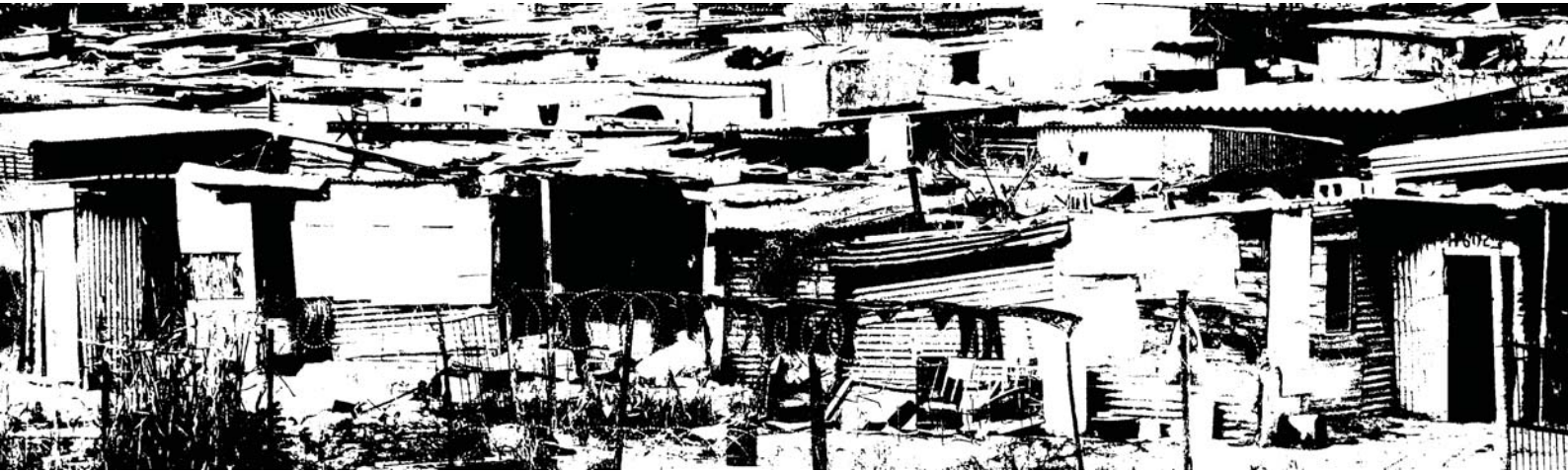


URBAN DESIGN FOR CAPACITY DEVELOPMENT IN INFORMAL SETTLEMENTS

CASE STUDY: DIEPSLOOT, JOHANNESBURG, SOUTH AFRICA. PUBLIC SPACE AND ENVIRONMENTAL INFRASTRUCTURE



Mark Lindsay Tyrrell

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'Consider the informal city: one billion people live in slums; the modern city is in crisis; the population will double by 2020; only the present matters.'
(Brillembourg et al. 2005)

EXECUTIVE SUMMARY

The overall proposition of this project is that urban design can set up the parameters for successful capacity development in developing countries through the process and product of a locally and government owned urban design vision or physical development framework. This vision is seen as an agreed direction for improvement that is born from specific realities of the site rather than a top down solution or element of external aid for a specific problem. This theoretical exploration and method is to be put into practice through a pilot project. This project will develop an urban design framework for the township of Diepsloot, Johannesburg.

The basis for the pilot project has been founded from site based research and community consultation undertaken in 2007. This information has then been taken off site and explored through this document. An urban design vision is proposed here that has evolved through a process of examining the 'informal' layers of the township and how they work with or against its 'formal' layers. The design exploration makes proposals for interventions that can become part of an open discussion and design process involving community, government and internal and external experts in Johannesburg in mid 2008.

In this phase, the urban design vision will be challenged and reworked by government and community. The reconfiguration of these proposals into a new physical design vision agreed upon and owned by community and government

will be the ultimate aim of the whole process.

Smaller projects will then form the basis of further community, NGO and governmental development partnerships, be phased over time and acted upon. Community capacity and community cohesion will be built through the local management of the urban design process and vision, programme formulation, development planning and implementation, and evaluation and maintenance of the progressive development operations.

This document is to be understood as having two major components and an appendix. The first component seeks a working method suited to this project. It outlines the contexts within which the pilot project is taking place. These are the theoretical and historical dimensions of capacity development and of city design as a development tool. These explorations of theoretical context will result in some of their elements being combined into a working method for the pilot design project and for its restructuring once returned to South Africa.

The second part is the urban design exploration itself. This component relies on community consultation undertaken in 2007 and on the analytical tools of urban design. It is also a visionary exercise, imagining the possibilities of what could be. The pilot project is an opportunity to draw together ideas into a physical design proposal and revised development vision for the township of Diepsloot. It is to be understood that this is a designer led component, completed on the basis

of community consultation but without ongoing input in the process. This vision is not however regarded as the final design solution.

The appendix component of this document, outside its basis as a design exploration is a proposed outline of where the project will lead when returned to Johannesburg. The idea of producing a design framework in isolation is that it becomes a cohesive and strong direction that can instigate discussion and activity at community and governmental level. The vision will be presented to government and community and if government support is obtained will be followed by design workshops that try to reconfigure the vision into realisable, locally owned smaller projects. The appendix also sets out the steps that will be taken to move the design vision back into community and government ownership. The appendix also proposes evaluation methods for this project based on those used by the United Nations, World Bank and NGOs for capacity development projects.

This is an experimental document. It attempts to develop the possibilities of the practice of urban design for capacity development in the developing world.



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PART ONE

**THEORETICAL AND HISTORICAL CONTEXTS OF THE PILOT
PROJECT**

1.THE UNITED NATIONS MILLENNIUM DEVELOPMENT GOALS AND DEFINING AN INFORMAL SETTLEMENT

In 1999, the World Bank and United Nations Habitat embarked on a joint initiative 'Cities Without Slums'. This emerged from their jointly funded 'Cities Alliance.' The Cities Alliance defined slums as follows: 'Neglected parts of cities where housing and living conditions are appallingly poor. Slums range from high density, squalid central-city tenements to spontaneous squatter settlements without legal recognition or rights, sprawling at the edge of cities' (UN-Habitat 2005). One year later, the United Nations referenced its definition in the Millennium Development Goals (MDGs), one goal stating that it aimed : 'By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers as proposed in the cities without slums initiative' (United Nations 2000). Later, this goal became Target 11 and was grouped under MDG 7 'To Ensure Environmental Sustainability'.

WHAT IS A SLUM/ INFORMAL SETTLEMENT?

Slum was defined as any area that met the following six criteria:

1. Lack of basic services
2. Inadequate building structures
3. Overcrowding
4. Unhealthy and hazardous conditions
5. Insecure tenure
6. Poverty and exclusion

(UN-Habitat 2005)

Informal settlements have been recognised as components of the urban landscape in most developing countries for the last fifty years. 'Where development has been uneven often because of large scale displacement or war, informal settlements have overtaken formal. This has resulted in a majority of sub-Saharan African urban population living in informal settlements' (UN-Habitat 2005). In many cases so called 'informal' settlements lie alongside and often within 'formal' settlement patterns. In the case of South Africa, division and breakdown of formal urbanism is very clear due to the reconfiguration of its cities after apartheid. It is not only these re-colonisations that are bringing opposing urban conditions side by side. In South Africa, the overlay of inappropriate urban typologies that cannot deal with the scale of the housing problem has resulted in a constant weaving of formal and informal as people try to survive in the divided cities.



Diepsloot informal settlement is a neglected part of Johannesburg where housing and living conditions are appallingly poor. (Images: Tyrrell 2007)



Slums can be within the centre of cities. In down town Johannesburg, thousands of immigrants have colonised city buildings which were vacated after apartheid ended. The business district was moved to the heavily fortified developments of Sandton.

2.COMBINING TWO EMERGING PRACTICES: RE-THINKING URBAN DESIGN AS A CAPACITY BUILDING TOOL FOR DEVELOPING COUNTRIES

The following section introduces the practice of 'capacity development' as a broad development framework within which pilot projects take place. It traces the historical shifts in the practice of capacity development in order to present an understanding of current thinking. This section also explores major shifts in design theory and practice in terms of their contribution to development relating to the urban poor. The aim is to uncover some areas where the two fields have overlapped and diverged over the last fifty years. This section puts the pilot project into context and also seeks out a working method for urban design as a capacity building tool.

In the early post war period, development itself was defined almost exclusively in economic terms, measured by per capita GDP (Gross Domestic Product). It is no longer believed that it is possible to define development, nor even explain economic development such as capital accumulation, human capital, resource endowments, international trade, or geographic development in terms of one factor (North et al. 2006, p.6). Viewing development and capacity in exclusively economic terms is very limiting. It is now understood that sustainable development encompasses equity, political development, democratisation in processes, gender and environmental issues (Kingsbury 2004, p.2). A broadened view of development also recognises the roles of rich culture and social structures.

There has been much learnt about the outsider's role in advancing the processes of sustainable development in developing countries and there is now some agreement on practice. The way in which the design disciplines can contribute to this development practice has been tested but is still to be fully understood. Likewise, developing current understandings of what is now termed 'capacity development' or 'capacity building' continues to be a trial and error process. Boesen and Thirkildsen (1991, p.10) contend that the very term 'capacity building' has become synonymous with the general notion of sustainable development.

Since the 1960s, there has been ongoing debate regarding the role that the design disciplines may play in addressing the development issues facing informal settlements of the developing world. These historical dimensions build up a picture of the major contexts within which this design proposal for Diepsloot exists. This analysis recognises that the methods being employed currently and in recent years have come about by reconsidering and re-evaluating the assumptions of previous years. It is envisioned that this document becomes part of that trial and error process.

In the 1960s and 1970s capacity development practices by foreign entities focused on empowerment from the outside, a top down approach usually focused on the individual. It was believed that by administering financial aid to individuals in need, development problems would resolve themselves. Although not on an

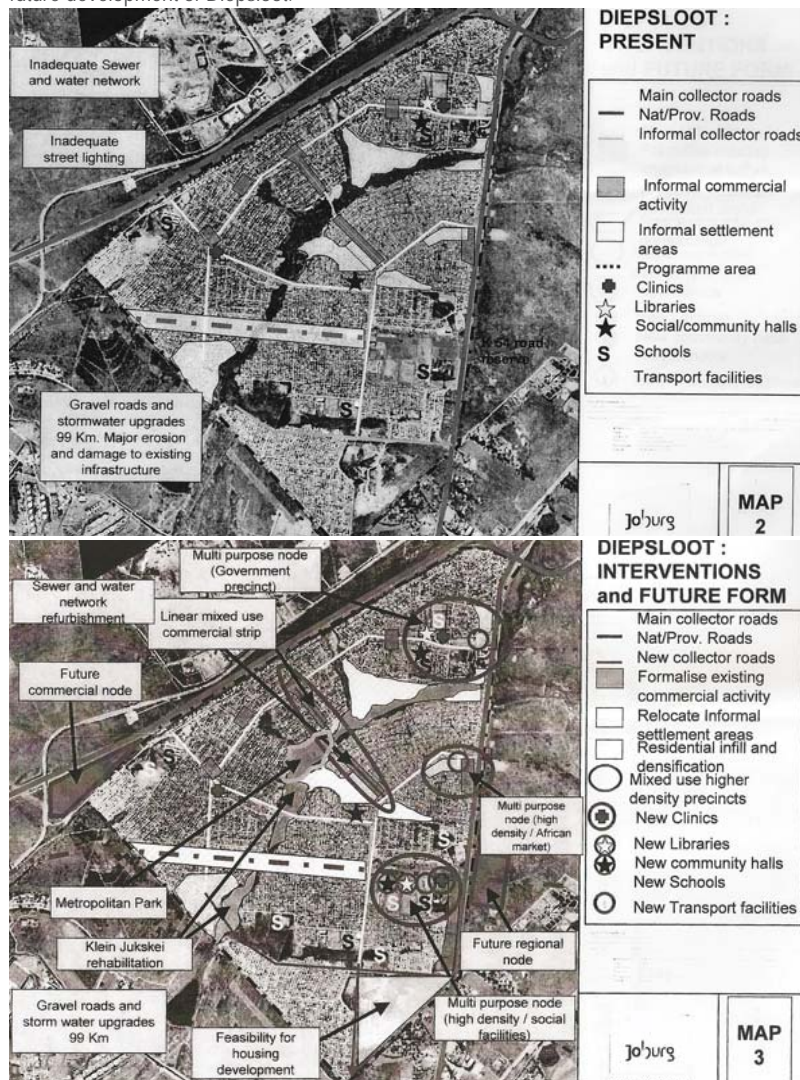
individual level, a similar externally driven, 'top down' bias extended to the design disciplines at this time. Fiori and Brandao (2007, p.3) argue that attempts of spatial designers in this period such as mass housing, slum eradication and modernist urban planning were driven by the belief that architecture and urbanism could 'promote development and shape social relations'. They argue that the failures of this period led to 'justified criticisms (that) increasingly gave way to a powerful anti-design discourse.' (Fiori & Brandao 2007, p.3) The modernists viewed the informal city as a set of disordered urban elements whose problems could be solved through application of modernist order. These schemes saw the process as black and white, problem and solution. They relied on bringing change through formal overlay of a set of spatial rules rather than any attempt to understand the existing condition.

Failures of the modernist discourse led to a new preoccupation with the organic and chaotic elements of city form. Studies of Christopher Alexander and Team X gave value to the systems that appeared unplanned, yet had their own order. As a reaction to the modernists they wrote in favor of the unplanned order beneath the modernists' perceived disorder. This process began to see the 'informal' as having its own values and rules. At the same time, such explorations moved away from implementing development projects and had greater influence on design theory. Interestingly within the capacity building arena, this was a period of de-spatialisation of aid. Rather than looking to the designers

or urbanists for answers, physical upgrading projects generally consisted solely of works of urban engineering. Generally, people in key positions were identified to undertake these isolated projects and then given training, skills, equipment and extra manpower to perform to a standard deemed 'better' by the 'capacity developer.' This had little impact on building the capacity of organisations or broader state institutions and, despite localised infrastructural improvements, had little benefit for the spatial dimensions of the city.

In the 1980s focus of capacity building work changed from the individual to the actual structure of the organisations that these individuals worked within. It was agreed that 'It is organisations that have capacity. Individuals have skills and competencies.' (Teskey 2005, p.4) Systems were changed and outside advisors often had short term relocations into developing countries rather than training local individuals. In the same period, with the strong neo-liberal (market oriented) policy backdrop, the 'upgrading' of institutions saw a move away from physical projects. As Fiori and Brandao (2007, p.6) state 'In terms of urban planning, there was a growing fascination in the emerging discourse of 'strategic planning' which, superseding physical master planning methods (of the modernists), aimed at setting up institutional structures for the formulation of strategic visions of competitive cities in a 'globalised' market.' This strategic planning approach, almost totally divorced from spatial concerns and with an underlying reliance on the purely

engineering solution, can be seen to this day as the dominant approach towards the future development of Diepsloot.



Above: The city vision for Diepsloot: Strategic planning solution not a spatial design solution.

By the 1990s, it was becoming clearer that only when the individuals, organisations and institutions were aligned, would there be the possibility of truly sustainable capacity development (Teskey 2005, p.8). In the contemporary era, the focus on good governance to underpin efforts made on individual, organisational and institutional levels has become paramount.

'Capacity building' and 'capacity development' are broad and ambiguous terms. Boesen and Thirlikdsen (2004, p.1) claim that when the term itself is ambiguous, meaningful operational specification of capacity is difficult to ascertain or achieve. However, it has been broadly agreed that whatever capacity building is not, to gain sustainable results it must be interdependent. It must also be approached with 'broad based enhancements of the capacity of the public sector, the private sector and civil society alike' (Boesen & Thirlikdsen 2004, p.1). Boesen and Thirlikdsen note that this understanding has been reflected in a shift from merely 'piecemeal interventions' that only work at building capacity in specific organisations to much deeper consideration of broader systemic capacity development. They suggest that the capacity of individuals, organisations, institutions and societies are nested within each other and co-influenced by each other. Dureau (2005, p.3) concurs with this, and contends that at a minimum, capacity concerns people and relationships. It is about 'creating both skills development, an enabling environment and agreed work practice. It is multi directional and addresses interacting layers for entry. It

incorporates individuals, organisations, institutions and whole systems'

The practice of capacity development now targets three vast tiers of development, the individual, the organisation and the institution. Because of the scale and complexity of these tiers and their interrelations, the notion of 'strategic incrementalism' has emerged. This is a World Bank term that defines attempts of projects to act as catalysts on a non-responsive or ineffective state, by building specific capabilities that have an effect on what Teskey (2005, p.10) refers to as 'the rules of the game'. This incremental involvement is proposed on 'best fit' rather than necessarily 'best practice'. Incrementalism by default involves process and time rather than direct and immediate results. This context specific approach appears to be key to the successes of capacity building projects, as most of the time incremental capacity development is more effective than attempting comprehensive reform (Teskey 2005, p.7).

It is equally important to match the scale of the capacity builder's activity with the scale of the problem. According to Teskey (2005, p.15), most of the time a larger impact can be made in organisations rather than institutions. This is especially true for the work of foreign donors, who, Teskey contends, have limited ability to bring about change at the institutional level. In the last decade Teskey states that donors have realised that organisations sit within a much broader framework of informal and formal institutions and have begun to try to develop this framework. Teskey (2005,

p.13) notes that in rare instances when what is 'technically appropriate aligns with what is politically expedient' real capacity is built. This may well prove to be the key consideration when this 'Urban Design Vision' is redeveloped in Johannesburg in 2008.

Most importantly for a design based exploration such as this, it has become evident over the last fifty years that capacity building activities that are not participatory and don't view ownership on the demand side as a condition for lasting success, are less likely to be sustainable. De Waal contends that it has been a slow and incomplete process from 'patronage to participation', which is still very much in progress (De Waal cited in Kingsbury 2004, p.8). This has meant a redefinition of donor role from implementer to 'engaged partner', endeavouring to stimulate rather than commandeer and implement changes. (Boesen & Thirlikdsen 2004, p.2) In response to this learning, Kingsbury (2004, p.10) reflects that the emphasis in development has moved away from donor imposed notions towards what the people seeking development are identifying their needs to be.

This mode of participation opens up for much greater specificity, enabling capacity building programs to be designed around a particular context. The following refers to this understanding: 'Broad and sustained change is the result of complex processes that cannot be explained with reference to a few determining factors, nor created by means of a standard recipe across time, sectors and countries.' (Boesen &

Therkildsen 2004, p.6) Kingsbury (2004, p.6) concurs with this stating that: 'All countries respond to and are influenced by a range of criteria that include history, material resources, economic infrastructure, trading links, political systems, conflict and the environment... if it (capacity development) is to be meaningful, it must grapple with specific outcomes in particular contexts, and not just broad theories'.

In this design proposal for Diepsloot, understanding local context has been the key to underpinning a development strategy. Specifically, a process has been developed that attempts to map the informal layers of the township and their intersections with its formal layers. By targeting interventions at these points of intersection it is proposed that most positive change can be made. This method relies on case specific understanding and seeks to apply 'best practice' on a 'best fit' basis.

Globally, traditional 'modernist' models are being challenged by capacity building models that are more reflective, more critical and more participatory. This has given way to a greater focus on accountability, transparency and ongoing evaluation. This is reflected in CIDA's (Canada) definition of capacity building based on: 'Broad-based participation and a locally driven agenda; built upon local capacities; focused ongoing learning and adaptation; or learning by doing... long to medium term involvement by donors; integration of activities at various levels to address/or work in, complex situations/

contexts.' (CIDA cited in Dureau 2005)

In line with this participatory context, Harrison (2006, p.21) comments that in planning terms, 'communicative action' has overtaken the practice of a 'technicist' approach to planning. Harrison recalls the definitions of Patsy Healey that 'plan making is a process of dialogue between different systems of meaning in the search for areas of consensus, and should not be regarded as a technical procedure.' Instead, plan making itself can become a process of 'consensus building through communication.'

This proposal views visual communication and community participation as essential if urban designers are to be engaged in the capacity development process. Looking for overlaps between formal and informal patterns of urbanism, it is conceived that the designer's work can become a visual agreement to promote discussion and collaboration between community, NGOs and government through process oriented design workshops. Flexibility and a participatory approach to design is important. 'At all times care must be taken to avoid the mistake of 'not asking questions before plunging into the design process, failing entirely to take into account the particularities of location, culture and need.' (Brillembourg et al. 2005, p.108)

Resulting from new understanding about how different levels of society should be integrated in capacity building processes and the importance of demand side ownership, new designer led models of 'slum upgrading' began to develop throughout the 1990s. There was a

re-emphasis on 'project level' work, yet attention was given to nesting this work with benefits at broader organisational and institutional levels. This led to a global resurgence of the debate about the place physical design may fit in the capacity development realm. As Fiori and Brandao (2007, p.8) remark, both the 2003 UN-Habitat report on 'The challenge of slums' and the task force of the UN Millenium Project on Improving The Lives of Slum Dwellers, alluded to the potential contribution of the design disciplines. The form of such contributions is still unknown and in need of development. As Rubbo et al. comment: 'There is a challenge to develop new paradigms and processes suited to improving the lives of people, and especially slum dwellers, in a dynamic, interactive and evolving way. Indeed, some commentators have argued that formal planning may actually exacerbate the problems of informal developments by imposing requirements that cannot be met.' (Rubbo, Gurran, Taussig-Rubbo, Hall, p.3)

In 1994, the Favela Bairro programme emerged in Brazil. It is one of the most interesting recent examples of the designer's possible role in the capacity development process. To date it is the largest and most comprehensive squatter settlement upgrading programme in Latin America. It included the following stages:

1. Architecture competition instigated by the Institute of Brazilian architects, followed by selection of sixteen entrants for design projects in the favelas.

2. Projects beyond sanitation and essential engineering infrastructure supply. Looking at ways to address social needs through design and construction of community facilities and spaces. Also looking at improving connectivity with the city both physically and with its organisations and institutions.

3. Favela Bairro was instigated to meet the development requirements of the favela as a whole rather than focus on the individual's housing needs. This model has similarities to that proposed here for the development of Diepsloot.

4. The basic informal structure of the housing layout remained intact, while the focus was on collective space and infrastructure. Once again such an approach has been taken in this exploration.

Teams of architects and social scientists led the sixteen projects however there was constant involvement of government organisations, NGOs and resident participation. Maintenance work was also deferred to community members (Fiori & Brandao 2007, p.15); a move central to this paper's proposals for Diepsloot. As with many capacity building projects, evaluation of its social effects and sustained continuation will be of utmost importance. The Favela Bairro project has been touted as a success, however it is acknowledged that benefits or disadvantages will be unclear for many years in this type of work and ongoing evaluation will be crucial.

Capacity development is as much a process as it is the delivery of a product. When applied to one individual, one organisation or one whole nation state, it is clearly an organic and changing process that must grow and evolve its methods as time passes. Urban design can also be understood as a process, and is described as such by Barnett in the following. 'Urban design is the generally accepted name for the process of giving physical design direction to urban growth, conservation and change. It is understood to include landscape as well as buildings, both preservation and new construction, and rural areas as well as cities' (Barnett 1992 cited in Schurch 1999, p.15).

Value in process and synthesis perhaps as much as product, is common to both urban design and capacity development. Multi level participation of different stakeholders is also an important characteristic of both fields. Schurch comments that 'citizen participation of one sort or another has long been a part of process to 'democratise' and encourage a sense of vested interest on the parts of inhabitants and users of built environments.' He goes on to comment that 'This aspect of urban design emphasises the 'anonymous' nature of the field and reflects the strong linkage of urban design to urban planning as compared with architecture or landscape architecture in which professional authorship looms in importance.' (Schurch 1999, p.16-17)

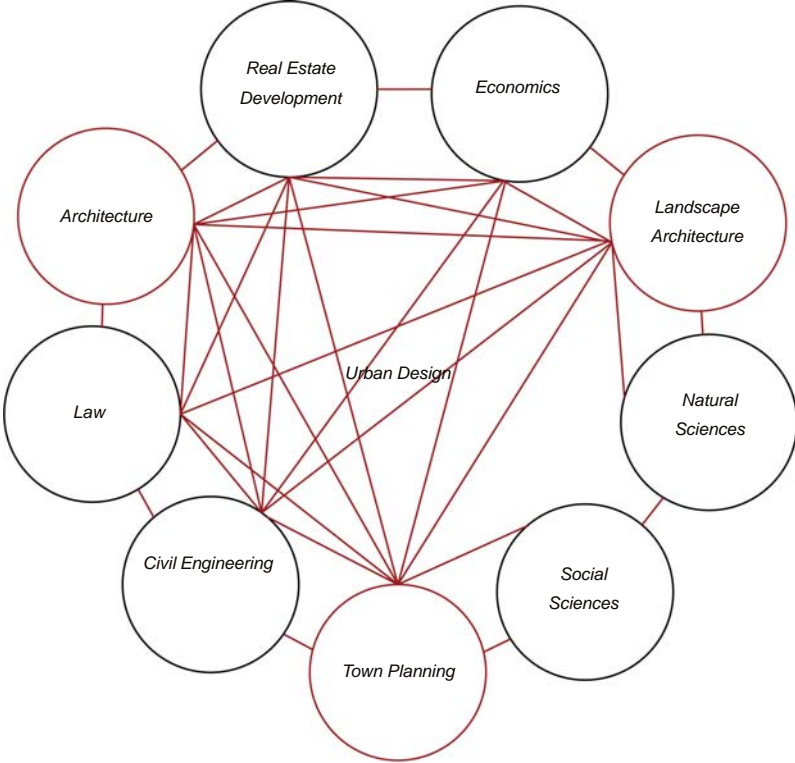
It is this more complex and collaborative nature of urban design that perhaps places the practice in the strongest position as

'design driver' in the process of capacity development. Urban design may be capable of providing physical visions born from the overlaps between formal and informal components of the city. These can be realised in varied ways by the countries individuals, organisations and institutions or governing bodies. Urban design, like capacity development also seeks to work at different physical project scales and societal levels at one time and through one process. Without a macro, mesa and micro understanding there will be limits to any truly sustainable lift in capacity, or any successful urban design scheme.

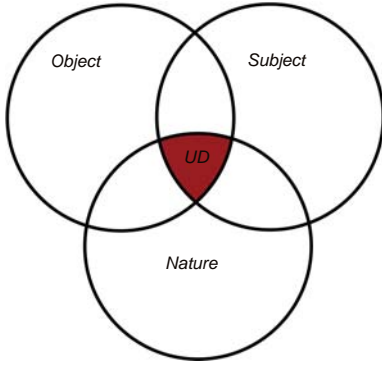
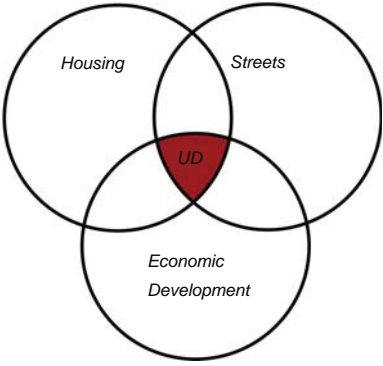
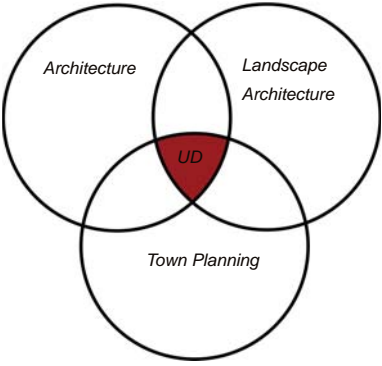
A purely economic approach to capacity building and development has broadened to embrace demand side participation and a complex interdependence between individual, organisation and institutional development. In light of this evolution, collaborative and flexible processes of urban design are well placed to test the benefits of physical design in the contemporary process of capacity development.

Positive development requires a transformation in society that can only begin from a point of understanding. This Diepsloot design project is therefore undertaken with the assumption that urban design can be a key tool in developing this understanding. The design process is viewed as a tool to reach that point of agreement of the multiple stakeholders. It is hoped the plan can become visual evidence of that combined process. Mapping parts of the city that usually remain unmapped will

enable new understanding of current and future relationship between parts of the segregated city and become a tool enabling inclusion of the excluded. As stated by Fiori and Brandao (2007, p.12-13), 'good design and urbanism can help create 'platforms' for other social and political developments in the city. It will not however, automatically create inclusive and just cities. But neither will just cities come about without appropriate spatial and design strategies.'

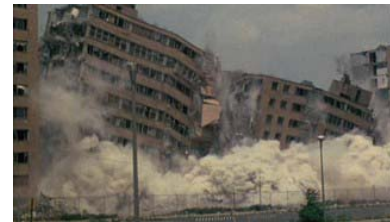


Right and Below: Possible theoretical and practical positions of the practise of urban design from Schurch. The practice of capacity development also sits within and between many disciplines. This and other similarities between the two practices may place urban design in the most favourable position of the design disciplines to be used as a tool for capacity development.





Above: The Pruitt Igoe complex in St Louis, Missouri built as mass social housing in the 1950s. Lack of community infrastructure and inappropriate architecture led to its complete failure. Mass housing alone will never lift the capacity of a whole community for positive development. (Photo:http://content.cdlib.org/xtf/data/13030/zm/ft8779p1zm/figures/ft8779p1zm_00000.jpg)

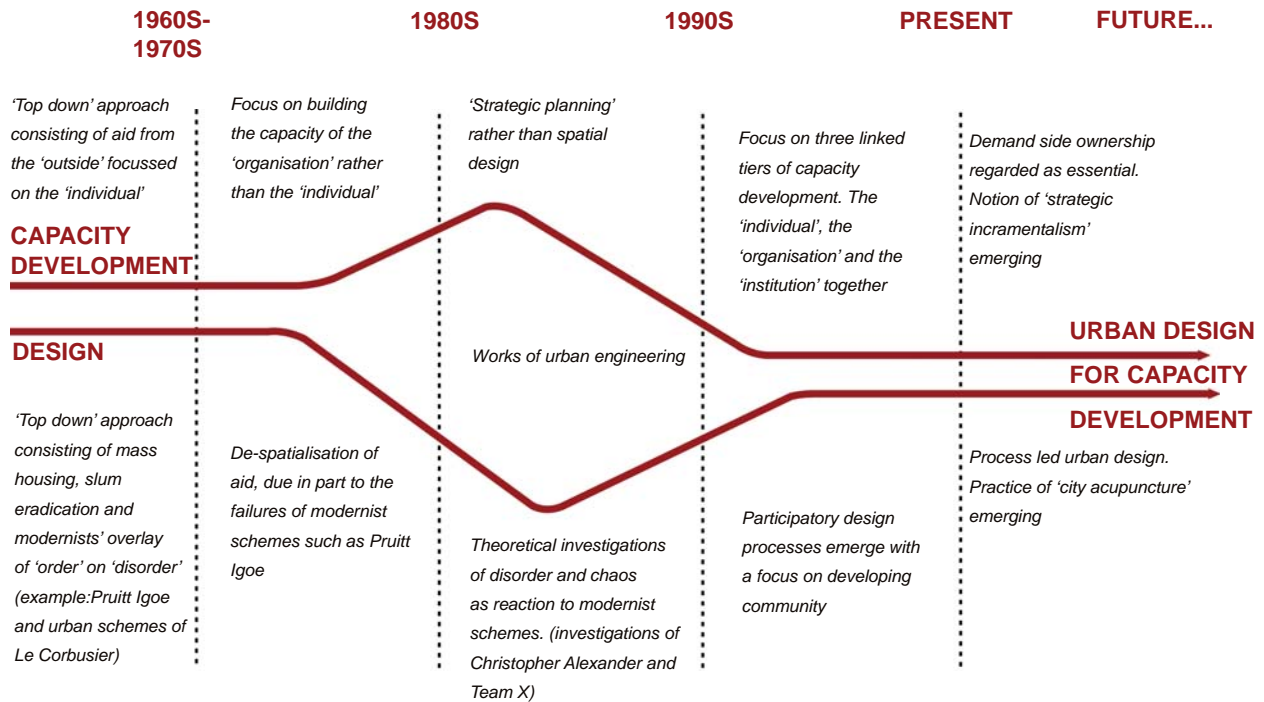


Upon demolition of Pruitt Igoe in 1972, Charles Jenks called it 'the day modern architecture died.' Although this is debatable, the failure of Pruitt Igoe proved dramatically that mass housing without community infrastructure could not work. Unfortunately, the failures of modern architecture led to 'justified criticisms' and a 'powerful anti design discourse.' (Fiori and Brandao, p3) (Images:affordablehousinginstitute.org)



The 'Favela Bairro' program of the 1990s saw a focus on architecture that provided community infrastructure rather than housing. Sports fields (left), community laundries (above), public space and street improvements. This focus, and a participatory process has led to greater success. (Images: *Architecture For Humanity*, p220)

EMERGENCE OF URBAN DESIGN FOR CAPACITY DEVELOPMENT



This diagram represents a timeline of two emerging practices. The upper line represents the evolution of the practice of 'capacity development', the lower line represents the evolution of 'design for capacity development'. The diagram illustrates where both practices have aligned and diverged. It shows the possibility for future alignment, where urban design becomes a key tool for capacity development in developing countries.

PART TWO
THE URBAN DESIGN PILOT PROJECT

3.INTRODUCING JOHANNESBURG

There are 3.2 million residents in Johannesburg in an area of 1600km². Broadly, there are 8.8 million in the greater province of Gauteng, an area of 17,000 km². These population figures do not include the tens of thousands of unrecorded immigrants from neighboring countries that live throughout Johannesburg.

There are staggering health problems, with 34% of the recorded population aged 24-29 infected with HIV and only 4% of the population reaching the age of 65. 24.1% of Johannesburg's population (over 700 000 people) lives below the poverty line and 31% of the population is unemployed.

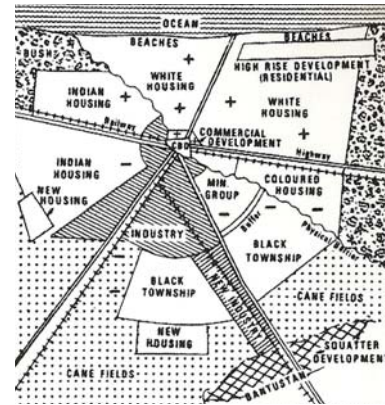
Johannesburg was a city whose rapid development took place due to the discovery of gold in 1886. It was under the 'Group Areas Act' of 1950 that major segregation was written into the planning law of the South African government. Each residential area was formed on the basis of race. Each area was to be functionally independent from the others and areas were to be separated by boundaries of transport infrastructure (roads and railways) or preferably by large natural barriers (Bremner 2007, p. 206).

As Mayekiso (2006, p.68) explains: 'Racist public policy has been completely eradicated, but the scars left by the system of apartheid are still with us, most explicitly in the form of economic inequality. Thus the racial ghettos of the past, such as the peripheral townships remain. However, they are now defined as economic ghettos because of the uneven nature of development under the racial capitalist

system of apartheid.'

The government's Black Economic Empowerment (BEE) policies have changed the way the economy stands. BEE is a policy based on the transfer of economic power from white to black. A super rich class of black entrepreneurs has emerged but this new wealth distribution has been very uneven. Quick wealth is resulting in a lavish material culture for those who can afford it. This has added to the extreme contrasts of wealth rather than a feeling of shared prosperity for all (Bremner 2007, p.210).

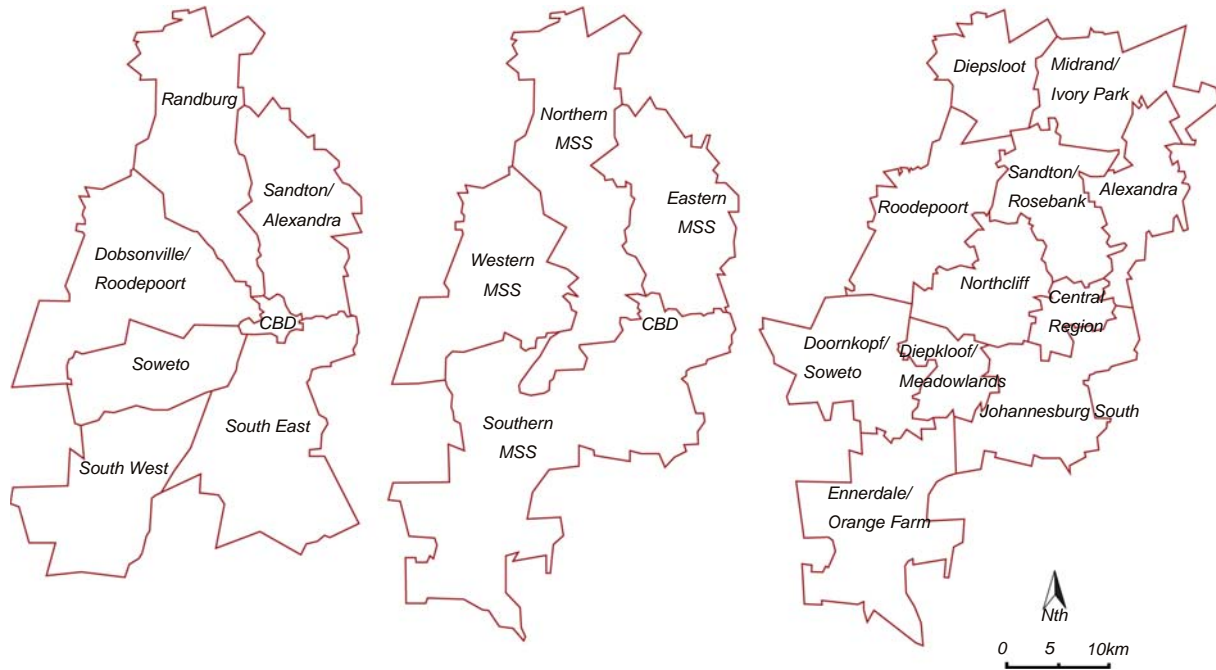
For some of the majority that have no legal way to acquire such wealth, criminal activity is often the only way to achieve the lifestyles so brazenly advertised throughout the wealthy and still mostly white enclaves of the rich. A massive and visual disjunction in wealth and opportunity has resulted in a wave of violent crime that has led to the development of highly fortified and enclosed and guarded residential settlements. As Bremner states 'this logic of defensiveness reinforces apartheid geographies and defers the possibility of anything remotely resembling a coherent city emerging' (Bremner 2007, p.211).



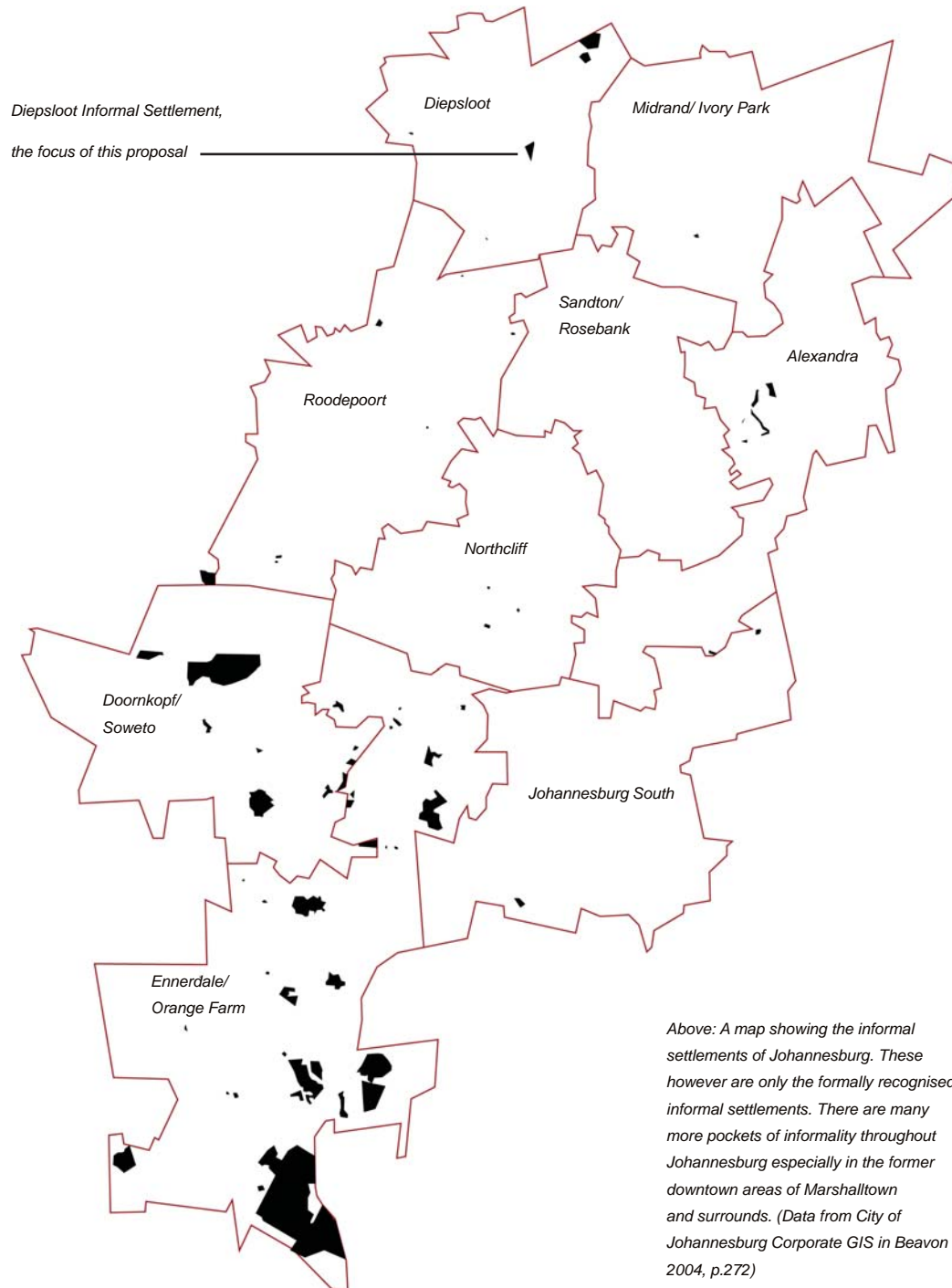
Above: One example of South African planning under apartheid. Planning for racial segregation. (Bremner 2007, p.206)



Above: In today's Johannesburg, a 'logic of defensiveness' reinforces apartheid geographies (Images: Tyrrell 2007)



Above: The evolving shape and division of Johannesburg since the end of apartheid between 1995 and 2000. Note the emergence of Diepsloot 24km to the northeast of the former city centre (data from Beavon 2004, p.238)

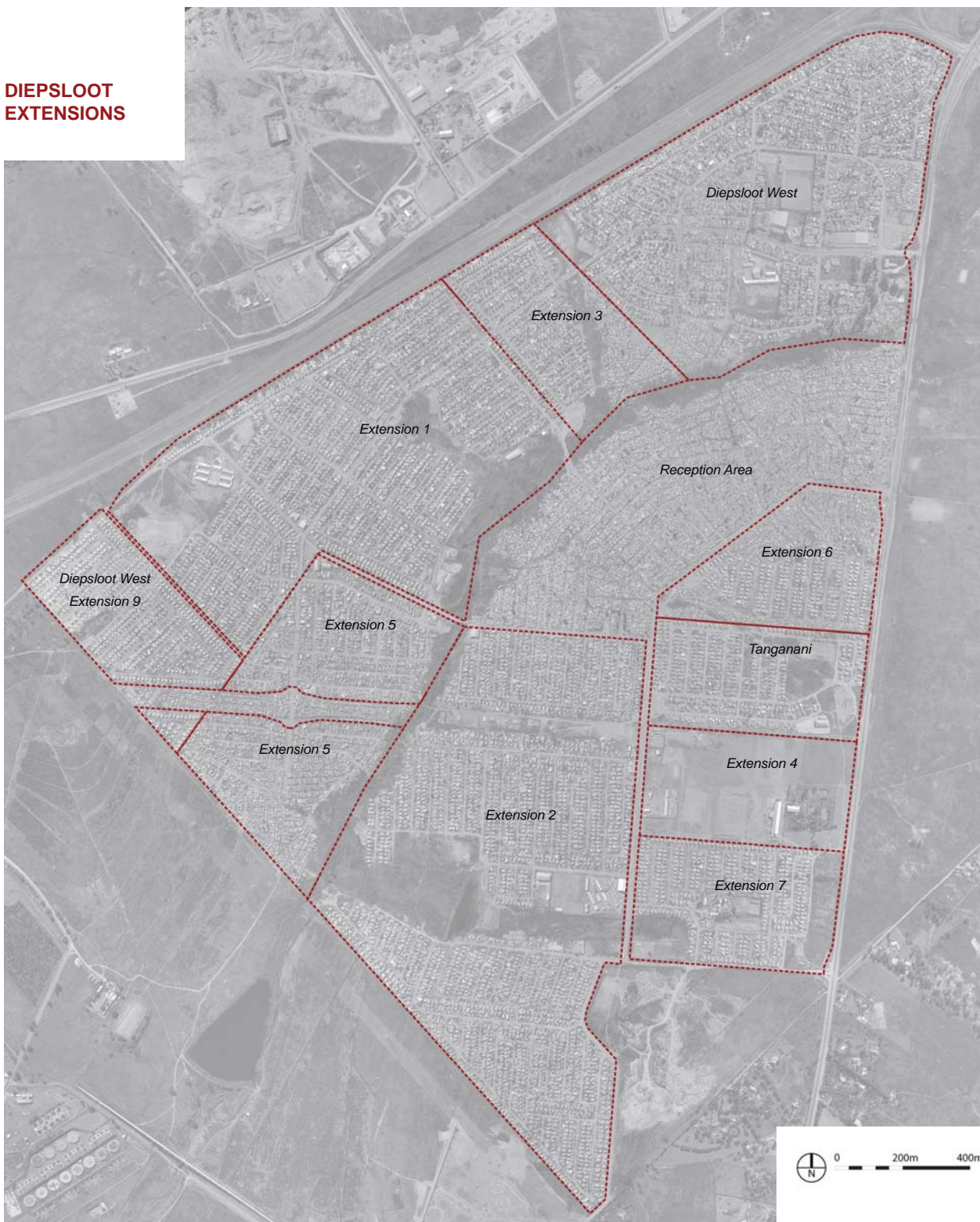


Above: A map showing the informal settlements of Johannesburg. These however are only the formally recognised informal settlements. There are many more pockets of informality throughout Johannesburg especially in the former downtown areas of Marshalltown and surrounds. (Data from City of Johannesburg Corporate GIS in Beavon 2004, p.272)

**DIEPSLOOT
IN CONTEXT**



**DIEPSLOOT
EXTENSIONS**



4. INTRODUCING DIEPSLOOT

Diepsloot is a post-apartheid low-income settlement created in 1994 to accommodate people forcibly relocated from Zavenfontein to the west of Diepsloot. There has been much subsequent relocation from surrounding local areas, the ratio indicating the greatest proportion arrived from Alexandra, followed by Skotipol and Randburg. Of these relocations, about half were forced and half moved to be closer to their work.

Diepsloot is located 24km to the north of Johannesburg's city centre. It began as a temporary transit camp and became an area with land allocated for permanent development by the poor. It is currently home to roughly 150 000 people, over half of whom are unemployed. (Diepsloot baseline survey). While there are both formal subsidised housing developments and informal settlements in Diepsloot, the majority of people (about 76%) live in informal settlements and in backyard shacks.

Four primary schools have been developed in Diepsloot, but no secondary schools. There are ten churches, one community centre, and one political party office. The area has only one clinic and the nearest hospital is located about 25km away. The distance to the nearest police station is 10km and is 20km to the fire station and post office. (Land Management Research Draft 2007)

The township has become home to a marginalised and often transient population. This results from the area initially being set up as a temporary transit camp. There has been a constant flow

of refugees from Somalia, the Congo and recently many from Zimbabwe. With the increasing population of the informal component of the settlement, many problems with basic infrastructure have also developed. It has been difficult for Diepsloot to develop strong community cohesion: 'The continuing influx of people to the area including a mixture of people seeking economic opportunities; illegal immigrants; and a substantial criminal element - combined with poor, inadequate services results in 'chaotic social dynamics' negatively impacting on the delivery of development plans' (Land Management Research Draft 2007)

As a response to uneven or unsuccessful development, many informal systems operate throughout Diepsloot, from networks of paths and tracks, dumping areas, agriculture, economy and rental arrangements. Informal systems are born from necessity and overlay and at times overlap with the formal. The informal overlays are generally part of a survivalist response to poverty and without better links with formal systems, are unable to develop beyond this point.



*Welcome to Diepsloot township sign.
(Image: Chang 2007)*

5. XENOPHOBIC VIOLENCE OF 2008

In May of 2008, horrific images of violence were broadcast from the informal settlements of Johannesburg throughout the world. Descriptions by the press used the term 'xenophobic violence', reportedly directed at immigrants from African countries surrounding South Africa. Violence and rioting occurred in many of Johannesburg's townships including Diepsloot.

This violence has resulted from a perception amongst some South African township dwellers that immigrants, many of them Zimbabwean refugees fleeing the Mugabe regime, have been taking employment opportunities and housing resources away from poor South Africans. Skilled and educated immigrants are perceived to have a better chance of securing work than locals. They are also suspected by some of bringing criminal activity to the township areas.

Attacks have taken place involving public burning and beating of immigrants to death. At the time of writing, 62 people had been killed and 670 injured. 1300 arrests had been made.

It is thought that Mozambicans and Malawians mostly returned home, however those from Zimbabwe, Somalia and the Congo were unable to return to their own countries. The United Nations set up temporary camps for the thousands of displaced township residents with nowhere else to go. (Various internet news sources, May 2008)

It must now become South Africa's top priority to focus upon new development models within the townships. Models that quickly lift the capacity of whole communities rather than the capacity of chosen individuals only.



Anti-immigrant township riots, May 2008



Horrific Johannesburg township violence, May 2008.

Image from BBC news 'In pictures: Johannesburg Violence' http://news.bbc.co.uk/1/hi/in_pictures/7407572.stm



Mass exodus of immigrants fearing for their lives

Image from BBC news story 'scramble to flee South Africa' <http://news.bbc.co.uk/2/hi/africa/7415507.stm>

6. PILOT PROJECT URBAN DESIGN METHODOLOGY

THE URBAN DESIGN METHODOLOGY WILL CONSIST OF THE FOLLOWING STAGES:

1. Investigating the current 'formal' development model being applied to Diepsloot. These are development proposals for the township and the general use of the RDP house throughout South Africa. How do these models intersect with the informal components of the settlement?
2. Mapping the layers of the township. This involves taking the Diepsloot map and mapping layers of informal and formal rather than just formal areas. Uncovering the spatial layout of the township as a whole, regarding informal and formal together as an urban structure.
3. Proposing physical design solutions that build community capacity of Diepsloot as a whole rather than individual capacity alone. Shared community infrastructure rather than individual housing supply.
4. Urban acupuncture and strategic incrementalism: Proposing a phased and locally driven approach to design and construction. Which projects will have the greatest and quickest benefit for community development?

LINKING FORMAL AND INFORMAL

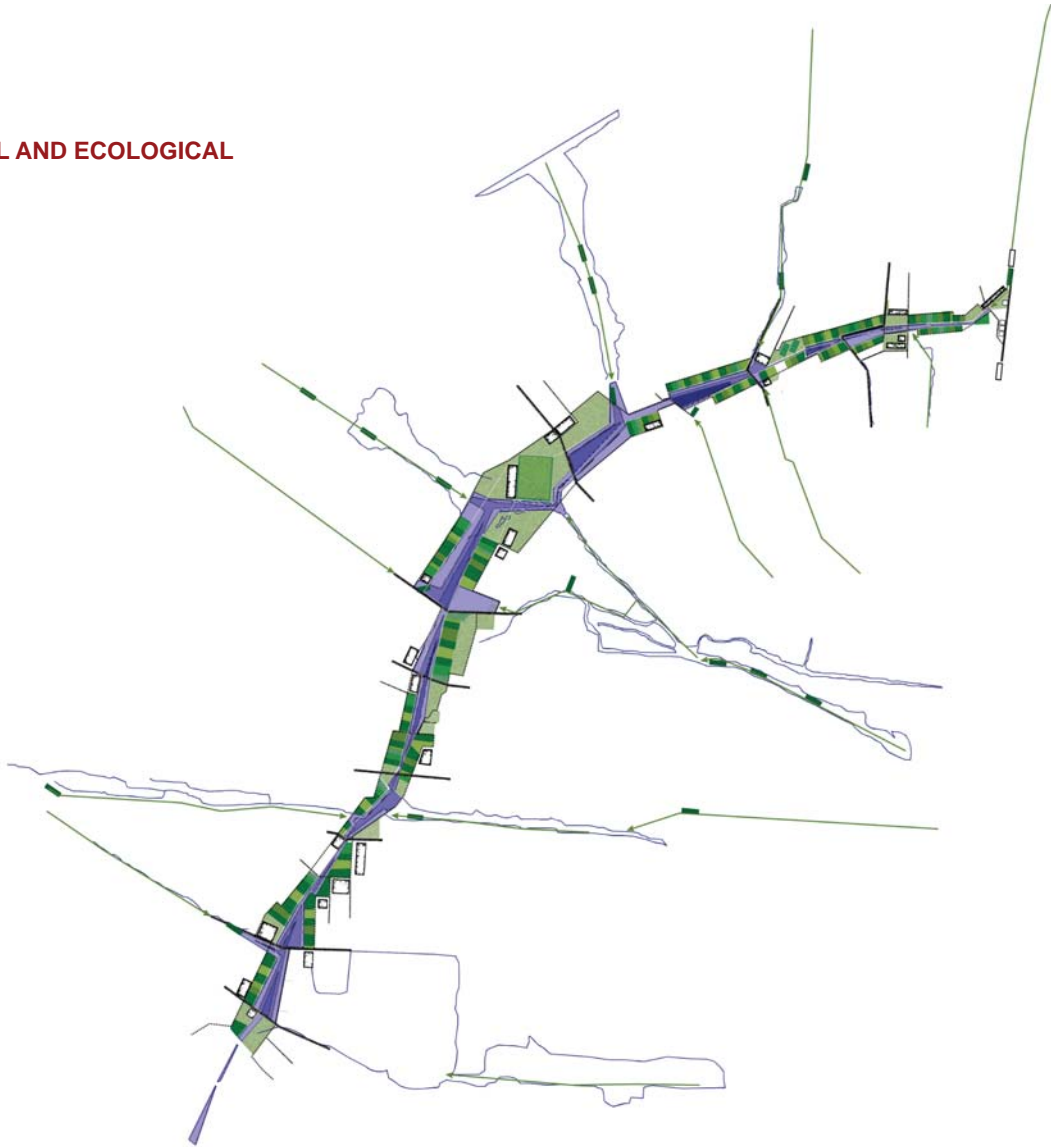
In Diepsloot and other informal settlements, for every 'formal' urban component, there is also an 'informal' overlay or alternative born from necessity. The formal RDP house on its lot becomes a modified perimeter block of shacks and communal lanes and spaces. There are formal river crossing points, yet also clear desire lines worn into the marshes at informal crossing points. There is a formal refuse collection service that responds to the formal development pattern, yet mounds of rubbish accumulate along lines of informal movement and activity producing traces of informal life over the recognised formal structure.

This legible duality extends through to recognition of the sites ecological layers. Provision of water and sanitation relate primarily to formal structures and 'best practice' engineering solutions rather than an investigation of local patterns and conditions in order to discover the 'best fit' solution for the site.

Through viewing 'formal' and 'informal' as separate elements and often 'formal' as the solution to 'informal', little cohesion or community development is achieved.

This design proposal focuses on transforming Diepsloot's divisive central marshland space into a social and ecological spine. This transformation will be essential in linking informal and formal systems and building the capacity of the Diepsloot community as a whole.

A SOCIAL AND ECOLOGICAL SPINE



7. THE CURRENT HOUSING SITUATION AND THE 'FORMAL' AND 'INFORMAL' RESPONSES TO DIEPSLOOT'S HOUSING CRISIS

Housing provision is the major physical development challenge for South Africa. After apartheid ended it was written into the constitution that housing was a basic human right. Below is the national housing vision from the national white paper on housing issued by the South African government (4.2 National Housing Vision):

'All South Africa's people will have access on a progressive basis, to:

A permanent residential structure with secure tenure, ensuring privacy and providing adequate protection against the elements; and potable water, adequate sanitary facilities including waste disposal and domestic electricity supply.'

(<http://www.info.gov.za/Whitepapers/1994/housing.htm#4.2>)

RDP houses are those delivered by the 'Housing and Reconstruction Development Programme' in order to attempt to achieve these housing goals. To qualify for an RDP house, a person must meet the following criteria: 1. Be a South African citizen 2. Be over 21 yrs of age 3. Have dependants and 4. Earn between R0-3 500 per month. There are however severe quantitative and qualitative problems with the RDP housing typology.

The RDP house consists of a small freestanding house on its own lot. This typology results in a very large land take. In many developing and developed countries, a compact city model is more desirable than a sprawling low-density city. The low density of the RDP house makes it an unsustainable housing

model for South Africa. Adequate public transport, service delivery and flexibility of housing type are not achievable with this model. Procurement of the amount of land required also slows the delivery. Harrison (2006, p.20) aligns the values of the compact city model with those of the environmental planning movement. He regards the benefits as mainly reducing emissions and designing efficient infrastructure. He proposes that in South Africa specifically, environmental concerns are coupled with the dysfunctional city form developed through the apartheid era. Today, the low-density typology of the RDP house continues this pattern of exclusion.

Harrison (2006, p.21) notes that in South Africa there are currently attempts to introduce urban growth boundaries to halt the process of sprawl, it is clear that the success of these boundaries will depend on the acceptance of new models of higher density government supplied housing. Fortunately, it is understood at a government level that the RDP house type is not suitable. The following news story illustrates the government's dissatisfaction with the current housing typology and its flexibility on a social level:

'The ANC's Sisulu is frank about the effectiveness of the government's Reconstruction and Development Programme (RDP). 'I have not been too happy with the quality and concept around the RDP house' she said. 'If we keep it we've definitely got to improve on it.' Her department is turning to flat rentals as a way of accommodating single workers who often have a family

home outside the city and do not need a government house. 'Tying them down to an RDP house might not be what they want. These (flats) will help us remove a huge segment of the people living in informal settlements.' One hurdle is ensuring building keeps pace with a continuing flow of rural dwellers and illegal immigrants into places like Diepsloot. Every year up to 300 000 flock to Gauteng - the province that encompasses Johannesburg, Pretoria, Soweto and Diepsloot. Some squeeze into shacks belonging to family or friends, living six or seven to a room a few metres wide while others put up new shacks, adding to overcrowding in the slums. Police are rarely seen in the twisting slum alleys and rapes and muggings are common. Fire is also a danger - a spilt candle could send flames racing through hundreds of densely packed shacks. 'There's no order here. People do what they want' said Matthew Baloyi pointing to Diepsloot's unpaved streets strewn with rubbish and spotted with puddles from broken water pipes. Around 20 slum dwellers might share one portable toilet in this township and a stench hangs in the air. Baloyi was one of the few thousand given a government house here, but it was built on dusty soil too poor to grow vegetables and is far from central Johannesburg where he hopes to find work.'

(<http://www.namibian.com.na/2004/July/world/0455C9568D.html>)



Above: This photograph shows informal shack settlement in the foreground, whilst in the background on the sloping land is the clear pattern of the RDP house layout, a single house on a block of land stamped over the landscape. (Image: Tyrrell 2007)



Above: Part of the informal component of Diepsloot (Image: Tyrrell 2007)

FORMAL SETTLEMENT:

This plan illustrates the 'formal' lot layout of Diepsloot. This is the pattern that appears on the city map of Diepsloot



INFORMAL SETTLEMENT:

In reality around 76% of residents live in the blank component of the previous plan (shown here in grey). Many residents also live in backyard shack arrangements within the 'formal' lot pattern. Parts of these informal settlements lie within the floodline of the marshlands (shown in blue)



8. HOW THE FORMAL HOUSING TYPOLOGY, THE RDP HOUSE, IS OVERLAID BY INFORMAL URBANISM AND WHAT THIS MAY SUGGEST



1. The image above shows an area of Diepsloot where RDP houses have recently been delivered. The pattern of the single building in space on a block of land is clear to see here. This housing typology requires a very large volume of land and makes service provision more costly.



2. Another area of Diepsloot where RDP houses have been standing for a longer period of time. Here, there has been the addition of many backyard shacks. Often these shacks are rented out by the owner of the RDP house. The layout of the lots change, becoming higher density agglomerations. Services are often quickly overloaded. Interestingly the resultant block pattern becomes one of space forming buildings with communal courtyards.



3. This is a third area of Diepsloot close to the reception area. While some original RDP houses can be seen here, the pattern of one house on one lot seen in image one has been broken down completely over time. The shacks and houses have become a far higher density and any left over spaces are communal yards or lanes.

This transformation illustrates the inappropriate nature of the current RDP house. There is a necessity for higher density, more flexible housing typologies. More communal living structures are very important for survival within informal settlements.

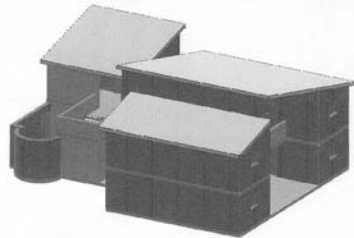
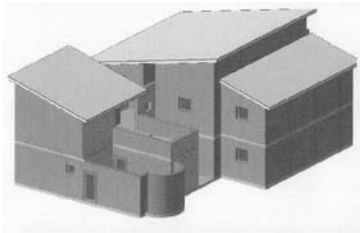
Images taken at same scale from Google Earth, 2008



THE ALEXANDRA RENEWAL PROGRAM

The Alexandra Renewal Program is working in Alexandra, Johannesburg to design and introduce new housing typologies.

Left: One of the new housing typologies designed for the Alexandra Renewal Program. These blocks are a more suitable density and include possibilities for flexible living such as rentable rooms. These housing schemes would benefit greatly by having storm water tanks installed during construction to capture roof water and reduce reliance on potable water.



Left: Another design being tested by the Alexandra Renewal Program.

There is great opposition to high rise flats due to their similarity to the 'hostels' of the apartheid era, notorious for their social problems. However, appropriate densities do not require high rise developments.

9. BUILDING COMMUNITY CAPACITY THROUGH PUBLIC OPEN SPACE RATHER THAN INDIVIDUAL CAPACITY THROUGH HOUSING DELIVERY

In part seven and eight, the failures of the RDP housing typology have been reviewed. Although housing provision is important for communities, where the scale of the housing shortage is so vast, development remains limited to those individuals who receive housing benefits. In contrast, the provision of public space and community infrastructure impacts upon many people and offers the possibility for broad scale community capacity development.

Public space is important in all cities. It has long been regarded as the glue of community. In the 14th century, French mythographer Petrus Berchorius wrote the following: 'Since piazzas are areas in villages or cities, empty of houses and other such things and of obstructions, arranged for the purpose of providing space or set up for the meetings of men, it should be remarked that in general through piazzas the condition of man in this world can be discovered.' Through the Agora, the Greeks were the first to create 'a public space as a necessary element of the urban landscape through which to express a community's collective power' (Kostov 1992, p.153). In new colonial cities of the Greeks, land for the Agora was the first to be laid out.

In Diepsloot, formal public space is situated mostly on the periphery. On visiting the township, it is not a sense of positive shared public space that is the most obvious. Instead it is the space that cuts the township in two, the marginal land of marshes and mounds of rubbish, flooded with polluted water and raw sewage. The

major negative physical feature of the community is clearly its central marshland because:

1. It is unhealthy: Grey and black water flow through streets and wash mountains of rubbish into this area. Hundreds of children play here in heavily polluted overflow.
2. It divides the community and is very difficult to cross, especially for the elderly.
3. It is dangerous in times of flood. People build shacks here and have been washed away. There have been fatalities.
4. It creates a strong sense of marginality amongst people who have been forcibly relocated by the state to a poor quality and dangerous environment

There are clearly many ills associated with this landscape setting, yet as a product of its marginal nature, this central land has remained open and free of development. Here at the core of densely packed shacks and informality, the marshes provide a large space that offers much needed relief. The ills of the space at present outweigh its benefit in spatial terms. As Tiwari states: 'residents should be proud of their public spaces, which contribute to their feeling of collective belonging' (Tiwari 2007, p.360). At present, the marginal and polluted land equates to a feeling of a marginalised community. It is a landscape representing poor health, danger and depression.

There have been proposals put forward to run pipes through the central marshland, stabilise the land and build further RDP housing on it. In contrast, this 'Urban Design Vision' argues against such

urban engineering 'solutions' in favor of redeveloping the marshlands into public open space with a strong local identity.

Pendalosa's observations support this argument stating that: 'Although over time poor neighborhoods may solve the worst flooding risks and end up getting water supplies, sewage and other basic necessities, they are never cured of their lack of public space' (Pendalosa 2007 p.313).

Ian McHarg's ecological design philosophy also supports the notion that the marshland area could be conceived as land for public space. He states that: 'We wish to find discrete aspects of natural processes that carry their own values and prohibitions: it is from these that open space should be selected. It is these that should provide the pattern, not only of metropolitan open space, but also the positive pattern of development.' (McHarg 1992, p.57) There may not be a need for heavy engineering solutions to flooding: 'Many flood control systems, usually designed to cope with rare peak levels, also prevent the ecologically valuable, regularly occurring, smaller floods' (Langenbach 2007, p.82).

PERIPHERAL PUBLIC OPEN SPACE

Most formal open space provision is on the periphery of the township. The darker green indicates space with formal program such as sports fields. The lighter green indicates other less programmed open space.

There is a lack of functional open space at the centre of Diepsloot. The informal settlement areas are devoid of any functional public open space and have few formal links to the spaces shown here.



This design proposes the redevelopment of the central corridor into a large functional public space including wetlands, sports, agriculture and community areas and the possibility of land put aside for public buildings. Although housing is the major physical development challenge, it is as Pentalosa says: 'Pavements, bicycle lanes, plazas, parks, promenades, waterfronts and public sports facilities (that) show respect for human dignity and begin at least to compensate for inequality in other realms.' (Penalosa 2007, p.311)

Yet the public realm must represent more than the functional or programmed. As Kostof writes: 'Public places host structured or communal activities... because of that, such places will bear the designed evidence of our shared record of accomplishment and our ritual behaviour.' (Kostof 1992, p.124) This record of community, a common memory, is essential in a township such as Diepsloot, only just beginning to establish itself, and with such divisions between formal and informal, opportunity and helplessness. A major priority of the Favela Bairro projects introduced earlier was both the improvement of existing and the creation of new public spaces. They were introduced to 'encourage social integration among the residents' (Fiori & Brandao 2007, p.17) As Fiori and Brandao (2007, p.19) state 'It is understood that if the residents have a positive image of the public spaces they use daily, a sense of pride would arise which is crucial for the community to develop.'

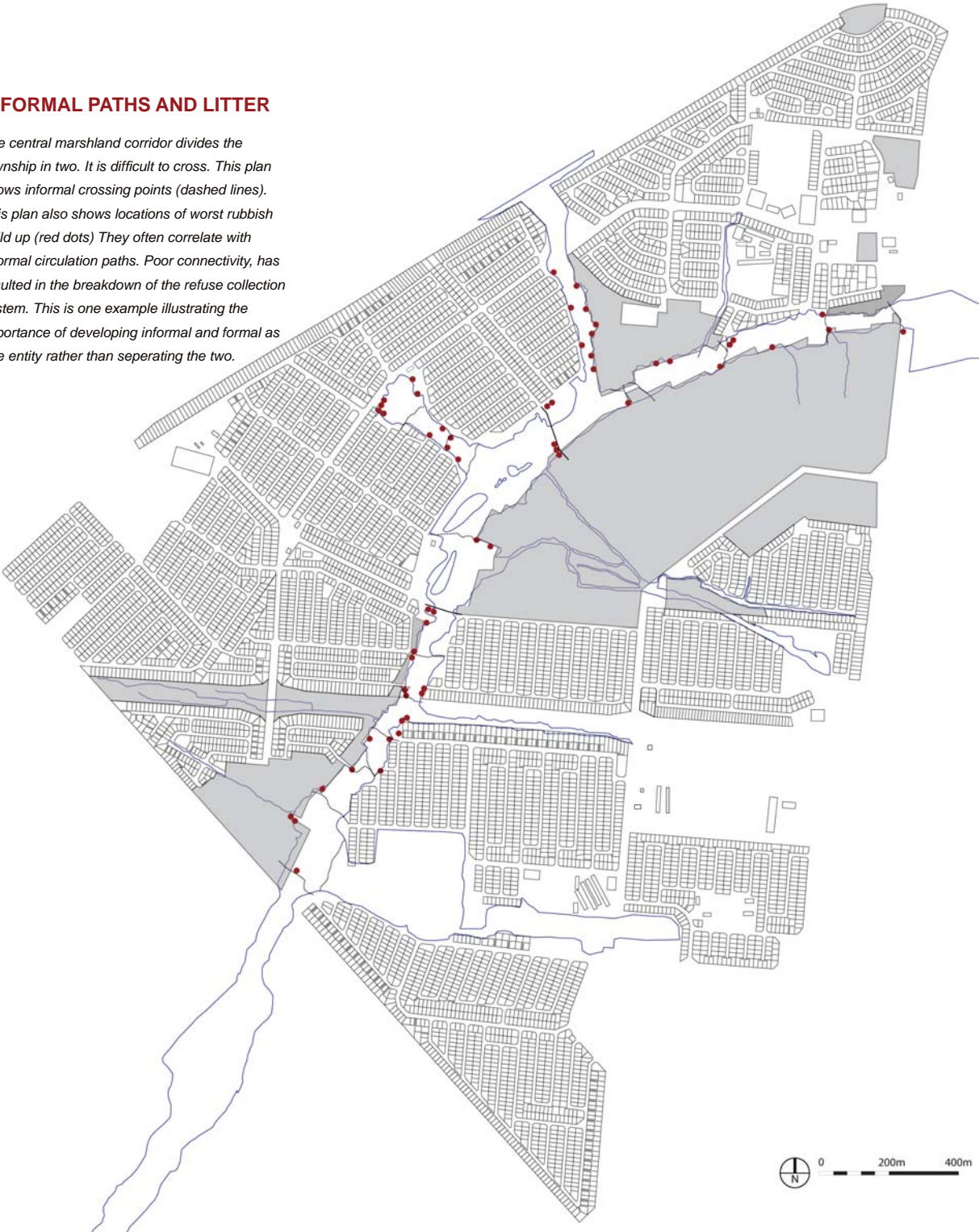
It is also important in the design of the public space for Diepsloot to encourage people to visit from the outside. Whilst there are clear disjunctions between formal and informal on the inside of the township, Diepsloot is still united in its isolation from the outside city of Johannesburg. The central spine proposed must be well connected to the road through the transfer of civic functions into visible position. In this way the space not only helps to knit community but also links a peripheral settlement, with the rest of the city. The roadside market has the potential to fulfil such a landmark/gateway role, but needs to feel safer and more accessible to traffic passing by.



Above: The space in between. As a product of its marginal nature, this central land has remained open and free of development. This space should be retained and become a central social and ecological spine for the township.

INFORMAL PATHS AND LITTER

The central marshland corridor divides the township in two. It is difficult to cross. This plan shows informal crossing points (dashed lines). This plan also shows locations of worst rubbish build up (red dots) They often correlate with informal circulation paths. Poor connectivity, has resulted in the breakdown of the refuse collection system. This is one example illustrating the importance of developing informal and formal as one entity rather than separating the two.



10. REVERSING NEGATIVE SENSE OF PLACE IN DIEPSLOOT

Genius loci, originated as a concept of the Romans, where the genius was the guardian spirit to every independent being, a spirit that stayed with the person or place for its entire existence, determining both essence and character. (Norberg Schulz 1984, p.18) It was of particular importance in many ancient cultures to come to terms with and understand the genius of the area where life took place. In many ancient and present day agricultural riverside settlements for example, survival itself depends on good understanding of the physical place. In ancient Egypt, this physical understanding extended further into the psychology of place. Public buildings were set out within the structure of the working landscape to give a sense of symbolism and security in a larger landscape order where man had located his secure place.

Norberg Schulz (1984, p.19) uses the word 'dwelling' to explain that where a person dwells or lives, is 'simultaneously located in space and exposed to a certain environmental character.' Norberg Schulz refers to the two psychological functions at play here as being 'orientation' and 'identification'. He argues that to gain an 'existential foothold' a person must be able to orient themselves and also to identify with their environment. Where and how s/he is in the world.

This identification with place is important. Norberg Schulz (1984, p.21) argues that a true sense of belonging is only born from a strong sense of orientation and of identification with the surrounding environment. He contends that in primitive

societies small environmental details were known and meaningful, yet in modern society, concern for the practical workings of orientation have generally left any environmental identification to chance. As he states: ' True dwelling, in a psychological sense, has been substituted by alienation.' If Norberg Schulz was referring here to the formal city, then his observations become only more pertinent when applied to informal settlements. In Diepsloot where practicality of finding shelter is a matter of survival, and relocation is always a threat, alienation, has for most become a function of urban life.

The design proposal for Diepsloot in essence is simple. Spatially the aim is to transform what is a physical division within the community into a space that connects informal to formal and builds community cohesion. The aim is also to study the local landscape condition and turn what is a negative environmental identity of polluted wasteland into a positive environmental identity through redeveloping a healthy wetland ecosystem and recreational/civic environment. As McHarg (1992, p.185) states 'It is possible to perceive the role of apparently insignificant sites as part of an important and valuable expression.'

This expression must be sought out and celebrated in Diepsloot. Instead of relocating people again, the power of psychic and physical connection to the environment must be returned to the community. On a practical level, Huchzermeyer (2006, p.49) refers to the notion of upgrading the dangerous land

that people are living near rather than removing them: 'In situ upgrading is more likely to be responsive to poverty and vulnerability, and to lead to social inclusion, than a relocation process, due to the socio-economic disruption (of delicately balanced livelihoods) of the latter' The people of Diepsloot should be encouraged to stay and encouraged to build as a community, a place to dwell rather than simply take shelter and survive.

Norberg Schulz (1984, p.21) states that 'identification means to become friends with a particular environment.' The people of Diepsloot need to be allowed to become friends with their central marshland corridor, let it not be fenced off and polluted, but let it become an expression of place and part of this communities identity.

In searching for the expression of the city's identity it is essential to look at what McHarg (1992, p.185) calls 'those elements- in the natural identity and that of the created city – that are expressive and valuable.' Interestingly, the name Diepsloot comes from the Afrikaans language meaning 'valley in the village'. For Diepsloot, those elements of both identity and ecological function will be found in the discarded marshland valley at its core.





The 'Bridge Too Far' project on the Po River, Maosi, Gansu Province, China is a good example of a simple structure for crossing a flood prone river. (Sinclair & Stohr 2006, p.274)



French Nord coal basin rehabilitation project: Wetland parks and bridges. (Topos, #56, 2006, p.25)

11.CONNECTIVITY: CONNECTIONS BETWEEN SIDES, CONNECTIONS BETWEEN 'FORMAL' AND 'INFORMAL' LAYERS.

It is proposed that the first step in developing a strong network of community infrastructure will be to increase connectivity and permeability within Diepsloot. An analysis of the street systems of Diepsloot has identified a division between the two sides of the marshland corridor. Informal paths of pedestrian travel have been mapped. Those most connected to formal road networks have then been selected to become the sites for future road or pedestrian bridges. It is proposed that these bridge connections become the catalysts for development of the water harvesting strategy, public open spaces, refuse collection routes and possibly sites for agriculture and civic buildings within the marshland corridor.

Theories of Kevin Lynch have helped to explain in spatial ways the process of understanding many cultures have had, or seeked to develop in their environment. Lynch talks of 'nodes' 'paths' and 'districts' that orient people in their environment. Together, Lynch proposes, these elements create an 'environmental image' that at its best can give a sense of emotional security and at its worst the terror of being lost in the world.

Norburg Schulz (1984, p.172) notes that 'An urban valley settlement represents a center which gathers the surrounding space. This is achieved by introducing an axis across the valley, mostly in connection with a ford or a bridge point.' In Diepsloot, proposed crossing points or roads/paths and their associated spaces would serve to gather formal and informal

spaces and systems together.

One of the main problems with the central marshland area is that it is difficult to cross. Observations are that although there are several formalised crossing points, they are too far away from most people to be used. In Johannesburg, 30% of all journeys are taken by foot yet in Diepsloot, this figure would be far greater. People crossing between the reception area and the facilities of Diepsloot West are not catered for with any formalised crossing point and have worn tracks through the mud.

This design proposes eight new formalised connection points. These connections would be one of the first phase projects. They prevent dangerous crossing of the marshlands, and create a focused path of movement. They connect informal with formal and, most importantly, this connection takes place within the central marshland corridor, the new spine.

The Lutschine River Tract project in Switzerland by Anna Buchwald and Laura von Minckwitz deals with an occasionally flooding river system. They introduce v shaped obstacles in the flood plain that over time gather sediment and enable vegetation. A more defined river and land system is created by the river and the placed obstacles. (Giro 2007, p.70-76)

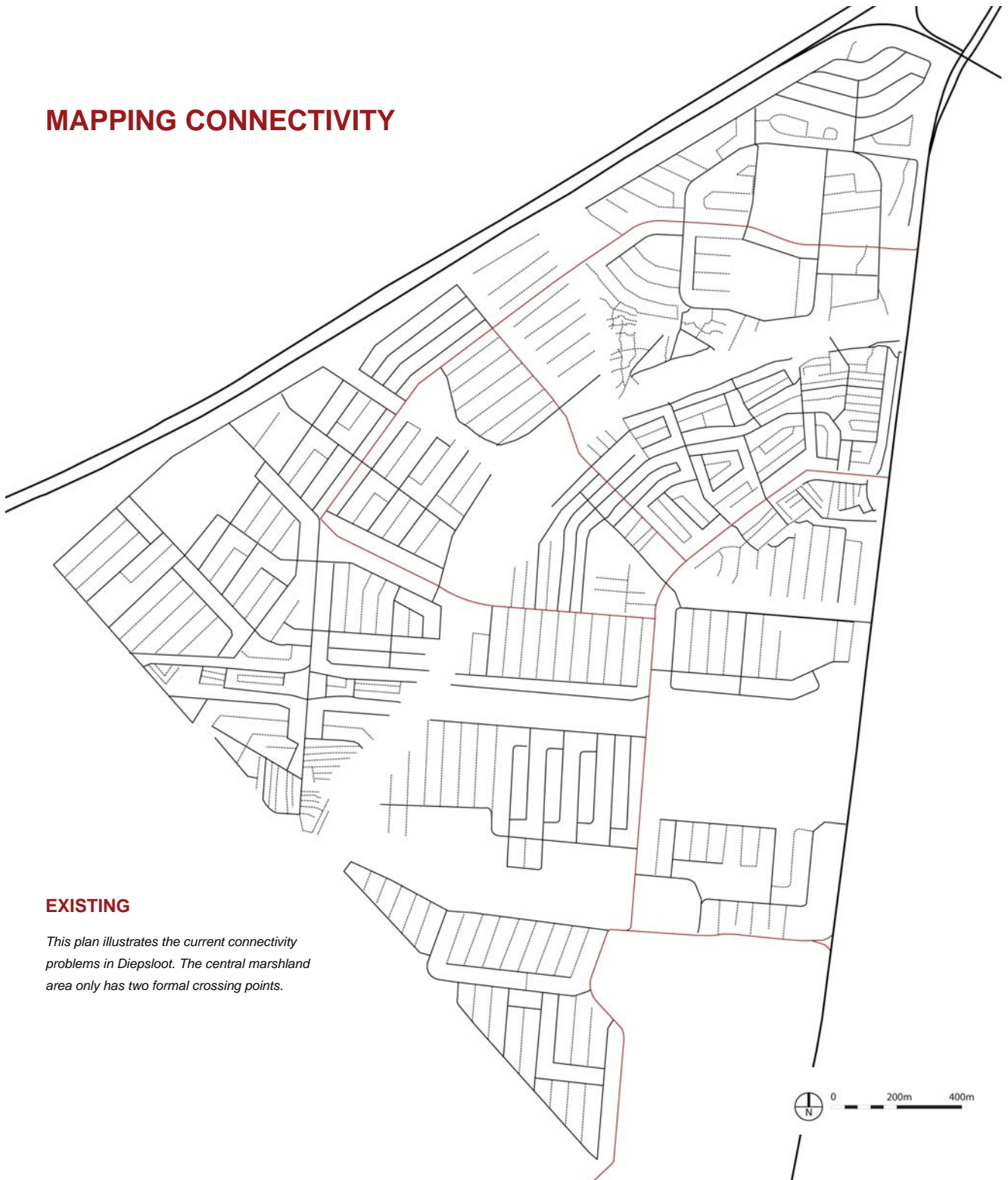
It is proposed in Diepsloot that the connectors themselves will become carefully formed obstacles that can be built against with extracted fill to form a more simple and controlled river and flooding pattern. In this way the connectors become catalysts for a matrix of riverside

public spaces, future agriculture plots and environmental management systems that occur at key overlaps between formal and informal settlement zones.

The idea is that these bridges are designed and built by community and internal South African experts. This design framework offers suggestions for their positioning and phasing. Bridge structures could be porous gabion and steel constructions making them simple to build and eliminating the problem of either damming the river or being washed away in times of flood.

The 'Bridge Too Far' project on the Po River, Maosi, Gansu Province, China is a good example of this type of structure for crossing a flood prone river. This bridge does not attempt to breach the highest water mark, instead it is a porous structure of gabions that can be used 95% of the year. (Sinclair & Stohr 2006, p.273) Gabion construction also means that locally sourced stones can be used and construction, maintenance and future reconstruction can be undertaken by locals as part of a government employment programme.

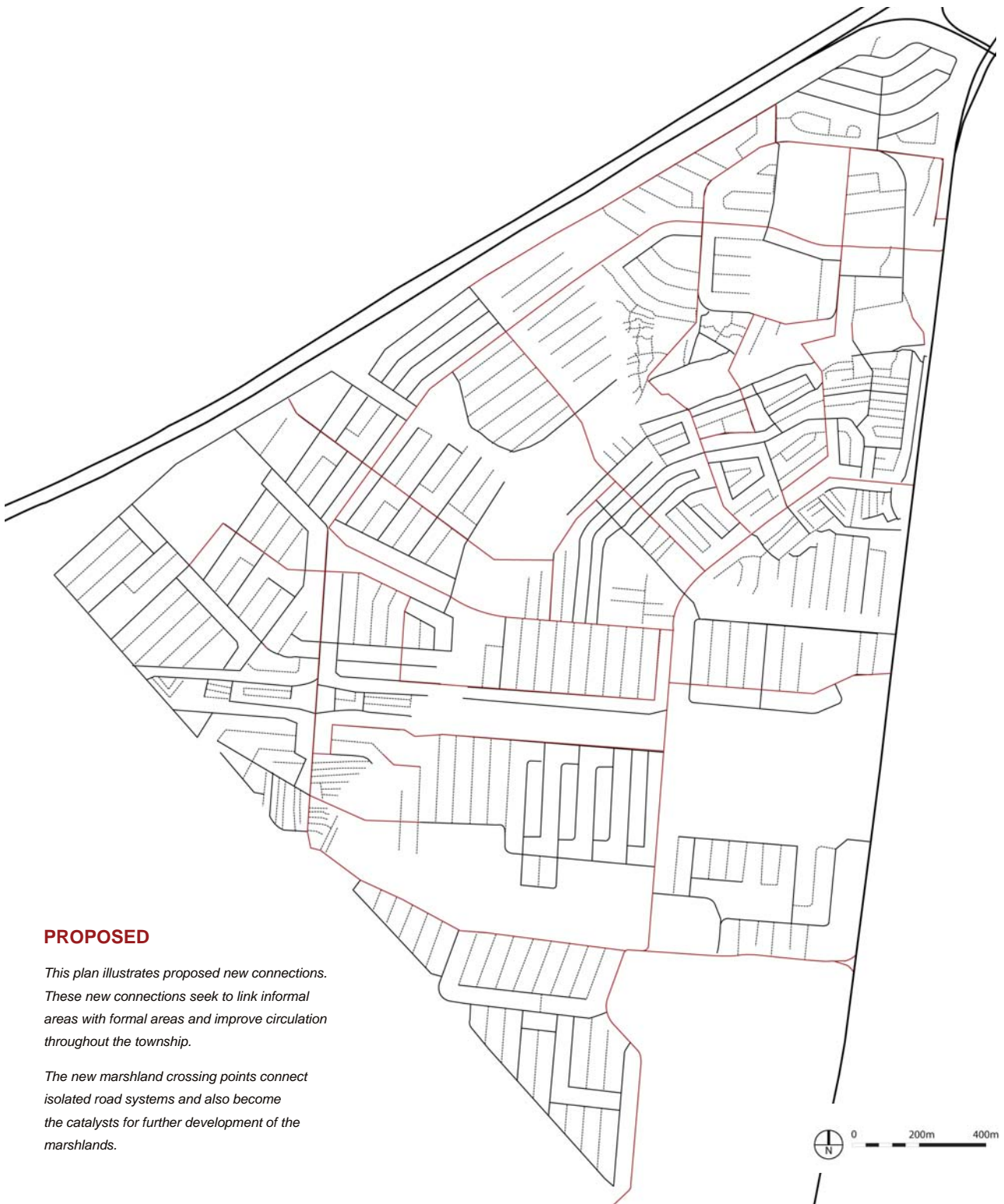
MAPPING CONNECTIVITY



EXISTING

This plan illustrates the current connectivity problems in Diepsloot. The central marshland area only has two formal crossing points.





PROPOSED

This plan illustrates proposed new connections. These new connections seek to link informal areas with formal areas and improve circulation throughout the township.

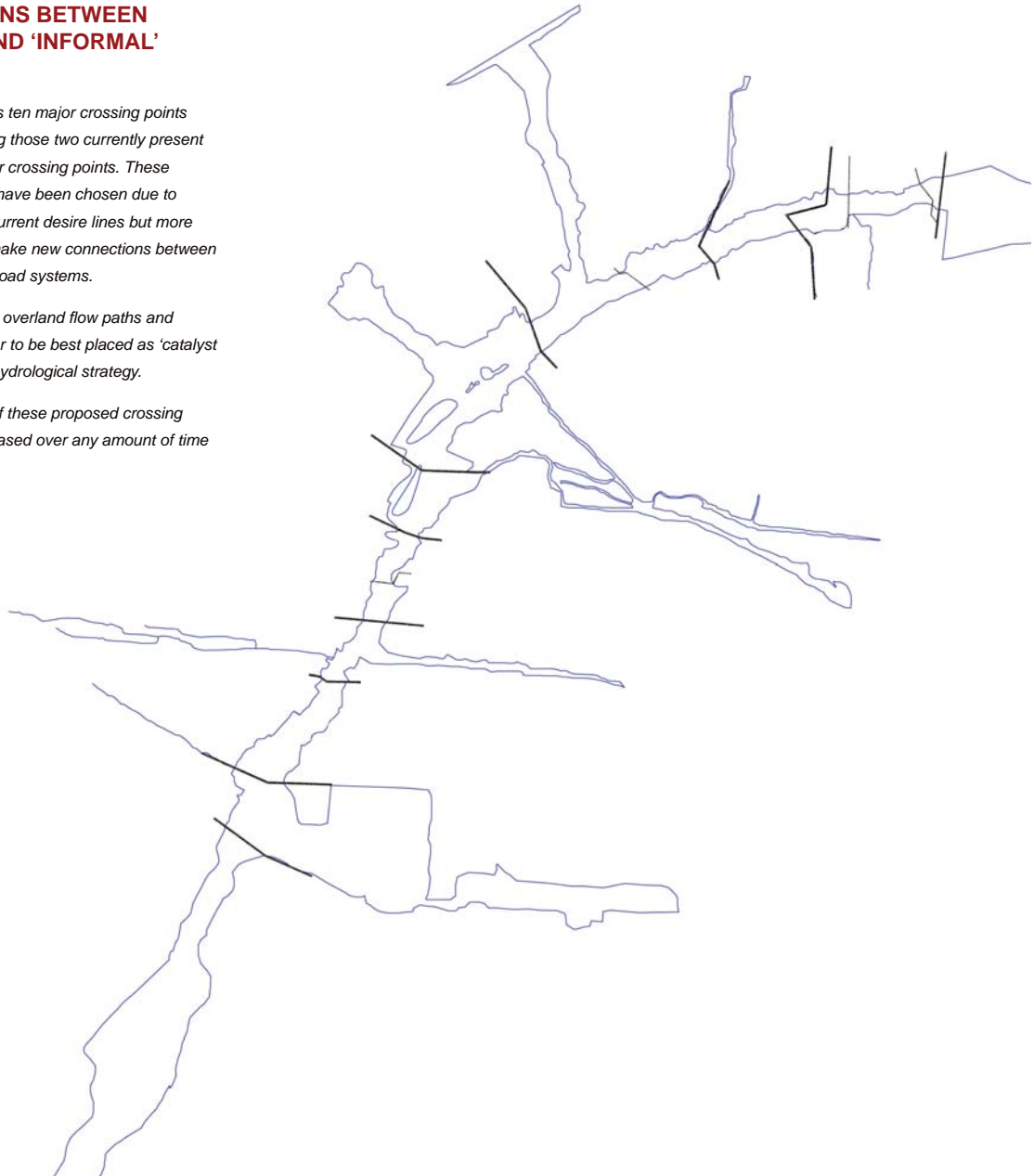
The new marshland crossing points connect isolated road systems and also become the catalysts for further development of the marshlands.

PROPOSED CONNECTIONS BETWEEN SIDES, CONNECTIONS BETWEEN 'FORMAL' AND 'INFORMAL' LAYERS.

This plan illustrates ten major crossing points proposed, including those two currently present and also four minor crossing points. These connection points have been chosen due to their proximity to current desire lines but more importantly, they make new connections between poorly connected road systems.

They also relate to overland flow paths and topography in order to be best placed as 'catalyst obstacles' for the hydrological strategy.

The construction of these proposed crossing points could be phased over any amount of time



**NEW CONNECTIONS IN
CONTEXT**

*This plan shows the proposed connections in
context.*



12. WATER MANAGEMENT AND ENVIRONMENTAL IDENTITY

Soft water is not an inexhaustible resource. It makes up less than 0.1% of the world's water and continually circulates through the process of evaporation and rain. Because wastewater is a component of this cycle, water has the capacity to transfer the negative effects of urbanisation to receiving waters far away from initial pollution. Eventually, because of the cyclical process, the negative effects of wastewater pollution are felt on humans once again. In Diepsloot, due to its degraded environmental setting, these negative effects are felt at their source.

World water consumption is constantly increasing and varies throughout different parts of the world. A European uses 70 times the amount of water as a citizen of Ghana, an American roughly 300 times more (Izembart & Le Boudec 2003, p.14). Waste water treatment is essential for all settlements in order to protect and best use the small supplies of water the world has access to.

Although the treatment of waste water through natural processes has been understood since the times of ancient Greeks and Chinese, techniques have been researched and optimised since the 1950s. Fairly low maintenance and inexpensive solutions for the treatment of wastewater are now gaining popularity around the world (Izembart & Le Boudec 2003, p.15).

Although simple reinstatement or construction of reed beds will have its limitations in an established city system, where such environments are already present there are many opportunities

for improvement of degraded marshland and wetland systems. During times of flood, the water in Diepsloot's central marshland rises and floods the surrounding lands. Residents of the reception area in particular are located often within the flood line and there have been instances of property destruction and even several fatalities associated with flash flooding in the area. Examining the hydrology of the area as a whole, natural water flow is one of the major organisational elements.

In the case of Diepsloot, its location in a marshland makes it a perfect environment for water quality improvements and possibly even reuse of treated grey water for agricultural irrigation.

THERE ARE SEVERAL STAGES IN THE TOTAL WASTEWATER TREATMENT CYCLE.

1. Pre-Treatment: Elimination of large solids, screening, grit and oil removal. In Diepsloot's case, this process must be linked to the recycling and garbage disposal strategy and also to an improved maintenance strategy for broken or blocked sewerage and stormwater infrastructure. At present these two maintenance factors are the single greatest source of pollution of the central marshland corridor.
2. Primary Treatment: Involves the separation of suspended solids. In Diepsloot this could be achieved through isolated lagoons and filtering through reinstated planting of wetland beds.
3. Secondary Treatment: Elimination of carbon pollution (organic matter). Once again, filtering plants can perform this task.

In Diepsloot the system must be designed so that in low rainfall months, water can still move through and dilute. High temperatures and sunshine can reduce the amount of oxygen required for this step.

4. Tertiary treatment: Elimination of nitrogen and phosphorous. In planted filters and marshlands, parasites and pathogens can be eliminated through exposure to ultraviolet rays (sun) and filtration through plants and sand/soil. Aeration is also suggested for maximum ultraviolet exposure. This can be incorporated into the process through small fast flowing waterfalls or water films. In Diepsloot there is the potential to create such elements with associated damming around current and proposed bridge connections. This step can also be achieved through the use of ever-shallower settlement ponds ranging from 1200mm deep to 500mm. This process is known as lagooning and is perhaps the most simple method for large scale application in Diepsloot.

In many locations, streets have become large, heavily eroded storm and waste water channels. They are places where rubbish collects and unhealthy water lays stagnant. For these streets a kind of street swale system is envisioned. A series of linear rain gardens will become vegetated sponges for the polluted water. Not only do these rain gardens slow the water in periods of heavy rain, they also begin the water filtration process before the water has even reached the central marshland. The swale systems also introduce further elements of urban green into the township, creating pleasant street environments.



Despite its current condition, Diepsloots central marshland should not be piped and removed. The corridor should be reinvented as an open space that Diepsloots residents can enjoy while retaining its ecological function and 'genius loci' as a marshland. Revitalising the central marshland would reverse the negative sense of place and begin to create a network of environmental / recreational infrastructure at key links between formal and informal. (Image: Tyrrell 2007)

A swale and wetland system should be incorporated into any further urban extensions of Diepsloot.

The final system for application here would have to be designed in detail with local and perhaps international experts. With most of these systems there would also be some additional maintenance required in the removal of excess sludge every ten years or so. This again should form part of the maintenance contract returned to the people of Diepsloot by the government.

Close by in Soweto, a wetland revitalisation project is being undertaken by the local group 'Working For Wetlands'. Leader Irvin Ndumo and a team of sixty are restoring the Klipspruit river which flows into the Klipspruit wetlands. The functioning of this system is of great importance. For over a century the three thousand year old peat soils and wetland have treated and retained most of the Witswatersrand regions sewage and gold mining pollution, which could be released downstream if the wetland dies completely. This is a vast project worth an estimated tens of millions of Rands. The local expertise built here should be transferred to the Diepsloot community as part of the capacity development process.

Beyond actual re-use of water, the revitalisation of the central marshland of Diepsloot will have broad community benefits. Access to dangerous water can be discouraged. If the central corridor has a community use and benefit, people will have less incentive to build upon it. Plant life can re establish creating a cooler microclimate in the summer, bird

life will return to the site and, as previously discussed, a positive environmental identity for the community can be fostered. 'Marshes are flood storage areas, aquifer rechargers, the home of wildfowl and often both spawning and breeding grounds.' (McHarg 1992, p.56) This scheme will bring broader ecological benefits to the wider region.

Programs proposed in the central spine such as public open space and productive agricultural land can work well within such ecosystems. As McHarg (1992, p.58) states: 'In principle, land use policy for marshes should reflect the roles of flood and water storage, wildlife habitat and fish spawning grounds. Land uses that do not diminish the operation of the primary roles include recreation, certain types of agriculture and isolated urban development.' There are also broad reaching possibilities for Diepsloot as a pilot project leading the way for other informal settlements on what has been regarded as marginal land throughout Africa and the world. Wright (2007, p.81) comments that 'Informal settlements often encroach on environmentally sensitive areas. Could protection generate jobs for local residents, rather than demands for clearance and relocation?'

Water management is one of the major challenges facing Diepsloot and extends beyond the pollution of and danger posed by the central marshlands in its current state. It is also essential to reduce the settlements reliance on potable water. Significant water losses were noticed, in the informal settlements in particular,

from the shared flush toilets / tap water stations and also from the cisterns points. The water often leaks from bathroom flush boxes where the water refill keeps recharging continuously and tap water flow is often clogged by food and other solids that result from washing. At cistern points water is simply lost in the process of filling up and carrying buckets back to the household. Such losses drain down to the floodplain, carry large volumes of rubbish and mix with grey water and pollutants creating a very unhealthy environment.

These losses represent a waste of an expensive and precious resource and potable water frequently runs out leaving those who did not or could not collect, without water sometimes for days. The government plans to provide extra water by installing an additional line to double the volume. This must however be coupled with an education and maintenance program, reduction of water losses and creation of awareness about the scarcity of the resource.

The region is vulnerable to flash-flooding during the rainy season (November to March). Shacks have been washed away and community members have expressed their fear with regards to flooding. The dense and fast occupation of land in Diepsloot has lead to a much lower permeability of the soil. This has drastically reducing the concentration time and caused the water runoff to flow much faster to the flood plain contributing to very sudden growths of the river discharge.



Above and Below: A river system in Kyoto, Japan has been configured so that for most of the year when it is not flooding, it becomes a beautiful urban park where many people gather and enjoy nature within the city. (Images: Tyrrell 2007)





Above: One of the many deeper marshland areas in Diepsloot that could easily be configured into a healthy and functional wetland systems such as that pictured below. (Images: Tyrrell 2007)



Above: Wetlands, natural and artificial are often reconfigured to become enjoyable recreational elements in parks and urban plazas. (Point Fraser Wetland, Topos issue 59, 2007, p. 16)



Above: Many streets in Diepsloot have been heavily eroded by overland flow. Rather than piping these flows under roads, vegetated bioswales such as the one pictured below could be introduced into the street network.



A vegetated bioswale in Victoria Park, Sydney. This swale captures stormwater, slows it down and the plants remove pollutants. These swales become important green elements in the streets.



Above: A simple rain garden to slow and treat water also becomes an important element in a park.

Individual rainwater harvesting should be taken into consideration as a way of reducing reliance on potable water and, at the same time, reducing water flow to the flood plain during heavy rains. Rainwater harvesting systems are used in urban areas in many parts of the world, the most suitable system for Diepsloot consists of collecting rainwater from house roofs for various domestic uses. Ideally every RDP household could collect roof water and store it in tanks of varying capacity depending on the roof areas.

The informal component of Diepsloot presents limitations for implementing these systems. This is due to factors such as limited roof areas for collection, difficulties in installing gutters on roofs made from scrap metal and the presence on the roofs of objects that secure the roof itself from wind or are simply stored for lack of space. It would be more appropriate to limit the use of these systems to the RDP

houses where space is less of a constraint and gutters are already provided. Water tanks should be included in the design of new RDP house typologies such as those pictured earlier.

Non potable water collected can have many uses such as irrigation and cleaning. At present, scarce potable water fulfils this function. In addition to this, most of the RDP houses are higher in the catchment than the informal settlement of the reception area. The provision of water tanks becomes a flash flood mitigation tool as water is slowed down through its capture in many tanks.

As there are long dry periods, dust and dirt are likely to cover the roof causing the first rain after a dry period to 'clean' the roof and carry suspended solids into the tank. It is advisable to include a simple first flush diversion system.

Depending on the size of the home and the amount of rain in the region, it is possible to harvest significant amounts of rainwater and therefore make considerable savings on water supply systems. The rainfall pattern of Johannesburg – considered to be similar to Diepsloot – shows that from November to March rains are more abundant, whereas from June to August there is less than 10 mm of rain per month in average. The following table indicates the quantity of water that could be harvested per month with two different types of RDP houses.

	Precipitation[mm*]	Harvested rainwater from roof [Liters**]	
		32 m2 RDP house	60 m2 RDP house ***
Averagemonthly			
January	125	3200	6000
February	90	2304	4320
March	91	2330	4368
April	54	1382	2592
May	13	333	624
June	9	230	432
July	4	102	192
August	6	154	288
September	27	691	1296
October	72	1843	3456
November	117	2995	5616
December	105	2688	5040
Total(lin/m)	7130	18253	34224

* This precipitation information is based on monthly averages for the 30-year period 1961 – 1990 for the city of Johannesburg (South African Weather Service – www.weathersa.co.za)

** using a runoff coefficient of 0.8 (ASCH, 1992)

*** two of the four types of RDP housing that are to be constructed by the end of 2007 in Diepsloot (http://www.joburg.org.za/2005/jul/jul13_housing.stm)

(Unpublished research Giuntoli 2007)

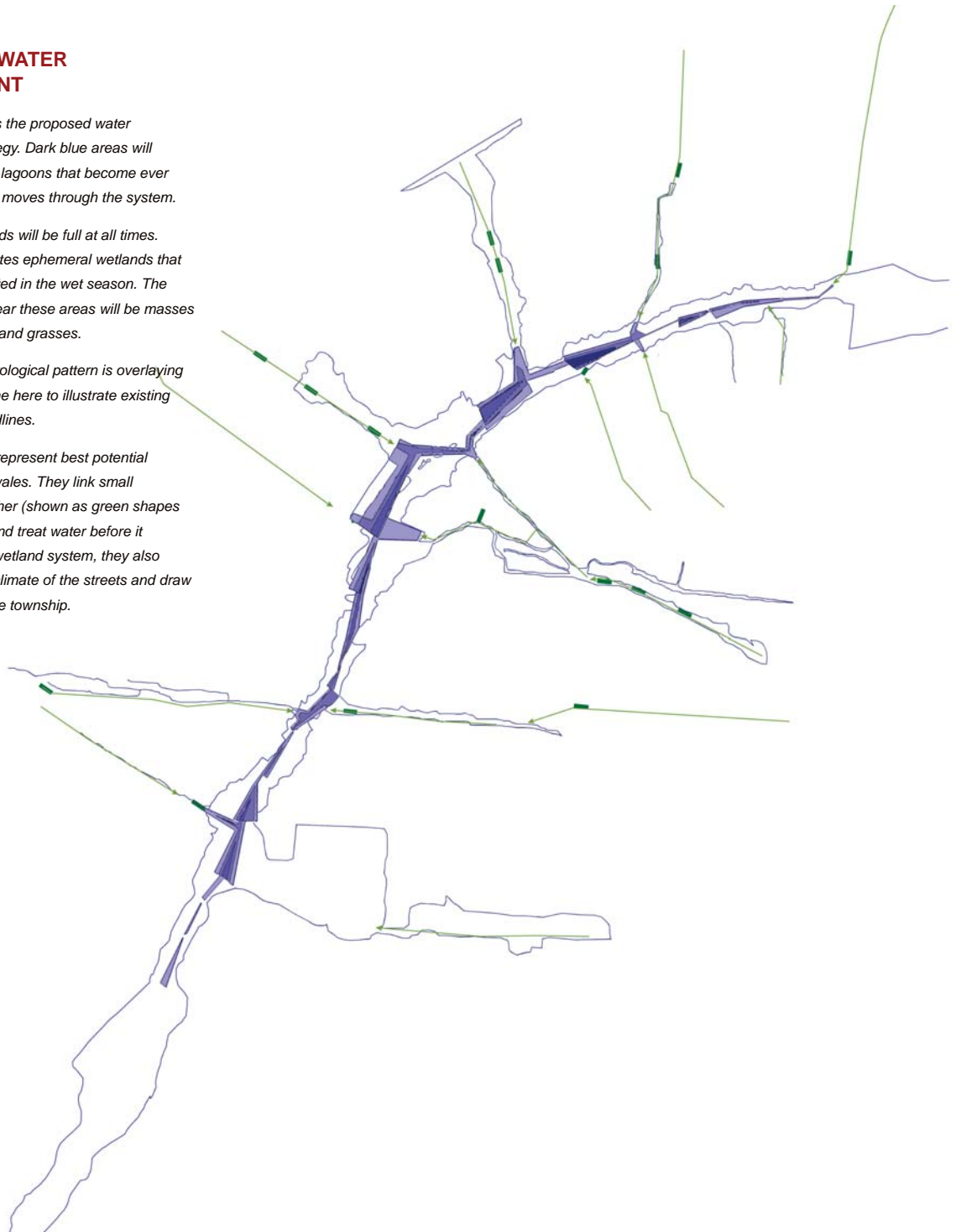
PROPOSED WATER MANAGEMENT

This plan illustrates the proposed water management strategy. Dark blue areas will be deeper wetland lagoons that become ever shallower as water moves through the system.

Darker blue wetlands will be full at all times. Lighter blue illustrates ephemeral wetlands that will only be inundated in the wet season. The remainder of the year these areas will be masses of sedges and wetland grasses.

The proposed hydrological pattern is overlaying the existing floodline here to illustrate existing and proposed floodlines.

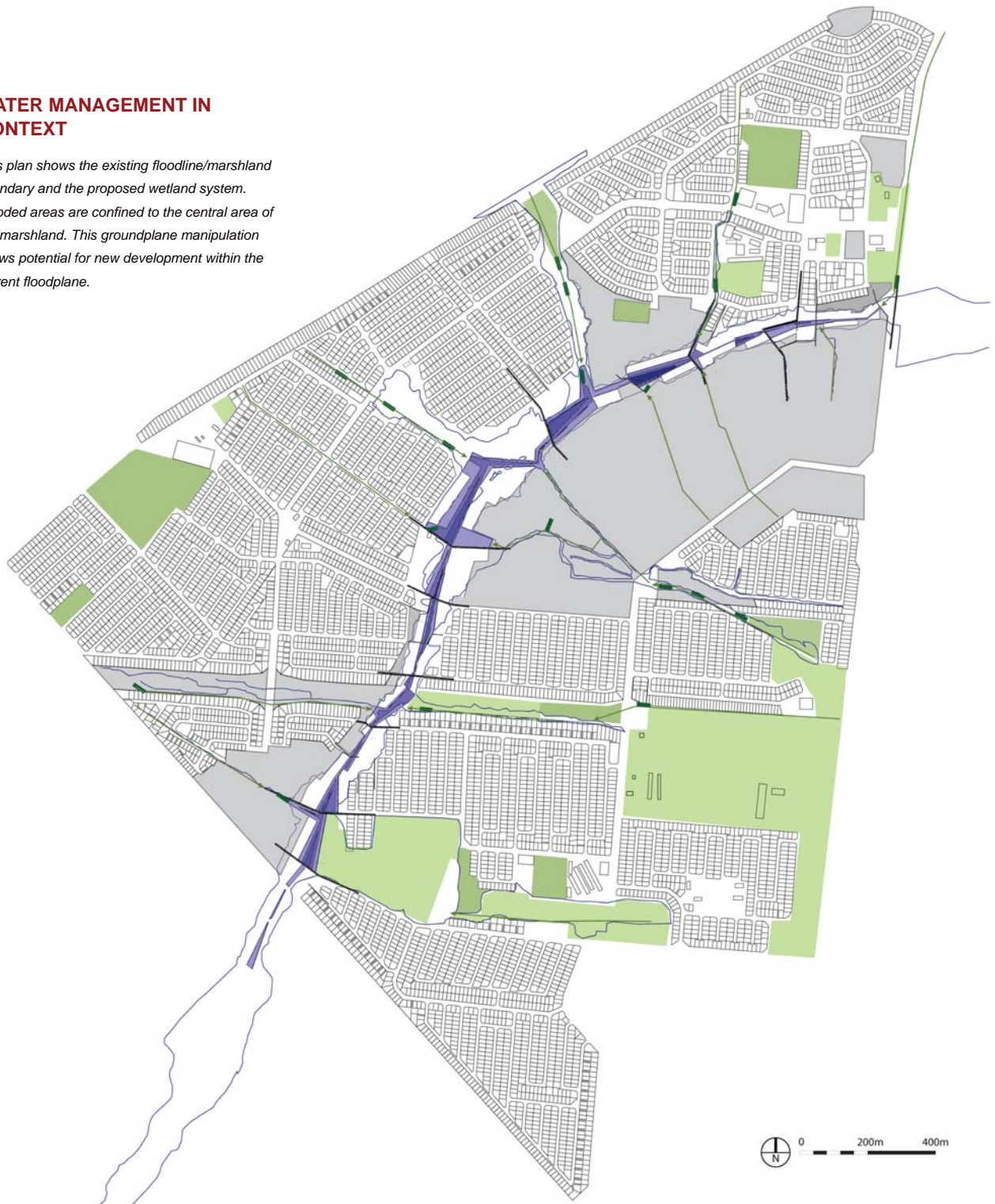
The green arrows represent best potential locations for bio-swales. They link small 'raingardens' together (shown as green shapes here). They slow and treat water before it reaches the main wetland system, they also improve the microclimate of the streets and draw planting through the township.



WATER MANAGEMENT IN CONTEXT

This plan shows the existing floodline/marshland boundary and the proposed wetland system.

Flooded areas are confined to the central area of the marshland. This groundplane manipulation allows potential for new development within the current floodplane.



PROPOSED OPEN SPACE

This plan illustrates proposed parks and public open spaces. These spaces relate directly to the proposed crossing points creating community spaces at those areas where formal and informal systems have been linked by the new connectors.

This attachment to new crossing points is key to the public spaces. They become areas with the highest chance of use by all members of the Diepsloot community.

The structure of the connector bridges/roads should be designed in detail so as to allow the creation of this public land through backfilling of excavated material against the road structure. This will allow a logically phased development that can be completed over any amount of time.

These open spaces include a large central park with a football field. Other spaces are large enough for many formal and informal recreational uses. Such programs would be generated by the community.



OPEN SPACE IN CONTEXT

This plan shows the connector roads, their effect on the hydrological system and the proposed public open spaces that relate to both proposed systems.



13. URBAN AGRICULTURE

Throughout Diepsloot there are several small-scale agricultural initiatives. These are mostly growing leafy vegetables. They are often associated with a small informal vegetable store. Although there is an interest and expertise in agriculture, there is not enough land secured for any large-scale endeavors. At present, agriculture is only an informal activity. Throughout developing countries, it has been proven that improved agriculture results in more and cheaper food and an increase in jobs. In Diepsloot, a component of the central river space could be converted to productive agricultural land. Due to the long-term pollution of this area, before agriculture is considered, soil must be tested and rehabilitated. 'Soils vary in their productivity for agriculture as a function of texture, organic matter, chemical composition, elevation, slope and exposure.' (McHarg 1992, p.56) As part of the long term phased approach, the central marshlands project could be phased so that with each stage of development, some form of land rehabilitation is achieved.

Fresh Kills parkland in New York is an example of this type of phased land rehabilitation model. Previously, the site was the world's largest sanitary waste dump. Now it is in the process of transformation into 2200 acres of public parkland, tidal marshland and creeks. Fresh Kills is a landscape scheme that was conceived as an ecological rehabilitation project that could not be designed; rather it would evolve over a six-stage process taking thirty years to grow a landscape and its healthy ecosystems. Rather than importing uncontaminated topsoil,

a process of 'in-situ strip cropping' was proposed. Crops are planted on alternating strips that follow the contours of the land. These crops control erosion and retain water for crop growth. The crops are tilled back into the soil and through a series of phases, renovate the soil profile. Organic content and soil depth are increased whilst compacted soil is aerated. Native grasses begin to re-seed. The important part of the Fresh Kills landscape is that the rehabilitation phase of the parkland is as important as the final result. The positive process of transformation and improved health is read in the landscape itself as the process takes place. The key techniques used here are soil making, succession planting and landform manipulation. (Corner 2005, p.14-21)

Despite urban agriculture's positive outcomes for food security, financial prosperity and skill development, its large-scale implementation may encounter initial difficulties in Diepsloot. Consultation with residents in 2007 suggested that some residents felt that they had moved closer to the city so as to escape the rural lifestyle and were opposed to such farming work. Others saw ownership of produce and possible theft as problematic, although there is no evidence of theft occurring at the current small-scale enterprises.

Globally however, there are many successful examples in developing and developed countries where urban agriculture has and is being tested. In Caracas for example, near the central park, there is a government supported scheme to grow vegetables in the city.

Although mainly as an education project to teach people how to grow food in confined conditions with one metre of soil, land reforms have been initiated along with government supported agricultural collectives. The government is attempting to cut down the dependency on imported food. (Brillembourg et al. 2005, p.114) Through the process of reducing dependency on others, community capacity can be developed.

Below: Informal economy operates in Diepsloot. Most of these are small survivalist enterprises. (Image: Tyrrell 2007)





Left: A small food store sells potatoes imported from Pretoria, a transport cost that could be easily eliminated. Some of the leafy vegetables grown in the plot pictured below are sold at this store. (Image: Tyrrell 2007)



Left: This is one of several small agricultural plots set up by individuals in Diepsloot. This one is affixed to the small store above. (Image: Tyrrell 2007)

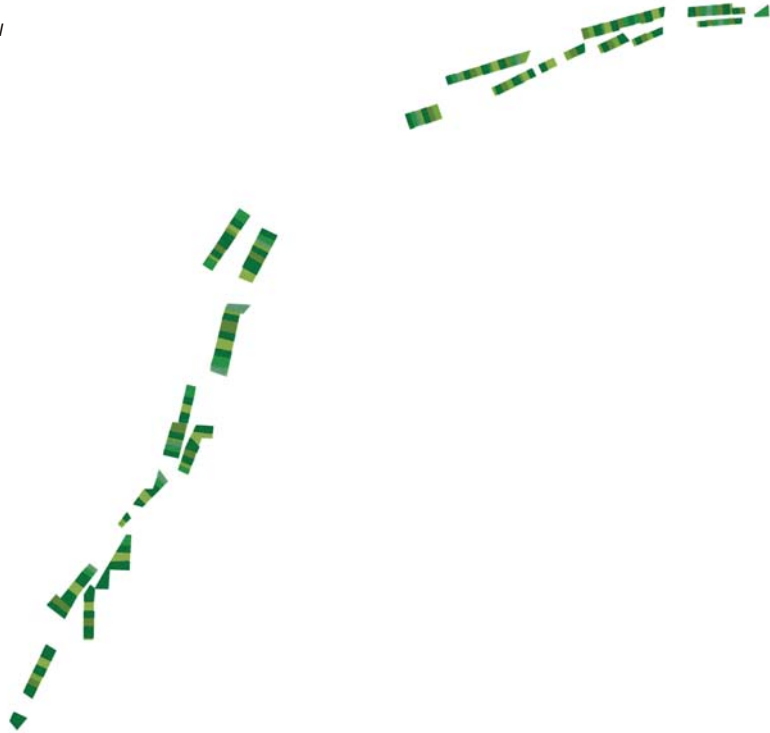
PROPOSED AGRICULTURAL PLOTS

This plan illustrates the proposed location of agricultural land in the central spine. These pieces of land are the upper terraces of the proposed hydrological system. They may or may not be able to use the treated grey water from adjacent wetlands for irrigation. This will depend on the water quality achieved by the hydrological treatment system proposed earlier.

The location of agricultural land is proposed between the public spaces further from the proposed connections.

A large area of productive land will be achieved through this scheme. This proposal will significantly raise levels of food security, employment, wealth and community cohesion/empowerment.

Formal recognition and supply of such land for agriculture will begin to move informal business ventures beyond survivalist enterprises. This capacity lift is the first step towards inclusion of Diepsloot in the 'formal' economy of Johannesburg.



PROPOSED AGRICULTURAL PLOTS IN CONTEXT

This plan shows the proposed location of agricultural lands in relation to other elements of the proposal. Note their proximity to informal settlement areas.



FURTHER PROPOSED CONNECTIONS

This plan illustrates further proposed connections through and beside the new community river corridor.

These connections unify the various public spaces and become 'parkland promenades'

They are also important elements in order to increase safety through public surveillance of open space.



PROPOSED CONNECTIONS IN CONTEXT

The proposed links bring overall connectivity between all the proposed elements.



14. SITES FOR CIVIC BUILDINGS, RETAIL, RECYCLING AND NEW RESIDENTIAL TYPOLOGIES

As well as improved connectivity and public realm, it is proposed that the central marshland spine will also have the potential to introduce public buildings such as police stations, market buildings, schools, childcare facilities and transport nodes near the main road. Once the popularity of the central marshland area begins to grow, informal commercial activity will begin to occur. In turn, more formal commercial interventions and new compact housing models should be generated within these areas.

POTENTIAL SITES FOR CIVIC BUILDINGS

Potential sites for community buildings are illustrated in this plan. Similarly to the location of public open space, these locations have been proposed at key points where new connections or spaces will draw together formal and informal layers of the township.

On some occasions, the proposed location will complete development blocks and give them a new face in the central spine. These buildings would be perfectly located for a variety of community and institutional uses that are planned for Diepsloot.

The buildings proposed at the eastern end of the river corridor are located so as to become landmark structures for the new development. They could house market or transport nodes or both. They are key to linking Diepsloot to the outside world of Johannesburg via William Nicol Drive.



PROPOSED SITES FOR BUILDINGS

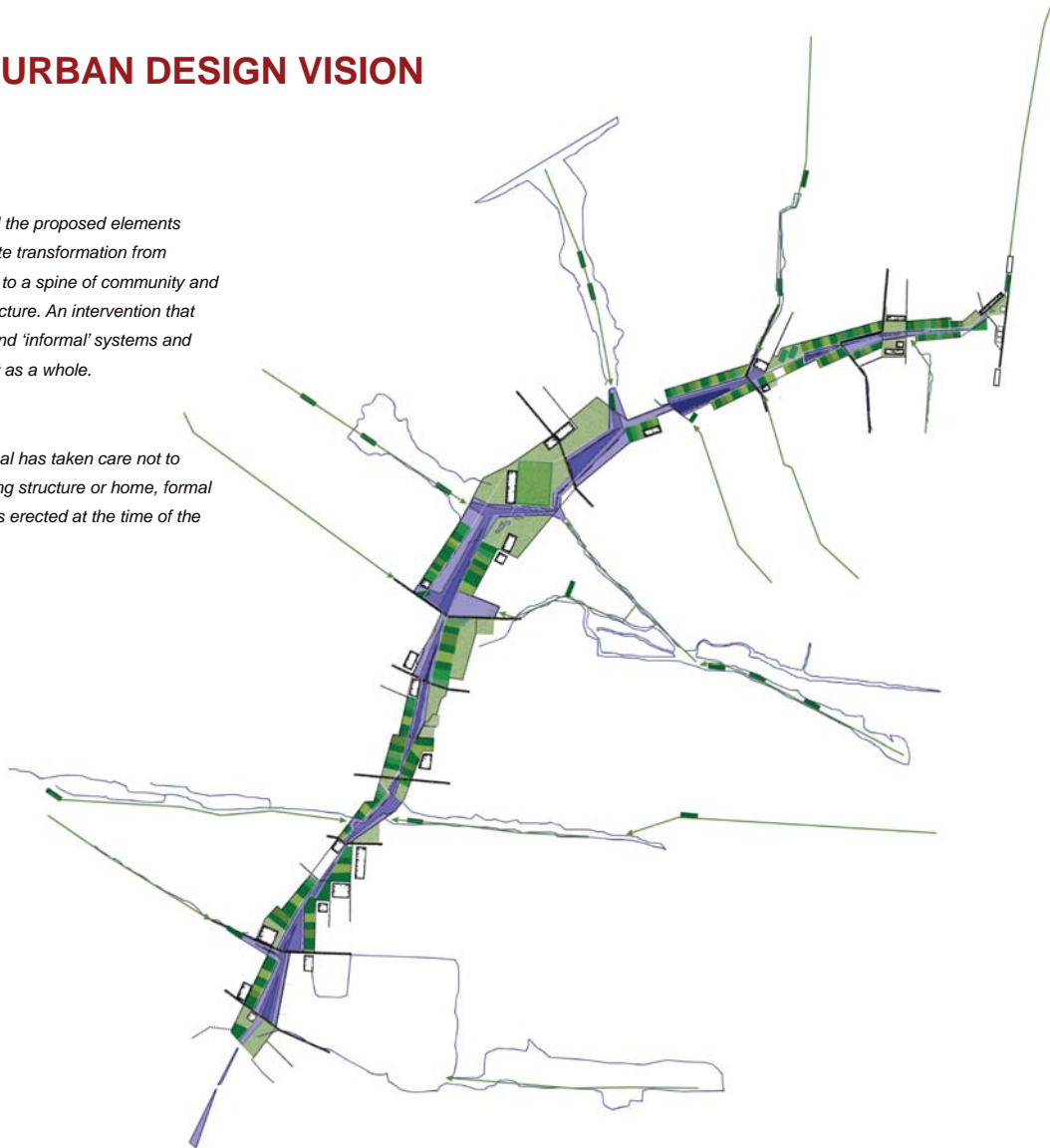
The proposed building sites relating to proposed key crossing points and open spaces. These buildings also relate to the grain of Diepsloot's existing built form and road systems, often completing or giving a face to incomplete blocks.



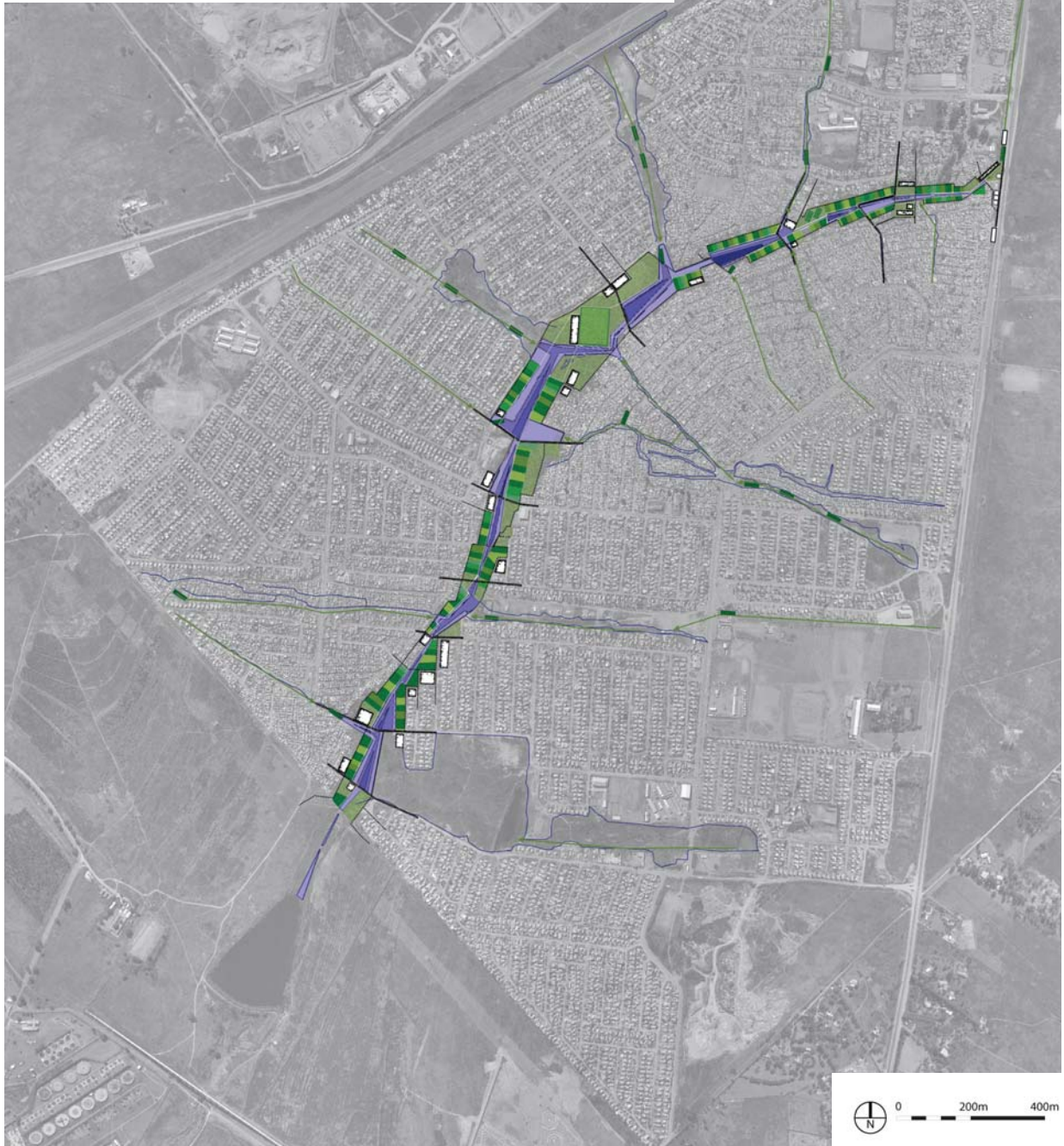
15. THE URBAN DESIGN VISION

This plan shows all the proposed elements together. A complete transformation from polluted wasteland to a spine of community and ecological infrastructure. An intervention that connects 'formal' and 'informal' systems and develops Diepsloot as a whole.

This design proposal has taken care not to displace any existing structure or home, formal or informal that was erected at the time of the design.



THE URBAN DESIGN VISION IN CONTEXT



16. WHY SHOULD THE CITY OF JOHANNESBURG SUPPORT THIS DESIGN PROPOSAL?

Unlike individual housing delivery, community capacity to formulate policy and execute development can be built through the process of delivery of a shared infrastructure. In this case the proposal for shared infrastructure consists of water treatment wetlands, public space and agricultural plots that will, as a product also contribute to the capacity of the community. The proposal fits with the government's white paper vision on community capacity building, or as they call it: 'people centered development'

4.4.4 People-centred Development:

'Government is committed to a development process driven from within communities. Through its policies and strategies it will encourage and support initiatives emerging from communities or broader local social compacts aimed at equipping and empowering people to drive their own economic empowerment, the development of their physical environment and the satisfaction of their basic needs. Policies must recognise and give effect to this approach.' (<http://www.info.gov.za/whitepapers/1994/housing.htm#4.2>)

Huchzermeyer (2006, p.49) notes that 'The provision of social and economic facilities plays a major role in the objective of empowerment for the 'Informal Settlements Upgrading Programme'. Social development is envisioned 'through the delivery of primary, municipal-level social amenities and community facilities

such as sports fields, community halls etc. (Department of Housing 2005) These statements support the notion of new, community developed public space for Diepsloot.

With regards to the space being proposed on marginal land of the central marshlands, South Africa's 'Informal Settlement Upgrading Programme' provides funding for land rehabilitation. This programme mostly funds 'drainage, stormwater intervention and the engineering of steep slopes' (Department of Housing 2005) Huchzermeyer (2006, p.50) presumes that such intervention is beyond that simply required for development of housing. This technicality is key to this proposal as it is imperative to rehabilitate the land as public infrastructure rather than develop further housing on it.

Further support can be found in Section 13.11 of the Housing Code, which covers the 'General Conditions for Pilot Projects'. It states that areas to be rehabilitated *'typically comprise areas with extremely high water tables, settlements situated on floodplains and settlements located on infill areas or near mine dumping sites/ slime dams'* (Department of Housing, 2005c:31) (Huchzermeyer 2006, p.50)

These excerpts from the housing strategy indicate that the government would in theory support the transformation of the flood prone lands of Diepsloot into community open space and a water treatment train of environmental infrastructure.

One of the first steps in this process, and the step most reliant on the city of Johannesburg will be legal protection of the central marshland for the purpose of community use. Edesio Fernandes (2006, p.242) states that the future success of cities in developing countries 'will depend on how state action through land use regulation and strategies of urban environmental management confront the process of socio-spatial exclusion and growing urban poverty.'

Fernandes argues for legal reform to ensure the 'right to the city'. This proposal for Diepsloot relies on the state providing security of tenure for the use of land to promote this communal right, the right to free access to community space and a healthy environment for all citizens of the world.

17. DEVELOPMENT PHASING

Once government support for community land use is gained, it is proposed that the phasing of this development can then occur at a slower speed. Unlike a building, public space improvement does not need to be completed in totality prior to its use. One of the major benefits of this proposal is that it can be phased as funding becomes available and community expertise is built. Once a master plan for the area is in place and there is local and government authorship / ownership of that plan, there is the potential for it to become a series of smaller community led projects.

The 'Urban Think Tank' experience in Caracas identifies a key principle to be applied to this Diepsloot project; that not everything needs to be completed at once. Wright (2005, p.81) comments on the notion of public space transformation: 'Designated public spaces are rare in these dense informal agglomerations but, once again, it is possible to build on and transform what exists. After all, people everywhere are drawn to spatial incongruities, irregularities and improvisations. A space can bring together citizens whose urban rights have been denied, reaffirming their pride and resistance. A community building or open space is all the more significant in peoples lives if it also provides for everyday needs like childcare, job training and sports' (Wright cited in Brillembourg et al. 2005, p.81).

'One approach to phasing of a large transformation such as the central marshlands scheme is what Ignasi de Sola Morales has defined as 'city acupuncture'

(Brillembourg et al. 2005, p.107) These are localised, small scale projects with direct community benefit. The idea here is that these small projects would be brought together by the agreed masterplan and that they would become more than the sum of their parts through urban design process and product. This city acupuncture has very close similarities to the way the World Bank describes strategic incrementalism discussed earlier.

Phasing of the project would therefore take the following broad direction:

IN THE SHORT TERM:

1. The City of Johannesburg should shift immediate attention away from individual housing supply in Diepsloot and onto community infrastructure supply.
2. The city must enable the security of the marshlands for such purposes.

IN THE MID TERM:

1. Detailed schemes must be designed by local experts with the Diepsloot community fully involved.
2. One section of the entire overall proposal must be delivered quickly. i.e. One connection, one agricultural plot, one storm water treatment wetland, one playground, one meeting place / market area etc.

IN THE LONG TERM:

1. Capacity must be built in the community members themselves. Community must be enabled to build out the rest of the plan with limited reliance on outside experts, yet strong links with the city of Johannesburg.

2. The successes and failures of the project must be evaluated and the process altered in light of these evaluations.

The process should be clearly documented in order to develop a model for similar projects in other informal settlements in South Africa and beyond.



APPENDIX

A PROPOSAL FOR MOVING THE VISION FORWARD

18. CAPACITY DEVELOPMENT

COMMUNITY CAPACITY DEVELOPED BY PROCESS:

When returned to South Africa, it is intended that this design proposal generates discussion and proposes a possible way forward for the development of Diepsloot. For the proposal to develop community capacity, members of the community will be called upon to be part of a series of design workshops with city officials and local NGOs (open to all).

As described in part one, it is essential that there is demand side ownership of the process and product. In early stages, this 'Urban Design Vision' will be presented as a set of loose ideas to promote debate and understanding of current development goals. This design will act as a catalyst for development discussion. The design process will be driven from this point by government and community members, altered and changed as locals provide input and local experts are identified.

Capacity will be developed through the process of building communities experience in community policy management and establishing stronger communication links between the community and the government. It is envisioned that through this process of working together at a broad visioning level, important networks will be built within community and between community and city officials. NGO groups should also be included in this process if possible.

COMMUNITY CAPACITY DEVELOPED BY PRODUCT:

If parts, or the entire 'Urban Design Vision' proposed in part two are adopted by community and government, this scheme could:

- a. Establish stronger environmental identity and sense of place. Providing shared space with a strong sense of locality is essential in building a community. In Diepsloot's case there is the possibility of turning the major boundary within the community into the major binding element of the community and its formal and informal components.
- b. Increase connectivity throughout the township
- c. Improve storm and grey water management through swale and wetland systems on public land, reducing flooding risk and improving sanitation.
- d. Provide safe space for recreation, performance, sport etc.
- e. Increase food security and local economy through community agriculture on public land.
- f. Give a beneficial use to the marshlands that in time will discourage squatting upon dangerously flood prone land.
- g. Encourage the construction of civic buildings and new retail and residential typologies in this rehabilitated central area.
- h. Increase links between formal and informal layers of community and also with the wider city by opening up the marshland corridor to the main road William Nicol

Drive, with transport nodes, landmarks and markets.



It is possible to help develop community capacity in Diepsloot through the process and product of small physical interventions.

This process was tested with success during 'The Global Studio' in 2007 where small scale stormwater repair and maintenance works were instigated by working groups of outsiders and residents and then carried forth by many community members. (Images: Tyrrell 2007)



19. MOVING FORWARD WITH THE PROPOSAL. SOME SUGGESTED STEPS TO SHIFT FROM DESIGN VISION TO DEVELOPMENT TOOL

STEP 1 CONSULTATION PROCESS

Design and conduct consultation processes to involve representatives from local government departments and local community organisations. The consultation processes will facilitate sharing of information and provide a forum for exchange of pertinent ideas relating to the proposed project. This will cultivate a sense of ownership of the project by all stakeholders and interested community members from the initial stages, and a shared sense of responsibility.

STEP 1A PARTICIPATORY DIAGNOSIS:

Hold a small town hall meeting in Diepsloot on a periodic basis. Activities may include drawing up a list to include all stakeholders and interested community members. This list would include their interests and a preliminary assessment of the likely impact of the project on those interests.

Perceived constraints or problems should be noted and incorporated in an agenda. SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis may be used to encourage further dialogue. Community and government rather than external advisors should identify appropriate stakeholder participation.

Less powerful members of the community must be included in the process. Their input should be sought through informal smaller meetings as some of them may be reluctant to express their real views in public.

It may be useful to summarise key stakeholders roles at different stages of the project cycle, in a participation matrix.

Although difficult, attempts must be made to include in the dialogue those opposed to change. There must be a strong position and a plan for managing opposition.

STEP 1B REPRESENTATIVE ELECTIONS AND INFORMATION SUMMARY:

A percentage of the initial interested group may be elected as representatives for the periodic town hall meeting. Their jobs will include following discussions, reviewing information collected and clarifying underlying causes of any major problems.

It is essential to distinguish between individual, organisational and institutional capacity development possibilities and between technical and governance requirements. Problems caused by the defects in the wider institutional or governance environment, for example poor policy framework should be understood.

A tool such as a problem tree analysis may aid in clarifying links between problems, symptoms and real underlying causes.

First phase construction projects must attain some tangible early successes to encourage and maintain support. This is in keeping with a phased building approach similar to the 'city acupuncture' or 'strategic incrementalism' models discussed earlier.

The project must seek to develop in a participatory manner. Commitment to participatory outcomes may be improved by maintaining dialogue and working

in collaboration with local community organisations to prepare performance indicators.

STEP 1C ANALYSIS AND PLANNING STRUCTURE (THE FOLLOWING LIST MUST BE REVISED AS THE PROJECT CONTINUES)

The overall environment

Current social context, issues and challenges, specifically racial mix and the current threat of xenophobic violence

Current economic context

Current political context

Priorities, policy making, individual and organisation capacity building

Key drivers of change

Key stakeholders and their interests

Previous and current capacity building efforts

Expected or desired outcomes from the proposed phase

Incentives to influence commitment and active, constructive participation of key stakeholders

Accountability arrangements

CHECKLIST:

Is the strategy changing?

What are the revised objectives and goals?

What are the revised priorities?

Has developing the strategy incorporated information obtained through consultations with key stakeholders and through SWOT analysis?

Have different gender needs and experiences been considered?

Are the goals and strategy generally understood?

STEP 1D THE DEVELOPMENT ACTION PLAN

An action plan should be designed to include:

Objective and goal outcomes

Expected main outcomes, products or services

Indicators

Anticipated impact of proposed phase

STEP 2. WINNING MAXIMUM SUPPORT FROM GOVERNMENT AND NGOS

Outcomes and the changing development plan should be shared with the government as well as any relevant NGOs. The process of design and delivery should at all times seek to link with the government's informal settlement development policies discussed earlier.

STEP 3. CREATING JOBS

All construction and maintenance employment should be progressively transferred back to Diepsloot residents. Key individuals trained during construction must pass on training within the township and be given incentive to do so.

Local people must be incorporated into the formal development process of Diepsloot in every possible way. This brings essential income to local people and thus creates incentive for hard work and policy support.

20. FRAMEWORK FOR ONGOING EVALUATION

Constant evaluation and re-evaluation of the approach is essential in order to incorporate external environmental variations due to changes in economy, society and globalisation. The way to determine whether the proposal as stated above will actually succeed once implemented is to put into place an appropriate and effective evaluation tool. Evaluation is essential for this Diepsloot proposal, in order that authentic capacity building may be initiated and sustained.

The proposal must have tangible results. As Ghai notes, 'the world community has never been so unanimous in regarding the eradication of absolute poverty as the most important moral, social and economic challenge of our times. But the gap between official rhetoric and concrete measures has seldom been so stark.' (Ghai cited in Maconick 2002, p.13). It is therefore clear that evaluation plays an important role in ensuring that this proposal will not lead to rhetoric but instead will be a base for tangible results.

INITIAL ASSUMPTIONS ON THE EVALUATION METHOD

Before launching into the chosen evaluation method, it is useful to first acknowledge the assumptions upon which the choice has been made. Firstly, the proposed plan for the Diepsloot settlement is one that builds upon the capacity of the settlement and the community within it. Morgan states 'in contrast to program evaluations, those to do with capacity issues come much closer to assessing personal and organisational behavior' (Morgan 2006, p.18). In other words, the

evaluation is necessarily qualitative (Ghai cited in Maconick 2002, p.72).

This has implications for the manner in which evaluation is conducted. It is beneficial to conduct it in inclusive way so that all participants feel a part of the evaluation process, rather than the object of evaluation. Capacity evaluations have a tendency to generate a much higher level of defensive behavior in those being evaluated. It will therefore be necessary to bear this in mind when conducting evaluations regarding implementation of design ideas.

It is reasonable to assume that real progress may not be able to be assessed for many years. There is little agreement on what is a reasonable period within which to assess progress on capacity issues (Morgan 2006, p.18) and therefore it is important that the evaluation method chosen is not time-restrictive.

It is considered important that a range of bodies in Diepsloot undertakes the evaluation. Maconick (2002, p.14) comments that it is essential to ensure the appropriate involvement of national organisations, including local beneficiaries and government authorities, in planning and implementing operational activities, as well as in evaluating their effectiveness, since only then can a significant impact be expected.'

Accordingly, the evaluation method chosen must ensure that a diverse range of groups carries out the evaluation.

THE CHOSEN EVALUATION METHOD:

The proposal explained in section 19 should be evaluated using an evaluation tool similar to the 'Organisational Capacity Indicator' and the 'Institutional Development Framework' (USAID 2000).

PROCESS OF SELECTING EVALUATION GOALS: ORGANISATIONAL CAPACITY INDICATOR:

The Organisational Capacity Indicator is an evaluation method whereby the capacity areas of the group are entirely self defined.

- 1.The consultative process and implementation of the proposal will be made up of a mixture of people from NGOs, Diepsloot and the government. The first stages of consultation will establish a task group who are responsible for the management and execution of the proposal.

- 2.The task group will together discuss and consider their role and the existence of the team. They will identify hopes for the future, which will form the capacity areas that the team works to monitor and improve.

- 3.The group will then develop 'future visions'. These are pictures of the future, and will contribute to the shape of the group. They will contribute to the overall objective that the group will measure itself against its own vision for the future. This is beneficial because they will not be measured by an external standard. This evaluation tool seeks to overcome

problems by ensuring that the evaluation method is fully participatory.

4. From the broad capacity areas, specific indicators are identified.

5. The group then designs a process for assessing itself, the results of which facilitate future progress. The Institutional Development Framework should be used as a flexible guide.

ASSESSMENT TOOL: THE INSTITUTIONAL DEVELOPMENT FRAMEWORK:

1. This evaluation method should focus on five key capacity areas and key indicators identified in the above Organisational Capacity Indicator stage.

2. These key indicators will be rated at one of four states along a development continuum (1=start up, 2=development, 3=expansion/consolidation, and 4=sustainability). Criteria will be put against each stage of development.

3. Through discussion and consensus, the group members then use the criteria to determine where along the development continuum they are situated for each indicator.

Then the group decides which areas are most important to work on and which should be granted the highest priority. The resulting graphic is a visual mark of their targets for the future. This method is suggested as it not only assesses an organisation's capacity but also sets priorities for future improvements.



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- <http://www.reuk.co.uk/index.htm>