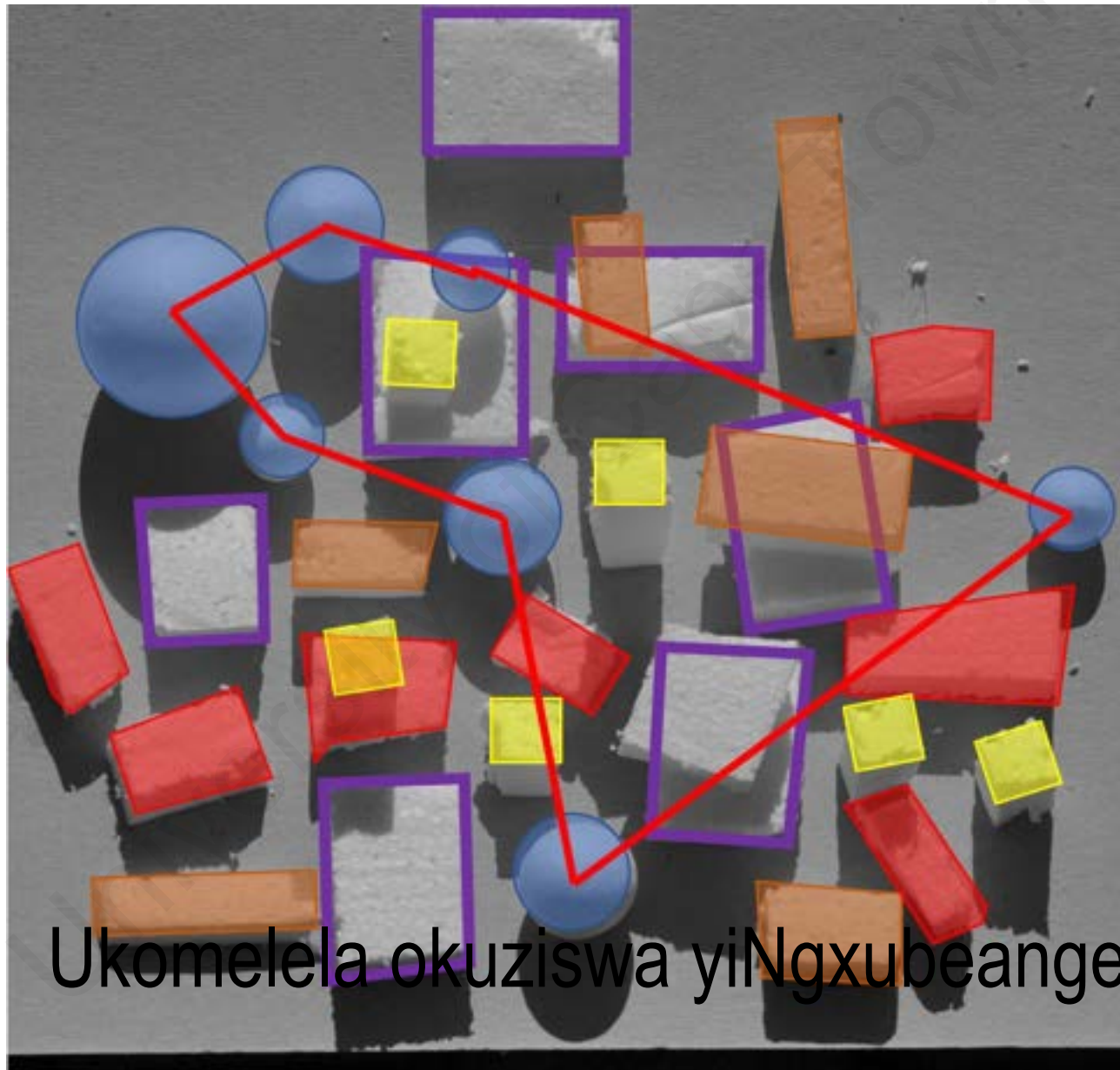


Resilience through Diversity



Ukomelela okuziswa yiNgxubeange

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DISSERTATION TITLE: **URBAN RESILIENCE THROUGH DIVERSITY**

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'Submitted in fulfilment of part of the requirements for the degree Master of Urban Design'
in the
Faculty of Engineering and Built Environment

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60 Credits

Convener/Supervisor: **Dr. Kathryn Ewing**

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DOCUMENT SUMMARY

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DECLARATION

In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertation and thesis, I declare that this dissertation, which I hereby submit for the degree Master of Urban at the University of Cape Town, is my own work and has not been previously submitted by me for a degree at this or any other tertiary institution. I further state that no part of this dissertation has already been, or currently being submitted for any such degree, diploma or other qualification.

I further declare that this document is substantially my own work. Where reference is made to the work of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Signed by candidate

Ntsindiso Charles Nduku

ABSTRACT

The objective of the research is to contribute to the development of the theory and body of knowledge that seeks to address urban sprawl, spatial inequalities, and spatial fragmentation left by the legacy of apartheid planning. I begin my research with the investigation of existing levels of Diversity, and I employ mapping to see the area which reflects more diverse characteristics. Furthermore, I seek to develop a design framework that links the social, economic, and environment. The objective of the framework is to inform the acknowledgement of existing Diversity, the making of sensitive interventions that will improve existing Diversity, and the addition of more diverse elements which will enhance the urban performance of Gugulethu.

Kayatekin, 2019 argues that urban Diversity contributes towards resilient and sustainable cities. He argues that for one to understand the importance of Diversity in an urban context, there needs to be an understanding of the meaning and definition of Resilience. According to Kayatekin, 2019, Landman 2012, there are different meanings of Resilience in urban terms. Kayatekin, 2019 also simplifies the definition into two parts, with one drawing from Material Science and another from Ecology. The fundamental tenet of this argument is the placing of urban Diversity as the cornerstone for cities' Resilience. I likened this perspective to that of Zuniga-Teran's, 2016, point of view, which describes Diversity as a critical element of urban Resilience.

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

INTRODUCTION

More than half of the world's population is currently living in urban areas, and 3 billion people will live in urban areas by 2050 (UN-HABITAT FOR A BETTER URBAN FUTURE).

The Native (Urban Areas) Act of 1923 resulted in naming the streets of NY (Native Yard) and moved non-Europeans to live in locations outside the city boundaries. This resulted in townships like Gugulethu, Nyanga, and Langa in the Western Cape (South African History Online, SAHO, 2017).

This type is a semi-detached single-storey building, sharing a wall with one neighbouring unit. These housing units were built by the apartheid government in peripheral areas of the city for African men who came mainly from Eastern Cape Homelands (Transkei and Ciskei) in search of work. Golden Arrows bus service has been operating in Cape Town urban areas and mainly in townships where the majority of the people do own cars, where they are seen to be providing a more reliable and cheaper service than the mini-bus taxis.

AIM OF THE STUDY

My research focuses on studying urban Diversity to examine its contribution to Gugulethu's Township's Urban Resilience. Through a desktop study and site visits, I looked at existing diversity levels in Gugulethu, which revealed varying pockets and levels of Diversity in certain sections.

OBJECTIVES

To transform Gugulethu into a safer and sustainable place to live. To improve and address urban challenges resulting from urban sprawl and spatial fragmentation. What tools can society use to transform and improve existing poor-performing South African urban systems and mitigate the multitude of future disturbance that threatens the ultimate Resilience of the cities in South Africa?

According to (Cem Kayatekin, page 4, 2019), the growing importance of socioeconomic Diversity necessitates an inquiry on existing metrics used to measure urban performance.

He further argues that instead of density measured per square kilometre or total dwelling per lot area, one ought to count the number of different household types supported in a square meter area of a building.

If a new measuring metric is used, how would it transform the image of the city? Will this fundamentally change the appearance of the city?

RESEARCH METHODOLOGY

The qualitative research methodology strategy emphasizes data collection and using techniques like video recordings, interviews, and site analysis.

This is a powerful way of gathering data, and it is one of the most common qualitative research methods used.

It involves a researcher asking the interviewee questions in a relaxed and honest manner and making some follow-up questions to extract as much information as possible on the research topic (Alan Morris, page 3, 2015).

Site analysis combined with theoretical framework were used as informants for design principle

.

LIMITATIONS

These experts worked in the Gugulethu area in different projects but mainly focused on low-income housing development projects.

Professor Julian Cooke has worked extensively on High-Density, Low-Income Housing in Cape Town Townships like Langa, Gugulethu, and Steenberg Social Housing. Though these were housing projects, their contribution to addressing urban challenges came out in his interview. This session has yielded some exciting results, but only a little ground was covered due to the Covid-19 pandemic impact. Careful management requires the declaration of the purpose of the research up front to make the community understand the difference between actual research and the work that other organizations in the area have undertaken.

Because the research works on a more realistic project, one needs to manage the community's expectations by declaring that the project is just for academic purposes

DESIGN DEVELOPMENT

The area of inquiry stretches along NY3 from Nyanga Junction to Nyanga Taxi Rank. The road starts as NY3 and changes its name to Koornof, 3rd Avenue, and Emme's road when it reaches Nyanga Taxi Rank. NY3 is then divided into four nodes, starting from Nyanga Junction to Nyanga Taxi Rank.

Understanding Cape Town Urban subsystems and Gugulethu's location within that framework is critical to the work I am embarking on of looking at Diversity in Gugulethu.

This systems perspective is informed by the sustainable cities outlook on urbanism.

Urban performance can be deemed positive in how urban environments are equitable

This is noteworthy when considering the state of South African cities, especially regarding the focus case of Cape Town and Gugulethu.

Useful for studies on Gugulethu and in continuation of similar studies on urban systems, this development of a resilience lexicon for reading the city posits as important the centrality of Diversity, whether in spatial flexibility and adaptability or even environmental Diversity in the case of climate-related shocks.

DESIGN FRAMEWORK

The framework takes advantage of overlooked urban assets in Gugulethu and allocate new urban uses to underused open spaces usually attached to public schools, sports fields and social infrastructure like halls, thus stabilizing neighbourhoods through curating a programmatically diverse urban fabric which contributes to resilience.

COCLUSION

This design research project has taken a step forward towards addressing less performing Gugulethu Urban Area by using adaptive reuse as a principle in order to enhance diversity in underused nodes. Finally, the two enhanced nodes were linked through movement as a space integrator to those that were better performing.

C H A P T E R

01

INTRODUCTION



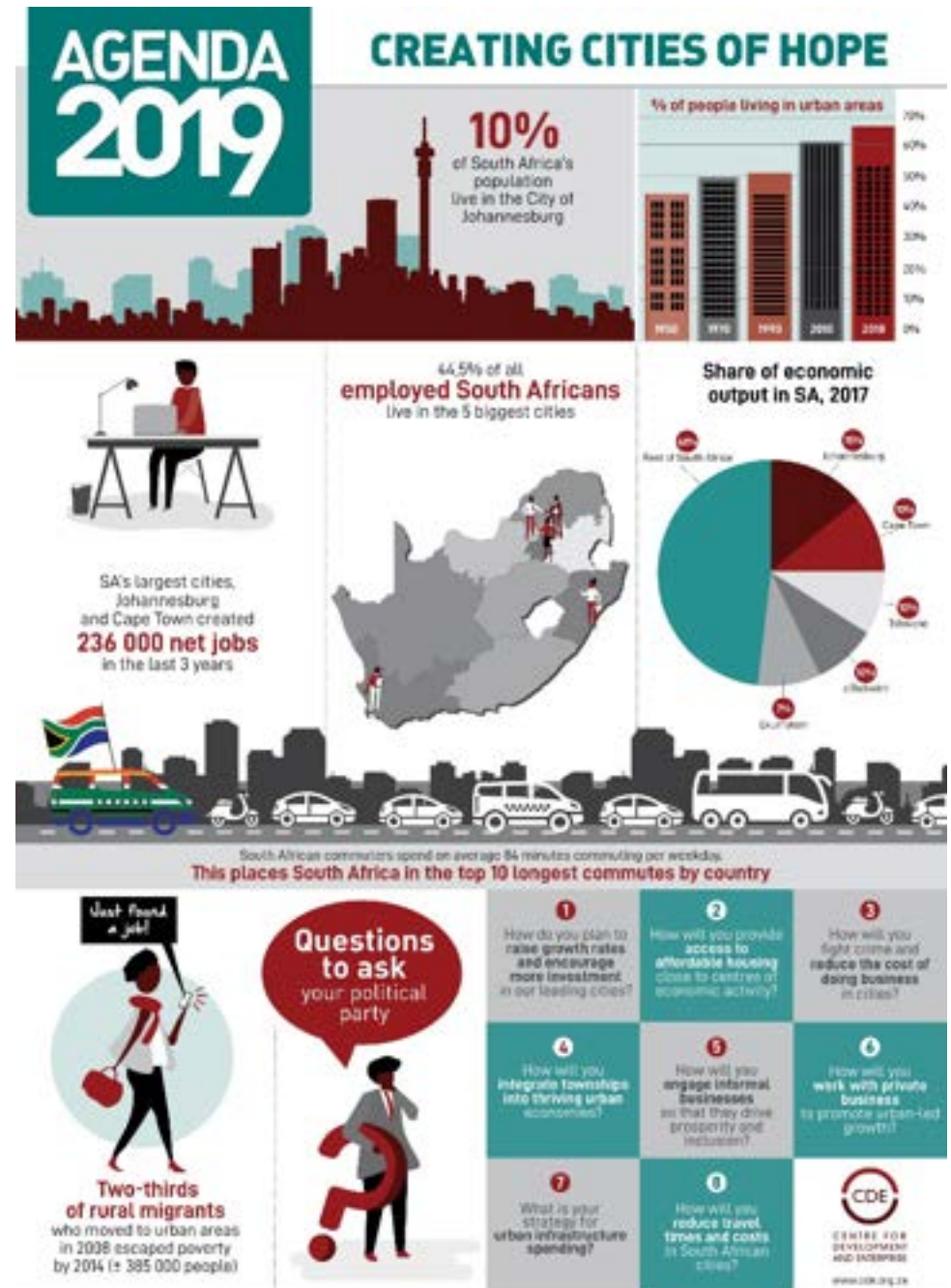
1.1) Introduction

More than half of the world's population is currently living in urban areas, and 3 billion people will live in urban areas by 2050 (UN-HABITAT FOR A BETTER URBAN FUTURE). The upward population growth in Cities has created unprecedented global social, economic, environmental, and spatial challenges, and such pressures can also be seen in South African cities. Furthermore, South Africa's problem has been worsened by Apartheid's planning legacy, which has resulted in urban sprawl and spatial segregation, laying the foundation for an unequal society. The dawn of democracy in South Africa heightened calls for spatial justice and an integrated planning system from different sectors of society. Diversity has also opened up more areas of research around the topic of spatial inequality in South Africa.



FIG 1.1 (far left): A result of urban sprawl in South African townships, Khayelitsha Cape Town 2017.

FIG 1.2 (left): South African urban sprawl (Daily Maverick 2019)



1.2) Contextual Background

Globalization has made the world small, interconnected, and sensitive to any changes or disturbances. Stresses happening anywhere in the world can quickly spread and be felt everywhere (A. Zuniga-Terani, 2016). In cities, disturbance and stress can include people getting sick from uncontrollable diseases and dying from pandemics like Covid-19. These could also include conflicts, economies collapsing and natural disasters occurring at rapid and unpredictable rates due to climate change.

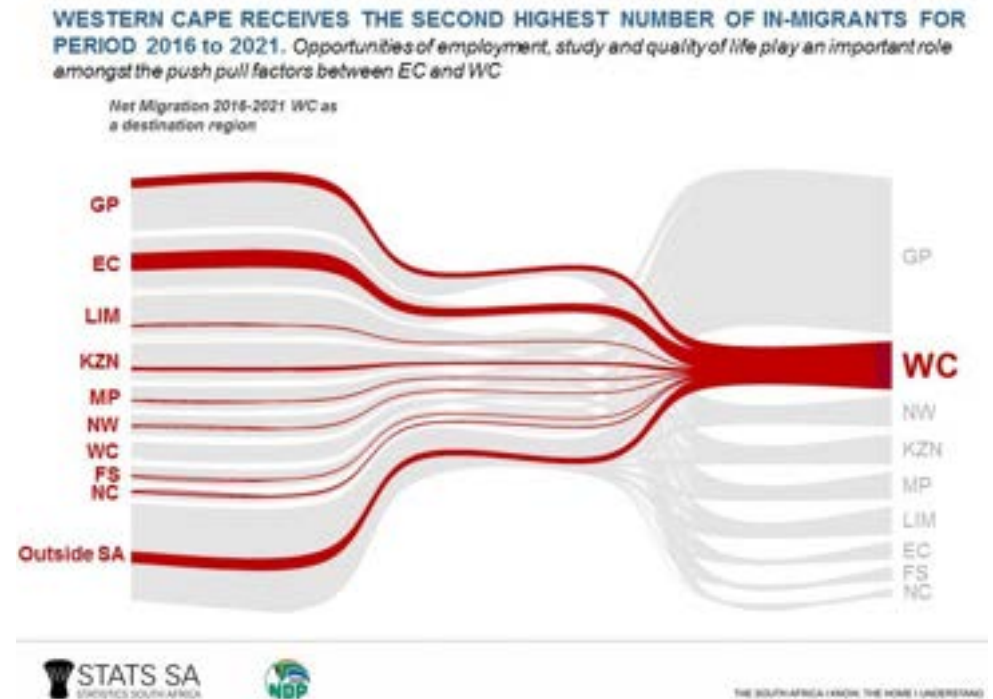
Human systems are finding it difficult to cope with these changes as the world population becomes urbanized. For this reason, the world is looking at Resilience as a goal and coping mechanism to withstand natural and artificial hazards (Yun-Cai Young et al.).

In a resilient city, when disturbances occur, people find alternatives and continue with their everyday life. Zuniga-Terani, 2016, argues that increasing Diversity distributes the risk which leads to attaining Resilience. In a resilient city, the form and the strength post-disaster are expected to be close to their pre-disaster state.

More than half of the world's population is currently living in urban areas, and three billion people are expected to live in urban areas by 2050 (UN-HABITAT FOR A BETTER URBAN FUTURE). Migration is not a new phenomenon to human beings but has a long history (Liang, 2007; Hungwe, 2012). The migration of human beings from one place to another is necessitated by searching for new and better opportunities or livelihoods. The upward population growth in Cities has created unprecedented social, economic, environmental, and spatial challenges globally, and South Africa has also been affected by these challenges. Furthermore, South Africa's problem has been worsened by the legacy of Apartheid spatial planning, which resulted in urban sprawl, spatial segregations, which laid the foundation for an unequal society. The dawn of democracy in South Africa heightened calls for spatial justice and an integrated planning system from different sectors of society, opening up more research areas around spatial inequality in South Africa.

FIG 1.3 (top left): Graphic of in-migrants from various provinces into the Western Cape (Stats SA, 2018).

FIG 1.4 (bottom right): In-migrants on a journey to seek a better life in urban areas (World Economic Forum, 2015).



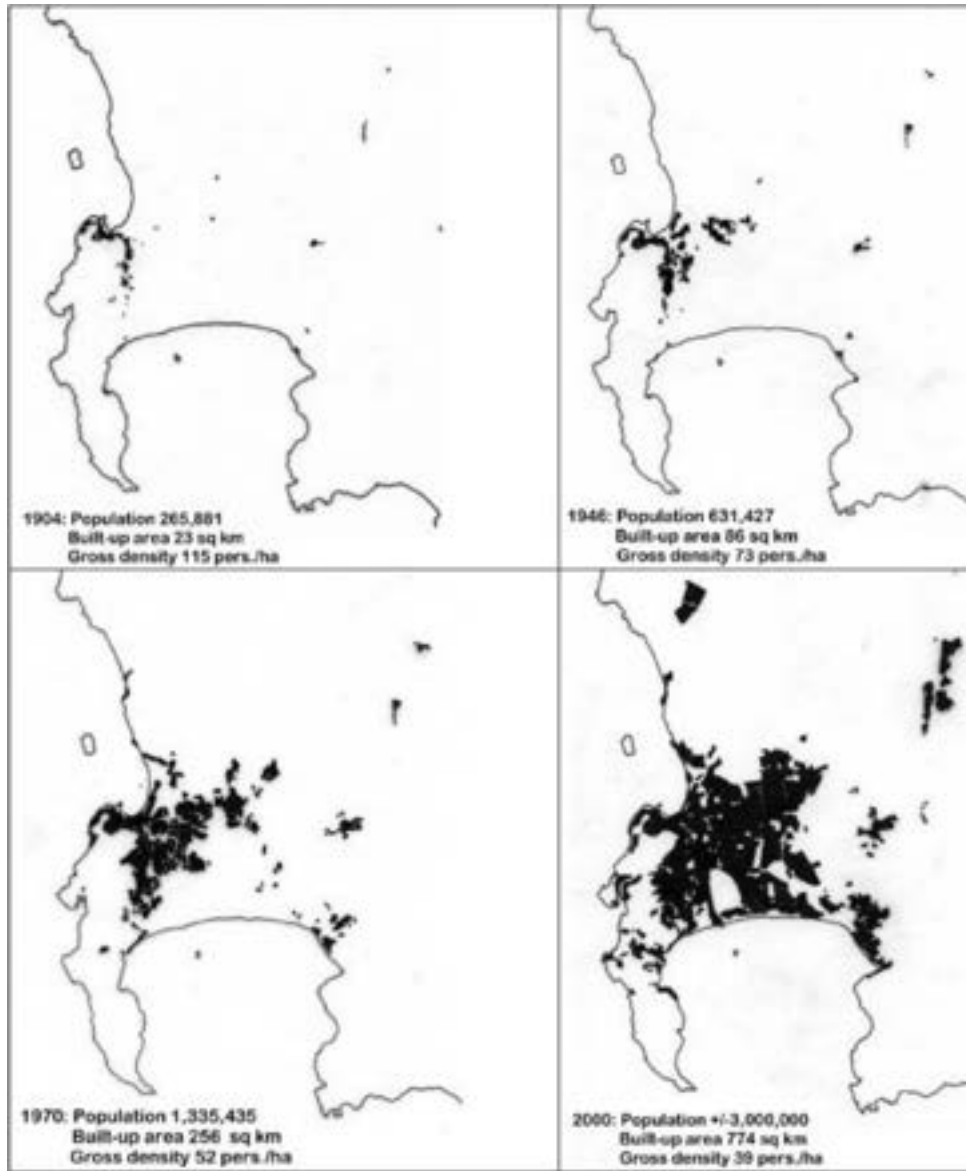


FIG 1.5: The trend of density and urban sprawl in City of Cape Town (Cooke,2009)



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FIG 1.7: The quality of life in an urban setting (Fraser & Magona, 2006)

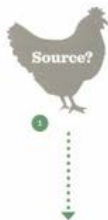


FIG 1.8: A collage depicting the quality of life in the rural areas compared to urban areas. The primary source of living in rural areas includes subsistence farming, livestock and home made bakery. Images sourced from MudChic (Fraser & Magona,2006)

TOMATOES & TAXI BARKS

A simple meal

This is an everyday story of a simple but nutritious meal: frozen chicken pieces bought from the corner spaza shop in Mkhazi. The shop's owner, John Yoni, buys his stock from a Soweto van wholesaler in Hillside, normally towards month-end. The convenience of his owner's location means that customers can walk here to do their grocery shopping. The meat is affordable, convenient, and wholesome, and people can buy walk away when they plan to eat this evening.



Buying in bulk

John Yoni's stock up of a wholesaler in Durban Road in Dalmeida (about 10km away) is a weekly, depending on what he buys. 'Mama's Fresh Chicken' and 'Mama's Chicken Portions' from and in bulk. The reason they aren't able to find out where the wholesaler sourced this stock. These types of wholesalers are important sources of a range of 'family food' products for traders all around Cape Town.



CHICKEN PIECES

All in one

These products are a source of protein in the meal, and also a source of protein. These products include food like the frozen chicken pieces, but also cleaning products, toilet paper and other household necessities. The success of his business depends on his ability to cater directly to the needs and buying habits of the people in the immediate area.



Bake and bread

Many customers return to the convenience store like Yoni's are comfortable to eat, so they buy more. John Yoni operates behind a makeshift security gate. Most of his customers, such as John Mkhazi resident John Mkhazi, use this grocery spaza shop because of its convenience.





FIG 1.9: Inequalities between Bloubastrand and Kya Sands, Johannesburg (Miller,2018).

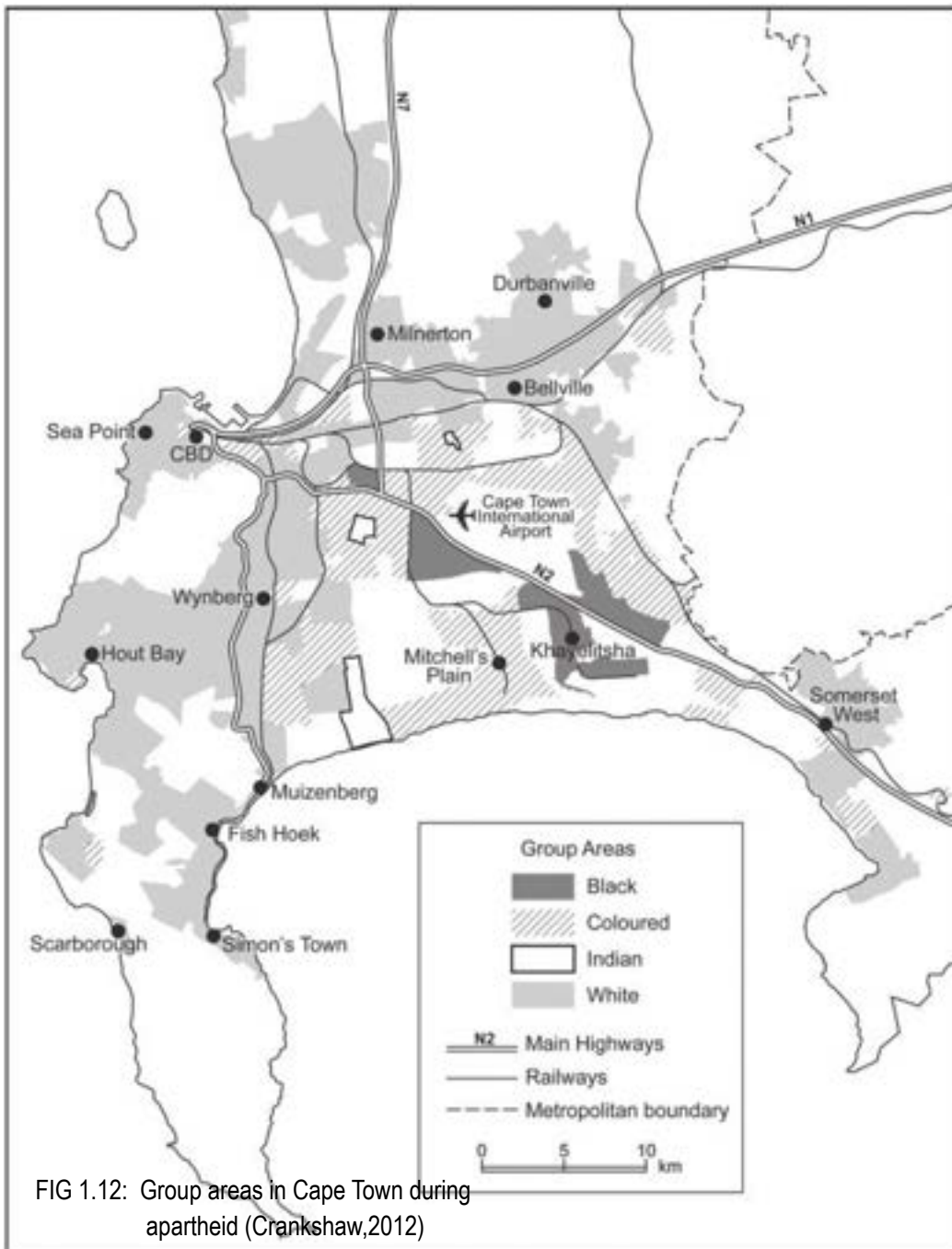


FIG 1.12: Group areas in Cape Town during apartheid (Crankshaw, 2012)

1.3) The Research Area of Focus

Gugulethu Township was established in 1958 and is located on the Cape Flats and situated 18km southeast of Cape Town in the Western Cape Province. The Township was established along with Nyanga in the 1960s and was initially named Nyanga West and later given a Xhosa name constructed with two words, igugu lethu, meaning 'Our Pride'. When the Group Areas Act (1950) was promulgated, the policy reinforced land dispossession and segregation in South Africa. In line with the Act, Africans, Coloured and Indian people from the inner-city areas were relocated to new settlements, often far from the workplaces. Africans were the first group of people subjected to forced relocation. The Native (Urban Areas) Act of 1923 resulted in naming the streets of NY (Native Yard) and moved non-Europeans to live in locations outside the city boundaries. This resulted in townships like Gugulethu, Nyanga, and Langa in the Western Cape (South African History Online, SAHO,2017).

The Cape Town City Council erected galvanized iron shed housing for families, later moved to permanent structures for housing. The first two families were forced from Windemere to a new camp on December 19 1958. This unique camp, Gugs (short for Gugulethu), was established to accommodate migrant workers from former rural homelands of Eastern Cape Province, Transkei and Ciskei.

Gugs was also used as a spill-over area from overcrowded Langa, which was the only Black residential area for Cape Town at the time. This resulted in the Western Cape Province having a high concentration of Xhosa-speaking township dwellers and is part of the reason it is viewed as a Xhosa-speaking province.

Even though Gugulethu was built for black people forcibly removed from the inner city of Cape Town, it became home to a diverse group of people who came from all provinces of South Africa. The migrant labourers from neighbouring African countries like Malawi, Zimbabwe, Zambia, and Lesotho settled in Gugulethu. They saw in South Africa a haven, at times running away from political instability experienced in their countries. Their migration was also influenced by work and business opportunities in the area. (An investigation of the integration of foreign migrants into the South African community: A case study of Zimbabweans living in Luyoloville and New Rest in Gugulethu, Cape Town (Diplock Samuel Kalule, Nov 2016).

Having stayed in Langa in the early 1990s after completing my matric, I can safely say that all black township residents in Cape Town still have strong links to the former homelands of Transkei and Ciskei. Every year around the festive season, scores of people go back to spend Christmas with their families. Quite a several black township dwellers do not recognize townships as their permanent homes, though they spend the majority of their time in Townships. This raises a big question in the urban discourse around dynamics of elasticity, permanence, and impermanence, informing the concept of the kinetic city.

Gugulethu contributed immensely in the fight against apartheid laws and is also known for the killing of the Gugulethu Seven, a group of young men who South African Security Police ambushed on March 3 1986. Gugulethu Memorial was built to commemorate these political activists who were members of Umkhonto Wesizwe, the armed wing of the African National Congress. Gugulethu is also known globally for anti-Apartheid activist Amy Elizabeth Biehl (April 26, 1967 – August 25, 1993), who was a student at the University of Western Cape at the time and an American graduate of Stanford University. She got caught in riots in Gugulethu and murdered by the locals while transporting three friends to Gugulethu. https://en.wikipedia.org/wiki/Amy_Biehl

Gugulethu, over the years, has evolved to become a diverse community and has produced lots of role models, mainly in the domains of sport, arts, and culture. Ray 'Velaphi' Ntlokwana (1937-2000), an actor from Gugulethu known as Velaphi, placed Gugulethu on the map in TV series' like Abakwazidenge, Kwasindezama, and many others. https://en.wikipedia.org/wiki/Ray_Ntlokwana#, The legendary Ms Sylvia Mdunyelwa, is also a famous Jazz musician who blossomed very late in her career.



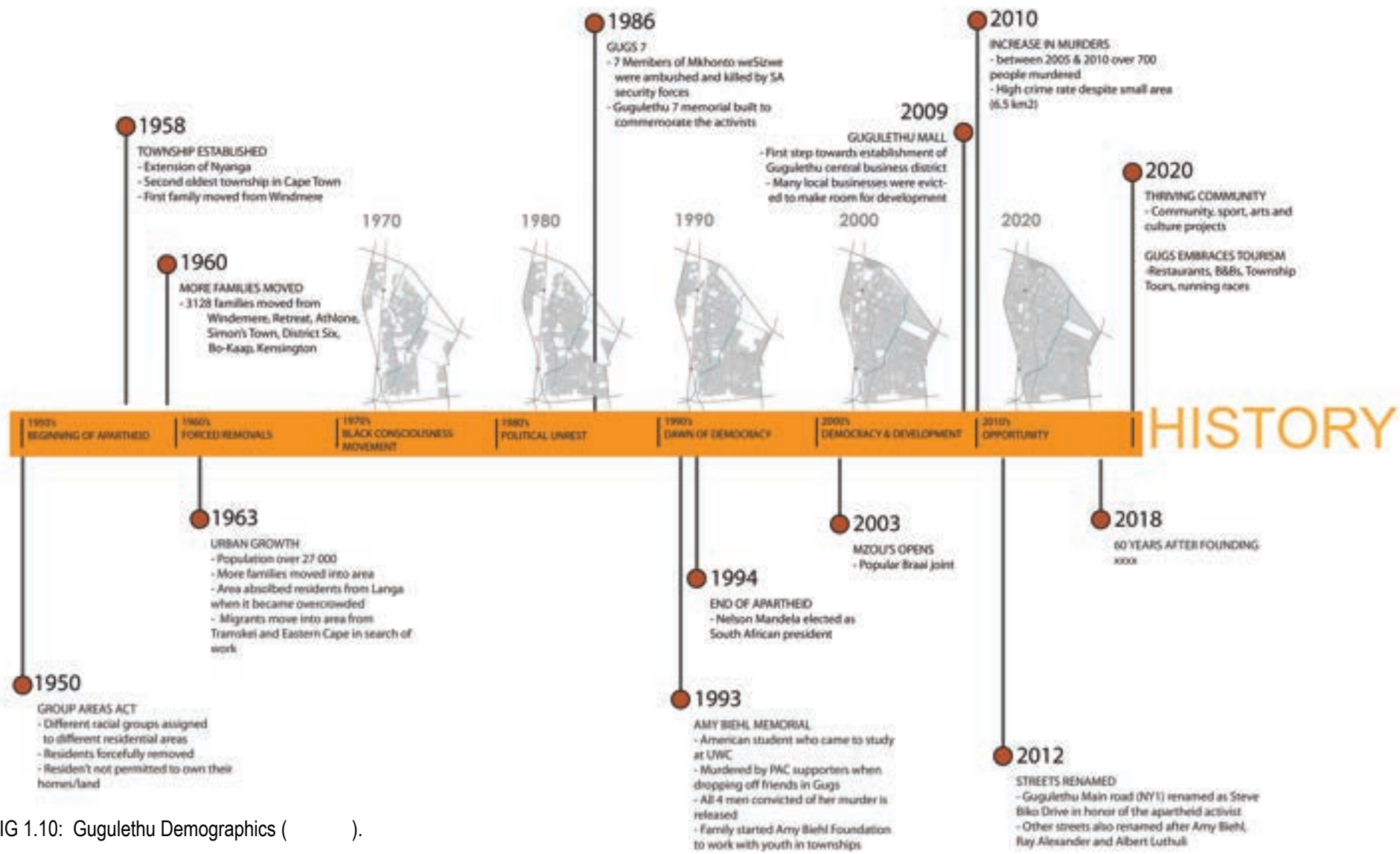


FIG 1.10: Gugulethu Demographics ().

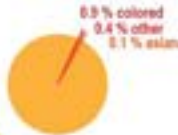
GUGULETHU DEMOGRAPHICS

POPULATION

98 468 

SOURCE: Community survey 2016

 **99%**
of total population
Black Africans



Employment **60%** of labour force (aged 15 to 64)
Not economically active **24 222**
Unemployment **17 886**

71% of households monthly income
R3 200 or less

HOUSEHOLDS

29 577 

DWELLING
 of households
live in formal
52% dwellings

 47.6%
access to
piped water



63%
access to a
flush toilet
connected to the
public sewer system



97%
use
electricity
for lighting



location



C H A P T E R

02

PROBLEM STATEMENT & RESEARCH METHODOLOGY

2.1) Problem Statement: Aims & Objectives

AIM OF THE STUDY

My research focuses on studying urban Diversity to examine its contribution to Gugulethu's Township's Urban Resilience. Through a desktop study and site visits, I looked at existing diversity levels in Gugulethu, which revealed varying pockets and levels of Diversity in certain sections.

OBJECTIVES

To transform Gugulethu into a safer and sustainable place to live.

To improve and address urban challenges resulting from urban sprawl and spatial fragmentation.

To test new measuring city performance by adopting new sets of performance indicators (measuring matrix.)

To explore and investigate the role of a designer as a mediator between society and the environment.

To harness transformational agenda through the involvement of multiple stakeholders, which will develop Gugulethu urban framework and cultivate fertile ground for Gugulethu urban resilience.

To explore possible outcomes if Diversity is used as a cornerstone to achieve urban Resilience. Diversity could influence a new city image if the city's performance can be measured on different income levels, mixed-age groups, different economic opportunities, a wide range of connectivity, multi-modal transportation infrastructure supported by urban fabric—the Resilience of transport infrastructure amidst the systemic crisis (Zuniga-Teran, 2016).

The different household structures are supported by urban fabric (Kayatekin, 2019).

One can reimagine Gugulethu's urban fabric when as it begins to support compact, self-sustained community patterns.

2.2) Research Questions

What tools can society use to transform and improve existing poor-performing South African urban systems and mitigate the multitude of future disturbance that threatens the ultimate Resilience of the cities in South Africa?

Looking at the collaboration between an urban designer and the community, how can urban Diversity be used as a measuring guide for urban Resilience to transform and change the current trajectory of failing urban systems in South Africa (Zuniga-Teran, 2016)?

Is there a scope for co-design and collaboration between the community and an urban designer to create an urban system that will weather the shocks and stresses while adapting and transforming towards sustainability (UN-HABITAT FOR A BETTER FUTURE)?

Part of the need for research into Diversity and Resilience stems from the necessary search for new socioeconomic metrics used to measure a city's performance. According to (Cem Kayatekin, page 4, 2019), the growing importance of socioeconomic Diversity necessitates an inquiry on existing metrics used to measure urban performance.

New urban performance measure metrics

He further argues that instead of density measured per square kilometre or total dwelling per lot area, one ought to count the number of different household types supported in a square meter area of a building. Or different economic quantiles, different firm types and sizes, ownership statuses, demographic strata, and socioeconomic differences. If a new measuring metric is used, how would it transform the image of the city? Will this fundamentally change the appearance of the city?

2.3) Research Methodology

The qualitative research methodology strategy emphasizes data collection and using techniques like video recordings, interviews, and site analysis.

In-depth Interviewing.

This is a powerful way of gathering data, and it is one of the most common qualitative research methods used. It involves a researcher asking the interviewee (usually an expert) questions in a relaxed and honest manner and making some follow-up questions to extract as much information as possible on the research topic (Alan Morris, page 3,2015).

The research was structured in the following manner: In Stage one, the experts worked in the Gugulethu area on different projects. Stage two, I conducted interviews with a few individuals in Gugulethu who I categorize as community leaders or activists. Stage three was then performed with the general public with the assistance of the activists using a questionnaire. The interviews give one an understanding and access to the interviewer's perception, memories, thoughts, reflections, and their interpretation of the topic and why they construct the world in a way they do in a manner (Alan Morris, page 5, 2015) suggested.

Site Visits.

Site visits were carried out at different times and days using various modes of transport to understand the connection between the built form and unique social structures of the community residing in this area. Site visits were carried out at different times and days using various modes of transport to gain an in-depth understanding of the connection between the built form and unique social structures of the community residing in this area.

Desktop research.

Through assessment of the Site, I was able to identify an area that had high levels of Diversity. I also looked at

Theoretical Framework.

The theoretical framework with different views on improving urban performance to increase urban Resilience, with Diversity as one of the main contributors, was considered.

Data analysis

TCape Town and surrounding municipalities' built form and spatial data are documented and interpreted using QGIS software. Base maps were set up and sourced from Surveyor General Spatial data (cgs.dla.gov.za), the City of Cape Town GIS database, and the UCT Geomatics department.

Limitations

Covid 19 health and safety protocols imposed by the President through the Department of Health and Task team set many limitations for deeper research engagement.

Experts Interview

Professor Julian Cooke has worked extensively on High-Density, Low-Income Housing in Cape Town Townships like Langa, Gugulethu, and Steenberg Social Housing. Though these were housing projects, their contribution to addressing urban challenges came out in his interview. This interview has given me an in-depth understanding of the impact urban planning policies have on the planning of cities. The relaxation of the old regulation permitting fewer units per hectare to increase to a higher number of units per plot resulted in densification of the area. Densification brought intensity in that area, particularly on main routes leading to essential destinations like Nyanga Junction. Highlighted in the zoom interview with an expert was the complex nature of working on the brownfield site and the community dynamics one has to navigate during participatory sessions.

Community Activist Leaders Interviews

The expert interview helped me frame my interview questions much better and more precise. Though the day started as an ordinary interview session, the proceedings devolved into a workshop with lots of surprises, which helped solicit more information. The community comprised an elderly guy in his late 40s, a young male, and a female teenager who gave me a perspective on how female teenagers navigate life in Gugulethu. Furthermore, two elderly males joined the session..

General public Interviews

This session has yielded some exciting results, but only a little ground was covered due to the Covid-19 pandemic impact. We covered a small area in fear of subjecting myself and the community activists to the risk of infections.

ETHICS-High expectations

One must be mindful that communities have high expectations on the government to uplift their life standard by either building low-income houses or creating jobs. The ethical issue that I can think of is that whatever design is proposed in the research does not bring down or undermine interventions that have been effective to date in the same area. Organizations like VVUP, Architectural firms, and the City of Cape Town have worked in the region towards similar objectives.

One must be mindful that communities have high expectations on the government to uplift their life standard by either building low-income houses or creating jobs. The ethical issue that I can think of is that whatever design is proposed in the research does not bring down or undermine interventions that have been effective to date in the same area. Organizations like VVUP, Architectural firms, and the City of Cape Town have worked in the region towards similar objectives.

Therefore, careful management requires the declaration of the purpose of the research up front to make the community understand the difference between actual research and the work that other organizations in the area have undertaken.

CHAPTER

03

LITERATURE REVIEW

3.1) Literature Review 1: urban Diversity and Economic Growth (John M. Quigley).

Quigley (1998) unearths a critical discussion on urban Diversity and economic growth. This work traces the interest of economists in the city as a domain of economic study and discourse. Four critical periods are highlighted in this work that unpacks the evolution of academic engagement on this subject matter. More striking in this work is the recurring endorsement of the argument brought forward by the likes of Jane Jacobs. In essence, Jacobs et al. argued that Diversity in the city led to heterogeneity in services driving up the demand for specialized inputs and outputs and yielding returns. Importantly, Quigley offers a useful categorization of two dominant periods where the study shifted from intra - metropolitan dynamics, the focus of macroeconomists, to external and even regional considerations.

Among key findings was the realization that industries that offered standardized services would generally settle outside of metropolitan centres like New York, while those that occurred within a neighbourhood of hybridity would operate close to the centre. What motivated the economists to study the city was the factors that influenced why people and firms selected certain parts of the city to settle in. This selection process would then inform the form and nature of activities that make up the city. These economists began to understand a series of location incentives that shaped significant towns.

The third study period arose in the 1950s out of the regional planning associations' desire to project what the city would look like three decades later. The fourth period coincides with the rise of neoliberalism in the 1980s, which altered thinking around economic growth.

What is striking about the focus of these studies is that they largely tackled the metropolitan city, American cities, and primarily New York both in the 1920s and 1980s. That is to say, the findings on the dynamics of what occurred in the industrial cities were not the focus of this but instead emanated from its conclusions. This carries valuable considerations for the relationship between a city like Cape Town and its townships. By not focusing on the dynamics of those industrial cities, the study does not make way for in-depth insights related to the South African industrial city dynamics. However, it does present exciting contrasts for how Diversity relates to the apartheid city condition of south African urban systems. Firstly, Cape Town is contrasted to New York through apartheid policy that puts a cap on the

extent and kind of Diversity possible in inner Cape Town in the period that coincides with the four paradigms of study of urban Diversity and economic growth. Although there are universalities that can be gleaned from these international cities, it shows that the existence of the townships as appendages to the city is a unique offering to the subject of urban Diversity and economic growth.

While most standardized industries were located in other cities in the USA, in South Africa, standardization was situated on the periphery of the apartheid city. The emergence of the Township was to serve this periphery outside of the urban Diversity that took place in the case of inner Cape Town. That means a study of urban Diversity in Gugulethu furthers the kind of inquiry that the work of Quigley (1998) embarks on. What is encouraging is that this work endorses the position of Diversity in driving economic growth. That enables a kind of hypothesis around why township economies as diverse urban environments should yield increase but will also reveal their differences to metropolitan cities that may inform the constraints for such growth to be realized.

Finally, another critical argument by Quigley (1998) is that as the metropolitan city grows, albeit in size and even population, so too should its economy grow. It is critical to note that this kind of growth is predicated on the assumption that there is diverse growth as the city grows. Therefore, it is crucial to note that the development of a city like Cape Town still bears limitations to Diversity similar to those under Apartheid. However, there has been significant progress post-94.

The regional outlook would also factor in the externalities that inform the nature of Cape Town's view and its elasticity. In this case, townships and informal settlements comprised of migrants from near and far are the ones that inform the kind of elasticity that determines how inner-city Cape Town's Diversity.

3.2) Literature Review 2: Urban Space Diversity in SA – Karina Landman (2012)

Landman (2012) makes a reasonable attempt that serves as a continuation from the studies of Quigley (1998). The effort to look at the South African context as far as urban Diversity is concerned is encouraging. Still, it quickly disappoints as it enclaves its assessment on medium-density mixed developments. The trouble with this approach is that it insulates the discourse from the necessary confrontation of that which is acknowledged as inherent paradoxes from historical and contemporary social and cultural influences. This narrative also enables the ever-standing condemnation of the South African city around issues of violence or fears of violence.

One reads Landman and sees that these ideological constraints hold back natural Diversity in the South African city. The danger also is that while they attempt to illustrate how mixed-housing attempts at Diversity, the work risks confining the imagination of the South African urban diversity inquiry to that of the question of housing. Acknowledgement of the policy interest in sustainability and the rise of housing development investments in line with that interest helps us recall the newly launched Sustainable Infrastructure Development Symposium (SIDSSA).

While Landman offers practical ways to continue the deepening of Quigley et al. into this subject at a contextual level, the arguments are also insulated from the confrontation of the Township vs the city apartheid structural debate, which is the interest of my diversity exploration of Gugulethu. Here, the author seems to pursue a diversity of human settlements to support place diversity towards safety and sustainability. The notion of place diversity is helpful for the inquiry into Gugulethu. This allows a pointed look at matters such as densification as not only being sufficient quantitative interventions in bringing about Diversity as inequality can often yield adverse outcomes for those attempts. According to Talen (2008), place vitality and social equity become crucial, and Jacobs (1961) considers Diversity vital for sustainability.

Landman does bring attention to three matters in the urban condition in South Africa that constrains Diversity. The presence of urban sprawl, fragmentation, and separation are also useful lenses to gauge the South African city. It is also striking in the study the acknowledgement of a housing development like Amalinda in East London. It would be interesting for Landman to see what has become of that income diversity in that housing complex. However, it is quite striking that in the context of East London, Amalinda indeed achieves higher levels of Diversity than most parts of the city.

Most South African cities still endure the race and class barrier to the diversity question, and as inequality continues to rise, so do attempts at Diversity become further skewed. The study of Gugulethu then cannot confine its inquiry only to housing as it will have pre-existing conclusions, as demonstrated by Landman. The valuable aspects of Landman's contribution are included in the vocabulary of a deeper inquiry on enhancing Diversity in Gugulethu. It is evident that Cape Town, as can be gleaned from similar cases in New York as argued by Quigley, is not concerned with restructuring its form for a radical outlook on inner-city Diversity. Even a look at Gugulethu will contribute to an extent by enclaved in the tale of two cities that Apartheid birthed on the South African city. The housing typologies and the geographies that emerged through the sprawl of the neo-liberal city and gave us enclaves are still the main features of Urban South Africa. A deeper look at Gugulethu's 'place diversity' should contribute to a growing body of work on urban South Africa. Only this time, it will not be confined to density housing developments. It should also borrow from Landman in looking at the nature of public space and vitality as such environments are often restricted by hard edges like fencing of public parks.

3.3) Literature Review 3: Kayatekin, C – How to achieve a resilient city? First let it shape itself.

Kayatekin (2019) acknowledges the growing interest in urbanism on the subject of Resilience. A helpful analogy from the argument is that of the city as both object and forest. This is used to elaborate on the two streams of scientific Resilience and that of ecological Resilience. Ecological resistance is demonstrated through the behavior of a forest as a complex system in times of pressure and stress. How the forest receives and reacts to the force, with aspects of it undergoing temporary or permanent change while others remain the same, is how it demonstrates its Resilience.

In the scientific case, when dealing with an object, Resilience is demonstrated by that object encountering stresses and pressures and being temporarily altered during that encounter while settling back in its normal state post-pressure. What Kayatekin reveals is the existing practice of seeing the city as an assemblage of architectural form. This outlook, it is argued, ignores the ecological or forest aspect of the city. That means, in essence, it amounts to a superficial reading of the city and ignores what Merhotra 2014 called the context of the context. Resilience as a lens for looking into urbanism is a good outlook on understanding the city in terms of the specificity of the Site and the context of the context. This resilience theory furthers other insights gleaned from the work of Jacobs (1961), Quigley (1998), and Landman (2012). While that earlier work on urban Diversity and economic growth had evolved since the post-world war I period, Resilience is a fitting continuation of that ongoing study of urbanism.

The ecological outlook offers us a way of reading the city comprehensively, which helps look at the complexity of the apartheid city condition for the focussed study of Diversity in Gugulethu. This is because it accommodates simultaneous Diversity and randomness. This comes as a result of it possessing what Kayatekin calls physicality, geology, and geography. In the scientific application, only the shape and strength are the properties of consideration. Similar to Quigley (1998), New York is used as a resilience case study in the event of a storm similar to the hurricanes that America experiences. In this instance of flooding, Kayatekin considers that transportation infrastructure grinds to a halt, with power outages, urban fabric severely stressed, and lives even lost. This scientific outlook also informs a top-down approach to urban governance while the ecological system informs a bottom-up. Like the 1950's regional and urban futures thinking that emerged in the urban discourse, the environmental approach allows for envisioning the city's future. Similarly, a 1970's socioeconomic shock or tech bubble that affected the economy impacted the businesses and other aspects of the city. Some were long-lasting and some were temporary but they all shocked stressed and taxed the city.

Resilience offers an essential lexicon for the reading of the city. Much of the existing body of work leads me to believe that it is possible to apply this in the task of Gugulethu as a tool that will yield a more comprehensive assessment and intervention for the context by centring Diversity as a driver for sustainable urbanism

3.4) Literature Review 4: Diversity as a key element of urban resilience – Adriana Zuniga-Teran

Zuniga-Teran (2016) draws us closer to a more practical application of Diversity as fundamental to urban Resilience. This helps us imagine a much more familial picture of the resilient city based on tenets we can understand. In this view, the resilient city would feature multiple industries, businesses, modes of transportation, housing types, plant species, water sources, energy sources, institutions, and residents. The South African case will benefit from the perspectives brought forward by her that pronounce the importance of diverse residents. As argued, Diversity as means of increasing Resilience within social systems is not new. However, it becomes helpful to combine the Resilience of social systems with those of the city as a combination of infrastructures and the broader context that Kayatekin posits as the forest. Those infrastructures have to be diverse, such as sources of water and means of transport and the natural environment such as vegetation.

Zuniga-Teran (2016) calls for a governance outlook informed by Diversity being at the centre of Resilience while going a step further to call for a city to have a resilience plan similar to the Boston case. In this outlook, Diversity is seen as a means of promoting stability in the face of change.

In the age we live in, and in a time of the pandemic, the Resilience of South African cities and cities across the globe are all being tested by covid-19. Comparatives can be drawn between the urban Diversity yielding Resilience in Boston to New York as argued in Quigley (1998) and the case of less diverse cities with standardized firms such as Detroit, the motor industry-dependent city.

The study reveals something else in the Detroit urban case. When the motor industry started decentralizing in the 1960's job losses, rose sharply. It was unemployment and racial tensions that also drove white people and their wealth away from Detroit. This finding is worth reflecting on for South African cities in general and the study of Gugulethu's Diversity. South African cities and their Apartheid inherited townships, and it can be argued, are trapped in a vicious cycle of being environments that were designed for the poor black migrants who came there in search of work. That means, in essence, they were not designed to attract white people and their wealth. This means that while there may be urban aspirations to attract all classes and cultural groups or races to the diversification of urban Gugulethu, there is already a binding constraint likely to repel white people and their wealth. This was also demonstrated by the acknowledgments made by Landman (2012) in the study of mixed housing.

The common thread in many texts aligns with Jacobs (1961) favouring urban vitality through a diversity of small businesses and an assortment of building types and dwelling units. Jacobs also called for an outlook on time that embraces the day and night functioning of the city as being crucial to this vitality. As argued, however, social cohesion and social systems are also vital to fostering Diversity and Resilience. Interesting is also the call for diverse energy systems and the admission that solar energy alone cannot provide the power for a city all the time because there is a lack of solar power at night and less power during cloudy days or in places of little daily sunshine. Such an argument is also essential for energy diversity concerning South African cities.

Zuniga-Teran (2016) concludes that it is possible to extrapolate the concept of Diversity to enhance Resilience in most urban subsystems. Understanding Cape Town Urban subsystems and Gugulethu's location within that framework is critical to the work I am embarking on of looking at Diversity in Gugulethu. This systems perspective is informed by the sustainable cities outlook on urbanism. This is acknowledged when the notion of climate change and increasing population pressures due to urbanization.

The recurring theme here is the crucial mention of social Diversity and social cohesion when examples like people's Resilience to the credit crisis and the Chicago Heatwave.

3.5) Literature 5: Dave Dewar

Dewar offers an essential conceptual framework for understanding urban performance. As argued, the city exists to enable urban life. The city accommodates, promotes, and enhances urban life through activities through urban structure, which consists of place, spaces, and channels of movement. The degrees to which living is enhanced varies from one structural configuration to the other. In articulating how balance is achieved in the city, Dewar demonstrates the importance of the relationship between people as expressed through urban activities, ensuring equitable access to urban opportunities and facilities for all urban dwellers.

The city must satisfy some key offerings as per Dewar towards the attainment of urban performance. Urban environments should offer freedom through the removal of constraints. Out of this should be how much is laid down to guide and release action and in what form should appropriate elements of the structure be provided. Secondly, urban performance can be deemed positive in how urban environments are equitable. This is noteworthy when considering the state of South African cities, especially regarding the focus case of Cape Town and Gugulethu. This is because the fair city should allow people easy access to the opportunities they generate.

Another characteristic of positive urban performance is intensity, Diversity, and necessary complexity. This triple-helix helps enhance the outlook on Diversity as central to Resilience. In this outlook, Dewar combines the importance of intense interaction with high levels of population support. For ease of access, it is argued that diverse activities are required over relatively small distances. This perspective on Diversity is enhanced more by the expectation of positive urban environments to be necessarily complex. Further explained, this constitutes an overlap of conditions and activities which provide an opportunity for spontaneous and unexpected to occur. In this case, such spaces also accept conflict, as argued by Dewar.

Integration is also essential for positive urbanism between different parts and elements of the city. Dewar offers a valuable lens for a study like Gugulethu by highlighting the importance of structural configurations and how they generate opportunities, thus enhancing life to a greater degree than others.

3.6) Literature 6: Wang et al

Wang et al. bring to light the importance of answering two critical questions in urban discourse. What are the typical characteristics of resilient urban communities, and how to identify these characteristics from the practices that proved to be resilient? The study of Resilience moves closer to understanding the development and application of its principles in city-making through this work. There are four indicators by which urban Resilience is assessed that offer a broad spectrum to inform an analytical process that can be further fine-tuned in line with context-specific considerations. These city performance dimensions are spatial pattern, environmental components, public services, and management system. This outlook is rooted in the conception of the city as a socio-ecological system. The study sets out to close the theoretical gap between Resilience as a characteristic and approach and that of an actual resilient community as both object and outcome.

Wang et al. argue that the resilient urban community is an essential subsystem in building a resilient city. The case study demonstrates through four cities how analyzing characteristics and approaches can be applied to different communities and how the findings can inform their manifestation as both outcome and object. In all this, they recognize that feedback loops that ensure that managing and policy are iterative and informed by findings become crucial in the management case. It can also be argued that this case study approach sets the scene for good practice in sourcing bottom-up perspectives in making the city. Findings also demonstrate the variety of context-specific possibilities of equipping a socio-ecological system with resilience capabilities. In some instances, it is about ensuring strong community networks that can ensure that information is equitably distributed to empower community members to be prepared for adaptability in times of shock, stress, or even crisis.

The multifunctionality and flexibility of spatial patterns are essential characteristics while embracing an ecosystem's view of the city. Some infrastructural interventions include sustainable urban drainage systems that manage flooding in a typhoon and employ green scaping to ensure runoff infiltration. Some interventions are technological and allow for rational mobilization through a resilient management system. These are deployed as pre-disaster and post-disaster interventions.

Useful for studies on Gugulethu and in continuation of similar studies on urban systems, this development of a resilience lexicon for reading the city also posits as important the centrality of Diversity, whether in spatial flexibility and adaptability or even environmental

Diversity in the case of climate-related shocks. Out of this, a useful procedure for case analysis is laid out. This begins with analyzing the performance dimensions of Resilience in each case of a resilient community. Secondly, analyzing targeted problems for each community to solve. Thirdly analyzing and illustrating resilient strategies based on the expression dimensions and in turn showing how measures are used to solve problems. The fourth step is analyzing the core resilient concept informing the strategies both in measure and purpose to finally ask what has been changed by the intervention. This illustrates the impact of the resilience strategy. Also shows how characteristics of each community relate to the key concepts and articulate them based on the case findings.

This outlook is very scientific but fosters pragmatism and a method of managing Resilience. Such applied knowledge on Resilience is crucial for taking a step towards entrenching Resilience thinking in even the work of urban designers. This will, without a doubt, play a vital role in shaping a design process for dealing with a context of Gugulethu as a subsystem of the socio-ecological part of Urban Cape Town. This framework is bound to unearth richer and more nuanced findings that can be fed back to the urban policy process in a context like Gugulethu.

3.7) Literature Review 7: Defining urban Resilience: A review – Meerow et al

Meerow et al. set out to do some ground-breaking work in their review of urban Resilience ending by proposing a workable definition to aid a cross-disciplinary outlook. This is due to the contradictory, inconsistent, and contested nature of existing reports. The aim here is to establish a common ground to enable diverse actors and interests to converge on an elastic definition. It is argued, however, that six tensions must be accommodated towards this definition. The theory recognizes dominant interpretations of resilient cities as complex adaptive systems (Batty, 2008; Godschalk, 2003).

While the research delves deeper into the reflection of resilience theory, the urban resilience outlook is my focus. In this instance, two theoretical streams are seen as dominant, and these deal with climate change threats, while others deal with the urban system's response to shocks and risks. In contextualizing urban notions, literature is split between those that recognize the city as a complex system and those that see cities as a composite of networks. In this work, it is also helpful to read cities as socio-ecological as was acknowledged in Wang et al. but also to see the socio-technical systems aspect of the city.

It's also worth reflecting on how the spatial and temporal scale affect how we think of urban Resilience and how globalization further adds complexity. The debate becomes very scientific in demonstrating the tensions between linear or single state equilibrium, multiple states, and dynamic non-linear. The city as a place undergoing constant change also becomes a critical matter to understand.

The proposed definition is, therefore, one that sees urban Resilience referring to the ability of an urban system -and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales -to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to transform systems that limit current or future adaptive capacity quickly.

Out of six identified conceptual tensions, Meerow et al. propose six responding positions. On the conceptualization of the urban, they recognize complex, multi-scalar systems made of socio-ecological and socio-technical networks that encompass

flows, forms, stocks, and social-economic dynamics. On the notion of equilibrium, they propose non-equilibrium, focusing on retaining vital desirable functions. On Resilience as a positive concept, this is seen as a contested normative vision that cities strive to attain. There are also pathways to Resilience denoting different degrees of change in the continuum from persistence to transformation. In terms of understanding adaptation, Meerow et al. propose that urban systems should not become highly adapted to current conditions at the expense of general adaptive capacity. Finally, considering time scale action, the speed of recovery or transformation after the disturbance is critical.

In pursuit of an inclusive and open discourse, this definition of urban Resilience is proposed to respond to the growing interest in Resilience. For work on contexts like Gugulethu, there are essential questions posed in this process of advancing the definition. Who determines what is desirable for an urban system? Whose Resilience is prioritized? Who is included (and excluded) from the urban system? What perturbations should the urban system be resilient to? What networks and sectors are included in urban design? Is the focus on generic or specific Resilience?

Is the focus on rapid-onset disturbances or slow-onset changes? Is the emphasis on short-term Resilience or long-term Resilience? Is the focus on the Resilience of present or future generations? Where are the spatial boundaries of the urban system? Is the Resilience of some areas prioritized over others? Does building resilience in some areas affect Resilience elsewhere? What is the goal of building urban Resilience? What are the underlying motivations for building urban Resilience? Is building resilience hinges on the process or outcomes.

All these questions are critical to the necessary thinking around Diversity and Resilience in the context of Gugulethu. What makes Resilience thinking favourable for urban study of socio-ecological, socio-technical network combinations complex adaptive systems that are urban townships in South Africa.

3.8) Literature Review 8: Does higher density housing enhance liveability? Case studies of housing intensification in Auckland – Haarhoff et al

The vital question posed by Haarhoff et al. on whether density housing enhances liveability brings to light some crucial considerations for urban housing policy and for a research agenda that responds to risks brought by climate change. Questions of sustainability have increasingly pressed the growing body of work around the future of cities. Cities around the globe have started embarking on a policy that prioritizes reliance on higher-density housing. This is due to the growing concern around urban sprawl putting pressure on services as rapid urbanization results in many people moving to cities.

The most considerable contention that Haarhoff et al. prove remains inconclusive is whether livable urbanism is achieved through densification. It is argued that such a concept can be easily conflated with housing satisfaction. In essence, with the survey carried out, it is not apparent that favourable reviews of housing satisfaction can be equated to liveability. As a result of the quest for sustainable cities, most governments have mapped out city limits to define an edge that curbs sprawl. It is within the boundaries of this edge that specific city neighbourhoods undertake various forms of density housing.

One of the other challenges to the hypothesis is that most respondents acknowledged the satisfaction that came from densification in places linked to transit-oriented nodes or proximity to a variety of services. It was, however, striking that many of these respondents would still prefer stand-alone houses at a later stage in their lives when they start families and earn better income. There is a sense that many respondents acknowledged densification as being better for young professionals or potentially accommodating the elderly, ideally on the ground floor levels of multi-storey housing. While the focus of this research has been New Zealand and Australia, consideration of contexts like Gugulethu makes it worthwhile to grapple with concepts such as liveability and satisfaction in the context of Diversity and urban Resilience. Understanding the intensification of neighbourhoods as one of the city formal expressions of urban subsystems will lead to better tools for analyzing and informing urban design strategies for Gugulethu.

Other respondents saw opportunities to form social networks as a drawcard to the densified neighborhoods. Urban intensification is often promoted as a means of increasing walkability and car dependency. Much of how the policy and governance of New Zealand and Australia suggest functioning governments and thus intensification seems plausible. In contexts like South Africa, where services are not equitably distributed, intensification tends

to lead to dilapidated roads and other services pressures. This can be seen in suburbs around cities like east London and Mthatha, where there are potholes as more people move into suburbs to live in housing communes, putting pressure on roads and resulting in potholes and damaged stormwater infrastructure.

That condition is not foreign to South African townships. The research also acknowledges the limits to Diversity that are often visited on densification by either the desire to dwell in suburbs or stand-alone houses with proximity to the city or the rejection of strategies towards integration through densification. So as a society that is charged with racial divides and complexes like South Africa offers us a chance to evaluate the notion of liveability as an outcome of intensification and understand what kind of policy contribution this position can posit on townships.

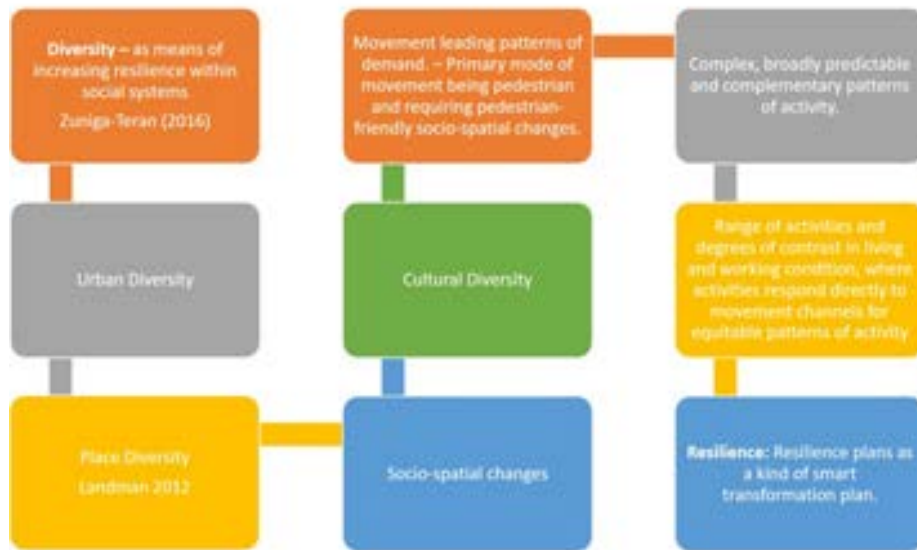
Yang 2008's definition, "the degree to which people perceive their residential environment as able to meet their needs and further the attainment of their goals", seems more accessible and is acknowledged as one that urban planners and designers have influence over. This is better than working with liveability itself, which is both subjective and objective in some cases. These arguments contribute to developing a rich vocabulary to shape my inquiry and aid my analysis process and the design interventions that will emerge for urban Gugulethu.

CHAPTER 4

04

THEORETICAL FRAMEWORK & PRECEDENCE

4. 1 Theoretical Framework



My interest in Diversity and Resilience includes references by Zuniga-Teran (2016) with Diversity as a means of increasing Resilience within social systems. This location of Diversity in social systems draws closer to my interest in how cultural Diversity as a dimension of Diversity can increase Resilience in the South African city. Further to that, the complexity of the South African City as a composite that includes townships and informal settlements; is covered by Dewar's outlook on movement as an element of structure in South African Settlements. I think of the city as a collection of settlements and place-types and becomes an inclusive lens wherein the idea of the city does not exclude the township and informal settlements that fall outside a city centre. For example, when thinking about Cape Town as a city, this settlements outlook enables one to think of Cape Town as inclusive of the suburbs, townships and informal settlements located outside the city centre.

Quigley (1998), through the study of Urban Diversity and Economic Growth, gives us theories of urban Diversity. Still, for the post-apartheid city with its many settlement types, it is not sufficient. From this study, we learn from Jane Jacobs and others that Diversity in the city led to heterogeneity in services driving up the demand for specialised inputs and outputs and yielding returns.

This theoretical outlook is once again based in New York and is not sufficient for understanding the value of Cultural Diversity in South African Settlements. Dewar's criteria for a Pedestrian-friendly settlement describes dense and intense environments wherein the local market is large and vibrant enough to support a wide range of goods, services and facilities, frequently provided by tiny operators. This attempt at articulating even the scale of operators is more relevant to the township context and enhances the reading of facets of Urban Diversity. But again, culture is not yet factored in or pronounced. Another dimension comes from Landman (2012) and the theory of place diversity.

It is, in fact, Landman who acknowledges inherent paradoxes from historical and contemporary social and cultural influences on the South African city and highlights three matters in the urban condition in South Africa that constrain Diversity. These are urban sprawl, fragmentation, and separation. The township is, in itself, an outcome of sprawl and separation or has elements of fragmentation. The Diversity brought about by the social and cultural influences that are important for including in our theory of Diversity increasing Resilience. While Jacobs considers Diversity as vital for the city's sustainability, I take sustainability to be inclusive of Resilience, thus making Diversity crucial for the city's Resilience.

Landman argues, for instance, that densification is not the only quantitative intervention for bringing about Diversity and is thus not sufficient because inequality can sometimes yield adverse outcomes for those attempts. Cultural Diversity can also determine some of these adverse outcomes or even paradoxes and call for an expansion of our outlook on Diversity to include Cultural Diversity. According to Talen (2008), place vitality and social equity become crucial in enhancing place diversity. What is missing from this is a recognition of Cultural Diversity as an essential way of strengthening place diversity and, in turn, urban Diversity, enabling Diversity to increase an urban settlement's Resilience

In the end, I want us to consider Diversity in the context of South African urban settlements to be consisting of three pillars, one of urban Diversity and its impact on economic growth and that of place diversity and its effect on place vitality, social equity, with movement as an element of structure informing pedestrian-friendly settlements and finally cultural Diversity complementing movement and influencing the socio-spatial changes in and around those settlements. The common thread in many of these theories is in line with Jacobs (1961) favouring urban vitality through a diversity of small businesses and an assortment of building types and dwelling units. Jacobs also called for an outlook on time that embraces the day and night functioning of the city as being crucial to this vitality.

As argued, however, social cohesion and social systems are also crucial for fostering Diversity and Resilience, where the notion of cultural Diversity can find expression as either an attraction or informer of social cohesion, social systems and socio-spatial changes. All of this complements Dewar's theory of positive urban performance denoted by intensity, Diversity and necessary complexity. Wang et al. offer other performance criteria for the city that are complementary to Dewar's position: spatial patterns, environmental components, public services, and management systems. This illustrates, even more, the importance of those socio-cultural dynamics that perspectives on cultural Diversity would enhance.

This is about ensuring strong community networks that can ensure that information is equitably distributed to empower community members to be prepared for adaptability in times of shock, stress, or even crisis. The multifunctionality and flexibility of spatial patterns are also highlighted as essential characteristics while embracing an ecosystem's view of the city. This can enhance the view of theory that recognises dominant interpretations of resilient cities as complex adaptive systems (Batty, 2008; Godschalk, 2003).

Dewar and Todeschini call for South Africa to move to a kind of smart transportation planning similar to that of the UK in 1992, wherein there is a precise setting of economic and social objectives and targets and the design of policies, strategies and projects to move towards these. This should include cultural Diversity and can be similar to a city's resilience plan. It will be essential to ask critical questions in that process, such as the following:

Who determines what is desirable for an urban system?

Whose Resilience is prioritised? Who is included (and excluded) from the urban system?

What perturbations should the urban system be resilient to?

What networks and sectors are included in urban design?

Is the focus on generic or specific Resilience?

Is the focus on rapid-onset disturbances or slow-onset changes?

Is the emphasis on short-term Resilience or long-term Resilience?

Is the focus on the Resilience of present or future generations?

Where are the spatial boundaries of the urban system?

Is the Resilience of some areas prioritised over others?

Does building resilience in some areas affect Resilience elsewhere?

What is the goal of building urban Resilience?

What are the underlying motivations for building urban Resilience?

Is the focus on process or outcomes?

Perhaps this will also aid the kind of governance outlook Zuniga-Teran (2016) calls for, which is informed by Diversity being at the centre of Resilience while going a step further to call for a city to have a resilience plan similar to the Boston case. In this outlook, Diversity is seen as a means of promoting stability in the face of change. Something important is revealed in the Detroit urban case. When the motor industry started decentralising in the 1960's job losses, rose sharply. It was unemployment and racial tensions that also drove white people and their wealth away from Detroit. This finding is worth reflecting on for South African cities in general and, in particular, the study of Diversity. South African cities and their Apartheid inherited townships; it can be argued, they are trapped in a vicious cycle of being environments designed for the poor black migrants who came there in search of work. That means, in essence, they were not designed to attract white people and their wealth.

This means that while there may be urban aspirations to attract all classes and cultural groups or races to the diversification project, there is already a binding constraint likely to repel white people and their wealth. This was also demonstrated by the acknowledgments made by Landman (2012) in the study of mixed housing. This is important for considering the effects of deindustrialisation on diversity efforts in South African urban Settlements.

CHAPTER

05

SITE ANALYSIS

5.1) Site Exploration

Site Walkabout

I began by undertaking some desktop research to establish an area with more diverse characteristics in Gugulethu. This exercise made me choose NY3, a movement route connecting, like a thread (irhali), Nyanga junction to Nyanga Taxi Rank. Furthermore, it made perfect sense to select a site with transport interchanges at both ends.







5.2) Diversity of Building Typologies

Suburban House Typology

This housing typology is similar to houses built in Cape Town suburbs but smaller with good size plots. Noticeably, these houses have fewer or no backyard dwellings.

Rowhouse Typology (referred to as stables, dog kennels, and matchboxes)

Brick and mortar house with asbestos roof sheeting, no internal finishes like ceilings or floor coverings.

Because of co-ownership, this typology has developed a lot of backyard dwellings.

Cottage Typology

This type is a semi-detached single-storey building, sharing a wall with one neighbouring unit. RDP(Reconstruction and Development House)

Department of Human Settlements built low-income two-bedroom units aimed at addressing the housing shortage in townships.

Migrant Labour Hostel (referred to as train houses, zones or KwaKiki)

These housing units were built by the apartheid government in peripheral areas of the city for African men who came mainly from Eastern Cape Homelands (Transkei and Ciskei) in search of work. Because of big in-between spaces and co-ownership, the site coverage often exceeds the municipal standard, filled with informal structures all-round. The majority of attachments along NY3 serve as both accommodation and informal trade structures.

Low-Income High-Density Housing (Two storey Walk-ups)

These are built by the Provincial Department of Human Settlements housing to address housing shortage through densification of Migrant Labour Hostels.

Council Owned 2-storey Row Housing.

The City of Cape Town Council built these as single quarters for residents.

Informal Structure Typology

There are two types of informal structures, one is (backyarding) in the backyard of the Rowhouse typology rented out to the backyard dwellers and the one privately owned in an informal settlement, as can be seen in the case of Lotus Park. These structures are built from timber and cladding with corrugated iron.



MIGRANT LABOUR HOSTELS



INFORMAL TRADING



BUILDING IN-FILLS



SEMI-DETACHED HOUSING



INFORMAL SETTLEMENTS



COMMERCIAL TRADING



RECREATIONAL



EDUCATIONAL



5.3) Formal and Informal Business

The area from Nyanga Junction to NY1(Steve Biko Road) has a broader distribution of building typologies.



5.4) Permanent Structures

Nyanga Junction

Nyanga Junction comprises formal commercial trading stores, including Shoprite/Checkers nation retail stores and other franchise shops like Fish and Chips Co.

Fuel Station (Referred to as NY1 Garage).

The fuel station is owned by a local businessman operating in an old Shell garage setup.

New fuel stations are now incorporating convenience shops like Pick-N-Pay, Steers, Debonairs, Something Fishy, Woolworths, Mug and Bean, etc.

Retail shops (Council owned)

These shops were thriving in the 1980s and were operated by locals. The Mjanyelwa Family used two shops, which originated from my village of Qumbu in the former Transkei. Few of them are operational now, and most of those are now operated by foreign nationals.

One would not expect business failure along NY1 (Steve Biko Road), but this is the main area where businesses from formal to informal seem to be struggling down to Emms Drive.



5.5) Diverse Informal Trading

Notably, informal trading has been established mainly on the south side of NY3. Observation is attributed to the fact that Hostels are on the south side of NY3 and are not privately owned. Therefore, it is accessible to appropriate in-between spaces around Hostels, put up temporary informal trading structures, and take advantage of commuters' movement and people walking to shop at Nyanga Junction.

Informal trading offers different goods like clothing, linen, hardware accessories. Also on offer are electrical appliances, light fittings, electrical conduits, wiring, refurbished fridges, TVs, electrical repair workshops, door locks, gartering systems, plumbing pipes and fittings, furniture, upholstery workshops, fresh vegetables, fruits, CDs, plastic containers, Herbalists (Traditional medicine), Sangomas (Traditional Healers), hair salons, Cellphone accessories, and repairs, traditional foods restaurants, raw and braai meat, shebeens, car wash, car repairs, shoe repair shops, and barbershop.



5.6) Temporal Structures

The setup is straightforward and comprised of a space displaying goods for marketing purposes. Depending on the nature of products on sale, these can be displayed on the sidewalk, kept in place with heavy objects like bricks, and hanging on collapsible gazebo structures. The table is placed on drinks or beer crates, cardboard boxes covered with uPVC cloths or foldable steel tables, shop owner/keeper's chair, and a shade cloth hung on a makeshift gazebo structure. This is the simple life setup because of the lack of urban infrastructure supporting informal trading.

Steel Structures (shipping containers)

These structures offer some level of permanency due to their lockable nature. Other structures are constructed out of timber and corrugated iron, which is usually attached to permanent installations.



5.7) Transportation Diversity

Trains

Trains are still among the cheapest, efficient, and reliable modes of transport used by Township dwellers. However, this mode of transport has been riddled with vandalism (cable theft), lack of safety, and crime. Trains have not kept up with population growth in the Township, which is more evident during peak hours, and train operations are often disrupted due to cable theft.

Busses

Golden Arrows bus service has been operating in Cape Town urban areas and mainly in townships where the majority of the people do own cars, where they are seen to be providing a more reliable and cheaper service than the mini-bus taxis. However, buses are sometimes caught up in mini-buses(taxi) routes conflicts, and violence.

Mini-Bus Taxis

Though it is instead an expensive mode of transport, it is thriving in Townships due to its more frequent availability than buses. Nyanga Taxi Rank is the only Taxi Rank servicing Gugulethu and Nyanga, thus rendering this transport mode inefficient during peak hours.

Amaphela

Amaphela emerged to take advantage of the service vacuum providing transportation for a short distance from the doorstep, Street to a bus terminus, train station, or taxi rank. They are more efficient because they are always in circulation and are cheaper. Unlike min-bus taxis, they don't wait for commuters to fill up. They are the Township's version of the cab as we know it.

Motorcycles and bicycles do not feature as alternative or cheaper modes of public transport in SA Townships. I observe that these two modes of transportation are individually operated and owned. However, it is clear why these modes of transport are not used in Townships. All the road networks were designed to prioritize cars. Public space alongside the road is less than the road space. The narrow sidewalk is shared between pedestrians and everyday activities, forcing people sometimes to risk their lives and walk on the road. This cannot offer enabling conditions for cycling.



5.8) Densification, Intensity & Public Spaces

Densification and Intensity

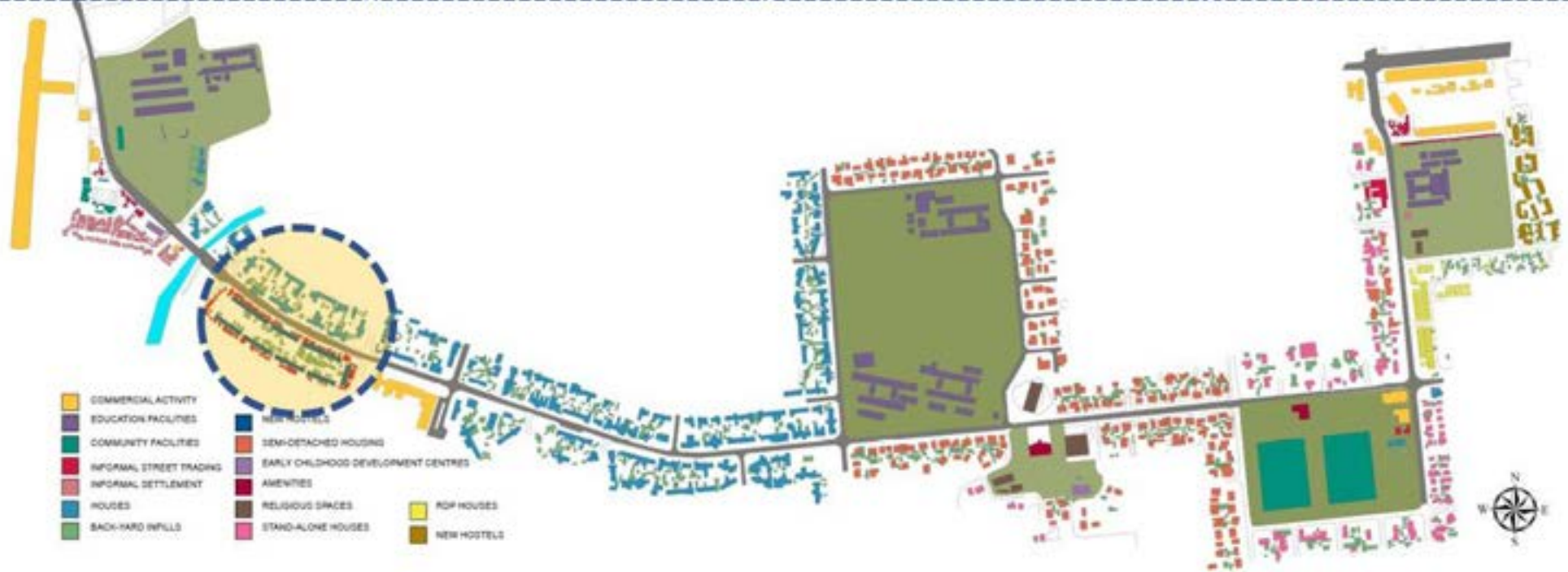
The intensity from Nyanga Junction to NY50 has increased and that can be attributed to the fact that high densification through formal and informal means is increasing at a high rate in this area.

Public space

There are no Public spaces providing community space for everyday activities. Potential Public spaces are fenced off and attached to public schools with limited or no public access.



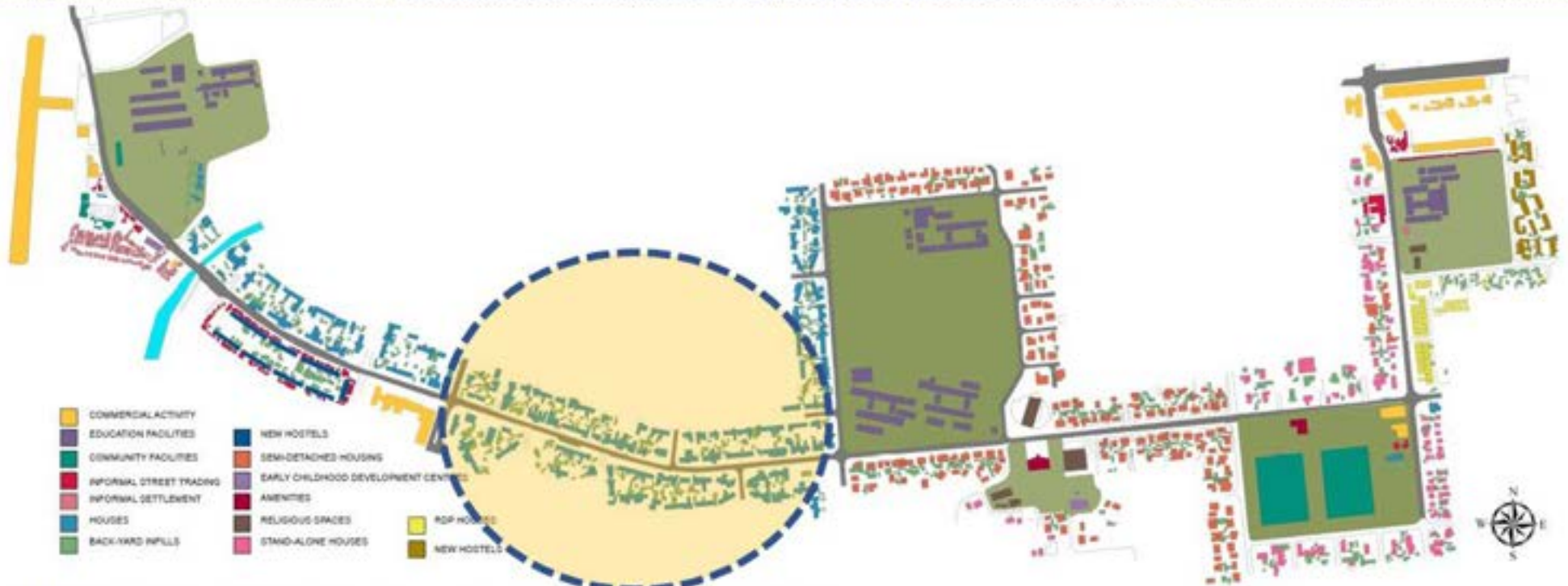
DIVERSITY OF DIFFERENT HOUSING TYPOLOGIES, TRADING & COMMUNITY AMENITIES



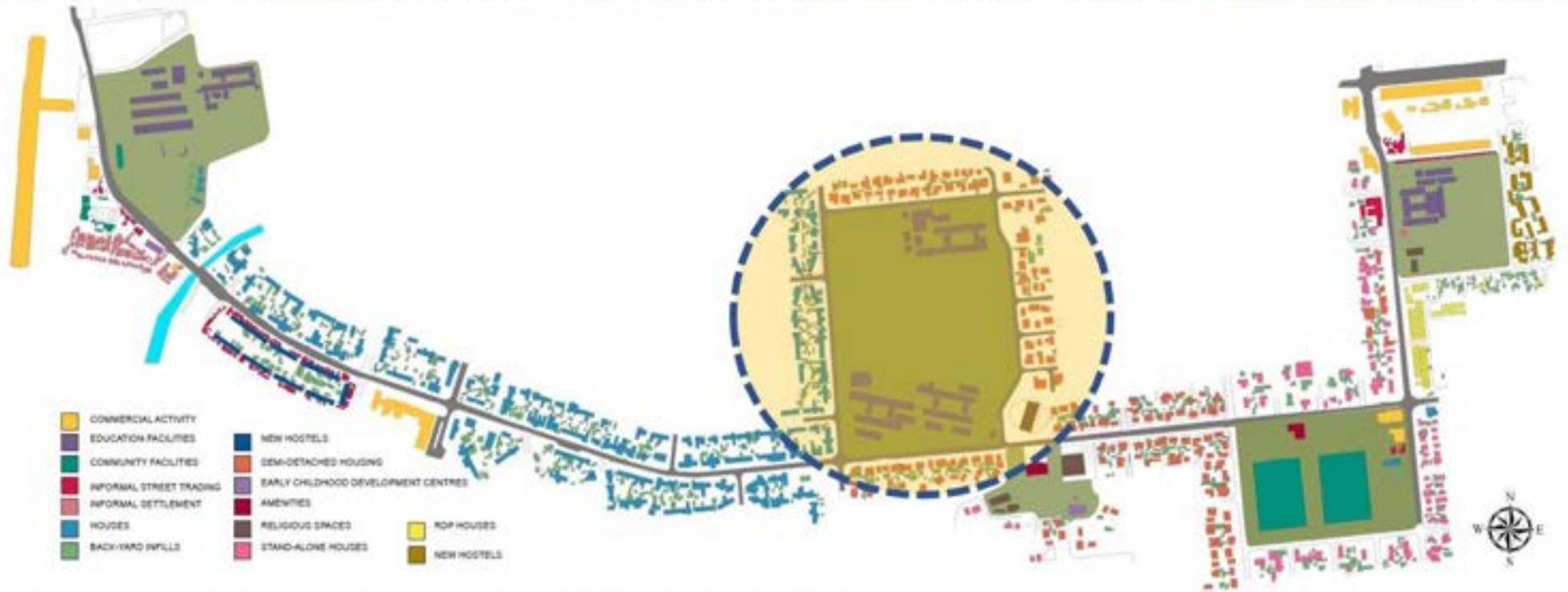
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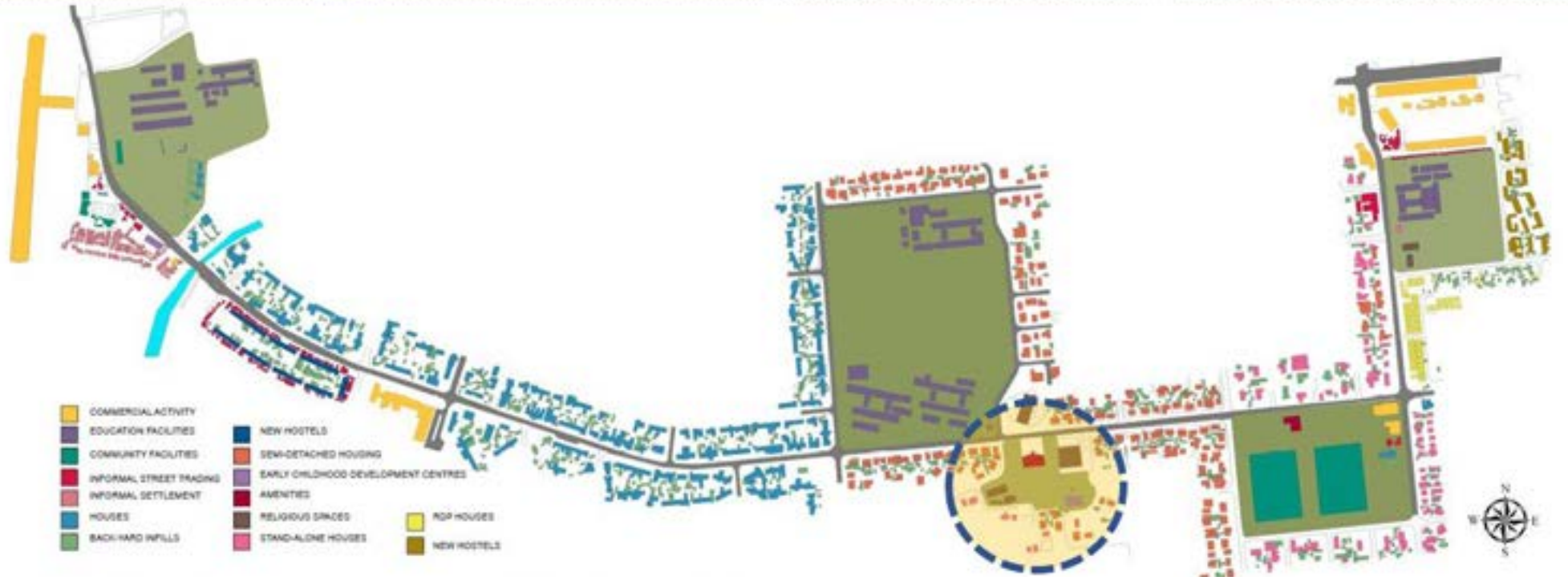
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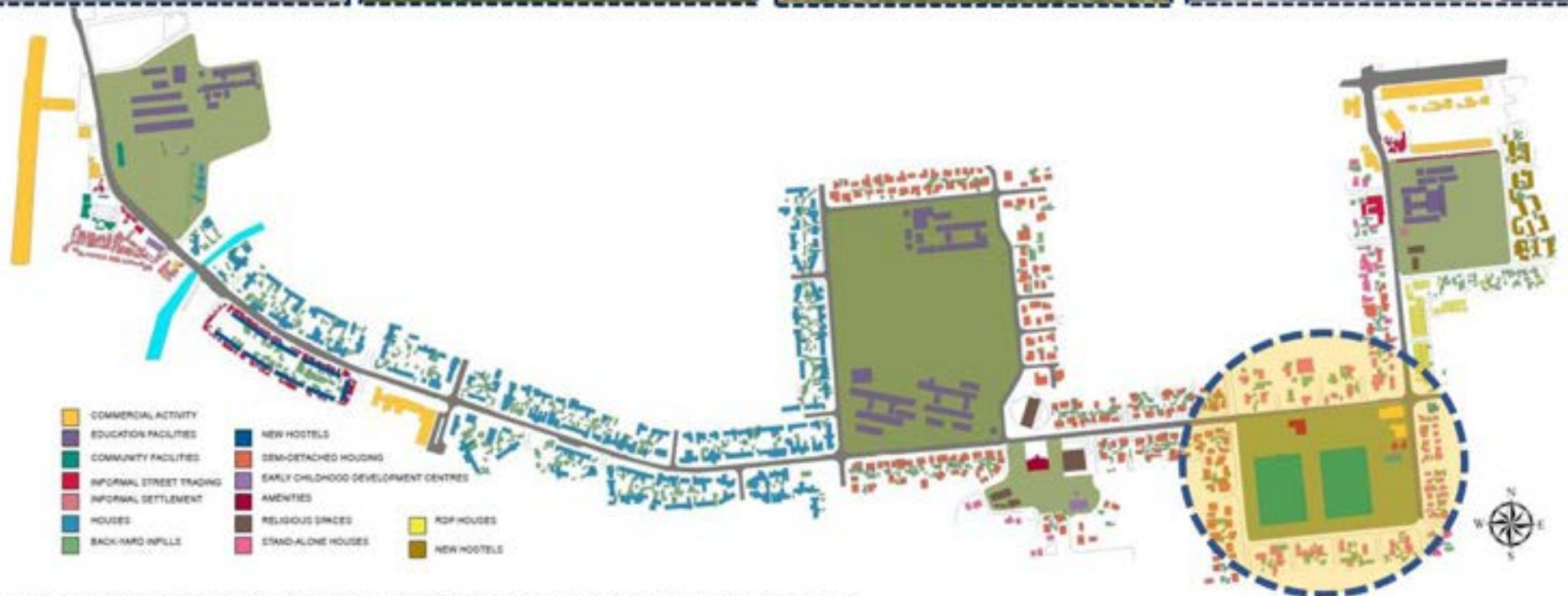
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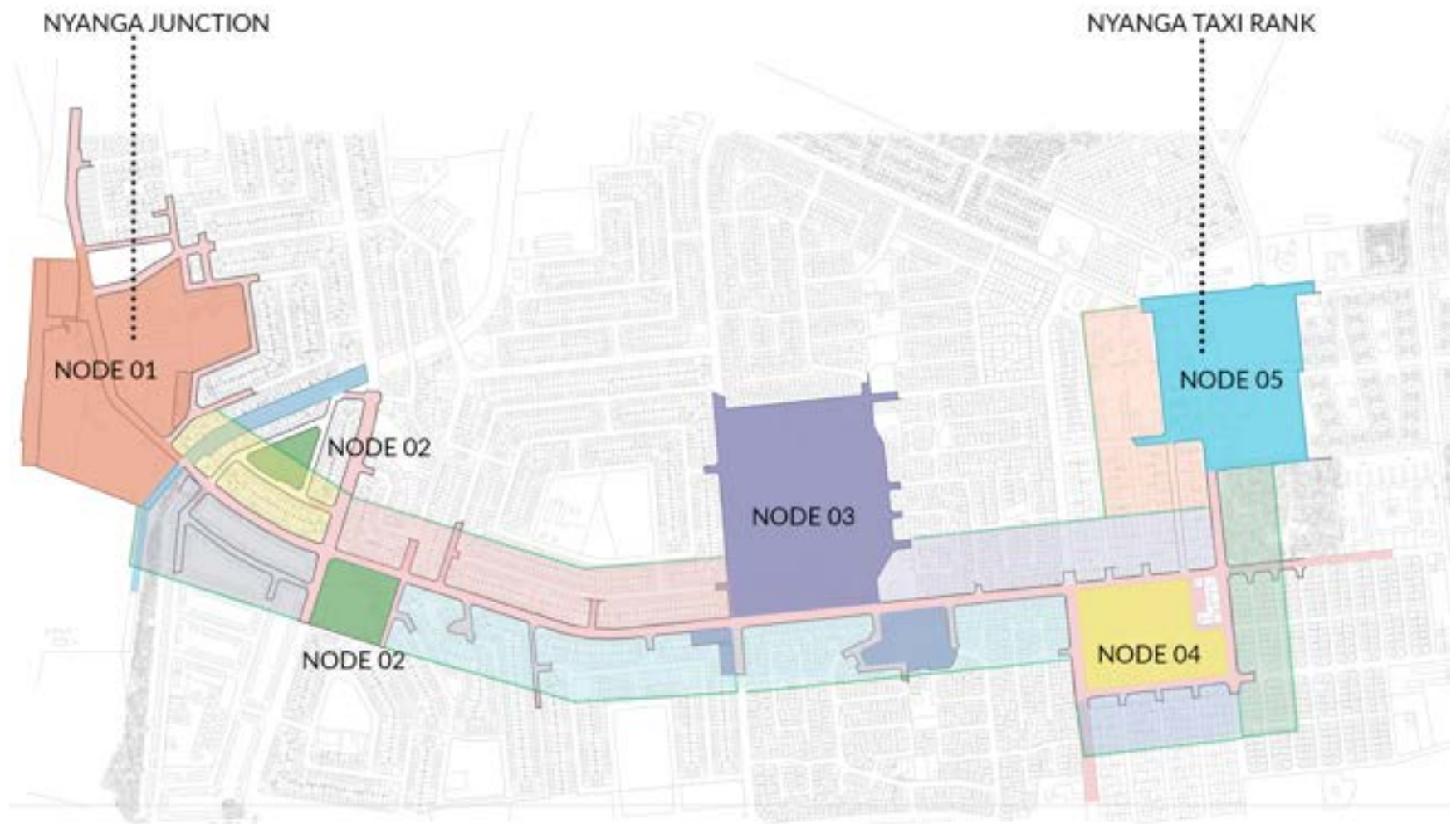
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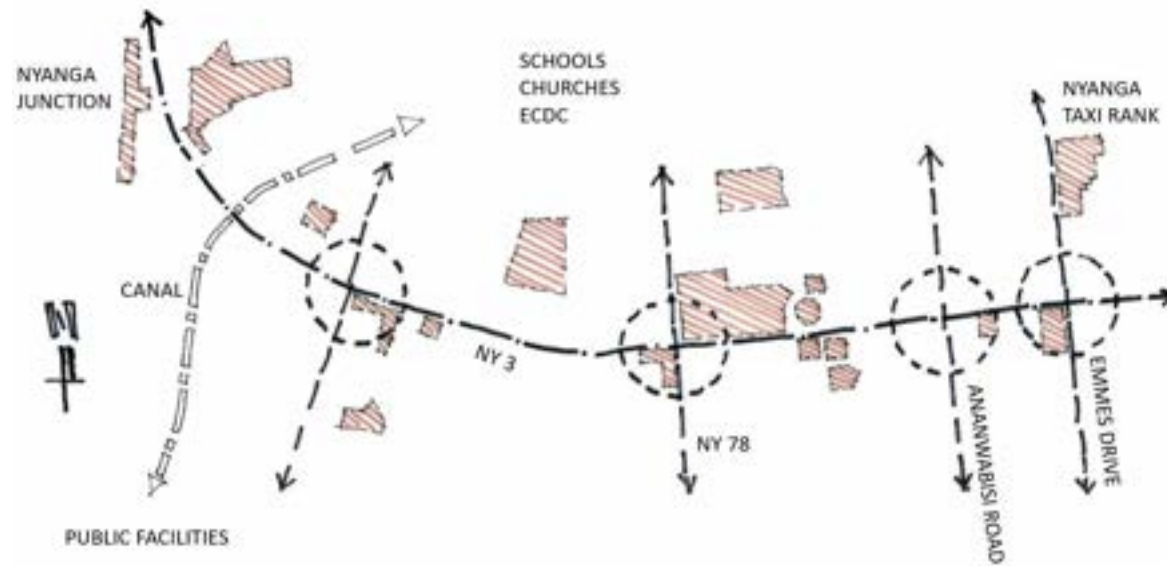
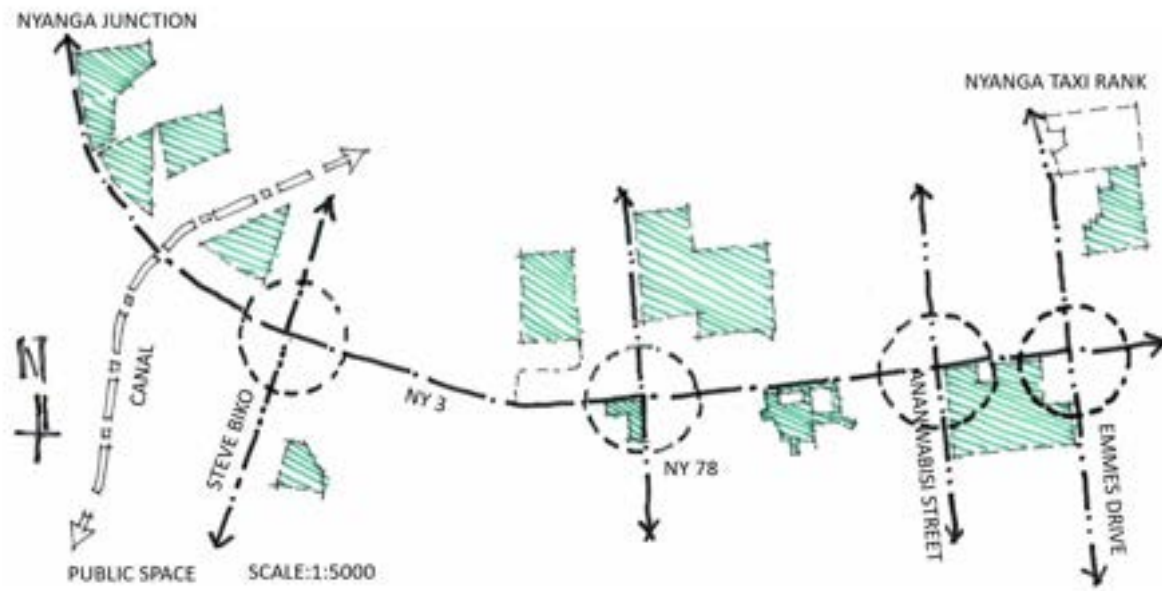


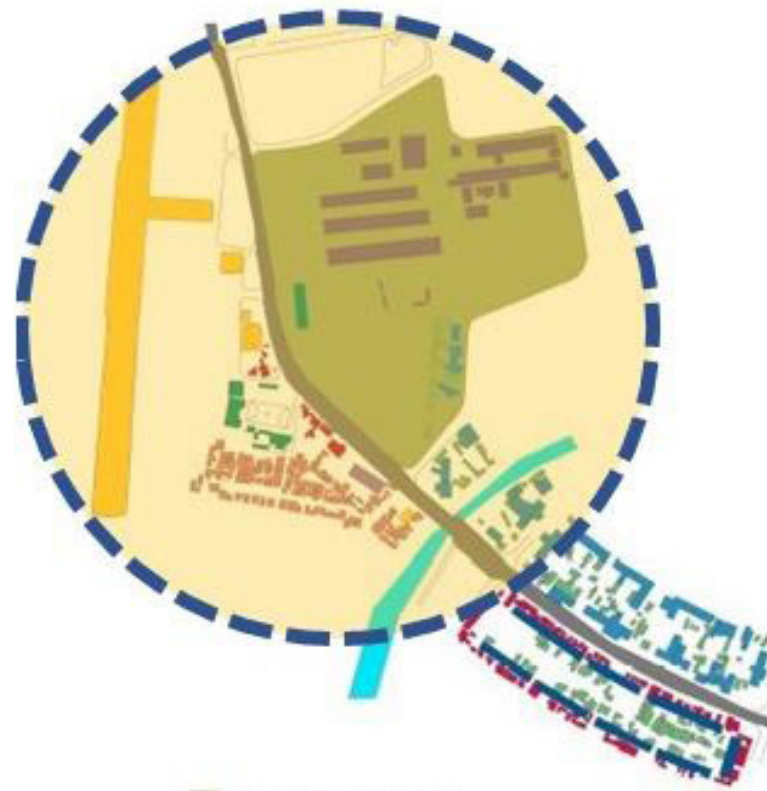
DIVERSITY OF DIFFERENT HOUSING TYPOLOGIES, TRADING & COMMUNITY AMENITIES



DIVERSITY OF DIFFERENT HOUSING TYPOLOGIES, TRADING & COMMUNITY AMENITIES







**HIGH INTENSITY ZONE
HIGH DENSITY
STRONG COMMERCIAL ZONE – FORMAL/INFORMAL TRADE**



EXISTING STREET CONDITIONS



EXSITING STREET CONDITIONS

SUPPORT AND ENHANCE

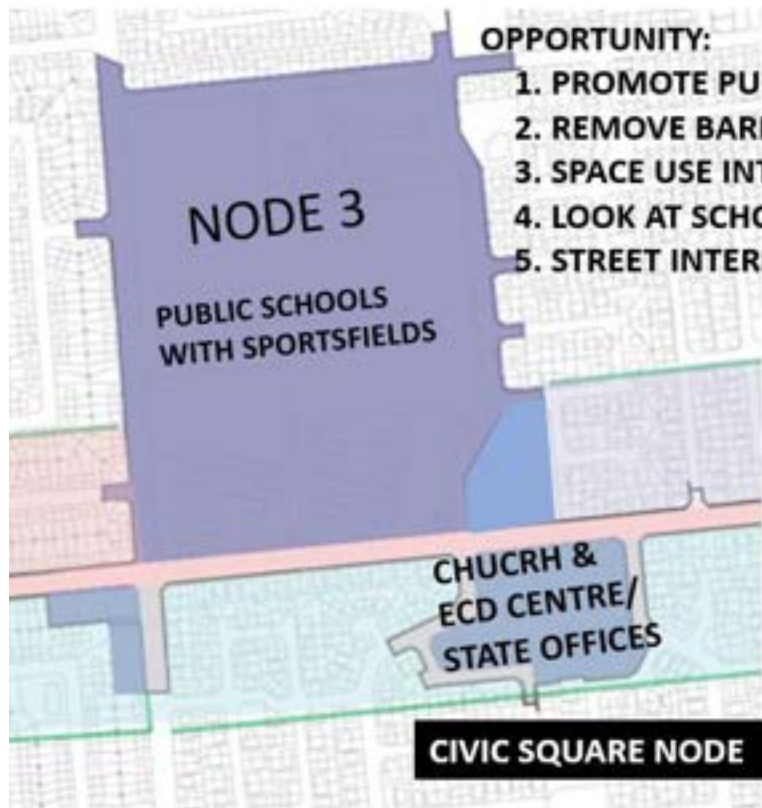


HIGH INTENSITY ZONE
HIGH DENSITY (CONSIDER INCREMENTALISM)
STRONG INFORMAL TRADE ZONE
CANAL CLEANING



CHALLENGES:

1. BARRIERS TO ACCESS – FENCING
2. UNDEFINED PUBLIC SPACE (NO IDENTITY)

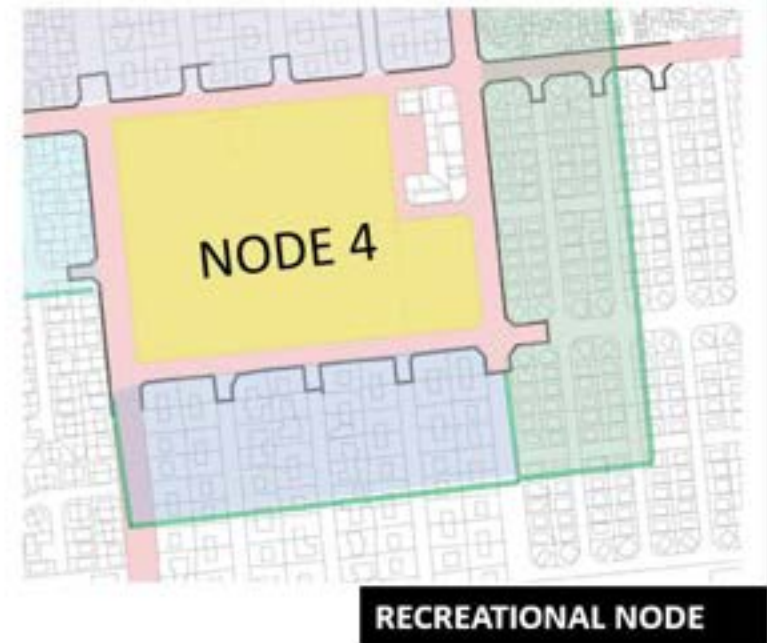


OPPORTUNITY:

1. PROMOTE PUBLIC ACCESS
2. REMOVE BARRIERS
3. SPACE USE INTERGRATION
4. LOOK AT SCHOOL ENTRANCES
5. STREET INTERFACE

OPPORTUNITY:

1. URBAN INTERVENTION TO DRAW PEOPLE IN
2. PROMOTE NODAL LINKS
3. ENHANCE PUBLIC SAFETY MEASURES

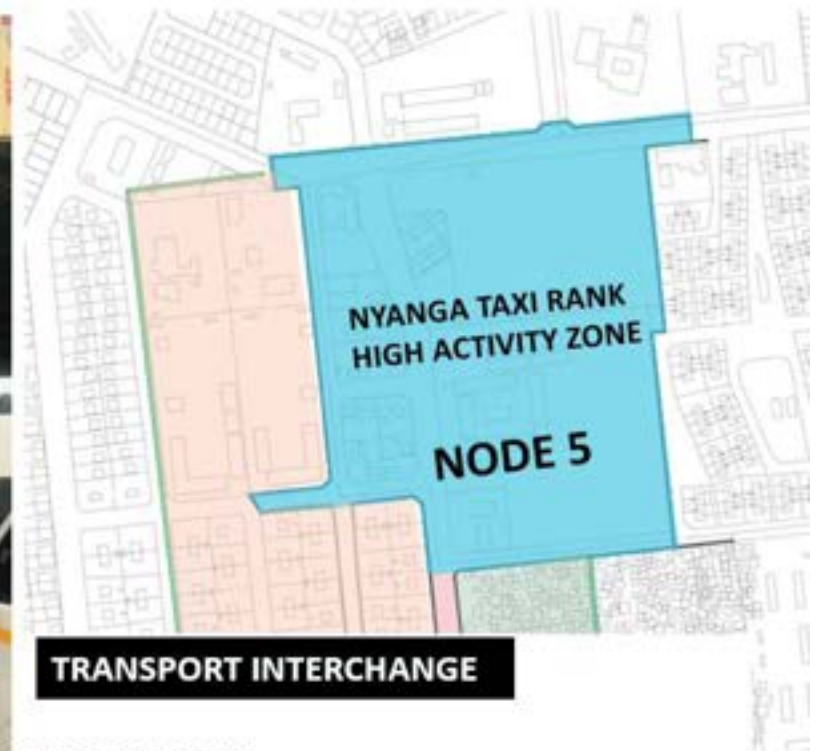


VISION:

TRANSFORM, SPACE CHARACTER/IDENTITY TO PUBLIC SPACE & STREET INTERFACE

CHALLENGES:

1. PUBLIC SAFETY
2. URBAN INTERVENTION FOR INFORMAL TRADING SUPPORT
3. IDENTITY



VISION:
LINK TO NODE 1

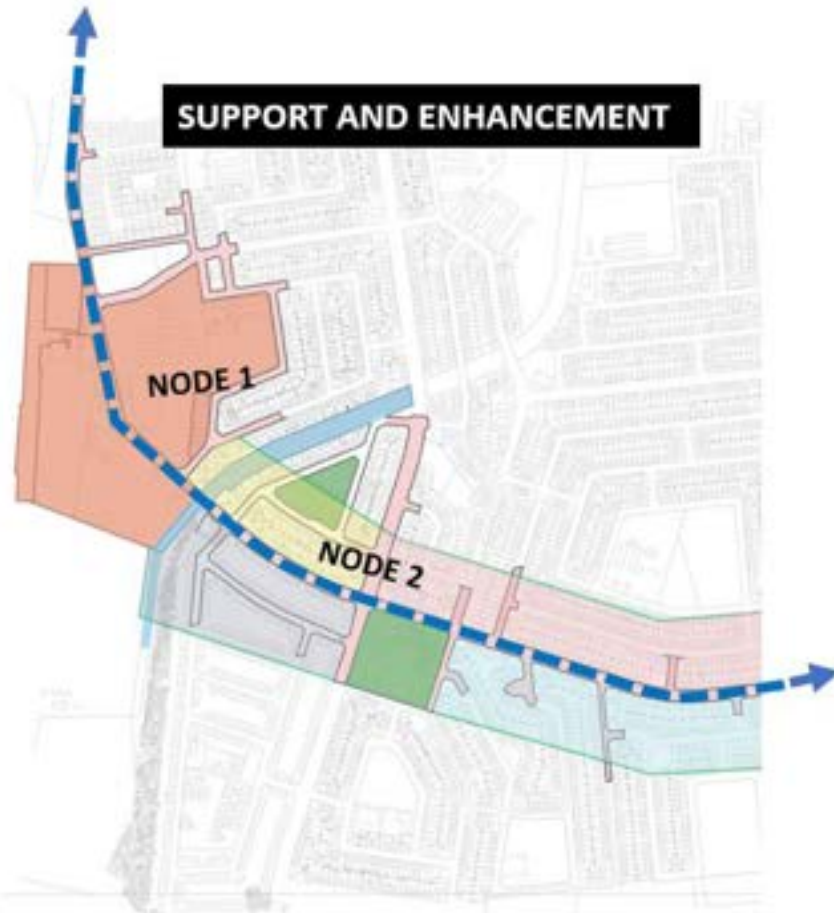
OPPORTUNITY:

1. PROMOTE PUBLIC ACCESS
2. ENHANCE SAFETY
3. TRADE & URBAN INFRASTRUCTURE SUPPORT



CHALLENGES:

1. FRAGMENTED NODES

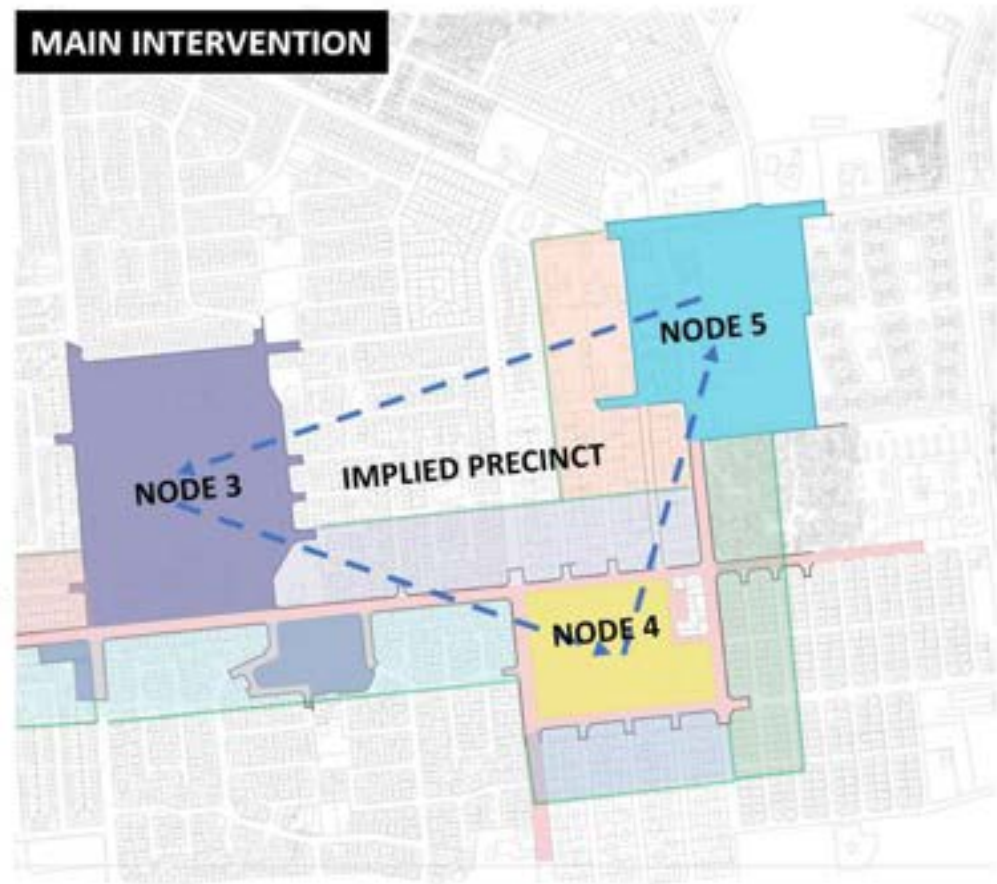


VISION:

CONNECT HIGH ACTIVITY ZONES

OPPORTUNITY:

1. SPACE INTEGRATION
2. USE MOVEMENT TO LINK NODES



C H A P T E R

06

DESIGN STRATEGY & DESIGN PRINCIPLES

6.1) Design Strategy

The area of inquiry stretches along NY3 from Nyanga Junction to Nyanga Taxi Rank. The road starts as NY3 and changes its name to Koornof, 3rd Avenue and Emmes road by the time it reaches Nyanga Taxi Rank. To ease my way through the proposal, I have given the route NY3 the name iRhali (thread) Road referring to the space-connecting thread. I divided the area into 5 nodes as follows: Node 1(Nyanga Junction), Node 2(stretches from the canal to the fuel station across NY1(Steve Biko Road), Node 3(Schools site), Node 4(Nyanga Sports Field) and Node 5(Nyanga Taxi Rank).

The design strategy takes advantage of overlooked urban assets in Gugulethu and allocate new urban uses to underused open spaces usually attached to public schools, sports fields and social infrastructure like halls, thus stabilizing neighborhoods through curating a programmatically diverse urban fabric which contributes to resilience.

Urban adaptive reuse to existing Gugulethu urban environment and allocation of new and multiple uses of open spaces provides an opportunity for re-inventing the built environment through a process of layering and curation, leading to more diverse and resilient urban fabric.

Adaptive reuse of urban space is a strategy which will not only look at large scale urban regeneration project but also focus on small scale initiatives which can have an immediate impact and organically grow to a bigger scale with long term impact.

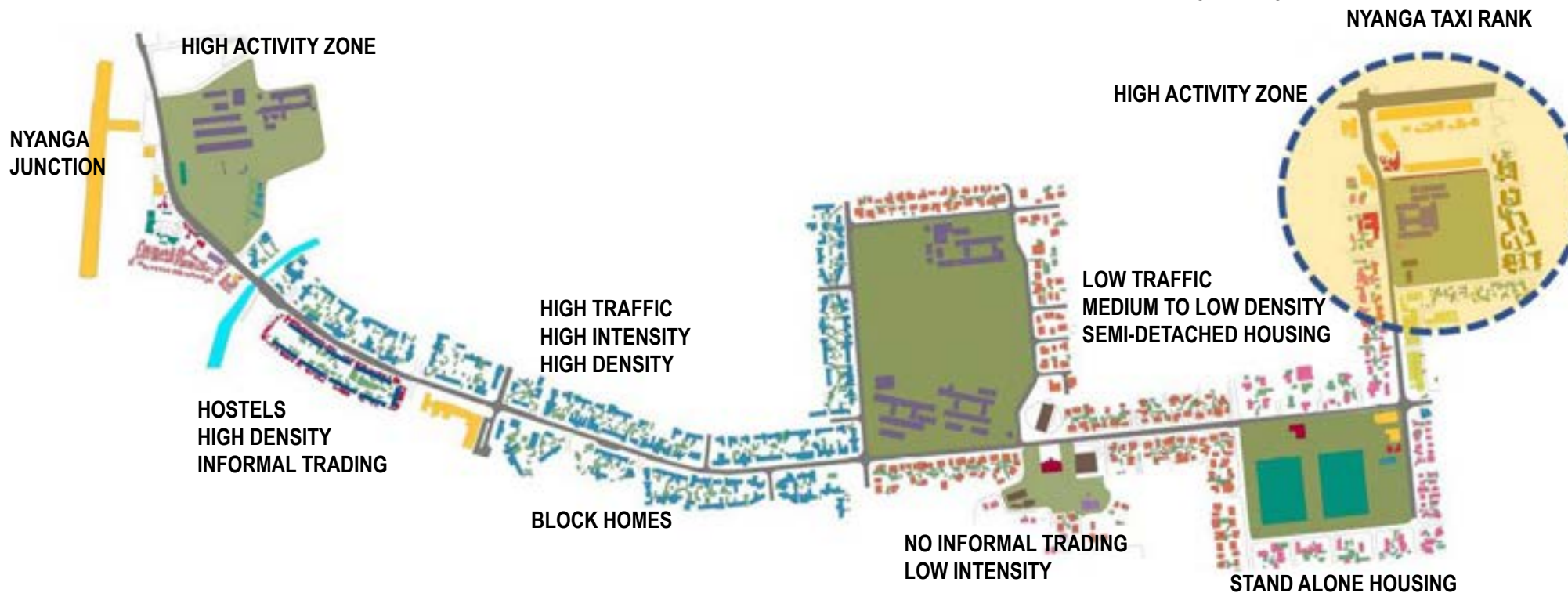


Node 1 and Node 5 are high activity gateways for the people entering or leaving the Township.

Introduction of commercial facilities in Nyanga Junction triggered space transformation which saw the interchange becoming a social centre and a 'special space' environmentally (D. Dewer, F. Todeschini, 2004). Centres like these have become centres for the people to meet and socialize. People feel a sense of ownership and see these centres as the spaces they belong to regardless of their social standing.

David Dewer's argument on the public transport interchange points as instruments of urban restructuring reinforces the diverse nature of activities already taking place around these two interchanges. The energy levels currently existing in these two nodes influenced my intention to connect the two nodes. This brings me to a point that growth of diversity around these centres is a biproduct of the urban restructuring taking place in these centres or vice versa.

High levels of Diversity and activities in and around these nodes can catalyse an increase in urban resilience in this section of Gugulethu. How do we then spread the resilience indicators demonstrated in these nodes throughout Gugulethu?



1. The first step is to leverage on existing diversity and resilience performance found in these nodes by connecting the two high activity nodes.

2. Secondly, look at the impact node 2 and 5 are having on other nodes.

3. Thirdly, intervene and lift nodes that are not performing at the same level as other nodes.

Nodes Connection

This approach is leveraging on the use of movement as a space integrator (D. Dewar, F Todeschini,2004). This will change the current character of NY3, where the route in its form and relation to the urban form around it, encourages destination to two nodes than connection to opportunity.

Uytenbogart highlights equity to frame his argument on urban structural elements. This way he promotes urban activities and different processes of by allowing access to the opportunities the urban environment generates. Another dimension to be added into the theory of using movement as urban integrator is the use of movement as an element of Urban Space (D. Dewar, F Todeschini,2004).

Nodes 2&5 impact on other nodes

The impact of Node 1 to Node 2 could be described as positive due to the close proximity of nodes to each other. The performance bubble of Node 1 stretches to covers Node2, but its energy doesn't travel as far Node 3 because of long distance between three and two. This therefore means that I will not focus my design intervention on nodes 1&2. Node 5 urban performance is very close to that of Node 1; however, does not have enough impact to share or influence performance of Node 4 because of the long distance between the two and the fact that they don't share the same movement route. In view of the above, my design focus only covers Node 3 and Node 4. Node 3 &4 Design Intervention.

NODE 3 &4 DESIGN INTERVENTION

Phandulwazi Node 3 ('knowledge seeking' hub)

This node is comprised of 3 schools and big underutilised open spaces between the schools. The overall area of the site is 10 hectares with schools taking 4.7 hectares and open space taking 5.3 hectares. NY3/Koornof street (Rhali street) is the main street on southern side of the site, fronting and connecting Gugulethu to Nyanga and Crossroads. NY 78 (Emdeni street) is running along the length on the western side and connects the site to the Philippi area. David's Street on the northern side connects the site to the neighbourhood and local networks. J. Nontula Street runs on the eastern side of the site and links the site to local networks.

Spatial Development Framework.

Movement is pulled through the site, creating a corridor of knowledge while splitting the site into two halves. The corridor starts as a grand entrance from NY3 (Rhali) and cuts between two schools (Sithembale Matiso Senior Secondary School on the western side and Andile Primary School on the eastern side and weaves through the site to connect to Davison Street at the rear end of the site. The western half of the site is comprised of the school on the southern entrance side and an open space to the edge of Davids Street on the northern rear side.

The open space is further split into two halves by pulling NY 90 street across Emdeni street, through the site to the central corridor of knowledge.

The eastern half of the site is comprised of Andile Primary School from NY3 (Rhali street) and Nomlinganiselo Primary School on the northern edge (Davids Street) and the open space between the schools. The open space is then divided into two halves by pulling Yanta Avenue through to the central corridor running through the site.

Programme

Open spaces

Mixed-use High Density Low-income Housing (two storey walk-ups)

Mixed-use housing allowing trading space on the ground floor defining site edges along Mdeni Street.

Courtyard space creation

Play area

Parking

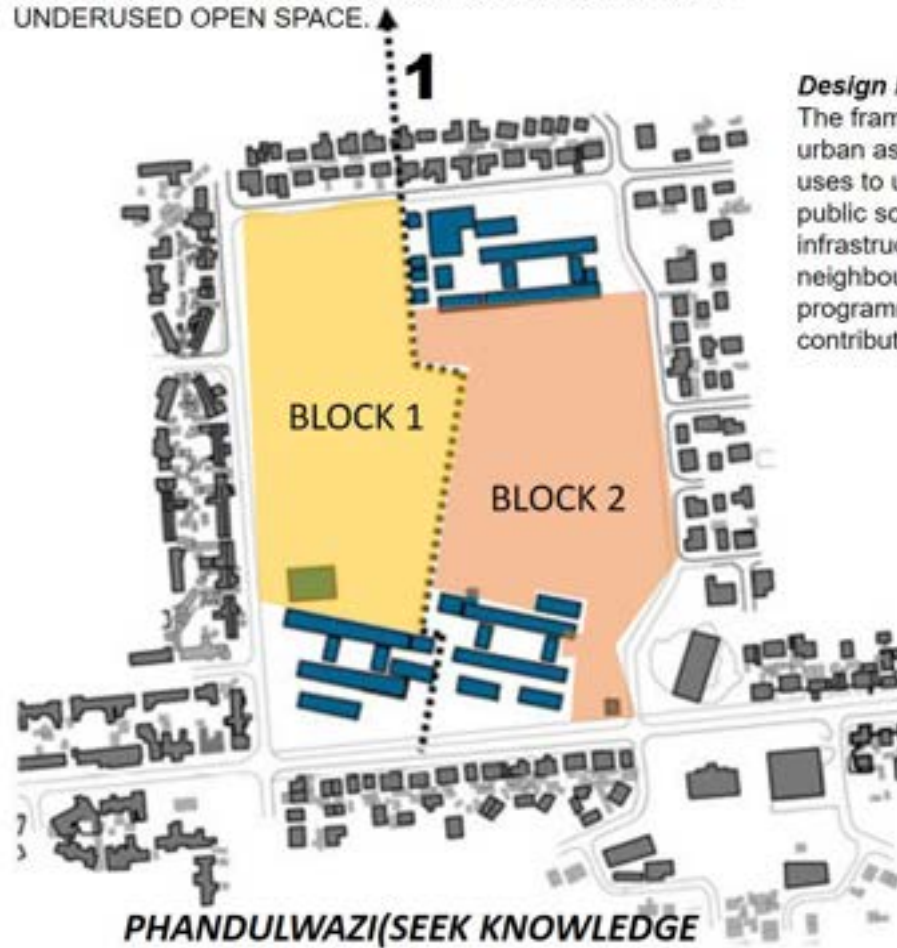
Landscaping

Empilweni Node 4 ('wellness' hub)

The site is comprised of 2 full size rugby sports fields, a small clubhouse, parking, concrete seating stands and is 4 hectares in size. NY3/Third avenue on the northern side, gives the frontage to the site. Emmes Drive on the eastern side connects the site to Nyanga Taxi Rank and Philippi. Second avenue runs on the southern side of the site and Ananwabisi completes the boundary on the western side of the site. There are few

STRATEGY 1:

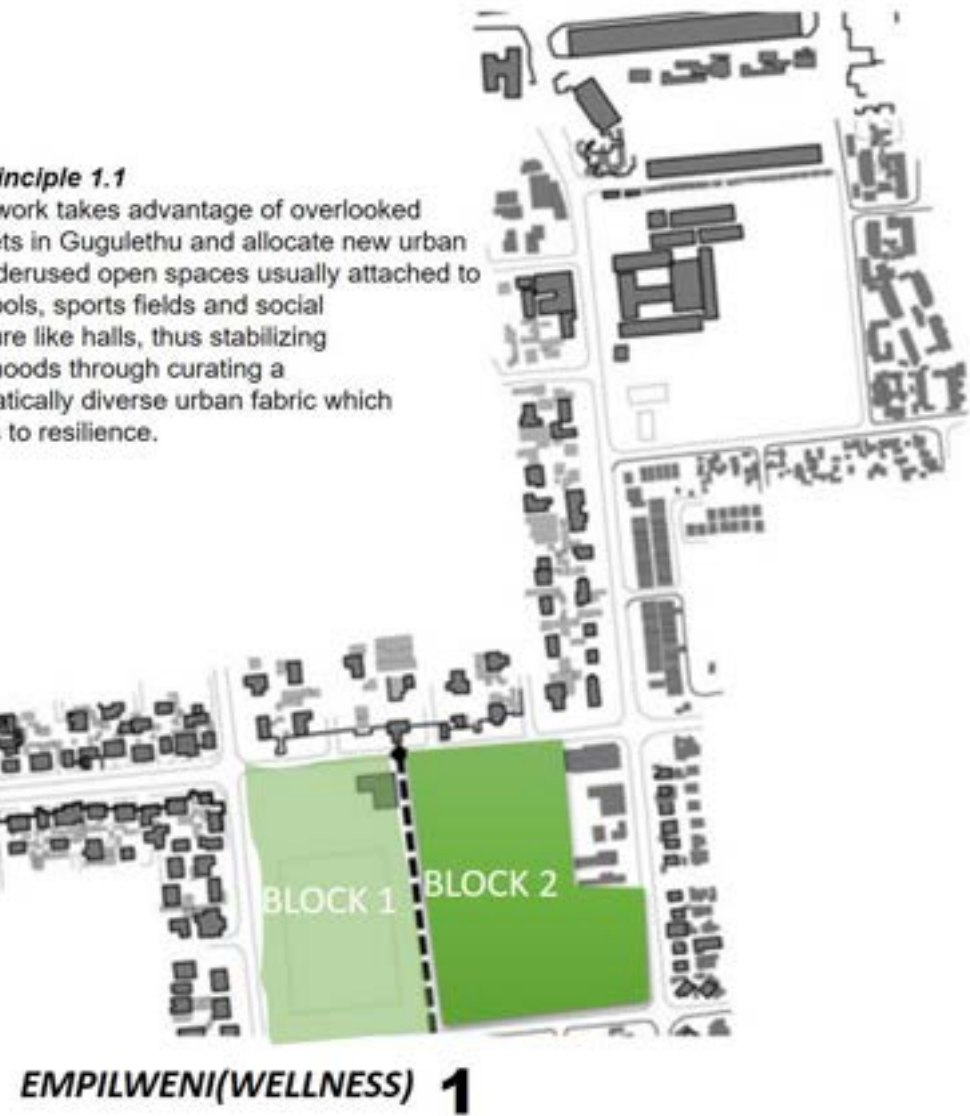
INTRODUCE A LINE AS A SPACE WHICH COLLECTS DIVERSE ACTIVITIES ALONG ITS EDGES AND ACTIVATE UNDERUSED OPEN SPACE.



PHANDULWAZI(SEEK KNOWLEDGE)

Design Principle 1.1

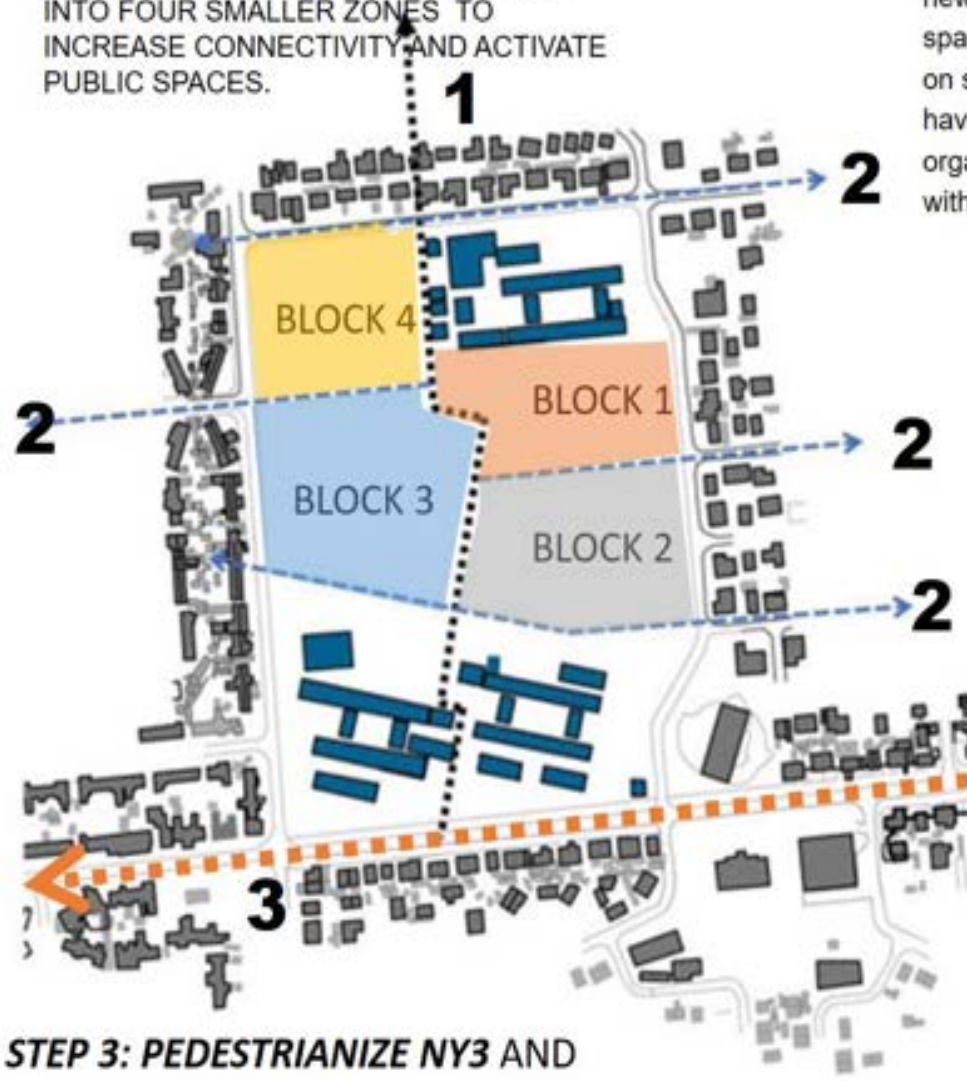
The framework takes advantage of overlooked urban assets in Gugulethu and allocate new urban uses to underused open spaces usually attached to public schools, sports fields and social infrastructure like halls, thus stabilizing neighbourhoods through curating a programmatically diverse urban fabric which contributes to resilience.



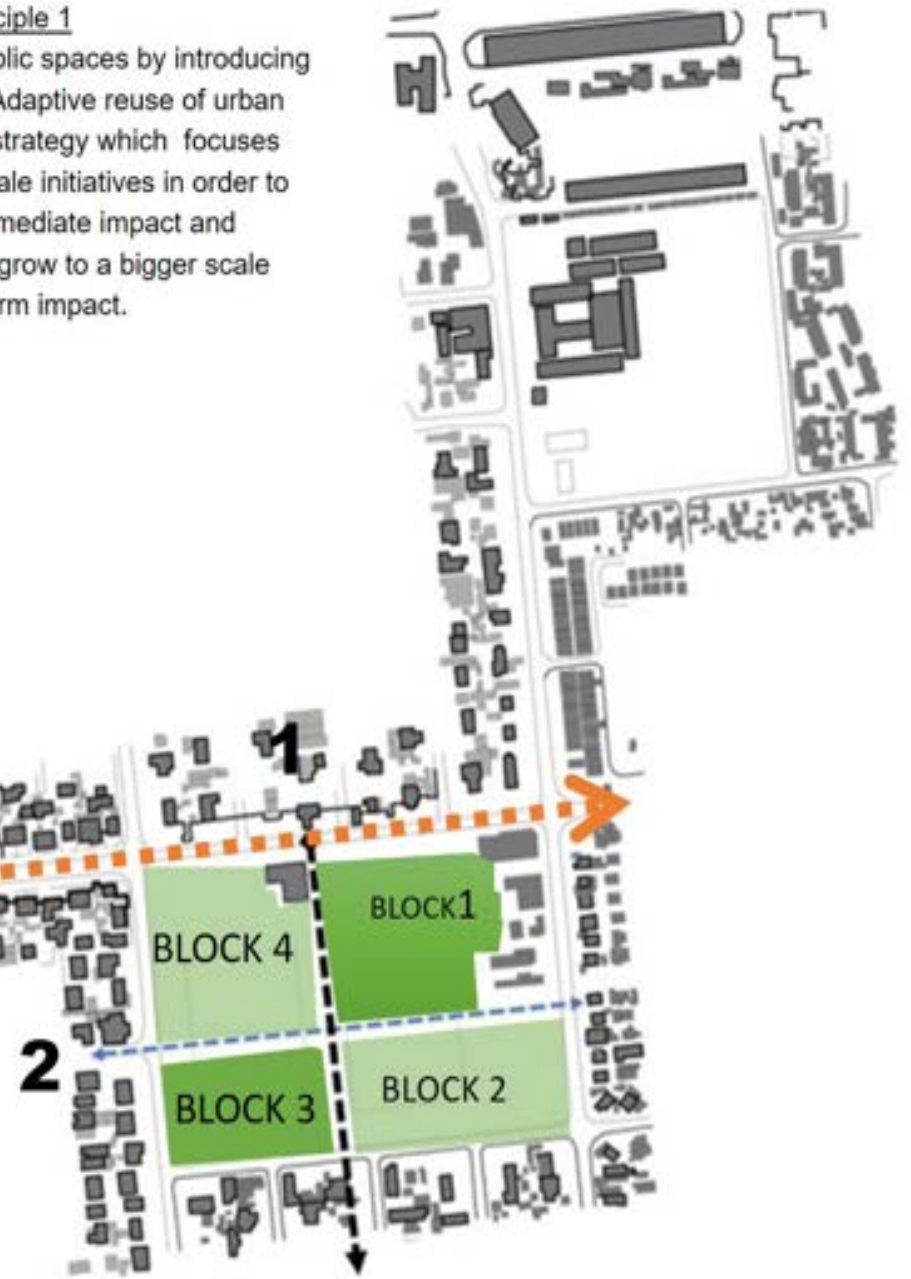
EMPILWENI(WELLNESS) 1

STRATEGY 2: INCREASE CONNECTIVITY
 PULL ADJACENT STREETS THROUGH TO
 CENTRAL SPACE APPORTION SPACE
 INTO FOUR SMALLER ZONES TO
 INCREASE CONNECTIVITY AND ACTIVATE
 PUBLIC SPACES.

design principle 1
 activate public spaces by introducing
 new uses. Adaptive reuse of urban
 space is a strategy which focuses
 on small scale initiatives in order to
 have an immediate impact and
 organically grow to a bigger scale
 with long term impact.

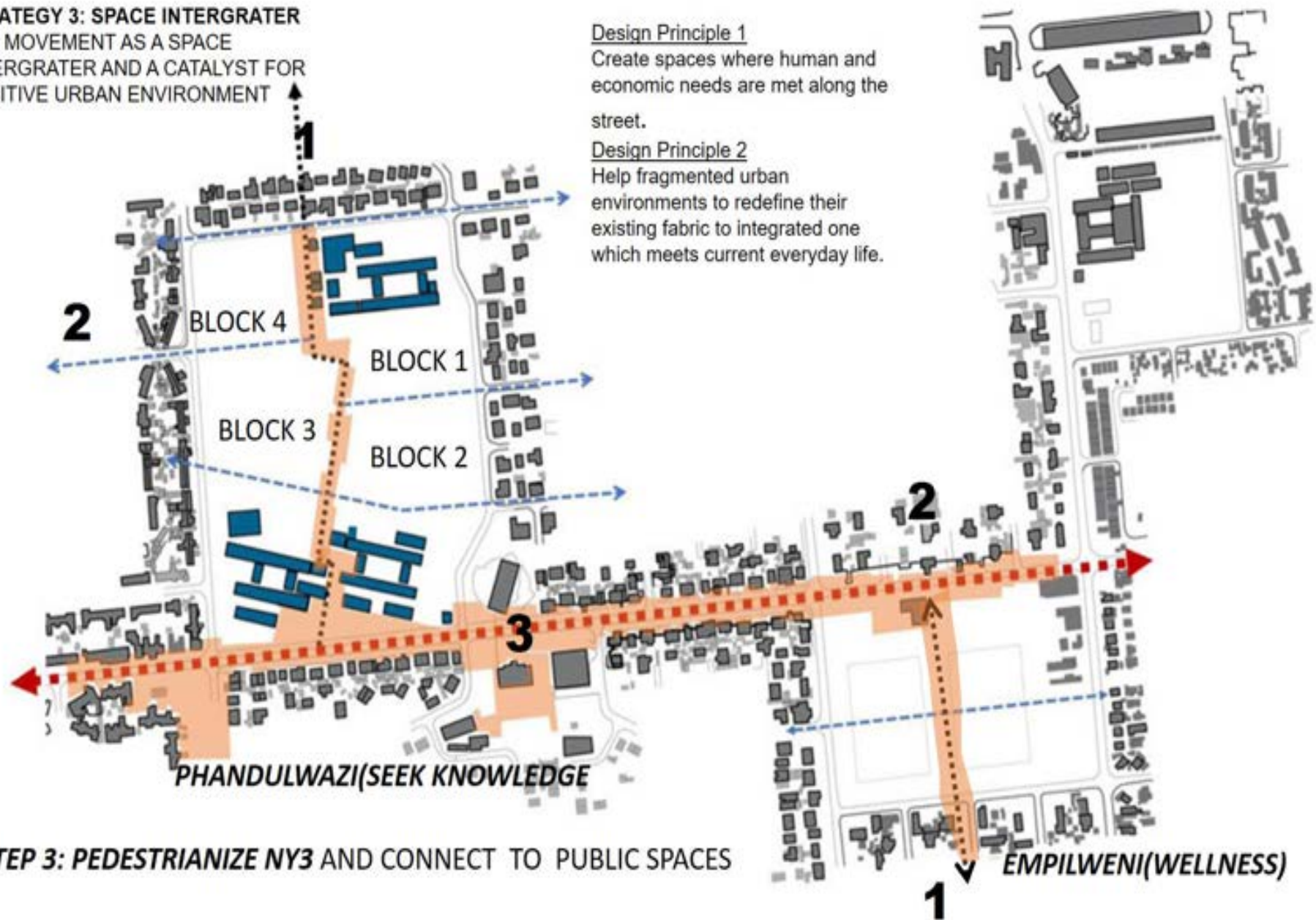


**STEP 3: PEDESTRIANIZE NY3 AND
 CONNECT TO PUBLIC SPACES**



STRATEGY 3: SPACE INTERGRATER
 USE MOVEMENT AS A SPACE
 INTERGRATER AND A CATALYST FOR
 POSITIVE URBAN ENVIRONMENT

- Design Principle 1
 Create spaces where human and economic needs are met along the street.
- Design Principle 2
 Help fragmented urban environments to redefine their existing fabric to integrated one which meets current everyday life.



STEP 3: PEDESTRIANIZE NY3 AND CONNECT TO PUBLIC SPACES

STRATEGY 4: DIVERSE FACILITIES

MAKE A PROVISION FOR DIVERSE EDUCATIONAL FACILITIES IN NODE 3 AND RECREATIONAL FACILITIES IN NODE 4

Design Principle 4.1

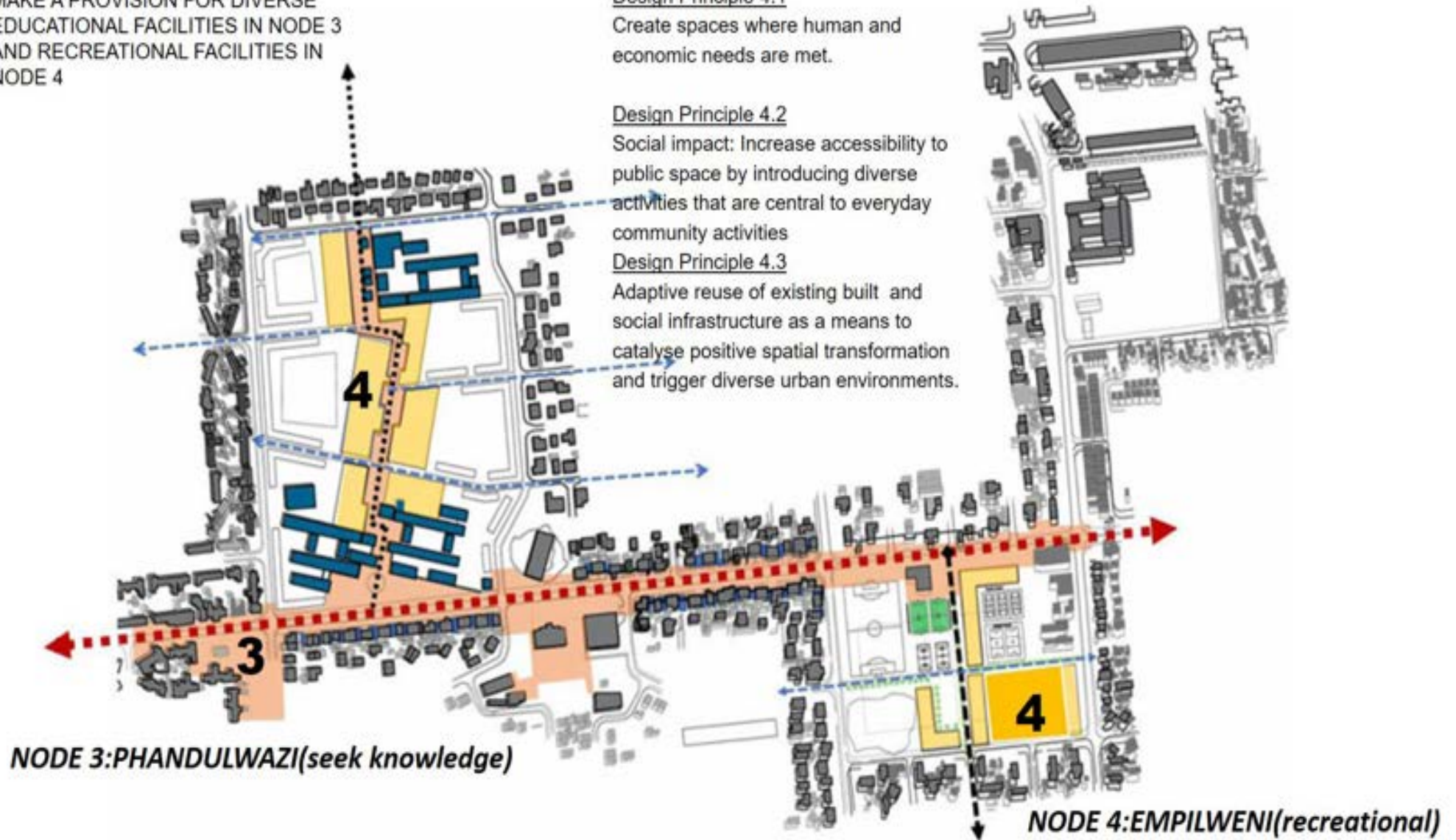
Create spaces where human and economic needs are met.

Design Principle 4.2

Social impact: Increase accessibility to public space by introducing diverse activities that are central to everyday community activities

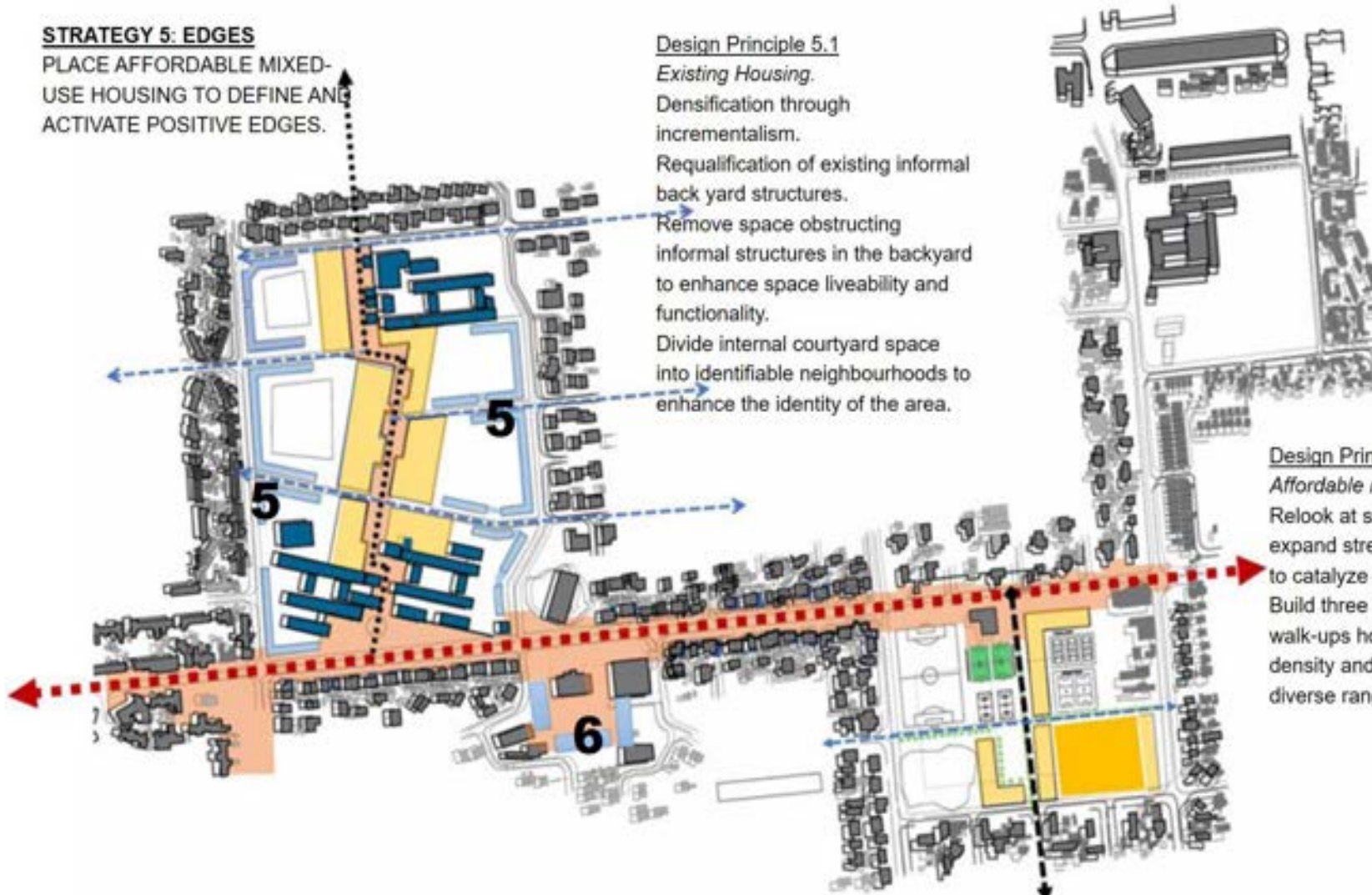
Design Principle 4.3

Adaptive reuse of existing built and social infrastructure as a means to catalyse positive spatial transformation and trigger diverse urban environments.



STRATEGY 5: EDGES

PLACE AFFORDABLE MIXED-USE HOUSING TO DEFINE AND ACTIVATE POSITIVE EDGES.



Design Principle 5.1

Existing Housing.

Densification through incrementalism.
Requalification of existing informal back yard structures.
Remove space obstructing informal structures in the backyard to enhance space liveability and functionality.
Divide internal courtyard space into identifiable neighbourhoods to enhance the identity of the area.

Design Principle 5.2

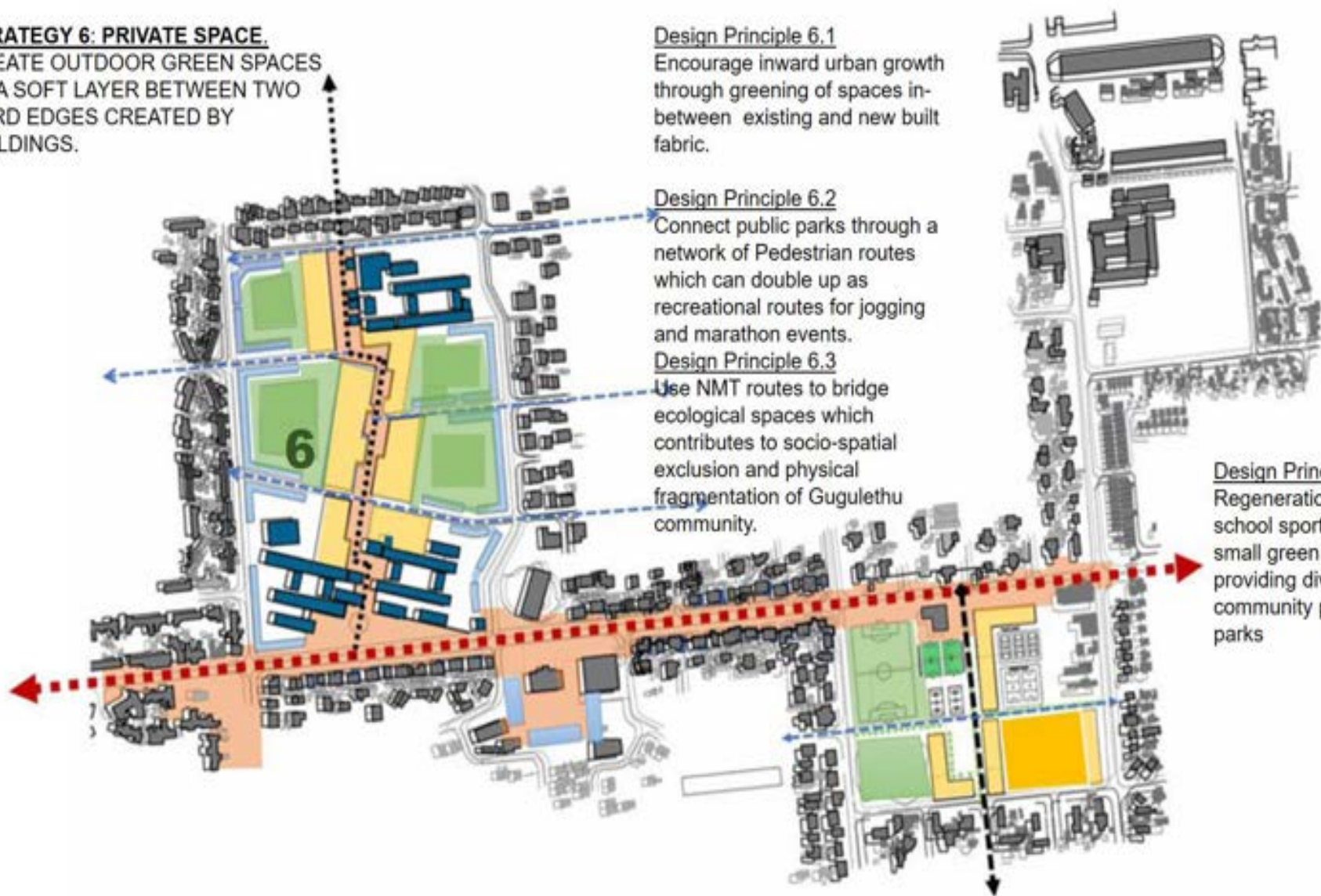
Mitigate Urban Sprawl by increasing density. Adaptive reuse of existing housing and social infrastructure as a means to catalyse positive spatial transformation and trigger diverse urban environments. Adaptive reuse strategy as a strategy for revitalizing post-apartheid urban environment, creating densities, and mitigating urban sprawl.

Design Principle 5.3

Affordable mixed use housing.

Relook at street interface to expand street house relationship to catalyze different activities. Build three storey affordable infill walk-ups housing to increase density and accommodate diverse range of house types.

STRATEGY 6: PRIVATE SPACE
CREATE OUTDOOR GREEN SPACES AS A SOFT LAYER BETWEEN TWO HARD EDGES CREATED BY BUILDINGS.



Design Principle 6.1
Encourage inward urban growth through greening of spaces in-between existing and new built fabric.

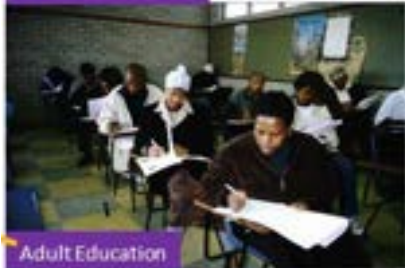
Design Principle 6.2
Connect public parks through a network of Pedestrian routes which can double up as recreational routes for jogging and marathon events.

Design Principle 6.3
Use NMT routes to bridge ecological spaces which contributes to socio-spatial exclusion and physical fragmentation of Gugulethu community.

Design Principle 6.4
Regeneration of abandoned school sports grounds into small green spaces providing diverse usage from community parks to children parks



Craft Market/Stalls



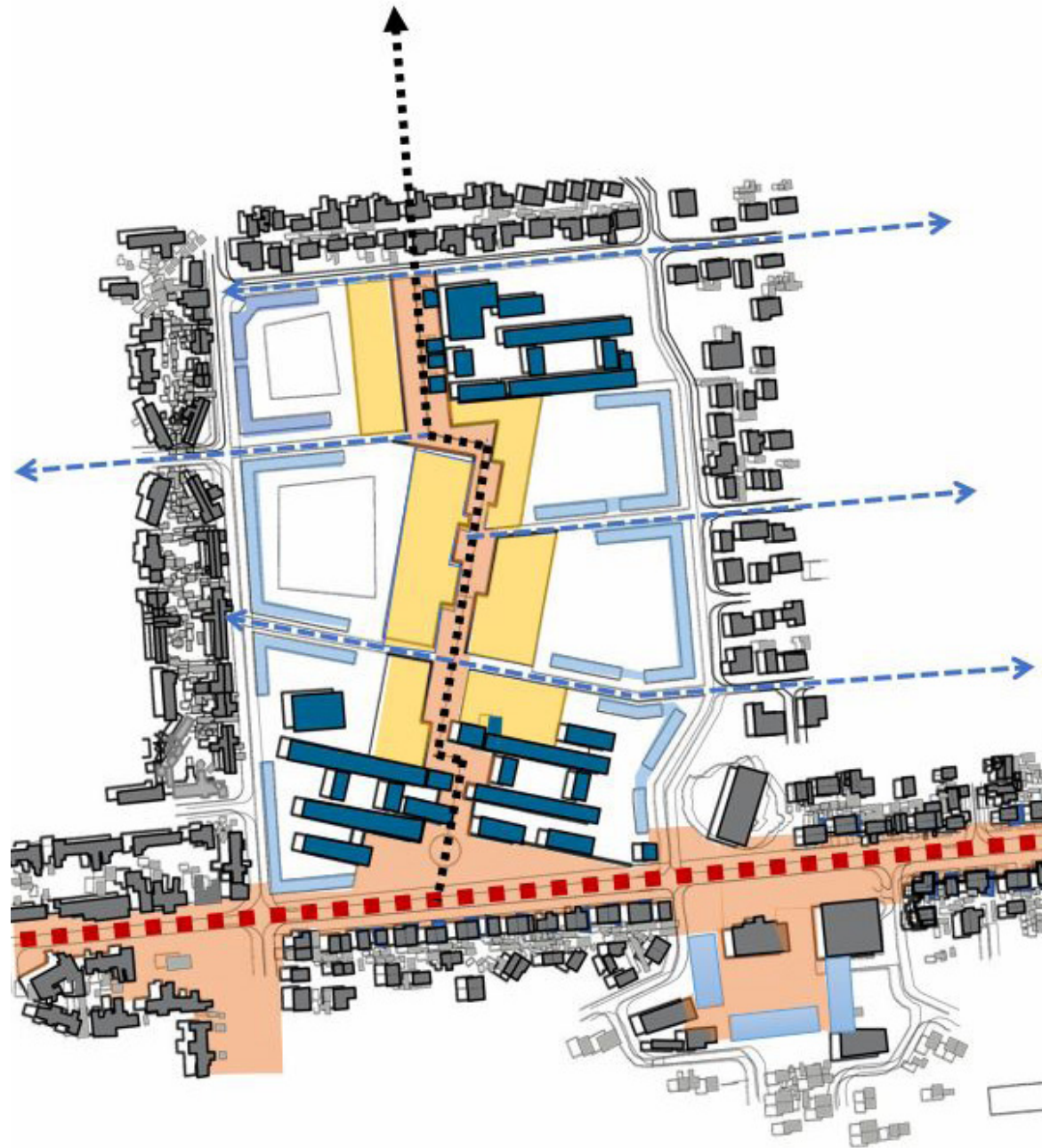
Adult Education



Street furniture/Landscaping



Play area



Incubator



Technical Workshops



Furniture market



Culinary School



Tourism School



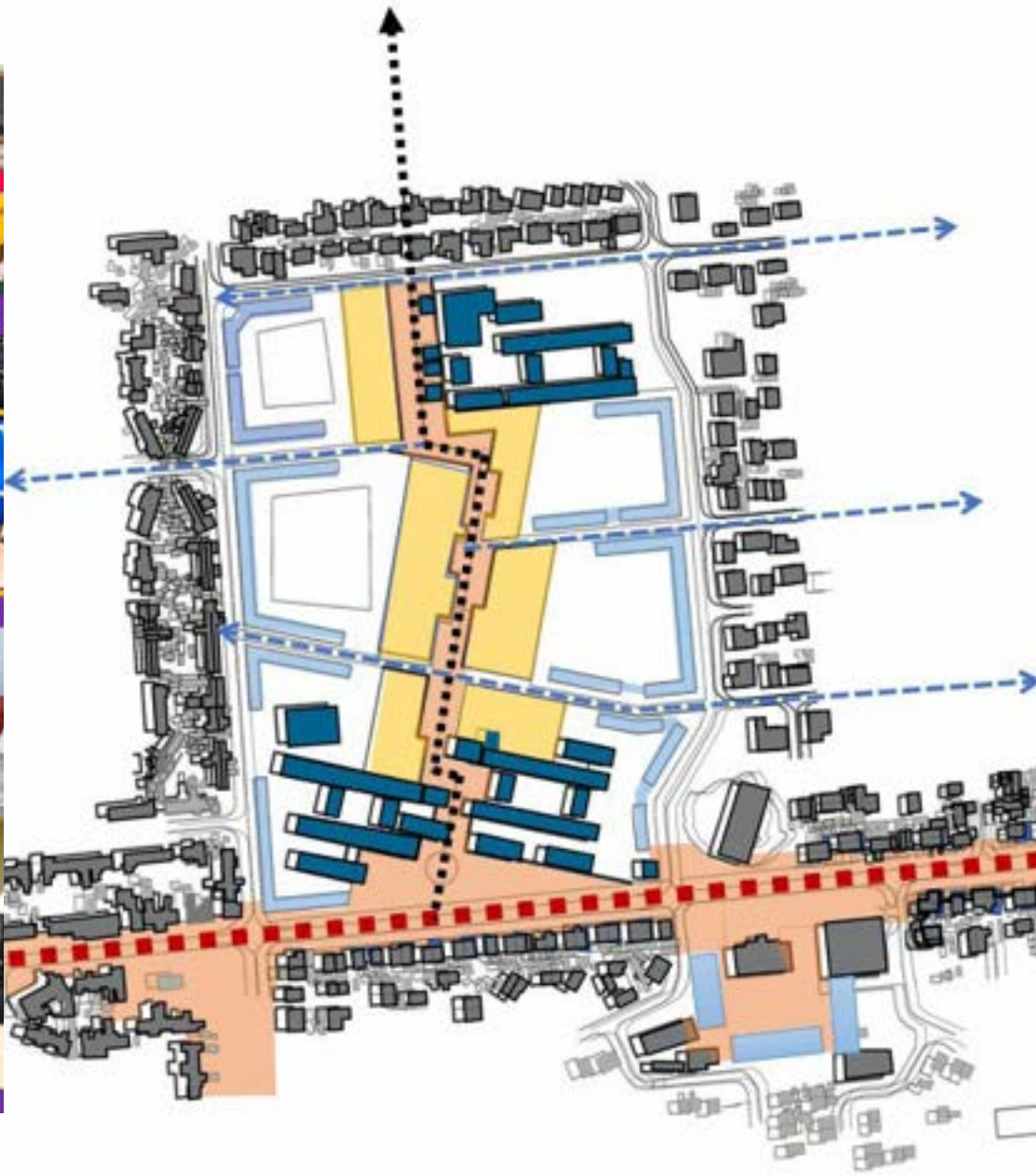
Co-working space



Dance



Music school



Community workshops

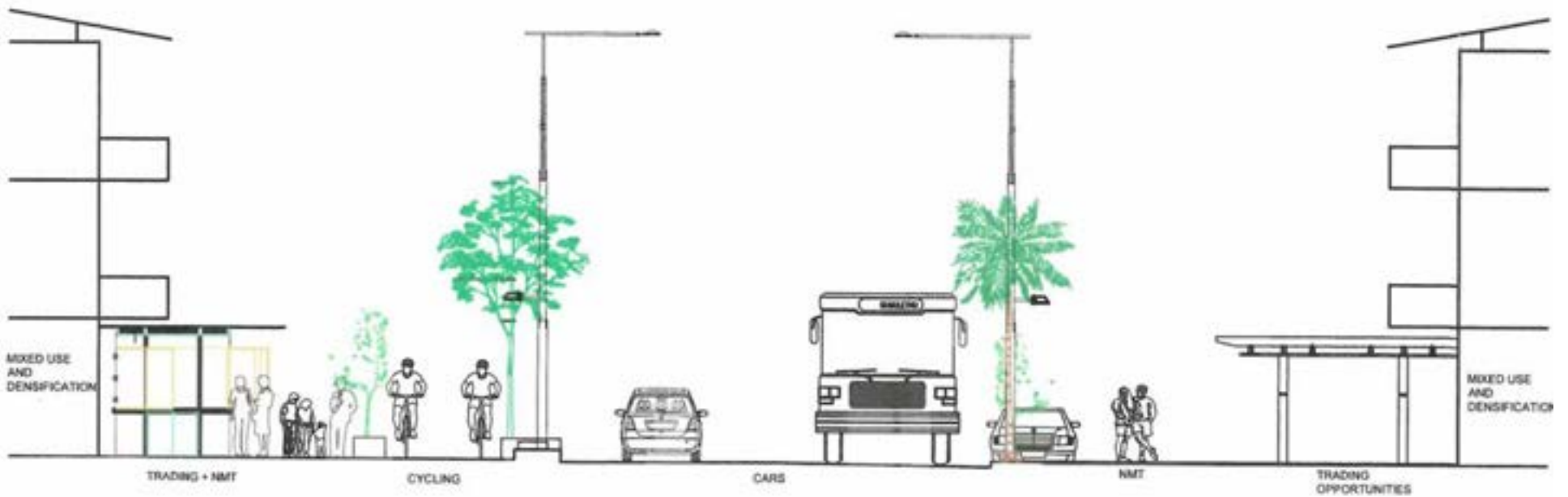


Coding Classes



Educational Exhibitions





PROPOSED STREET CONDITIONS

SPORT PRECINCT (EMPILWENI)





C H A P T E R

07

CONCLUSION

CONCLUSION

Embarking on this research project widened my scope of thinking and knowledge concerning theories of urban diversity phenomenon. It has become clear that diversity in other parts of the world will not necessarily follow the same principles in the Gugulethu context. Gugulethu context has its unique character. It needs a particular approach that requires a complete understanding of many variables that define Gugulethu socio-economic conditions concerning its specific urban context.

The minimum interaction I have had with the Gugulethu community expanded my support of the bottom-up approach when one deals with a particular context. Human beings who often make decisions on their behalf should fully participate when professionals design their environments. The process should take the form of collaboration between community and Urban designers.

My NY3 adaptive reuse of underused urban fabric proposal also added a clear understanding of how one can work with existing conditions rather than running away from the troubled spatial forms, which will result in urban sprawls. My proposal aims at energising underused open spaces by introducing diverse activities and diverse facilities as a catalyst for positive urban regeneration.

This design research project has taken a step forward towards addressing less performing Gugulethu Urban Area by using adaptive reuse as a principle in order to enhance diversity in underused nodes. Finally, the two enhanced nodes were linked through movement as a space integrator to those that were better performing.

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Postgraduate Master of Urban Design (MUD)
APG5086S – URBAN DESIGN RESEARCH PROJECT
 June 2020

URBAN DIVERSITY

Statement to be read out to a participant by a student about to undertake an interview for research in UD Research Project – a copy of the form could be given to the participants if they request it.

CONSENT FOR A PARTICIPANT TO BE INTERVIEWED FOR RESEARCH

Hello, my name is **NTSINDISO CHARLES NDUKU** and I am studying the neighbourhood of Gugulethu as part of my Masters of Urban Design at the University of Cape Town.

I would like to record the interview/discussion, if you agree (verbal + photographic).

- The questions I ask are only for education and research and do not benefit you or your community. You will not be compensated for your participation.
- I must be careful not to raise expectations, as no improvement to public/private spaces will result from the interview.
- The information which I am gathering will be used in my course and may be published in academic journals/exhibitions. The research data will be stored safely for future use.
- You have a right to refuse to answer any questions. If you want to end the interview at any point you are free to do so.

Permissions:

Do you agree to be interviewed, to contribute to this research?

Yes I do: No I do not:

Do you give permission for your name, title and photo to be used as a source of information in our research?

Yes I do: No I do not:

Participant: name:

signature:

Student: name:

signature:

date:

ETHICS APPLICATION FORM

Case Note:

any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form **before** collecting or analysing data. The objective of submitting this application *prior* to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the **EBE Ethics in Research Handbook** (available from the UCT EBE, Research Ethics website) prior to completing this application form: <http://www.ebe.uct.ac.za/ebe/research/ethics1>

APPLICANT'S DETAILS		
Name of principal researcher, student or external applicant	Ntsindiso Charles Nduku: NDKNTS002	
Department	Department of Architecture, Planning and Geomatics	
Preferred email address of applicant:	ndukun@nnarch.co.za	
If Student	Your Degree: e.g., MSc, PhD, etc.	MUD(Masters in Urban Design)
	Credit Value of Research: e.g., 60/120/180/360 etc.	60
	Name of Supervisor (if supervised):	Dr. Kathryn Ewing
If this is a research contract, indicate the source of funding/sponsorship	N/A	
Project Title	URBAN DIVERSITY	

Whereby undertake to carry out my research in such a way that:

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

APPLICATION BY	Full name	Signature	Date
Principal Researcher/ Student/External applicant	Ntsindiso Charles Nduku		29 May 2020
SUPPORTED BY	Full name	Signature	Date
Supervisor (where applicable)			11/06/2020

APPROVED BY	Full name	Signature	Date
MOD (or delegated nominee) - Final authority for all applicants who have answered NO to all questions in Section 1; and for all Undergraduate Research (Including Honours).			
Chair: Faculty EIR Committee - or applicants other than Undergraduate students who have answered YES to any of the questions in Section 1.			

PLAGIARISM DECLARATION

I, HENDISO CHARLES NDUKU, student number NDKNTS002, hereby acknowledge that:

1. Plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.
2. I have used the APA convention for citation and referencing.
3. Each contribution to and quotation in, this essay/report/project/paper..... from the work(s) of other people has been attributed, and has been cited and referenced.
4. This essay/report/project/paper..... is my own work.
5. I have not allowed, and will not allow, anyone to copy my work.

Signature: 

Date: 07/12/2021