasingly, landscape is emerging as a model for urbanism. Landscape has traditionally been defined as the art of organising horizontal surfaces .... By paying close attention to these surface conditions – not only configuration, but also materiality and performance – designers can activate space and produce urban effects without the weighty apparatus of traditional space making” (Sarkis:124).

Waldheim contends that for many, across a range of disciplines, “landscape has become both the lens through which the contemporary city is represented and the medium through which it is constructed” (2006: 10). Weller suggests that the landscape “is the infrastructure of the future” as it is the “medium through which all ecological transactions must pass” (Waldheim, 2006:11). And Koolhaas submits, “Architecture is no longer the primary element of urban order, increasingly urban order is given by a thin horizontal vegetal plane, increasingly landscape is the primary element of order” (Waldheim, 2006:11).

### **2.2 Landscape Urbanism – an alternative approach to urbanism**

“Public space in the city must surely be more than mere token compensation or vessels for this generic activity called ‘recreation’. Public spaces are firstly the containers of collective memory and desire, and secondly they are places for geographic and social imagination to extend new relationships and sets of possibilities” (Corner, 2005:32).

An urbanist theory with the emphasis on landscape has evolved over the past 15 to 20 years. Charles Waldheim coined the phrase landscape urbanism, a concept that developed along with fellow landscape architect James Corner and architect Mohsen Mostafavi during the 1990’s. It was first publically introduced during a landscape urbanism conference and exhibition held at the University of Illinois in 1997. Charles Waldheim organized the event “to describe the forces and events which he and others had seen coalescing

over the course of the previous decade to form this new brand of urbanism, which was being practiced, at the time, by a small cohort of North American and European designers including Stan Allen, James Corner, Adriaan Geuze, and Rem Koolhaas” (in Howard *et al.* 2013:439).

The theory promotes an agenda of landscape architecture and urbanism that goes “beyond conventional park and garden design on the one hand and avant-garde topographical landscape manipulations on the other” (Shannon 2011:626). Much of the discourse on landscape urbanism focuses “upon the challenges posed by post-industrial urban voids and concerns that are congruent with the politically correct, ecological biases .... The recovery of brownfields sites and the reintroduction of natural processes and habitats are key issues linked to landscape urbanism” (Shannon, 2011:627).

Advocates of landscape urbanism theory have critiqued conventional urbanism. Anderson (2010: 83) writes that “the contemporary city seems to be positioned in a deadly crossfire between nostalgic New Urbanism, Koolhaasian bigness, neo-liberal sprawl and hardcore late modernist segregated planning”. Tully (2013) suggests Landscape Urbanism has emerged as a robust alternative to the failures of modernist urban planning.

Its followers .... believe that the medium of landscape, because it necessarily privileges ecology over form, is the most able organizer of a healthy, post-industrial urbanity. The result is a landscape-based urbanism that seeks to radically realign traditional disciplinary boundaries in the design professions while it breaks down the established dualisms between the synthetic and the natural, the urban and the wild. This is different from the ancient concept of *rus in urbe*, transferring the ‘countryside into the city,’ in that it is not simply erasing the city in favour of the country (Howard, 2013:438).

Proponents of the theory argue that landscape, rather than architecture and infrastructure, is more capable of organizing the city, enhancing the urban experience and creating a platform for sustainable urban form. Waldheim (2006), contends that Landscape Urbanism is a call to turn the traditional practice of urban design inside out, starting with open spaces and natural systems to structure the city, instead of buildings and infrastructure systems. Durack (2004) adds that “it’s most powerful contribution, however, may be that it recalls nature’s restorative cycles and tries to put them back to work in the city”.

While the premise of using landscape as the primary medium for organizing our cities may seem straightforward, defining Landscape Urbanism has proven to be elusive, and many iterations and interpretations abound. A carefully nuanced definition is provided by Julia Czerniak,

Landscape urbanism, a phrase taken here to be the conceptualization of and design and planning for urban landscapes that draw from an understanding of, variously, landscape’s disciplinarity (history of ideas), functions (ecologies and economies), formal and spatial attributes (both natural and cultural organizations, systems, and formations), and processes (temporal qualities) impacting many scales of work. Landscape urbanism also suggests a particular culture of and consciousness about the land that refrains from the superficial reference to sustainability, ecology, and the complex processes of our environments in favour of projects that actual engage them. Embedded in landscape urbanism is concern not only with how landscape performs ... but how it appears ... (Howard, 2013:440).

Bridging the gap between man and his environment, landscape urbanism offers insight into ways of creating healthy and sustainable urban environments by regenerating decaying urban fabric and reusing post-industrial sites. Importantly, James Corner suggest that landscape urbanism is more than a style, rather it is an ethos, an attitude, a way of thinking and acting (Moshen *et al.*, 2003).

### **3. Wemmer Pan Case Study – Leading with Landscape**

As modern cities have concealed the natural substrate of their sites, it is the duty of landscape architects and urban planners concerned about issues around sustainable urban form, to recover and then remediate the remaining voids, creating spaces of discovery, relaxation, and human and ecological health. The recovered landscape, understood as the primary element of urban order, can then become a catalyst for development and be employed as an instrument to integrate new development and amenity into the urban fabric. Herein lays the potential of a ‘leading with landscape’ approach to the reordering of the Wemmer Pan precinct to establish an integrated system of built and unbuilt structures that can grow over time.

#### **3.1 The study area**

The Wemmer Pan precinct is located on the southern edge of the Mining Belt which separates it from the city. The area provides a unique opportunity within the current urban context and challenges confronting the City of Johannesburg. It is uniquely positioned relative to the inner city and its associated economic and social opportunities; it is proximate to an established, albeit declining, complex of residential opportunities, including La Rochelle, Turffontein and Rosettenville. Figure 1 below illustrates the study area.



Figure 1 The Wemmer Pan Precinct indicated with the red outline (Aerial photograph courtesy of the CoJ GIS Department)

### 3.2 The Wemmer Pan

The Wemmer Pan was originally a brick field quarry, owned by Sam Wemmer. The pan itself was, however, subject to mining water rights held by several mining companies. Water was drawn from the pan, which also held run-off from the slimes dams. Rights to use the pan and the land were allocated under a Notarial Agreement signed on 22 June 1923. The Agreement allocated surface water use rights for 'recreation and boating purposes' together with the foreshore land (Barbir, 2010). Residential development was attracted to the area south of the pan, in the late 1800's with the establishment of La Rochelle suburb in 1895 and the Pioneers suburb in the 1920's. In 1920 the Turfontein Race Course was built and over subsequent years Pioneers Park, on the southern side of the pan was developed as a regional recreation facility for the city. The precinct also developed as a sporting node with the establishment of the Hector Norris Park (1926), the Wembley Ice Rink and Stadium (1938) and the Rand Stadium in 1949 (Barbir, 2010). In its heyday Wemmer Pan and Pioneer Park were one of Johannesburg's major outdoor venues. People from all over the city went there to spend a family day near the water, visit attractions such as Santarama Miniland, miniature railways and illuminated musical fountains. However, since the early 1990's the number of visitors dwindled and the area slowly started to decay to the point where it is now synonymous with crime, vandalism and pollution. Current urban, mining and other land use activities have put extreme pressure on the natural systems of the study area, specifically industrial and mining developments to the north and north-west of the pan (refer to Figure 1).

#### 3.2.1 Pollution and water management

Over time the pan has been subjected to a dramatic alteration into its flow regime. Every rain event tends to flush dirt, debris, heavy metals, and animal faeces from mining and industrial sites, streets and parking lots into the storm-water system, ultimately reaching the pan. Recent studies (Iyer and NLA, 2015) found that water within the pan is high in *E. Coli* load and is unsuitable for both full contact and intermediate contact recreational activities. Water pollution problems and challenges are generally well understood and their causes and effects well known, but that knowledge is seldom applied to the effective management of water in the urban landscape. Managers, planners and designers unfortunately treat these problems of flooding, storm water drainage, water pollution, water use, and water supply separately and in an 'industrial' manner.

According to Lyle (1994) the industrial approach to landscape water management bypasses and replaces the natural processes with a concentrated, energy intense system that causes flooding and exacerbates pollution. Fortunately, the commonly held 'industrial' perspective about designing and managing urban waterways has begun to shift to an approach that makes full use of basic landscape processes and which provides very real benefits to society. Lyle (1994:147) adds that

We face the challenge of providing human needs while at the same time providing for the needs of other species and maintaining the healthy and sustainable functioning of the system. Accomplishing all of these simultaneously requires that we make full use of the natural processing capacities of the land. In using them well, the principles of natural ecosystems provide guidance.

To this end an integrated ecological approach of the study area's drainage systems is necessary.

### **3.3 Approach: Leading with landscape**

Landscape, in particular that associated with Wemmer Pan and its tributaries, is the most important resource to consider when advocating a landscape urbanism approach to developing a framework for the precinct. This landscape is one of the defining features of the study area and needs to be established as a healthy natural focus for future development that would enhance design responses to broader challenges of the precinct's sustainability and would have the potential to increase connectivity, multi-functionality, and landscape performance. The strategy is to develop a model of urbanism in which ecological function and health can be imbedded in or at least be integrated with the shape of the study area's urban fabric. It envisages weaving nature and city together into a new hybrid that functions like a living ecosystem in which the ecological forces and flows that support urbanism are considered as part of the project area as opposed to external to it. The new landscape would process and remediate the land and the water, while simultaneously creating a highly dynamic, green public realm that extends from the pan like green fingers into the surrounding urban fabric and around which new development could be centred.

A large-scale urban landscape like Wemmer Pan and its associated systems is thus integral to the sustainable development of the area and would be central to regeneration initiatives, especially when brownfield sites can be developed adjacent to or near it. It would offer the opportunity to stake out a new and unique identity for the precinct by promoting the peculiarities of the local ecology, history and cultural identity in the area. This new landscape would be fundamental to assuring the competitive attractiveness of the study area, retaining and attracting new talent, new residents and businesses, and promoting economic development.

The notion of leading with landscape to regenerate city environments is a successful concept that has been implemented in a number of cities around the world and which is proposed for the project. According to Hes and Du Plessis (2015) the term 'regenerate' has a number of meanings, not only does it mean reinvigorating or reviving a system, or restoring it to a better state or condition; but to changing the system into something different and better, as well as to bringing about a thorough moral change or improvement.

The Toronto Waterfront, which was originally envisaged in the 70's is today an area of largely publicly owned land focused around open space systems along the edge of Lake Ontario and the mouth of the Don River. Paris's city administrators commissioned numerous parks in the 80's and 90's on post-industrial land as the focus for new development, while at the same time providing successful recreation and tourism facilities. Parc Andre Citroen is one of the more famous of these. Melbourne developed the old industrial and railway lands adjacent to the Yara River; the focus of the new developments turned the central part of the city into a hive of activity. Federation Square, an important element in this system, created a new urban order on a site that never existed before as it was built over railway lines. The High Line development in New York's West End has gained international acclaim for its simple yet extremely successful approach in bringing life back to a section of the city through the regeneration of a disused, raised railway line.

The central component of these projects is the essential role that landscape played in re-appropriating post-industrial sites as catalysts for development. The planning and design of large urban landscapes is faced with a number of significant challenges, such as multiple competing stakeholders, phased financing, segmentation, conflicting development goals, inaccessibility and difficult implementation, especially on brownfield or contaminated sites. Corner (2009:18) states that "Consequently, the design of large parks today must inevitably be strategic and time-based. Design initiatives cannot simply be wilful, subjective or formal approaches, but need instead to be intelligent and flexible with regard to what is inevitably a complex field of dynamic variables".

### **3.4 Towards a landscape framework**

The idea of leading with landscape therefore opens the way for a new hybrid urbanism for the study area that builds on the already proposed TOD and BRT initiatives and recognizes the importance of the existing open space system as the basis of an emergent new public realm which must not be a passive or a benignly naturalistic place. It should be green and living, but it should also be beautifully designed for people, for varied social uses and for infinite forms of experience. The planning of the area cannot solely rely on conventional practices that privilege buildings over landscape or infrastructure over ecology. Therefore the urban design proposal for the precinct simultaneously contains a bold vision and a strong commitment to nature and green ecology, and of an urban culture that is vibrantly social, interactive and dynamic. Landscape, and a creatively conceived public realm, are essential to achieving these aspirations and anchor the strategy for the Wemmer Pan Precinct and its capacity to shape the identity of the study area. This approach accomplishes a multiple of things; it can meet many goals simultaneously. In this sense it's easier to hybridize the agenda — to mix infrastructure, landscape, urbanism, ecology — because in this way efficiencies can be created that could result in cost savings in both the short and long term. The landscape must perform utilitarian as well as ecological functions — it must process storm water, produce energy (perhaps), grow food, and provide amenity.

Existing biodiversity areas and ecological support areas would form the basis of distinct 'water fingers' (Figure 2) which emanate from and connect back to the pan creating a network that extends into the study area and which would:

- Enhance urban ecosystem functionality to improve landscape performance;
- Allow for soils, water and biodiversity to function as integrated components of broader landscape processes to deliver ecosystem services;
- Improve connectivity;
- Encourage access to and interaction of people with the natural environment leading to improving human health and well-being and
- Contribute to enhancing the precinct's response to climate change.



Figure 2 The Landscape Framework and BRT Route and TOD nodes (adapted from Iyer and Newtown Landscape Architects)

### 3.4.1 Water fingers

The water fingers, and the natural areas around the pan, would be expanded out to create a larger ecosystem and structural 'buffer zone' that would allow for the introduction of natural water filtration systems such as constructed wetlands and floating wetlands (Figure 2). An ecological support area also needs to be considered to link the western inlet of the pan to the defined support area, west of it, as well as to ultimately link with the Robinson Deep landfill site, which, when rehabilitated, has huge potential as a biodiversity 'hot-spot' to the immediate west of the study area. The current storm water channels that feed directly into the pan at this inlet would need to be retrofitted to improve their ecological potential. A number of ameliorating actions must be taken to improve the ecological qualities of the channel and to reconnect the stream to the earth to re-establish the natural drainage pattern, provide refuge for riverine fauna and a rooting area for aquatic plants. In conjunction with the rehabilitation of the channels, is the attempt to bring people closer to the river – to fulfil man's natural desire to recreate beside water. To this end walkway and bikeway systems would be introduced, which ultimately connect to the planned bicycle lanes in the precinct.

Upstream of the existing channels, west of the pan, where the original streams have been buried and where storm water pipes enter the system, a network of constructed wetlands would be created to filter out silt and other pollutants before they reach the pan. The water finger extending northwest of the pan also plays the important ecological role of filtering and cleaning water coming off industrial and mining areas. Together, these fingers, west and north of the pan, would function as innovative water-quality infrastructures and indigenous parkland inclusive of social systems and future neighbourhood parks. The resultant open space system along with the new urban fabric adjacent to it would generate a range of interconnected territory offering diverse land use, cultural and recreational features and a series of unique interconnected greenways that ultimately tie back to and focus on Wemmer Pan.

The proposed landscape framework is as much about bringing Wemmer Pan and 'river-life' into the study area as it is about bringing the city's inhabitants to the 'river life' and the pan. Not unlike the proposal for the Johannesburg Inner City Park illustrated in Figure 3 below, but at a smaller scale. To this end the framework imagines not only a number of landscape spines — essentially, linear parks — along the drainage lines, but a series of new landscape strands that weave around and across these fingers, and permeate the urban fabric, both existing and new (Figure 2) to create opportunity for development along their edges.



Figure 3 Bringing 'river life' to the city (source Newtown Landscape Architects)

### 3.4.2 Landfill to park

Immediately to the west of Turffontein Road lays the Robinson Deep landfill site and north of the railway line just west of Rosentenville Road is the Village Deep site (Figure 2). While neither falls within the study area they provide a recreation and biodiversity opportunity and should be included in the landscape framework for the Wemmer Pan precinct. The conversion of these landfill sites to parks would add immense value to the area.

In a time of severe urban space and resource constraints within the city, rehabilitating these landfill sites provides an excellent opportunity to correct longstanding local patterns of environmental injustice perpetrated by mining and industrial activities over the years. Communities around the world and in Johannesburg are rediscovering the benefits of urban living in close proximity to the inner city. These landfill sites can play an important role in providing relief to the built up areas of the precinct and connect to the open space system proposed for the study area. In theory, turning a landfill into a park transforms a noxious liability into an attractive asset. As a sustainable recycling of urban assets, in many cases it works beautifully. However according to Harnic *et al.*, "compared to a greenfield site, an old landfill almost always requires more time and planning to turn into a park. Indeed, complex issues of toxicity, liability, and ground settlement often conspire to prevent municipalities from pursuing such projects. But these challenges are not insurmountable" (Harnic *et al.*, 2006:85).

## 4. Conclusion

The first step in turning these ideas into reality is to ensure that the Corridors of Freedom vision of Johannesburg and the role that Wemmer Pan Precinct plays within in this context is continually reinforced and politically accepted by all stakeholders. It is also crucial to acknowledge and accept that an extensive landscape system complemented with Transit Orientated Development is fundamental to this vision and for the creation of sustainable development and regeneration initiatives in the area. Once this vision is entrenched and owned by all citizens, public/private partnerships could develop the landscape strategically and in incremental stages, starting with the existing, functioning parts and building on these as well as developing previously leftover spaces to ultimately become the new commons of the Wemmer Pan Precinct. This new and emerging landscape and its environs would be seen as a potential receptor for new economic development, bringing financial returns to its investors, and promoting civic pride that would ultimately establish the precinct's competitive attractiveness and make it an appealing place to live, work and visit.

In addressing these issues Landscape Urbanism and the theory it advocates about understanding the challenges facing the regeneration of decaying urban environments, provides an approach to dealing with the issues related to the study area and also offers clues to the creation of a new 'landscape'. Nature, traditionally conceived as separate from cultural endeavour, would be fully integrated into the man-made landscape. The result would be a synthetic, integrative nature, but nevertheless a place of great bio-diversity, where life is continually manufacturing new environments as it grows and evolves. The landscape, which includes the integration of urban ecological systems with infrastructural networks, would ultimately become a place of "ecological reflection, passive recreation, active sports and exercise, creativity, performance and cultural events, community development, economic enhancement and neighbourhood revitalization" (Field Operations, 2002:24).

## 6. Acknowledgement

It is important to acknowledge the work of my colleagues at Iyer Urban Design Studio and Newtown Landscape Architects whose work on the Wemmer Pan Urban Design Framework (still in Draft format) forms the basis of the case study presented in the paper. I thank Paul Hanger, Tahira Toffah, Johan Barnard and

Dayle Shand for their valuable contribution and creative insights. Also, the City of Johannesburg needs to be commended on their 'Corridors of Freedom' initiative, which when successfully implemented will make a huge difference to many of Johannesburg's citizens.

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