



***Transforming the Potchefstroom Industrial area and the Ikageng Gateway corridor to combat urban decay.***

Tshepo Mokwaledi-MKWTSH027. Date: 2024.

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Ke leboga lotlhe go nna karolo ya loeto lono.

## Translation:

(I would like to extend my deepest gratitude to the University of Cape Town and The Anglo American De Beers Chairman's Fund for the funding that made this academic chapter of 2024 possible. Their support has been invaluable in allowing me to pursue my studies and fully immerse myself in this Urban Design Master's program.

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I am a child of my ancestors, Batlhaping and Bahlakoana. This dissertation is dedicated with love and gratitude to my grandparents, who are no longer with us. Their legacy continues to inspire me, and I hope to honor them through this work. I am truly living my ancestors' wildest dream.

Most importantly, dear God, your mercy and protection, and unconditional love have carried me this far, and I am forever grateful.

Thank you all for being a part of this journey).



Figure 0.1: Sketch of authour and parents (source: author's own, 2024).

# Chapter 01

## Maatla a ga Potchefstroom le go wa ga gagwe (Potchefstroom's strength and downfall)



Figure 01: Montage of what makes Potchefstroom powerful and special  
(source: author's own, 2024).

# Research Abstract

Urban spaces are dynamic entities shaped by the interplay of physical infrastructure, social dynamics, economic forces, and historical legacies (Stanley et al., 2012). This research project explores the complexities of urban decay and transformation within the Potchefstroom Industrial Area, South Africa, with a specific focus on the Ikageng Gateway Corridor. Grounded in the experiences of local figures such as Belinah and Napo Mokwaledi, who once thrived in this area, the study delves into the socio-economic, spatial, and infrastructural challenges and opportunities facing Potchefstroom.

Through the lens of Dewar (2019), I examine the imperative of addressing historical legacies and promoting spatial justice in urban design. The Ikageng Gateway Corridor, once a vital artery of connectivity and commerce, now bears the scars of urban decay. This study aims to dissect the manifestations of decay along this corridor and engage with local stakeholders to uncover the lived experiences and aspirations of those affected.

**The central research question is: *How can the Potchefstroom Industrial Area be transformed, with an emphasis on the Ikageng Gateway Corridor, to counter urban decay?*** I utilize storytelling as a comprehensive methodology, incorporating social mapping, semi-structured interviews, tracking and tracing. These techniques aim to provide a holistic understanding of the corridor's degeneration and potential for transformation.

By examining socio-economic factors, spatial conditions, land use patterns, accessibility, and community interactions, I aim to identify best practices and innovative approaches for transformation. The objectives include proposing design interventions to enhance economic development, improve safety, and foster community resilience.

This project seeks to review and highlight the challenges of policies, zoning regulations and development plans. And propose design strategies that can transform the Potchefstroom Industrial Area into a vibrant, resilient, and economically vital urban space. Through community engagement and a deep understanding of the area's historical and present context, I aim to contribute meaningfully to the ongoing discourse on urban transformation in Potchefstroom.

Keywords: Urban decay, Potchefstroom, Gateway corridor, Transformation, Economic development, Socio-economic factors

LOCALITY MAP

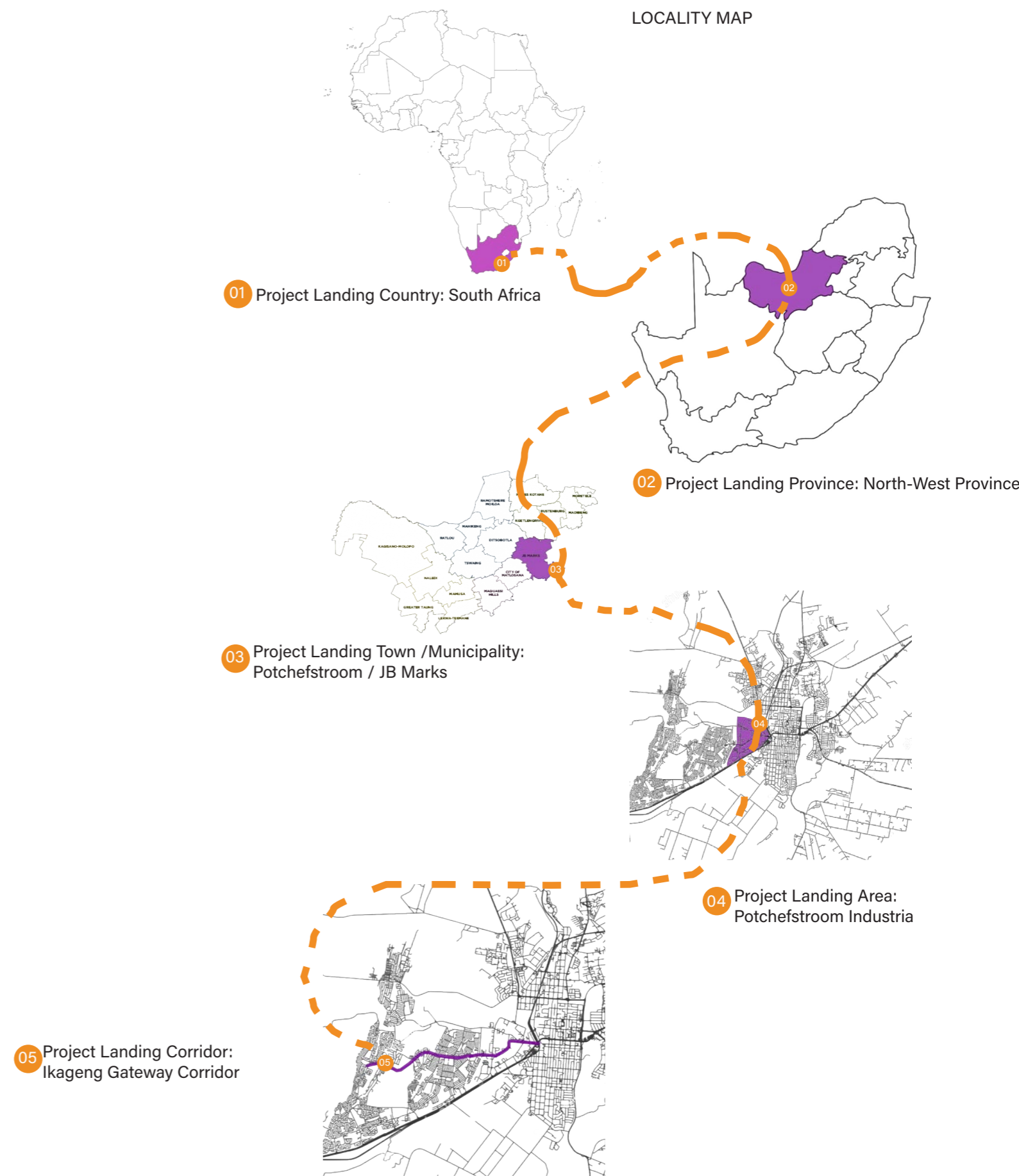


Figure 02: Locality of industrial area from a multi-scalar lens (source: author's own, 2024).

# Problem Statement

Urban environments are inherently dynamic, continually undergoing physical and functional changes, as highlighted by Lea (1972). One significant manifestation of this constant transformation is urban decay, which is currently impacting Potchefstroom Industria. Located along the Mooi River in the JB Marks Local Municipality which was once known as Tlokwe Local Municipality, North-West Province, South Africa, Potchefstroom straddles the N12 Treasure Corridor and is experiencing considerable urban changes. The 2011 census identified the North-West Province as the second fastest-growing province in South Africa, with a 14.9% growth rate, following Gauteng (Meiring, 2013). This population surge has accelerated urbanization, positioning Potchefstroom as a primary regional node with notable economic growth driven by a diverse economy (Cillers and Drewes, 2010).

According to MAP 3—Potchefstroom City Council (2015), Potchefstroom boasts the largest manufacturing sector in the region, producing goods valued at R323 million per annum, which accounts for approximately 50% of the manufacturing output of the entire southern district. Despite its economic vitality, Potchefstroom is not immune to urban decay. The industrial area, particularly the Ikageng Gateway corridor, critical for economic activities, has experienced physical degeneration and heightened spatial inequalities. This decay has led to a migration toward the central business district (CBD), leaving the industrial zone with unsafe, underutilized, and deteriorating spaces. Urban decay in this industrial area acts as a magnet for poverty and social problems, deterring people and economic resources, and adversely affecting other parts of the city (Anderson, 2019).

The Spatial Development Framework (SDF) outlined in MAP 3—Potchefstroom City Council (2015) proposes rejuvenation strategies for nodal development on the east of the N12 in the industrial area from a planning lens, emphasizing densification, the creation of a multi-purpose community development center, and the integration of social and economic activities with higher-density housing. Similar interventions have been implemented, such as the Ikageng Gate community center. However, this center currently has a 42% vacancy rate, with the likelihood of further increases as more stores close and relocate elsewhere (Capital Land Property Assessment Management). The spatial development framework lacks detailed spatial design considerations, leaving a gap between planning intentions and their materialization.

This research aims to investigate the causes and consequences of urban decay in Potchefstroom's industrial area, exploring potential urban design interventions to rejuvenate and transform this crucial economic corridor and mitigate the broader impacts of urban degeneration on the city. Specifically, the study will analyse the current spatial development framework proposals of the JB Marks Municipality, from an urban design perspective. The goal is to spatialize these planning intentions with a human-centric approach, emphasizing the design of accessible, safe, and attractive public spaces, and enhancing public amenities and infrastructure in the industrial area. By moving beyond abstract concepts and focusing on detailed spatial designs and human-centered approaches, this research seeks to provide actionable strategies to counter urban decay and foster sustainable urban transformation.

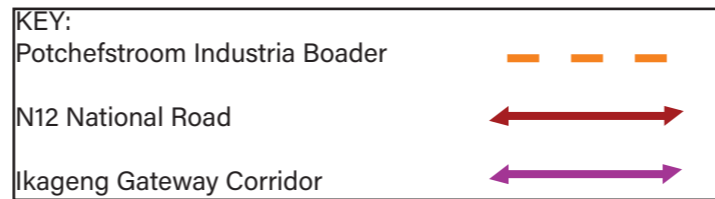


Figure 03: Map of Potchefstroom Industria street condition (source: author's own, 2024).



Figure 04: Signs of urban decay along Ikageng Gateway corridor (source: author's own, 2024).



Figure 05: Signs of urban decay along Ikageng Gateway corridor (source: author's own, 2024).



Figure 06: Signs of urban decay along Ikageng Gateway corridor (source: author's own, 2024).



Figure 07: Signs of urban decay along Ikageng Gateway corridor (source: author's own, 2024).



Figure 09: Signs of urban decay along Ikageng Gateway corridor (source: author's own, 2024).



Figure 08: Signs of urban decay along Ikageng Gateway corridor (source: author's own, 2024).

# Introduction

This research project explores urban transformation as a lens to understand the challenges of urban design in the Potchefstroom Industrial Area. Situated at the crossroads of historical legacies, economic transitions, and social narratives, the Potchefstroom Industrial Area exemplifies the complexities of urban decay and the quest for rejuvenation.

To ground this inquiry, I turn to theoretical frameworks that illuminate the dynamics of urban decay and transformation. Anderson (2019) discusses urban decay as a multifaceted term associated with physical, social, and economic changes within cities, linked to segregation and vice versa. Dewar (2019) extends this argument, suggesting that urban decay results from inevitable social, spatial, and economic changes, acting as catalysts for urban transformation. He highlights how South African cities, shaped by colonialism and Apartheid segregation, are spatial manifestations of these shared histories. Bosselmann (2012) argues that city transformation is heavily influenced by economic forces but emphasizes that designing physical settings and shaping environments requires balancing monetary gains with social and ecological considerations. He underscores that urban design is fundamentally a social, political, and environmental endeavor.

This research draws on both global Northern and Southern scholars to dissect the meanings of urban decay and transformation. By contextualizing these concepts within the South African context, I aim to recognize their multidimensional nature, encompassing physical, social, and economic dimensions.

In the local context, the experiences of individuals such as my mother, Belinah Mokwaledi, and my father, Napo Amos Mokwaledi, whose businesses once thrived in the Potchefstroom Industrial Area, illustrate the challenges and opportunities associated with urban development from the apartheid era to the present. Their stories provide insights into the social transformations that have shaped the area.

Central to this inquiry is the Ikageng Gateway Corridor, a vital artery traversing Potchefstroom's urban landscape. Once a lifeline of connectivity and commerce, this corridor now bears the scars of urban decay. Through a series of objectives, I will analyze the socio-economic, spatial, and infrastructural manifestations of decay along this corridor. Engaging with local stakeholders and employing methodologies such as story-telling, social mapping, social tracing and tracking, and semi-structured interviews. I seek to uncover the lived experiences and aspirations of those connected to the corridor's fate.

In the pages that follow, I embark on a journey of discovery, guided by Potchefstroom's past narratives, its present realities, and its future possibilities.

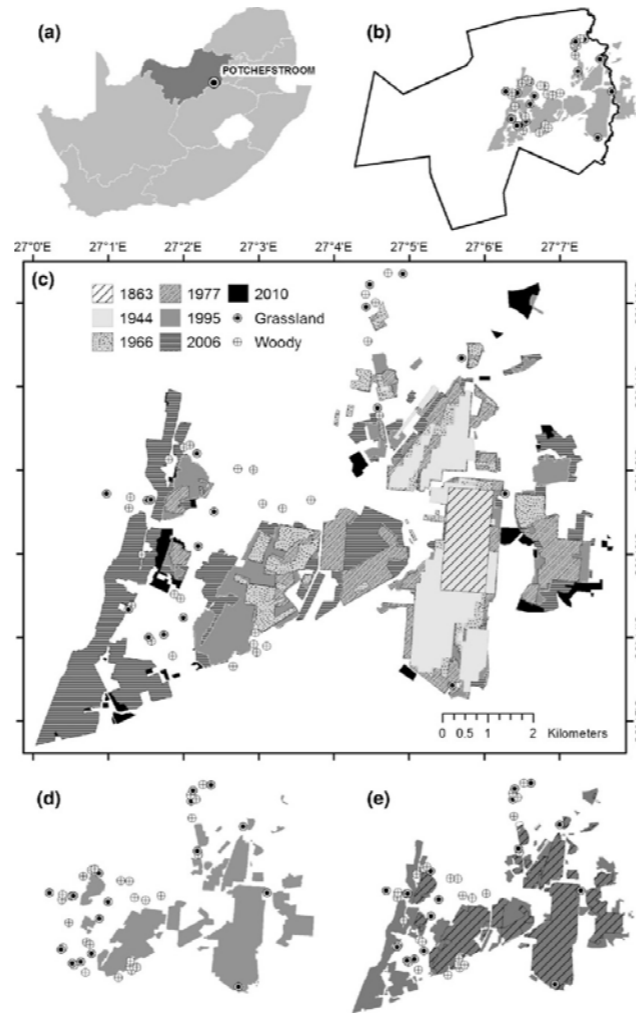


Figure 11: Potchefstroom urban development from 1863 to 2010 (source: du Toit, 2016. Retrieved from: [https://www.researchgate.net/figure/The-location-of-Potchefstroom-in-South-Africa-a-the-town-commonage-area-black\\_fig1\\_301904502](https://www.researchgate.net/figure/The-location-of-Potchefstroom-in-South-Africa-a-the-town-commonage-area-black_fig1_301904502)).

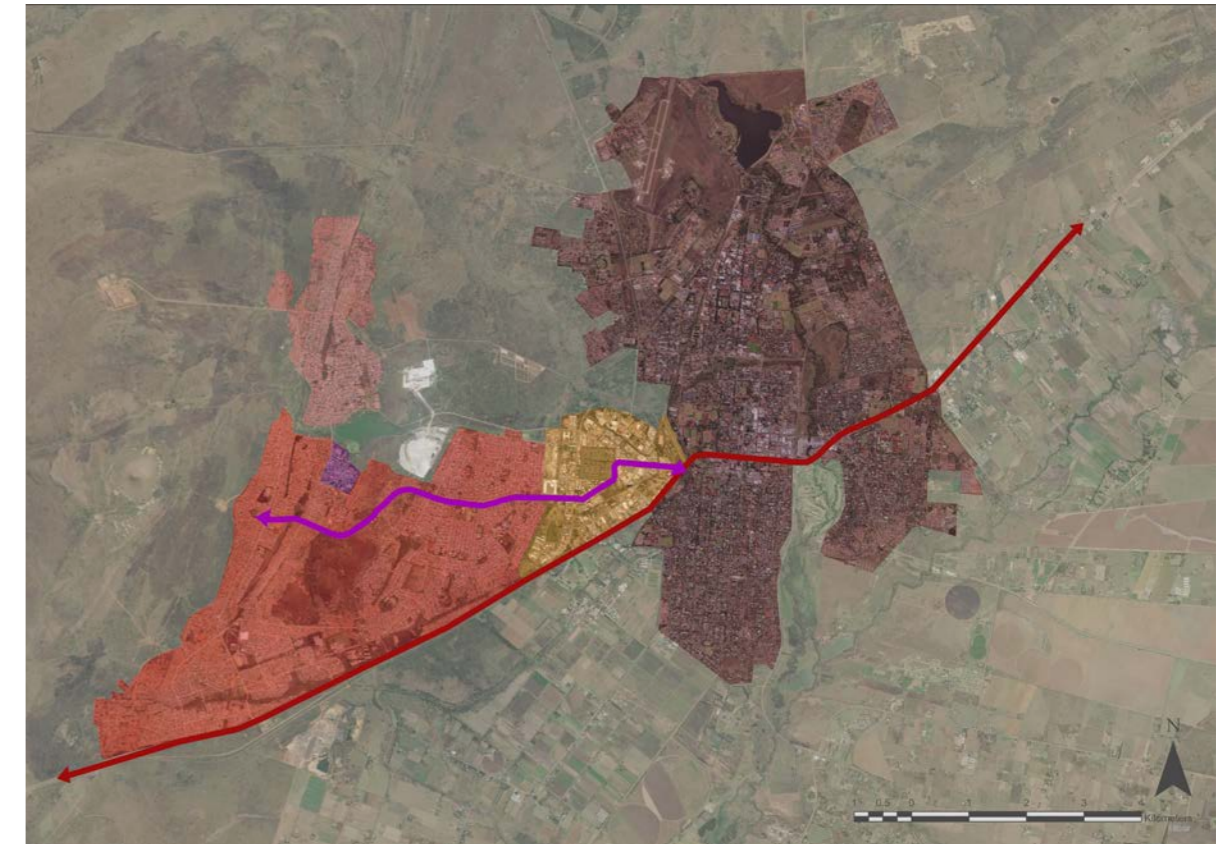
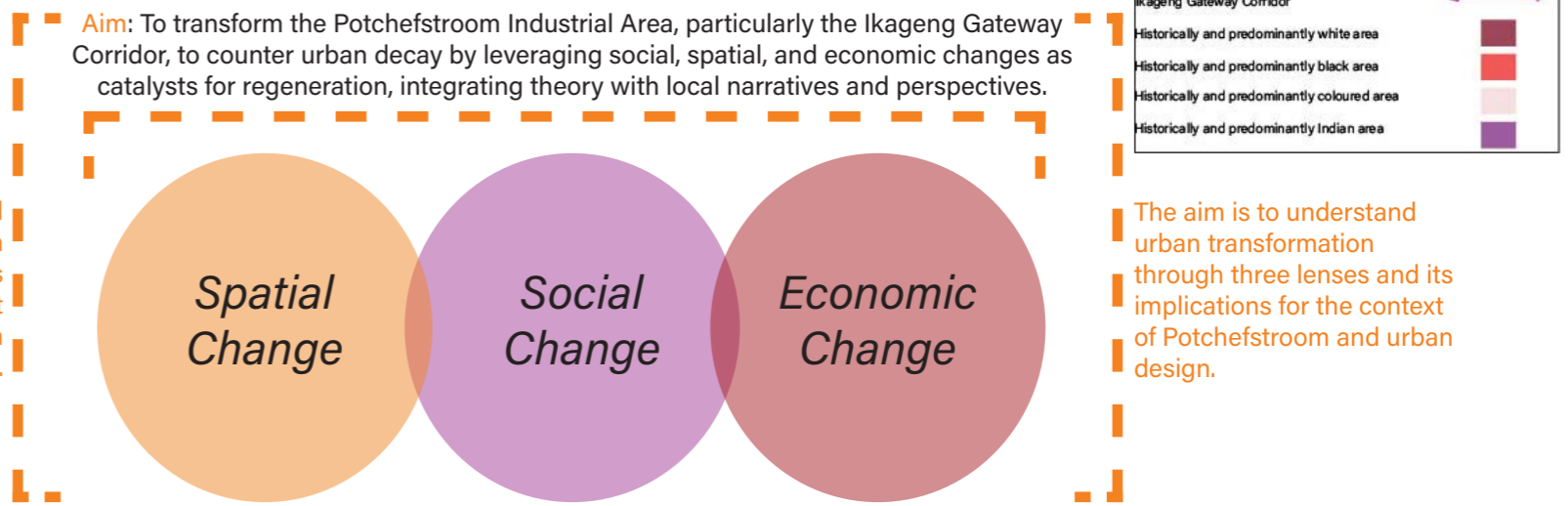


Figure 12: Historical and predominant racial areas (source: author's own, 2024).



# Positionality

I am Tshepo Rethabile Mokwaledi, aged 24, born and raised in Potchefstroom, situated in the North-West Province of South Africa. Currently, I am pursuing a master's degree in urban design at the University of Cape Town, located in the Western Cape Province. Growing up, I was fortunate to be raised in a loving family environment with both of my parents actively involved in my upbringing. Reflecting the proverb "it takes a village to raise a child," the collective support of extended family, neighbors, and community members played a significant role in shaping my upbringing.

My familial background is deeply rooted in entrepreneurship, with both of my parent's owning businesses in the Potchefstroom industrial area. This familial connection to business instilled in me an early appreciation for the complexities of economic and social dynamics within urban environments. My upbringing was enriched by the diverse perspectives and experiences of individuals from various societal strata, ranging from employees and business partners to consumers and residents.

In terms of geography, my upbringing exposed me to different neighborhoods within Potchefstroom, each with its own historical and socio-economic context. From the historically white areas of Baillie Park, Potchefstroom Central, and Miederpark to the historically coloured area of Promosa and the historically black area of Ikageng, I experienced the diversity of urban spaces within my hometown. Additionally, my family's involvement in property ownership led to experiences in rural neighborhoods such as Mooibank and Wilgeboom, providing me with insights into the challenges and opportunities associated with urban development and decay from various perspectives.

Despite venturing to cities like Johannesburg and Cape Town for my studies, Potchefstroom remains an integral part of my identity. Its rich history, cultural heritage, and sense of community hold a special place in my heart. While the demands of academia may limit my visits home, I cherish every opportunity to reconnect with my roots and contribute to the ongoing language of urban transformation in Potchefstroom.

The decline of Potchefstroom Industria deeply affects me, as I spent most of my life there. It is unsettling to see the once-thriving area becoming dead and underutilized. Both of my parents worked hard to build better lives in this area. My mother, Belinah Mokwaledi, successfully ran a catering and events company there for 17 years before relocating due to the area's decline. Similarly, my father, Napo Amos Mokwaledi, had an engineering company based in the industrial area for two decades before moving it due to the deterioration. The decline of Potchefstroom Industria represents a significant and emotional upheaval for my family.

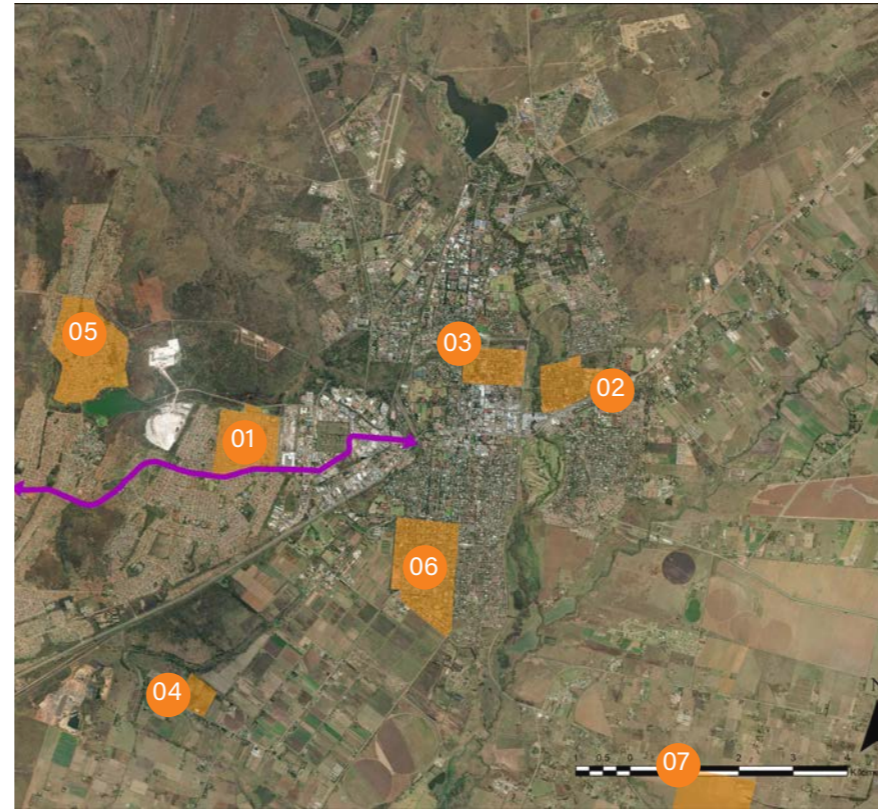
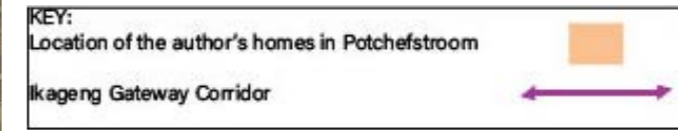


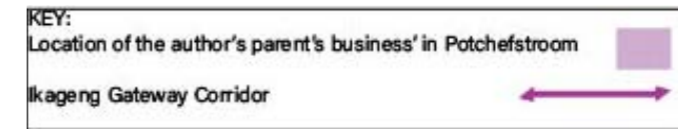
Figure 13: Map of author's homes and upbringing in Potchefstroom (source: author's own, 2024).



- 01 Location of Home in Ikageng
- 02 Location of Home in Baillie Park
- 03 Location of Home in Potchefstroom Central
- 04 Location of Home in Mooibank
- 05 Location of Home in Promosa
- 06 Location of Home in Miederpark
- 07 Location of Home in Wilgeboom AH



Figure 14: Map of businesses owned by author's parents in Potchefstroom Industria (source: author's own, 2024).



- 01 Location of the author's mother's first business in Potchefstroom Industria
- 02 Location of the author's father's business in Potchefstroom Industria
- 03 Location of the author's brother's business in Potchefstroom Industria
- 04 Location of the author's father's first business in Potchefstroom Industria
- 05 Location of the author's mother's business in Potchefstroom Industria
- 06 Location of the author's grandparent's first business in Potchefstroom Industria

# Background

“Potchefstroom is known for its industrial, service and agricultural growth and includes industries such as steel, food and chemical processing” (PotchefstroomInfo, n.d.). Mahikeng is the capital city of the North-West Province, Potchefstroom is an economic hub within the province due to its industrial area and what the area has to offer.

Bonakele (2016) further expresses that Potchefstroom’s industrial zone has many factories and companies mainly focusing on steel, food, beverages, and chemicals, with big entities such as Tigerbrands, Staalbeer, Chubby Chick, Triomf, Naschem, and Nestle, which make Potchefstroom a key role-player in the economy of the north-west province as provisions here are made for local, national, and also international markets.

Potchefstroom is known for many things; it boasts about being a university town with low crime rates and was once the capital city of ZAR (Zuid Afrikaanse Republiek) (the Afrikaanse Republiek) in 1852, which is currently known as the Republic of South Africa. The second oldest settlement of European descent is in the Transvaal, founded in 1838 by the Voortrekkers. The area is known for a strong farming economy, the country’s largest chalk factory, and one of the largest organ factories in South Africa (Thomas, n.d.). “South African towns resemble spatial manifestations derived from shared histories of colonialism and imperialism” (Dewar, 2019, p.7).

For this project, it is crucial to understand how Potchefstroom has transformed over time through the lens of time, how the past has influenced the present, and how the present can influence the future. As expressed by Klein (as cited in Dewar, 2019) that our world is changing, and the change is inevitable. Dewar (2019) further stresses that qualities such as environmental and socioeconomic sustainability, spatial integration, a sense of place, choice, and resilience needs to be placed of higher importance in the aim of achieving spatial justice.

Unpacking and grappling with historical context and how past events have shaped the present presents an intervention for the deteriorating industrial area to combat urban decay and promote urban transformation in the form of rejuvenation and regeneration.

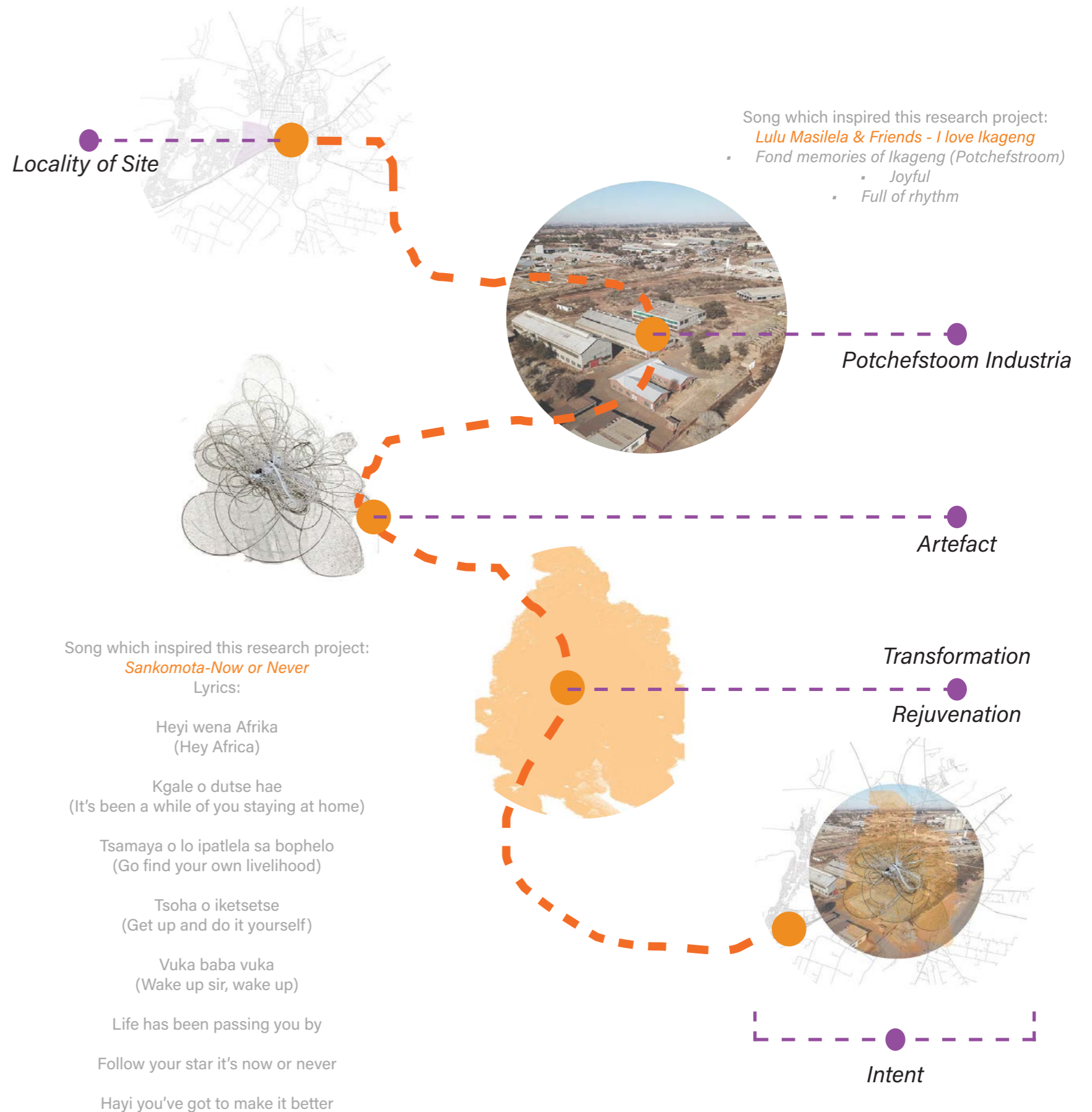


Figure 15: Storyboard of author's intent in Potchefstroom Industria (source: author's own, 2024).

# Defining Urban Decay

General Definition: According to Collins Dictionary, urban decay refers to the deterioration of an urban area due to neglect or age.

## Global North Perspective:

Anderson (2019) defines urban decay in the global north as an inevitable aspect of ongoing urban change, resulting from social, economic, and physical changes in cities. He notes that deprived neighborhoods are a crucial element of this interaction. Slater et al. (2000) support Anderson's view, referring to this process as urban decline. They trace the concept back to debates from the late 1970s and 1980s about the economic decline of late-medieval English cities following the Black Death in 1348. These debates identified three main consequences: population decline, economic impact, and physical decay.

## Global South Perspective:

Ndou and Nyamwanza (2023) examine urban decay within the global south, specifically in South Africa. They describe urban decay as a complex issue with multiple impacts, including high crime rates (socially) and high unemployment levels (economically). They argue that urban decay negatively affects cities' image, livability, and productivity by damaging the built environment. Using Thohoyandou Town as a case study, they highlight the unique challenges developing countries face. Urban decay in this context includes physical deterioration (dilapidated buildings, crumbling infrastructure), social deterioration (breakdown of social networks, increased crime, poverty, social inequalities), and economic decline (unemployment, decreased investments, shrinking tax base).

Khumalo et al. (2023) further explore urban decay in the global south, using Pietermaritzburg, South Africa, as a case study. They argue that urban degradation occurs gradually due to changes in the socioeconomic circumstances of a community. They emphasize that urban decay manifests in various forms, from the physical deterioration of buildings to the broader decline in the quality of the neighborhood environment (Lea, 1972). Khumalo et al. (2023) assert that while urban decay is a global concern, its manifestation varies by context. Nonetheless, the underlying philosophy is comparable with the deterioration of urban built forms influenced by the three spheres of change: social, economic, and physical.

In summary, urban decay, whether in the global north or south, is a process characterized by intertwined social, economic, and physical deteriorations, impacting communities and cities in multifaceted ways.

For this research project, it is essential to understand the term "urban decay" and its manifestations in Potchefstroom, as it encompasses physical, social, and economic dimensions. By examining these factors, I can argue for integrative, regenerative and rejuvenative design approaches and strategies to combat urban decay in the Potchefstroom Industrial Area. Unpacking the theoretical perspectives on urban decay and contextualizing them in Potchefstroom will help demonstrate the need for interventions to transform the area.

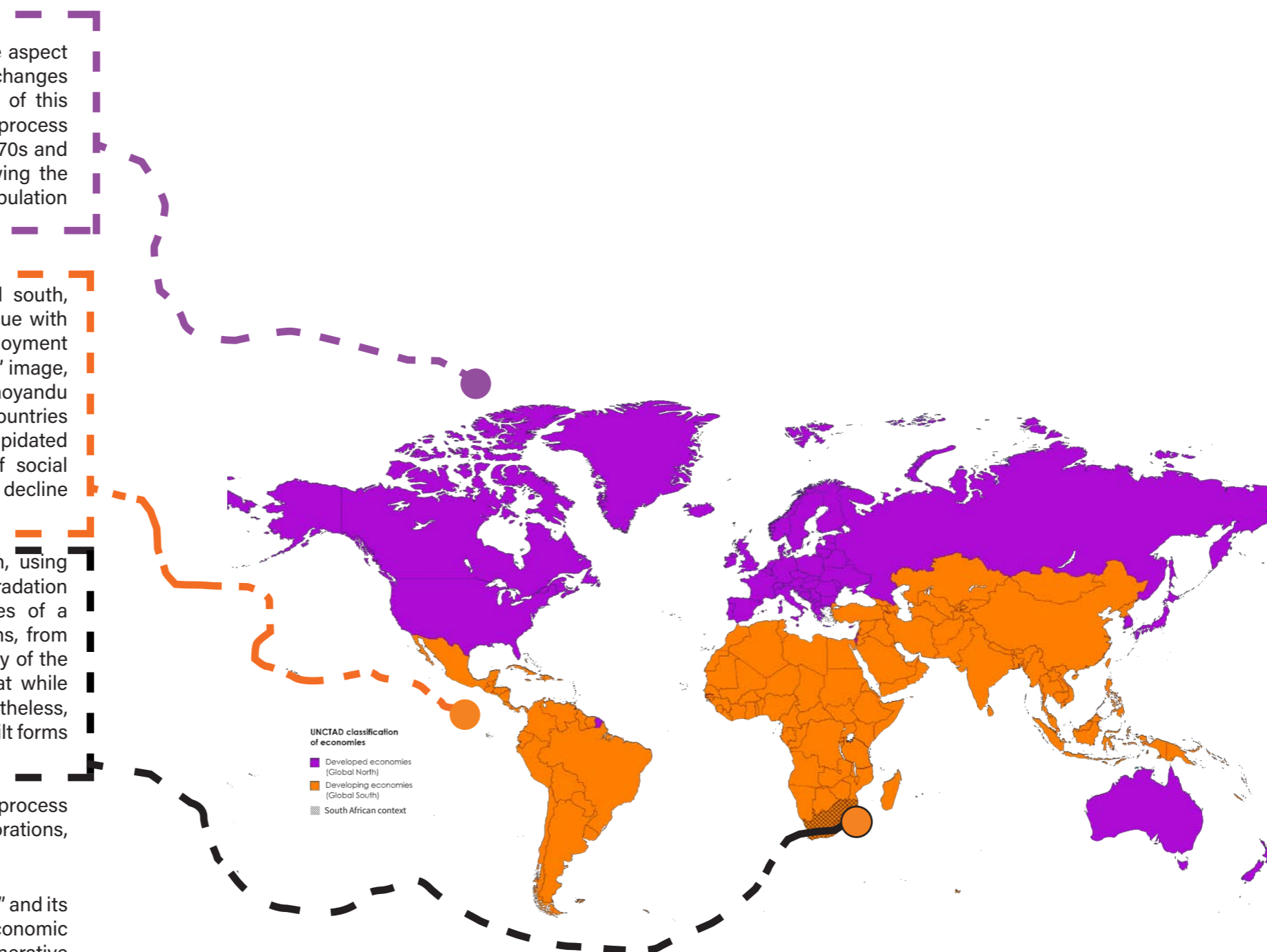


Figure 16: Global South and Global North Countries (source: Parrish, 2013. Retrieved from: <http://simoneparrish.com/2013/05/global-north-vs-global-south-has-and-have-whats/>)

# Research Question

**How can the Potchefstroom Industrial Area be transformed with a specific emphasis on the Ikageng Gateway Corridor to counter urban decay?**

## What is Urban transformation?

Urban transformation involves implementing planning measures that significantly change the characteristics of urban areas, including public spaces, building purposes, and plot organization (Law Insider). Bosselman (2012) emphasizes that while cities are not art, urban design is an art that shapes cities to enhance daily experiences, addressing both positive and negative aspects like urban decay. He argues that urban transformation should balance economic factors with the quality of physical settings and holistic environmental shaping, requiring knowledge beyond market forces.

Inam (2013) highlights that urban designers have the creative capacity to **radically** improve cities through urban transformation.

Bently (2004) defines urban transformation as examining how cities are formed and used, and how they can be improved, linking the physical environment with social, economic, political, and cultural processes.

## What is Urban Rejuvenation?

Defining urban rejuvenation is crucial for understanding the motive behind this research project, as it encapsulates its core intention. According to the Oxford Dictionary, rejuvenation is “the action or process of giving new energy or vigor to something” and “the restoration of a youthful appearance to something.” Rittiluechai (2000) spatializes urban rejuvenation by stating it can be achieved by reconfiguring spaces and activities to make a facility and a site more viable. He further explains that viewing the site from various levels and historical backgrounds helps unpack rejuvenation objectives and understand the site in a broader context.

Oweye (2012) describes urban rejuvenation as encompassing positive and practical interventions that address economic, social, environmental, and political circumstances. He asserts that urban rejuvenation involves physical, economic, and political regeneration. Essentially, urban rejuvenation is a comprehensive and integrated vision and action plan that aims to resolve urban problems, bringing lasting improvements to the economic, physical, social, and environmental conditions of a degraded area.

## What is Urban Regeneration?

Urban regeneration, as defined by McDonald et al. (2009), originated in post-World War II Europe and Britain, driven by the need to address industrial decline and improve society. Initially focused on social and economic enhancement, urban regeneration has since expanded to encompass environmental, social, and economic coherence, particularly with the advent of sustainable community policies.

Roberts & Sykes (1999) support this view, highlighting that urban regeneration involves collaboration among public, private, community, and voluntary sectors, all working towards a single common goal of improving quality of life. They emphasize that urban regeneration is a long-term cycle of activity, requiring sustained efforts rather than quick fixes or permanent solutions.

Didier et al. (2012) examine urban regeneration from a global south perspective, particularly in South African cities. They argue that the South African approach often disrupts the traditional narrative of urban regeneration, focusing more on economic control and profit through city improvement districts, rather than addressing social issues or promoting social policies. This economic emphasis can sometimes contradict the holistic purpose of urban regeneration, which aims to achieve social, environmental, and economic cohesion.

## Why the Ikageng Gateway Corridor?

According to, MAP 3—Potchefstroom City Council (2015) the Ikageng Gateway Corridor is classified as a class 3 minor arterial road, that provides access to basic amenities, improving the lives of Potchefstroom residents and businesses in the industrial area and along the corridor. As the corridor stretches from Ikageng to the Industrial area, all the way to the Towns CBD, merging with the N12, which is a Class Road, connecting neighborhoods, commercial areas, and major transportation routes, enhancing accessibility within the Potchefstroom Town. Such a vital corridor for Potchefstroom which runs through the primary regional node, an educational node, a tourism node, a transport node, an economic node, and development node is experiencing urban decay.

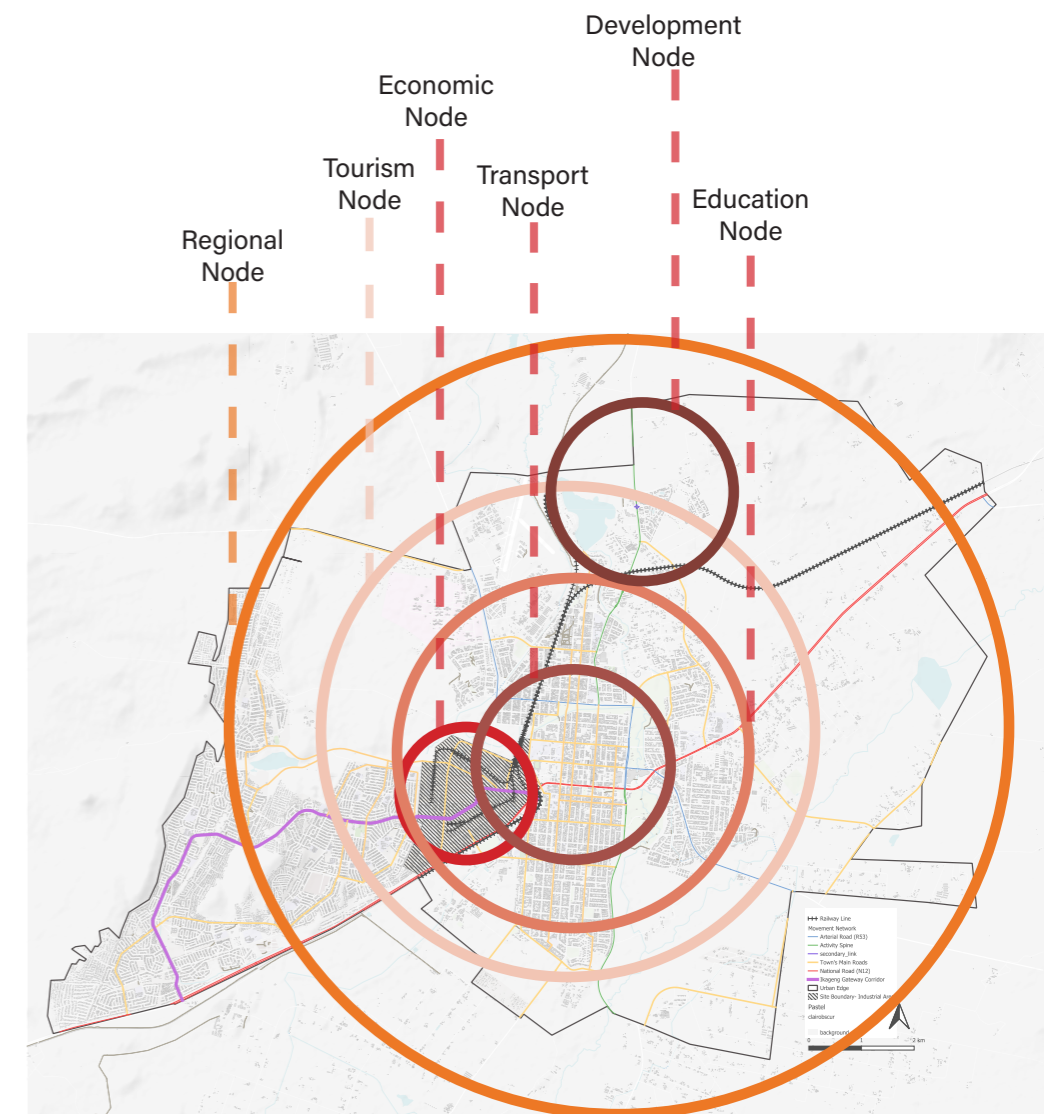


Figure 17: Map of various nodes in Potchefstroom (source: author's own, 2024).

# Objectives

**(1) To investigate the socio-economic factors contributing to urban decay along the Ikageng Gateway Corridor.**

Sihlobo (2023) states that the interlinked problems of poverty, unemployment, and weak economic activity continue to plague communities in South Africa. According to Bonakele (2016) Potchefstroom faces high employment rates amongst the youth—a staggering 29,5%. This lack of employment opportunities for youth poses a threat for the government and business sectors. Consequences of unemployment in Potchefstroom are layered which include low self-esteem, teenage pregnancies, a high rate of HIV/AIDS, and alcohol and drug abuse. Many people in the town resort to illegal sale of alcohol and drugs to make a living.

**(2) To evaluate the impact of urban decay on local businesses, informal traders, and the overall economy of Potchefstroom.**

**Spatial Lens:** The objective is to evaluate the conditions of buildings and their dead or active interface and orientation to the Ikageng corridor, the street's condition, pedestrian infrastructure affected by urban decay.

**Land use and Urban form lens:** The objective is to examine land-use patterns and zoning regulations in the industrial zone along the Ikageng corridor. While evaluating urban form such as street's layout, building densities, and public spaces and how urban decay has affected the function of these spaces.

**Accessibility and connectivity lens:** The objective is to analyze how accessible the industrial zone is through various modes of transportation, including walking, cycling, public transit, and private vehicles and how urban decay has affected accessibility with a focus on the Ikageng corridor, from the perspective of a resident, business owner, worker, and supplier.

**Socio-economic lens:** The objective is to conduct interviews with local businesses, workers, informal traders, and community members to understand their experiences and perceptions of urban decay; to spatially unpack their challenges and barriers they face daily.

**(3) To identify best practices and innovative approaches for rejuvenation and regeneration on the Ikageng corridor and migrating the effects of urban decay.**

**(4) To propose design interventions aimed at promoting economic development, enhancing safety, and fostering community resilience within the industrial area.**

**(5) To assess the spatial manifestations of urban decay, including:**

**Wide double lane roads:** Rothman et al (2012) argues that crosswalks are crucial locations in the urban transport network which need to be carefully designed as pedestrians face numerous obstacles during their daily commute, including conflicts with motorized vehicles, turning movement, motorcyclists, other pedestrians, varying vehicle speeds, all of which compromise their safety, convenience, and comfort. Which may be the case within the Ikageng corridor as the corridor consists of little to no pedestrian infrastructure, namely crossings which impedes pedestrian movement and limits access to different areas.

**Unused spaces:** which result in an interruption within urban flow along the vital corridor impeding pedestrian movement and limiting access to different areas. "Urban areas which are homogenous in function are typically vacant during much time of the day or night making them prey for crime" (Kowalke, 2001, p.8).

**Abandoned buildings:** along the vital corridor foster perceptions of insecurity and fear which deters people from engaging with their surroundings, "The growing insecurity and fear of crime are among the major factors reducing the quality of life of urban dwellers as people experience fear of crime than actual crime" (Ogundiran, 2019, p.). And from an economic lens abandoned buildings indicate economic distress which discourages investments and business opportunities.

Newman, Park & Lee (2018) examine vacant urban areas which include abandoned buildings from an economic lens and argue that empty urban lots tend to disconnect the local community, generate unsafe conditions, lower the quality of life, produce unsightly aesthetic consequences, blight surrounding areas, deter future development, and decrease economic growth which impedes movement within the area whether from businesses or residents.

**Vacant plots:** act as spatial barriers as they disrupt the continuity of streetscapes and pedestrian pathways. Akerson (2005) argues that vacant plots reduce, and it is not beneficial to walkability because it lowers the number of pedestrians per unit area.

**Crumbling infrastructure:** Gibson & Marshall (2022) argues that sidewalks serve as vibrant conduits in cities and when well-maintained they tend to enhance public life and enable accessible passages for all residents, particularly the most vulnerable. Which is not the case within the Ikageng corridor as the crumbling infrastructure acts as spatial barriers as the deteriorating sidewalks impede movements and connectivity to different essential areas, employment opportunities, and amenities as the stretch from the township via the industrial area to the town is about 2km and residents of Ikageng walk daily to and from the town.

These spatial barriers as a collective result in safety concerns which have become poorly maintained and neglected leading to safety concerns such as crime and vandalism which creates feelings of hostility which restricts mobility along the vital Ikageng corridor. According Ogundiran (2019) the fear of crime is linked with combination of social problems such as poverty and the inequality between the rich and the poor, unemployment, and limited access to essential services. Which is spatially evident in Potchefstroom because of apartheid spatial planning.



Figure 18: Map of rejuvenation intent on Ikageng Gateway corridor and its primary nodes (source: author's own, 2024).

## Chapter 02

Kgopolo e e ikaegileng ka lefelo  
ya Potchefstroom  
(Place-based theory of Potchefstroom)

Oh, hometown mine, majestic and grand,  
Where generations past and present stand,  
You birthed my kin, my parents, and me,  
Witnessed my growth, as I've watched thee be.

A powerhouse forged, yet neglected, I fear,  
In beauty and importance, both far and near,  
Do you grasp your power, your greatness known?  
With a legacy rich, deeply sawn.

Owner of Mooi River's tranquil embrace  
Noticed in greatness by Potgieters gaze,  
Once capital revered, in days of your,  
An academic haven, rich in lore.

Jam Smuts hailed thee "city of expertise"  
Where arts and culture flourish with ease,  
Home of sports, victories proudly cheer,  
National treasures cherished near and dear.

Yet in shadows lurk in troubling plight,  
A cloud obscuring thy radiant light,  
Awaken now, from this self-made plight,  
Together, ancestors and I, unite.

Strength we summon, for future call  
transformation beacons, rejuvenation for all.  
Vumani bo! Siyavuma! Hear our plea,  
Tsongang bana ba badimo, rise and see!

Pula! A ene! Let rain and hope pour,  
As we reclaim our glory once more.



Figure 19: Image of Potchefstroom's jazz group (source: author's own, 2024).

The cover image of the musical group Teenage Lovers, icons of the 1970s from the Ikageng township in Potchefstroom, reflects the deep cultural roots and significance of Potchefstroom's industrial area. Situated southwest of Johannesburg in the North West Province (formerly the Transvaal), Potchefstroom was envisioned as a "city of expertise," with its industrial area playing a pivotal role even before Johannesburg's gold discovery. The "TX" prefix on the number plate underscores Potchefstroom's identity, as the car itself was an American import brought into the town's industrial sector.

Despite apartheid's segregation laws, Teenage Lovers used the industrial area (Jazz complex) as a vibrant space to compose and perform jazz, symbolizing the town's cultural heartbeat and placing Potchefstroom on the cultural map. This historical context underscores the area's longstanding potential for a dynamic, mixed-use character—a legacy that deserves recognition and reimagining to meet the community's evolving needs.

# Theoretical Framework

## Framing the Argument

A spatial justice theoretical framework for Potchefstroom's urban and industrial development, influenced by historical legacies and modernist planning, can be constructed by examining the intersections of power dynamics, racial segregation, and industrial decentralization. This framework highlights how historical events, particularly the Anglo-Boer War and apartheid policies, have shaped the spatial inequalities that persist in the region today.

### Historical Foundations and Modernist Planning

Sparks (2023) argues that modernist planning in South Africa began to take shape following the Anglo-Boer War (1899-1902), particularly in towns like Potchefstroom. The town's strategic importance during the war, highlighted by Van den Bergh (2009), as a logistical hub on a crucial railway line for British troops, established it as a key site for British dominance in the region. Potchefstroom's transformation into a densely populated town during and after the war laid the groundwork for future industrial growth, including the development of the Potchefstroom Industrial Area, which became a focal point for urban expansion.

The war not only shifted power dynamics but also introduced British military principles of organization, regulation, and infrastructure development, which influenced the town's urban planning. Van den Bergh (2009) emphasizes that this legacy of British rule extended into the post-war period, setting the stage for the imposition of modernist planning frameworks in the town, which were deeply entwined with the economic and political interests of the British Empire.

### Racial Segregation and "Racial Capitalism"

The spatial organization of Potchefstroom was also shaped by racial segregation, which predated the South African mining boom but became more pronounced with industrial development. Sparks (2023) continues Van den Bergh's argument by linking the apartheid-era spatial planning ideologies with earlier British public health policies that justified racial segregation under the guise of addressing sanitation issues. In Potchefstroom, racial divisions were solidified with the creation of segregated residential areas like Willem Klopperville, later known as "Makweteng" (Van Rensburg, 2006).

According to Marxist perspectives, as cited in Sparks (2023), racial segregation served as a tool of "racial capitalism," whereby the ruling class, both under British and Boer control, used racial divisions to maintain economic and political power. This was especially evident in mining towns like Kimberley and Johannesburg, where Potchefstroom acted as a link between these economic centers. The spatial division of labor and residence reinforced racial hierarchies and entrenched economic disparities.

### Industrial Decentralization and Its Impacts

Building on the historical legacies of British rule, apartheid-era policies further entrenched spatial inequalities through industrial decentralization. Dewar, Todes, and Watson (1986) argue that this policy aimed to move industrial development away from major metropolitan centers to less developed areas, such as Potchefstroom, as a way of maintaining control over urbanization. However, they critique the effectiveness of this policy, noting that it often failed to address regional underdevelopment or improve socio-economic conditions.

In Potchefstroom's case, the Industrial Area became a key site for decentralization, but it struggled to attract dynamic industries that could promote sustainable growth. Dewar et al. (1986) point out that the lack of social infrastructure and skilled labor made it difficult for these industrial zones to thrive, leading to low wages and limited job creation. Furthermore, the jobs that were created were often in unskilled sectors, contributing to continued socio-economic inequality. The authors argue that industrial decentralization must be more carefully designed to meet the specific needs of local communities, rather than applying a unified approach.

### Spatial Justice in the Post-Apartheid Era

In the post-apartheid context, the legacy of these historical planning decisions remains evident, as Potchefstroom continues to face challenges related to rapid urban growth, economic decline, and social inequality. The spatial inequalities entrenched by apartheid policies, as well as earlier British colonial rule, require a rethinking of urban planning strategies to promote more equitable development.

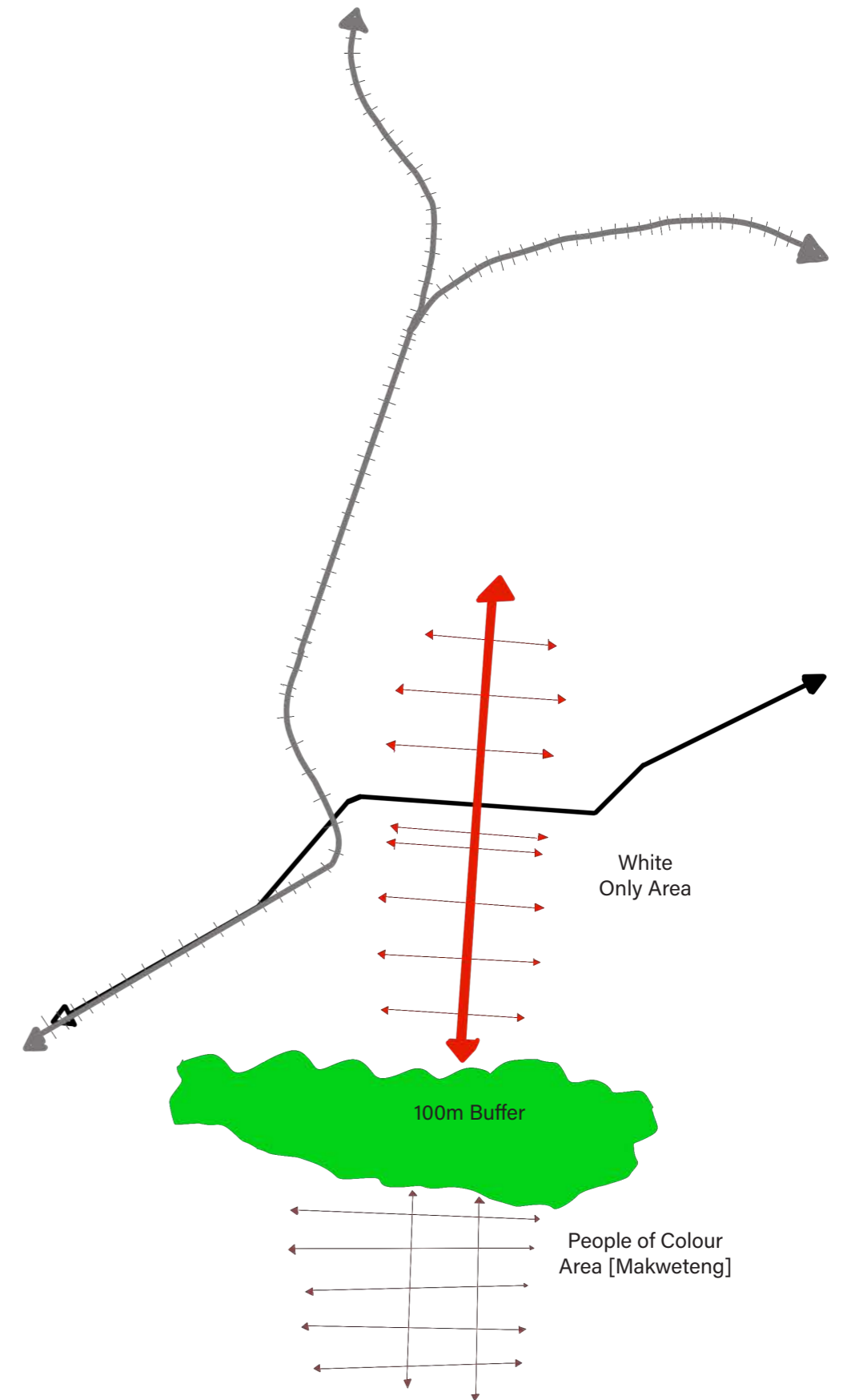


Figure 20: Potchefstroom: A Pre-Apartheid Spatial Layout (source: author's own, 2024).

# Theoretical Framework

## Spatial Justice

### Underpinnings of the Theory:

Soja (2009) emphasizes that spatial justice is closely linked to concepts of territorial and environmental justice. Rauhut (2017) defines territorial justice as a way to organize social and economic inequalities fairly. This means arranging these inequalities to benefit the least advantaged individuals while promoting fair access to opportunities, regardless of geographical location.

According to Schlosberg (2007), environmental justice should be framed as “equity” rather than simply “justice,” as it encompasses a broader and more inclusive range of issues. According to Zimmerman (1993), Bullard (1994), and Cutter (1995) (as cited in Schlosberg, 2007), the concept of environmental equity is subdivided into several categories, including:

- **Procedural equity:** Fair processes in decision-making.
- **Geographic equity:** Fair distribution of resources across different locations.
- **Social equity:** Fair treatment of all individuals and groups.
- **Distributional equity:** Equitable allocation of benefits and burdens.
- **Generational equity:** Fairness toward future generations.

Soja (2009) advocates for a “critical spatial perspective,” which closely examines how space and geography influence justice. This perspective is built on three key principles that highlight the interplay between spatial and social dimensions in shaping equity:

- **Ontological Spatiality:** Space is tangible and plays a fundamental role in how humans live.
- **Social Production of Space:** Space is shaped by social interactions and human daily activities, influencing how neighborhoods are planned and constructed.
- **Socio-spatial Dialect:** Space and society are interdependent. Social structures influence the shape of spaces, and in turn, the characteristics of those spaces affect social behavior and equity.

Soja (2009) also draws on Henri Lefebvre’s concept of the “*right to the city*,” which has significantly influenced modern spatial justice discourse. This concept emphasizes that everyone should have equal access to urban spaces and the benefits they offer.

As a South African urban designer, I recognize the urgent need for a spatial justice framework tailored to Potchefstroom. This framework must consider the historical legacies of power, race, and economic control [Ownership] that have shaped the town’s development. By addressing the modernist planning approaches that have led to the uneven distribution of resources, opportunities, and access to infrastructure—particularly across buffer zones and railway lines—future planning efforts can work towards creating a more just and inclusive urban environment.

## New Urbanism and “People as Infrastructure”

### Underpinnings of the Theory:

This theoretical framework explores how social equity can be fostered through the interconnection of social and spatial dimensions, using the concept of “people as infrastructure” to bridge these elements. It draws on the ideas of Simone (2004) and Talen (2002), emphasizing the role of human interactions in shaping urban spaces that are both socially inclusive and spatially just.

Simone (2004) extends the idea of spatial justice through three principles of spatial equity:

- **Ontological Spatiality:** Recognizing that space is a fundamental part of human existence.
- **Social Production of Space:** Space is shaped by social interactions, activities, and community practices.
- **Socio-spatial Dialect:** Space and society influence each other, where social structures shape spaces, and these spaces, in turn, impact social behavior and opportunities.

Simone (2004) highlights that people themselves act as the key link between these principles, emphasizing their role in creating and maintaining urban spaces—a concept referred to as urbanism. This approach suggests that human relationships and networks act as vital infrastructure, facilitating connections that support social and economic activities, especially for residents with limited access to resources.

Talen (2002) builds on this perspective through the lens of New Urbanism, a planning approach that shifts from traditional planning methods toward a focus on physical design. New Urbanism aims to create walkable neighborhoods that foster a sense of community, thereby interlinking social and spatial dimensions. Talen (2002) supports Soja’s (2007) view that spatial equity emerges from the dynamic interaction between spatial and social factors.

Simone’s (2004) idea of “People as Infrastructure” suggests that human networks play a critical role in creating spaces of economic and cultural opportunity, especially for marginalized communities. This perspective argues that putting people at the center of urban design enhances the potential for social equity, as human interactions shape the character and functionality of spaces.

Talen (2002) outlines several social goals and guiding principles for achieving social equity through urban design:

- **Social Equity:** Ensuring fair distribution of resources and opportunities, taking into account varying socioeconomic statuses.
  - **Community:** Fostering social interactions and building emotional connections among residents.
  - **Common Good:** Prioritizing collective benefits over individual interests, creating spaces that serve the needs of all.
- In addition, Talen (2002) proposes specific design strategies for implementing these social goals:
- **Compact, Mixed-use Neighborhoods:** These enhance accessibility by bringing homes, work, and services closer together, reducing the need for long commutes.
  - **Mixed-Housing Types:** This helps to reduce concentrations of poverty and promote diversity, providing different housing options for people of varying income levels.
  - **Transportation Design:** Focused on inclusivity, with infrastructure that supports pedestrians and cyclists, making urban spaces accessible for all.

Talen (2002) argues that New Urbanism should emphasize the preservation of resources and environmental protection, aiming to enhance social responsibility and civic engagement, which are crucial for promoting social equity. Public participation is a key element in the New Urbanism planning process, ensuring that community voices are heard and that urban spaces meet the needs of diverse populations.

This theoretical framework positions social equity as a product of the interplay between social interactions and spatial design, highlighting the importance of people as active agents in shaping their urban environments. By integrating the principles of New Urbanism with Simone’s concept of “people as infrastructure,” I can approach the Potchefstroom Industrial Area with a theoretical lens and intent of creating inclusive spaces that balance social needs with spatial design, fostering more equitable and inclusive community.

# Chapter 03

## Mokgwa wa Patlisiso wa Potchefstroom (Methodology)

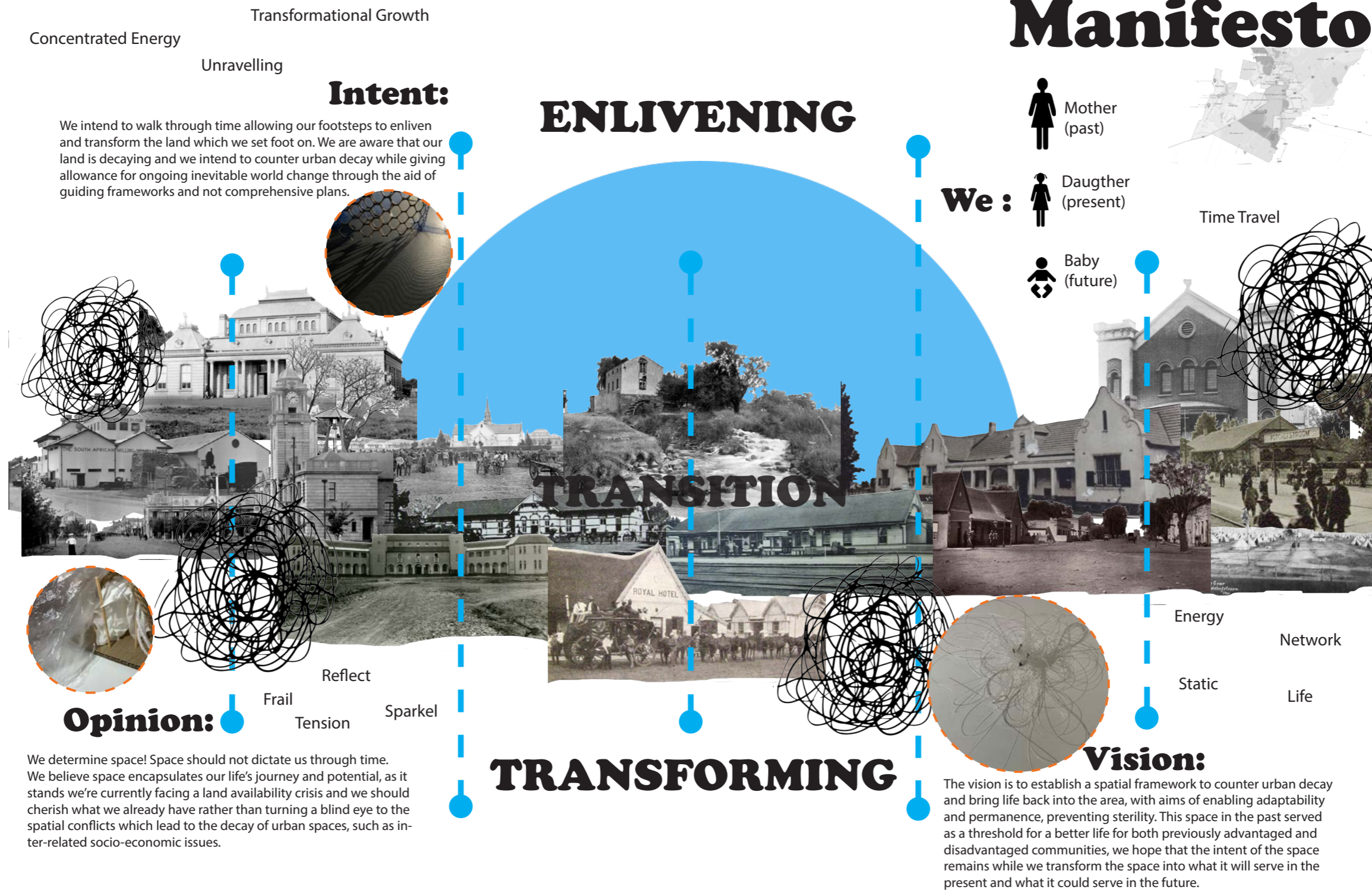


Figure 21: Research project manifesto depicted in a storyboard that highlights the power of storytelling (source: author's own, 2024).

I have used the art of storytelling as a form of storyboard to capture urban transformation and decay in Potchefstroom. My manifesto acts as a visual problem statement through the lens of time, utilizing generated artifacts to capture the intent, opinion, and vision of this research project. This approach is a powerful tool of visual communication and has sparked my interest in using storytelling as an overarching thematic methodology, as it is my strength and preferred form of communication.

# Methodology

## Story Telling

**Story telling: to act as thematic methodology throughout the duration of the project's research phase.**

Storytelling has long been recognized as a powerful vehicle for communication. Koch (1998) emphasizes that research is an interpretive process shaped by personal histories, biography, gender, social class, race, and ethnicity, both of the researcher and the participants.

I employed storytelling as a overarching method to develop tools for listening, seeing, sketching, building, and writing. People live their stories, and by interpreting these narratives spatially through maps and creative storyboards, I have explored and grappled with the concept of urban decay in the context of Potchefstroom. This approach has aided with the investigative potential strategies and interventions for urban transformation.

Koch (1998) notes, "Doing interpretive research is not an easy option in research" (p. 1183). Interpretation is crucial to my exploratory research project. I have focused on the complexities of creating an acceptable and accessible research product, covering several interrelated areas: social mapping, semi-structured interviews, tracking and tracing, writing, and rigour.

### Addressing Limitations

Storytelling is sometimes criticized as unscientific, biased, or overly personal. The researcher's role in the text is often challenged, and stories can be seen as lacking generalizability or accused of fabrication. There is no universally agreed-upon method for ensuring rigour in storytelling.

### Ensuring Rigour and Credibility

To demonstrate credibility, I have shown that multiple constructions of the research project are represented adequately, explaining how these interpretations are derived during the inquiry. I have included a transcript as an appendix to ensure that all conclusions are firmly grounded in data or explained by the researcher's interpretive framework. This approach has aided to validate the findings and ensure that the research is rigorous and credible.

## Semi-Structured Interviews

**Semi-structured interview: What are the benefits of using semi-structured interviews as a methodology during the project's research phases to unpack the effects of urban decay?**

I have used semi-structured interviews as a method to collect data to explore and understand the participants viewpoints, beliefs, attitudes, and experiences in detail for a deeper understanding of their interpretations of urban decay and their perspectives on rejuvenation and regeneration strategies.

### Questions:

**Significance and Positionality:** What does the Industrial Area mean to you, and what significance does the Ikageng Gateway Corridor hold for you?

**Historical Perceptions:** How have you seen the Ikageng Industrial Area change over the years, particularly around the Ikageng Gateway Corridor? / What were the most significant developments or changes you remember in this area, and how did they impact the community? / What factors do you believe have contributed to these changes?

**Current Challenges:** What are the main challenges you face in the Ikageng Industrial Area particularly around the Ikageng Gateway Corridor, today from a spatial lens? / How do these challenges affect your daily activities and interactions within this space?

**Spatial Usage:** How do you and others in your community typically use the spaces within the Ikageng Industrial Area? / Are there specific areas that you find unsafe or underutilized, and why?

**Community Involvement:** How can the community be involved in transforming the Ikageng Industrial Area? / What role do you think local businesses, residents, and workers can play in the urban regeneration and rejuvenation process?

**Perceptions of Urban Decay:** What signs of urban decay have you noticed in the Ikageng Industrial area? / How have these changes impacted your daily life, business, or community interactions?

**Community and Business Needs:** What do you believe are the most pressing needs of the community and local businesses in the Ikageng Industrial area? / How could addressing these needs help transform the area?

**Vision for Transformation:** How would you envision the transformation of the Potchefstroom Industrial Area, specifically the Ikageng Gateway Corridor? / What changes or improvements would you like to see implemented to counter urban decay? / How do you think these changes could positively impact your community and economic activities?

**Business Environment:** Can you describe the business environment in the Ikageng Industrial area over the years? How has it evolved, and what challenges have local businesses faced? / What opportunities or supports have been available for businesses in this area?

**Employment Trends:** How have employment opportunities in the Ikageng Industrial area changed over time? Have there been significant periods of job growth or decline? / What types of jobs were most common in the past, and what are the predominant employment sectors now?

**Community and Economic Interaction:** How do you think the economic activities in the Ikageng Industrial area have impacted the local community, both positively and negatively? / What economic resources or facilities do you think are lacking in the area?

## Tracking and Tracing

**Tracking and Tracing: What are the benefits of using tracking and tracing as a method during the project's research phases to unpack the effects of urban decay?**

Gehl and Svarre (2013) highlight the importance of tracking as a method for registering movement, which is invaluable for measuring walking speed, and identifying the locations, times, and extents of various activities along a route. These activities range from actual stays to subtle acts such as head turns, stops, and unexpected detours. Tracing provides foundational knowledge about movement patterns as well as specific insights into movement within a given area.

**Tracking Method:** I have paired a qGIS base map with observations gathered from following an active participant. Which includes sketches and markings of the participant's interactions with spaces onto a map at various times of the day. Which registers movement and activities along the critical corridor, capturing behaviors and interactions with space. This process has aided to identify constraints and opportunities within a social and real-time context.

**Tracing Method:** The tracing method has built upon the basic movement patterns and activities identified through tracking. It involves analyzing these patterns from spatial, social, economic, and historical perspectives to uncover spatial and human relationships and historical processes. The outcomes have been interpreted into storyboards and consolidated maps, providing concrete knowledge about movement along the Ikageng Gateway corridor.

**Spatial lens:** I have used GIS maps paired with aerial images of the industrial area to overlay with sketches and markings generated through tracking to analyze spatial relationships, identify patterns, land-use changes, and hotspots of deterioration to unpack urban transformation and urban decay. Which spatializes this research problem statement.

**Socio-economic lens:** I have used GIS maps paired with aerial images of the industrial area to overlay with sketches and markings generated through tracking to trace participants movements and space utilization to analyze social relationships, networks, and interactions with space to determine sequences, choice of direction, flow, frequently used entrances, perceptions of safety and accessibility, to observe and document interactions among residents, business owners, and workers along the Ikageng Gateway corridor.

By examining the area through spatial, social, economic, and historical lenses, the research has produced detailed storyboards and maps that inform urban design interventions, highlighting both constraints and opportunities from a holistic perspective.

# Methodology

## Social Mapping

**Social mapping: What are the benefits of using social mapping as a methodology during the project's research phases to unpack the effects of urban decay?**

I have used social mapping as a method to capture social relationships, networks, and interactions within the community of Potchefstroom with a focus on daily users of the Ikageng corridor. According to Social Mapping Conservation, Livelihoods and Governance Programme Tools for Participatory Approaches (2013), Identifying the location of different social groups in relation to key resources such as the industrial area, community structures and processes may be relevant in influencing the distribution of benefits which is achieved through social mapping.

I have made use of an active participant as a tool for social mapping. This approach involves a series of maps generated from qGIS, which were printed and used during a day-long observational study. Walking with the participants, I have mapped out their daily experiences from social, spatial, and economic perspectives using pins and sticky notes. This method was utilized to interpret spatial patterns, social interactions, and identify social disparities, creating a consolidated view of patterns, interactions, disparities, and opportunities.



Figure 22: Tracking Map of Potchefstroom Industria Area- Class exercise (source: author's own, 2024).

The active participant exercise involves a hypothetical social interaction between two residents of Ikageng, Potchefstroom. It follows their experiences and conversations as they walk through the key Ikageng gateway corridor, stopping at various nodes in search of informal jobs. The exercise documents the language used and the topics discussed during their journey. By spatializing these experiences, it creates an urban design contextual analysis. This exercise has inspired the use of social mapping as a methodology in this research project.

# Ethical Considerations

## Ethical Considerations

Ethical considerations in my urban design research project involve recognizing and respecting the diverse backgrounds of participants, encompassing their personal histories, biography, gender, social class, race, and ethnicity, as these aspects profoundly influence their narratives and my interpretations of them. I have prioritized obtaining informed consent by having each participant sign a consent form provided, ensuring confidentiality upon request. All participants will be adults over 18 years old and fully informed about the research objectives and the utilization of their stories, emphasizing their voluntary contributions and the right to withdraw at any stage.

Sensitivity was paramount when addressing distressing topics related to urban decay and transformation. Transparency and integrity has guided my interpretation process, guarding against personal biases and offering participants the chance to review and provide feedback on interpretations to enhance accuracy and authenticity. To ensure rigor and credibility, I have employed diverse data triangulation methods, including storytelling, social mapping, semi-structured interviews, tracking and tracing, and policy analysis. Maintaining detailed documentation and clearly delineating interpretive frameworks has enhanced the validity of the conclusions drawn from the research.

In my urban design research, ethical considerations take precedence, especially concerning the sensitive nature of mapping social relationships and networks. I have committed to maintaining confidentiality and sensitivity toward distressing subjects related to social disparities and economic challenges within the community.

Ethical considerations in my research entail approaching participants with empathy and sympathy, fostering a safe space for them to share their experiences. I have committed to critically reflecting on my own positionality and biases to ensure that interpretations of emotional narratives are respectful and accurate. Prioritizing the voices and perspectives of the participants, I have given them agency in shaping the narrative of their own experiences within the Ikageng corridor.

I have conducted interviews with adults aged 18 years and older who have provided informed consent. I have honored requests for anonymity in both record-keeping and reporting. Additionally, I have ensured that participants understand the purpose of the research project before each interview.

Ethical considerations in my research has prioritized privacy and confidentiality. To uphold this, I have maintained participants' anonymity and ensured that the confidentiality of any sensitive information encountered during the research process. Instead of using names or identifying information, each participant have been assigned a pseudonym to safeguard their privacy.

Once the research project concludes, I'll responsibly dispose of any personal information or identifiable details in accordance with data protection regulations, retaining only anonymized data for analysis and future reference. I'm committed to maintaining integrity and honesty in documenting experiences and reflections, refraining from altering or omitting entries to align with preconceived notions or desired outcomes.

Ethical considerations in my research involve respecting the privacy and autonomy of participants as tracking entails following them and documenting their interactions with space. I have approached the surveillance and observation of participants' behaviors with sensitivity, ensuring confidentiality in recording their movements and activities. While the research focuses on selected active participants rather than the entire community, it still intrudes on public space. To mitigate this, I have photograph street scenes and public spaces in a way that prioritizes the anonymity of other individuals unless permission is granted.

- Overall ethical considerations
- Ethical considerations of Social Mapping
- Ethical considerations of Emotional Mapping
- Ethical considerations of Semi-Structured Interviews
- Ethical considerations of Keeping a Diary
- Ethical considerations of Tracking and Tracing

# Methodology

## Semi-Structured Interviews Application

I embraced the approach of recognizing and valuing multiple perspectives when conducting research, to gain a comprehensive understanding of factors contributing to the urban decay of the industrial area. Adopting Chimamanda Ngozi Adichie's TED Talk, "The Danger of a Single Story." I engaged with various stakeholders through semi-structured interview, including residents, informal and formal business owners, former business owners, local authorities, community leaders, community care specialist, and socio-environmental sustainability consultant.

By conducting semi-structured interviews, I gathered a variety of narratives and experiences that provided an overarching and nuanced understanding of the industrial area's challenges and opportunities, ensuring that proposed interventions will be inclusive and aligned with the community's needs and aspirations.

Through actively listening to a wide range of voices, the hidden strengths and potential assets of this crucial corridor surfaced, urging the encouragement of a sense of ownership and encouragement among stakeholders aiding in the rejuvenation and regeneration of the Ikageng Gateway Corridor and the Potchefstroom Industrial Area.

The mind map on the right illustrates the synthesized and themed responses from two interviewees: a community member and an informal business owner in the industrial area. Please refer to the Annexure A for all synthesized mind maps from all interviewees.

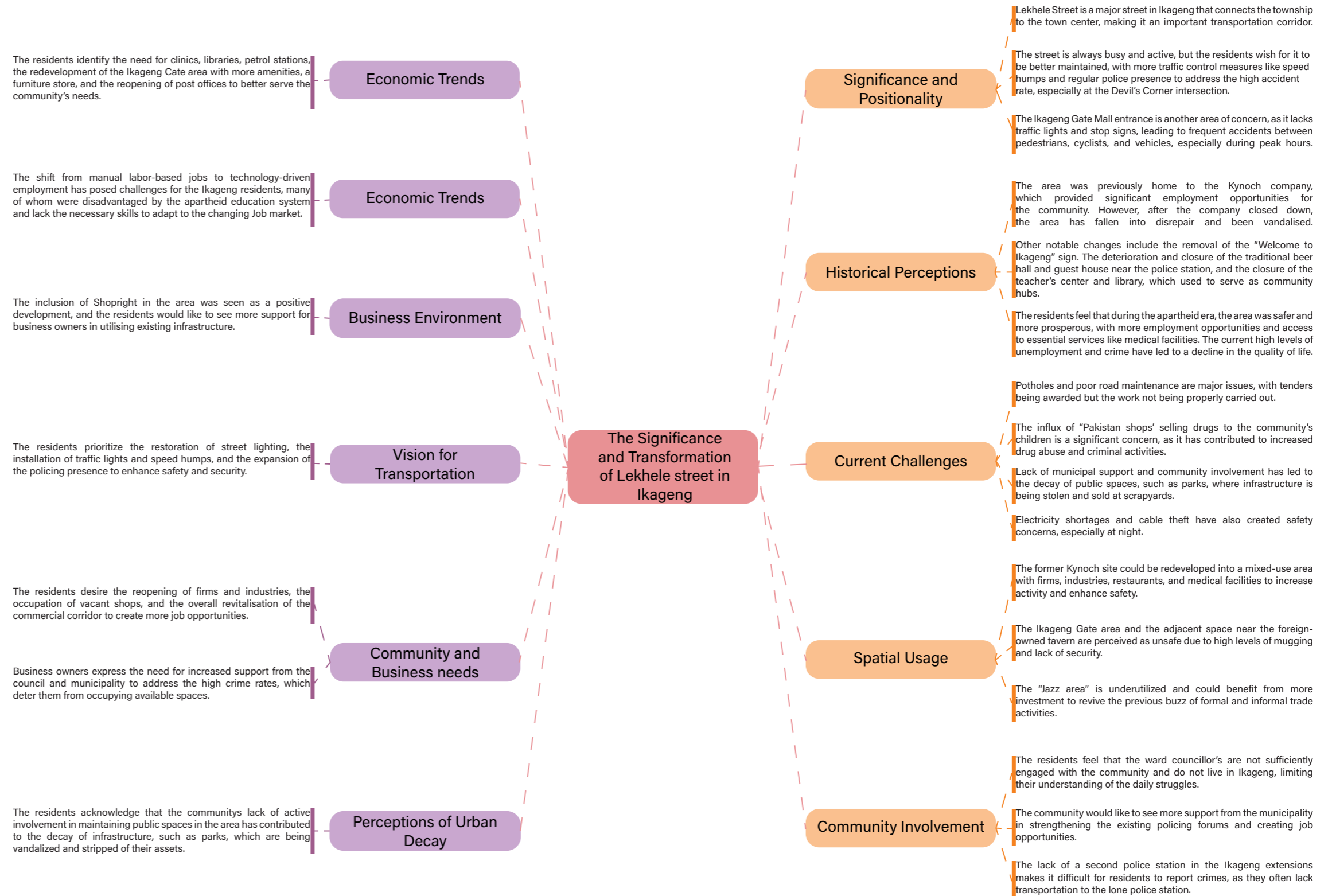


Figure 23: Synthesized mindmap of Interviewees responses (source: author's own, 2024).

# Methodology

## Semi-Structured Interview



Figure 24: Spatialised mindmap of Interviewees responses (source: author's own, 2024).

# Methodology

## Synthesis of Semi-Structured Interviews

### Findings from Semi-Structured Interviews:

The illustration on the right is a synthesized representation of the conducted semi-structured interviews with various stakeholders. Despite the differences in professions and in how these perspectives were articulated, a common thread emerged: a shared recognition of the need for rejuvenation and an ardent desire for community-driven solutions.

This unified thought is creatively interpreted as an investigation board. Visual clusters of key phrases from the interviews are pinned, revealing that although the terminology may differ, the underlying concerns are strikingly similar. For example, "need for community ownership" "need for community engagement" and "stakeholder relationships" all point to the need for inclusivity, improved and maintained infrastructure, as well as enhanced safety measures.

Spatially, these concerns often translate to the same critical areas, such as neglected buildings, poorly lit streets, and underutilized spaces. The board visually expresses these convergences, highlighting that despite the varied ways concerns are expressed, stakeholders are unified in their vision for a rejuvenated, vibrant Potchefstroom Industrial Area.

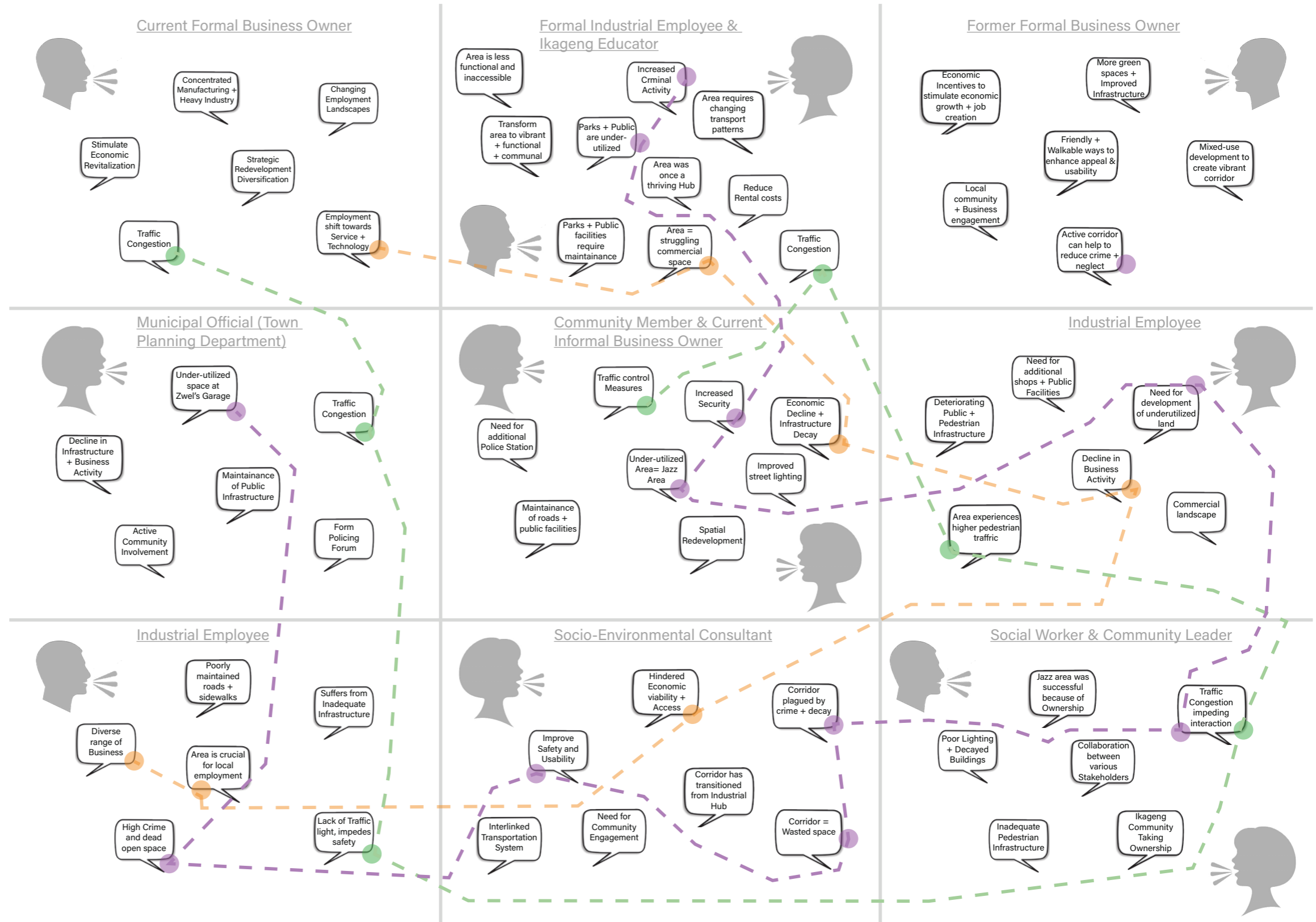
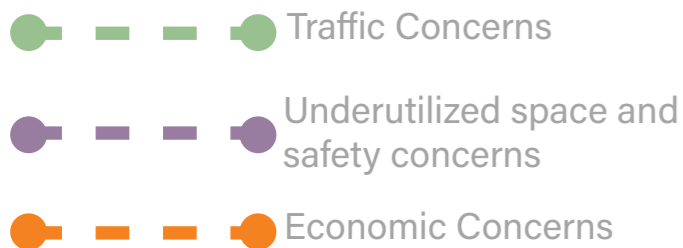


Figure 25: Pin-up of cross conversation of various interviewed stakeholders (source: author's own, 2024).

# Methodology

## Synthesis of Semi-Structured Interviews

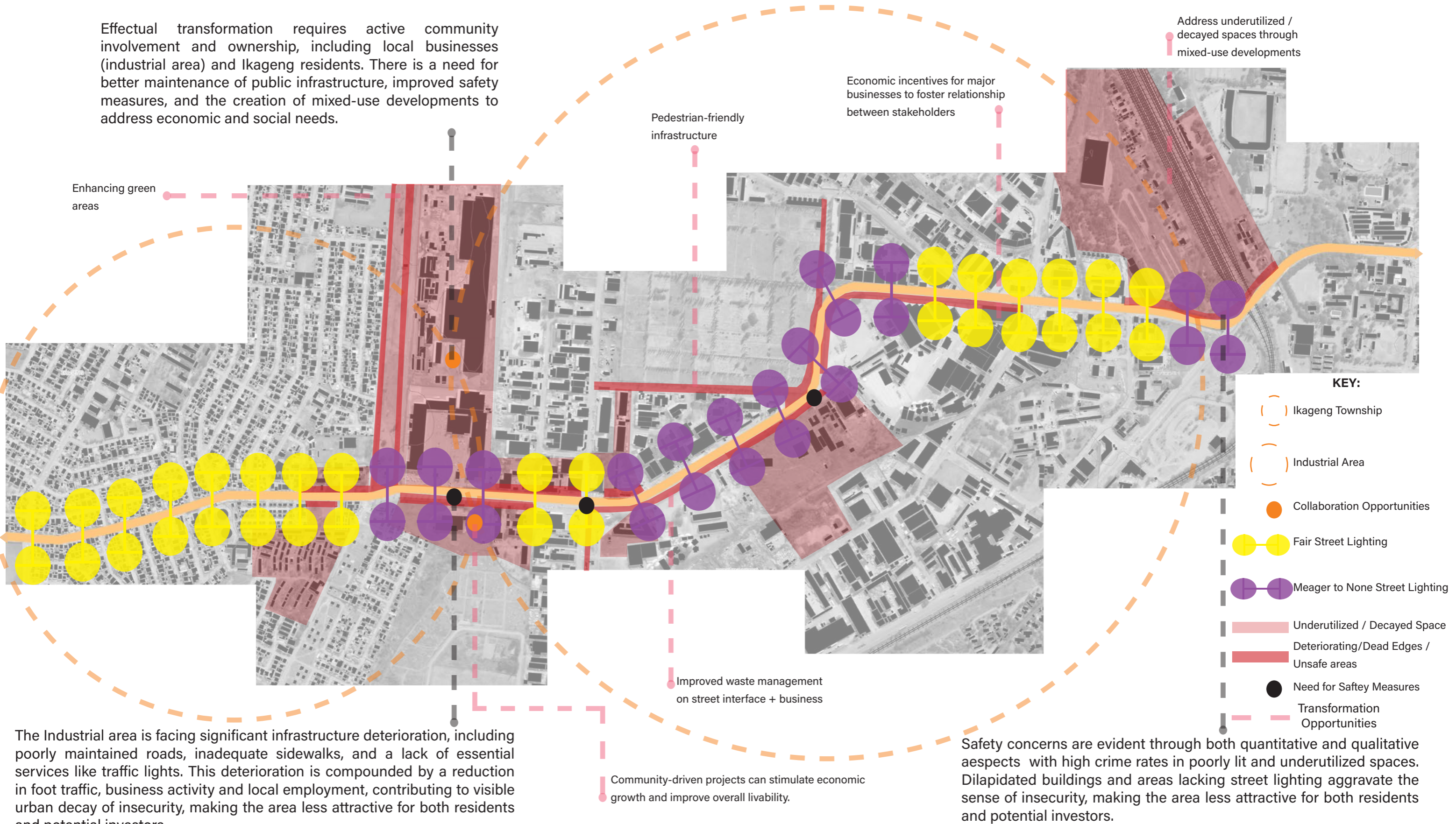
Effectual transformation requires active community involvement and ownership, including local businesses (industrial area) and Ikageng residents. There is a need for better maintenance of public infrastructure, improved safety measures, and the creation of mixed-use developments to address economic and social needs.

Enhancing green areas

Pedestrian-friendly infrastructure

Economic incentives for major businesses to foster relationship between stakeholders

Address underutilized / decayed spaces through mixed-use developments



The Industrial area is facing significant infrastructure deterioration, including poorly maintained roads, inadequate sidewalks, and a lack of essential services like traffic lights. This deterioration is compounded by a reduction in foot traffic, business activity and local employment, contributing to visible urban decay of insecurity, making the area less attractive for both residents and potential investors.

Figure 26: Synthesis Map of Key Takeaways from Interviews (source: author's own, 2024).

# Methodology

## Sectional Montage of Semi-structured Interviews

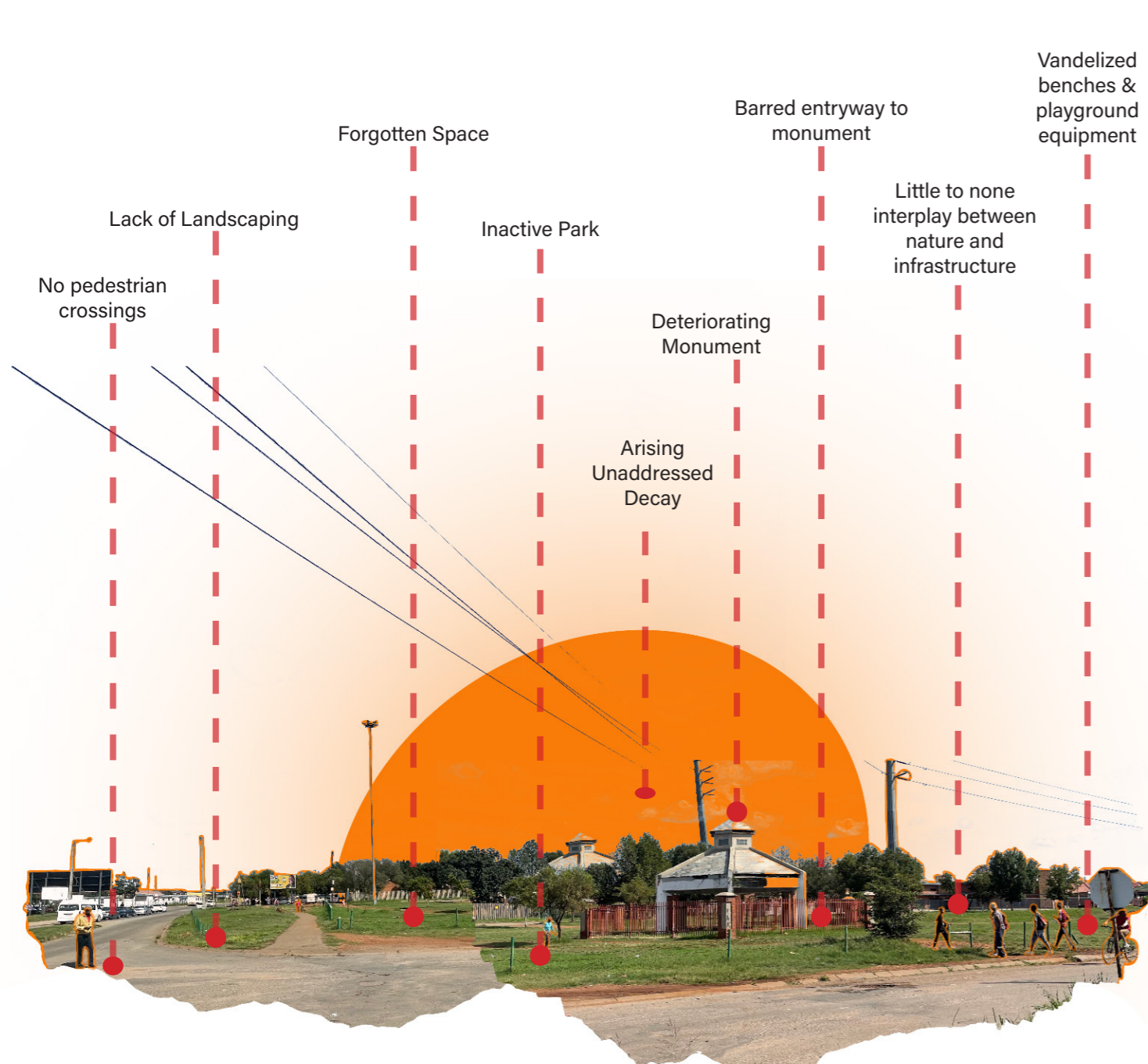


Figure 28: Collage of "Kgoro ya Ikageng" - Ikageng Gateway (source: author's own, 2024).

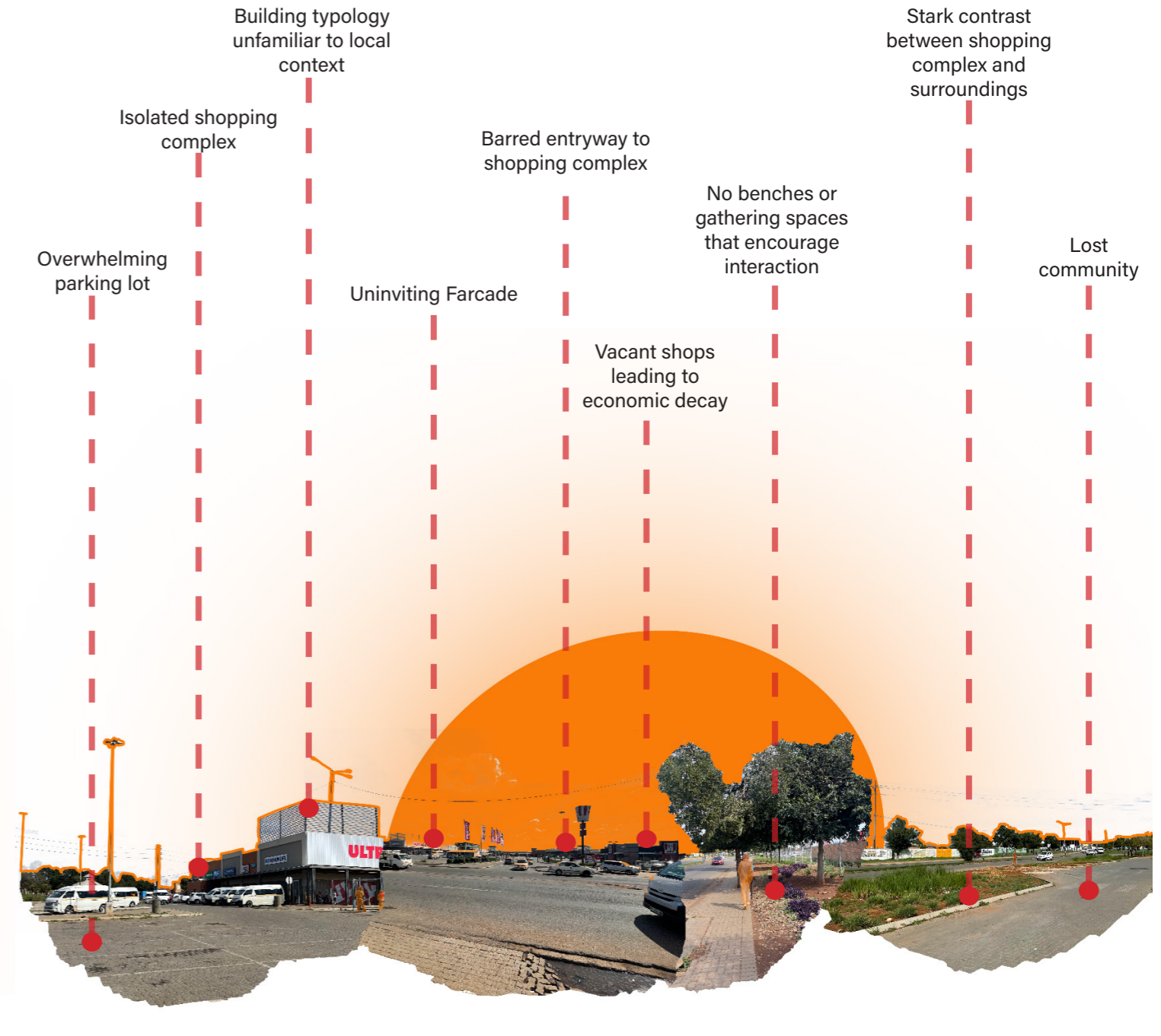


Figure 29: Collage of Ikageng Gateway Mall (source: author's own, 2024).

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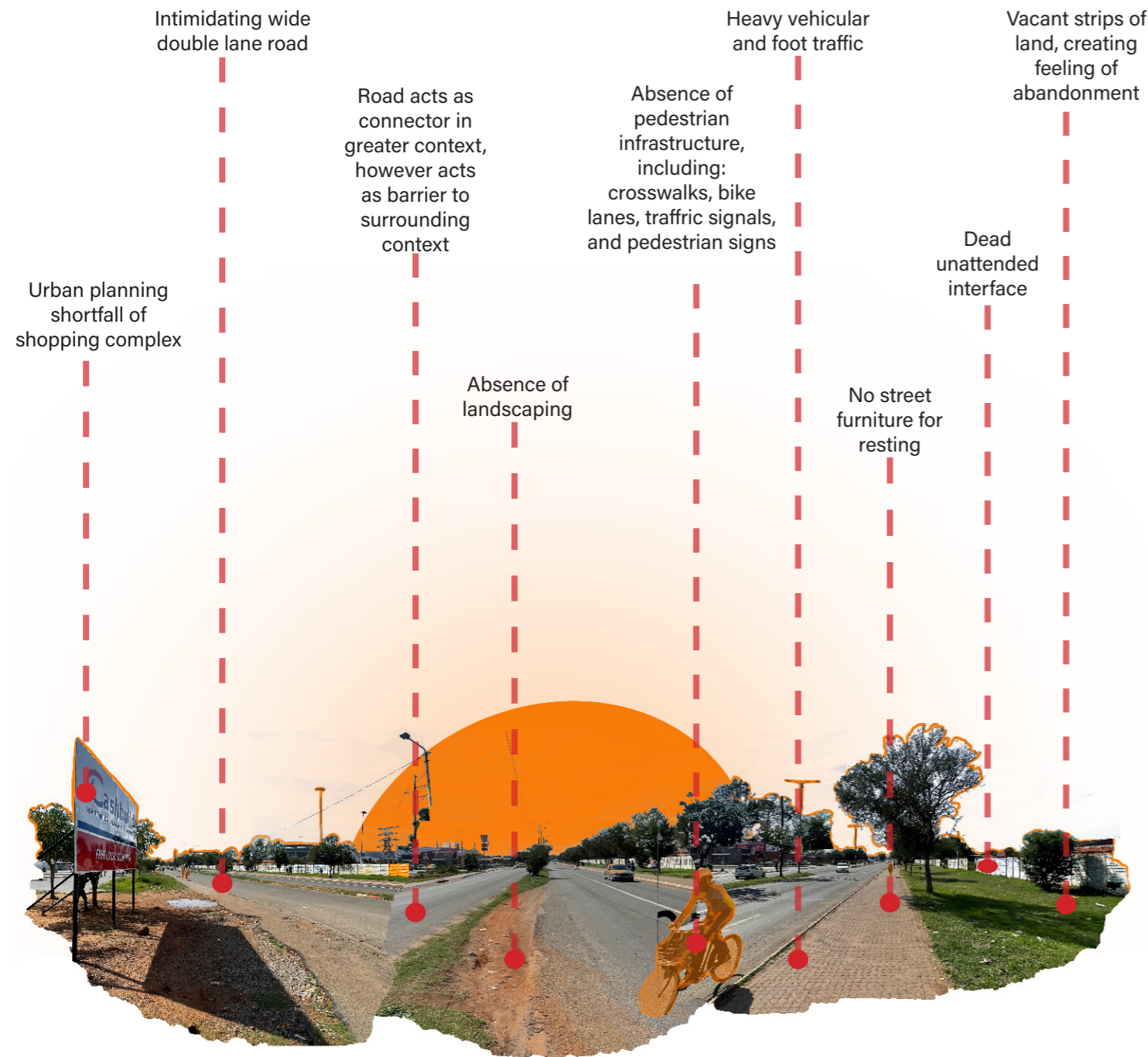


Figure 30: Collage of street conditions on Ikageng Gateway Corridor (source: author's own, 2024).

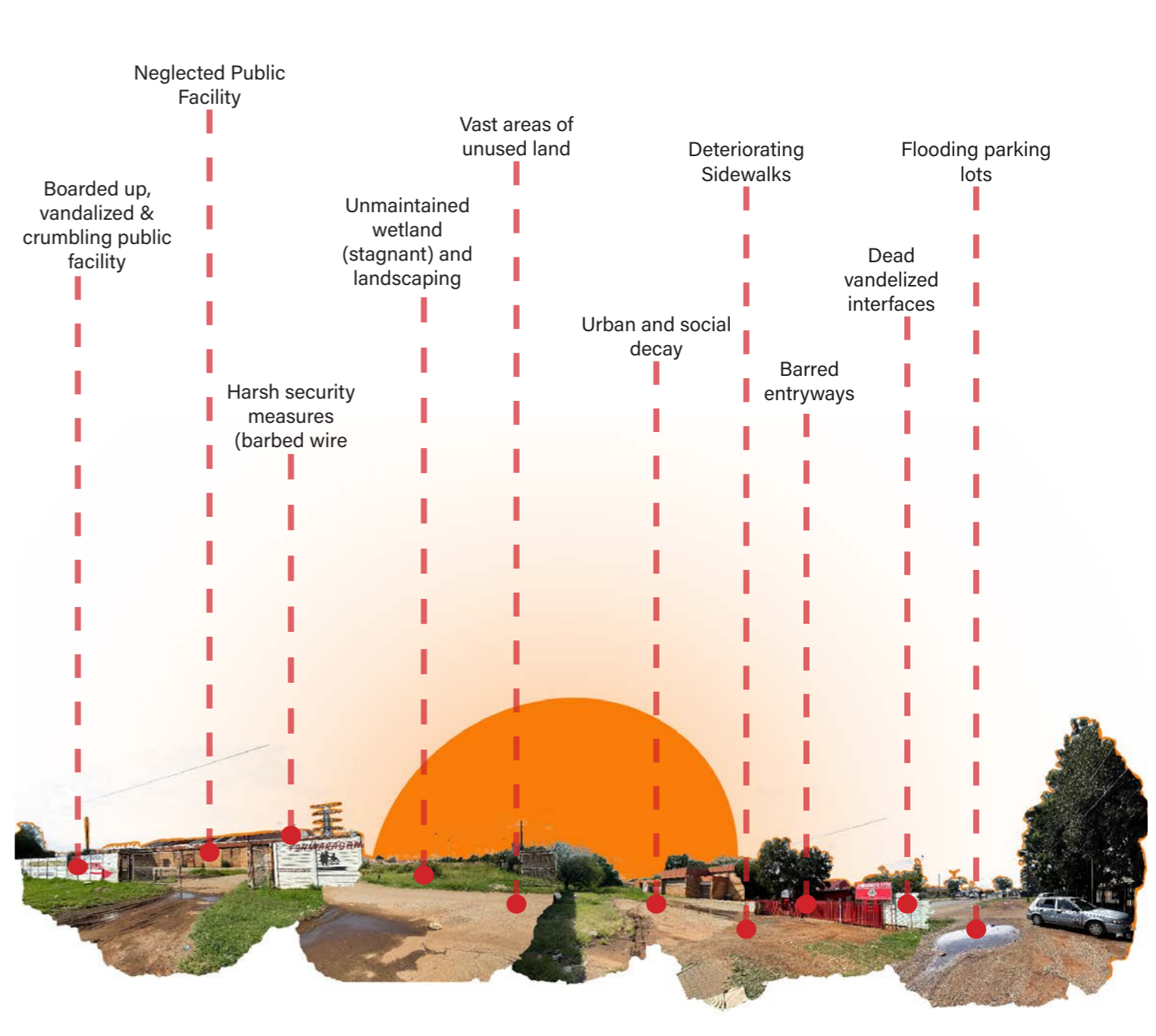


Figure 31: Collage of public facility cluster Ikageng Gateway Corridor (source: author's own, 2024).

# Methodology

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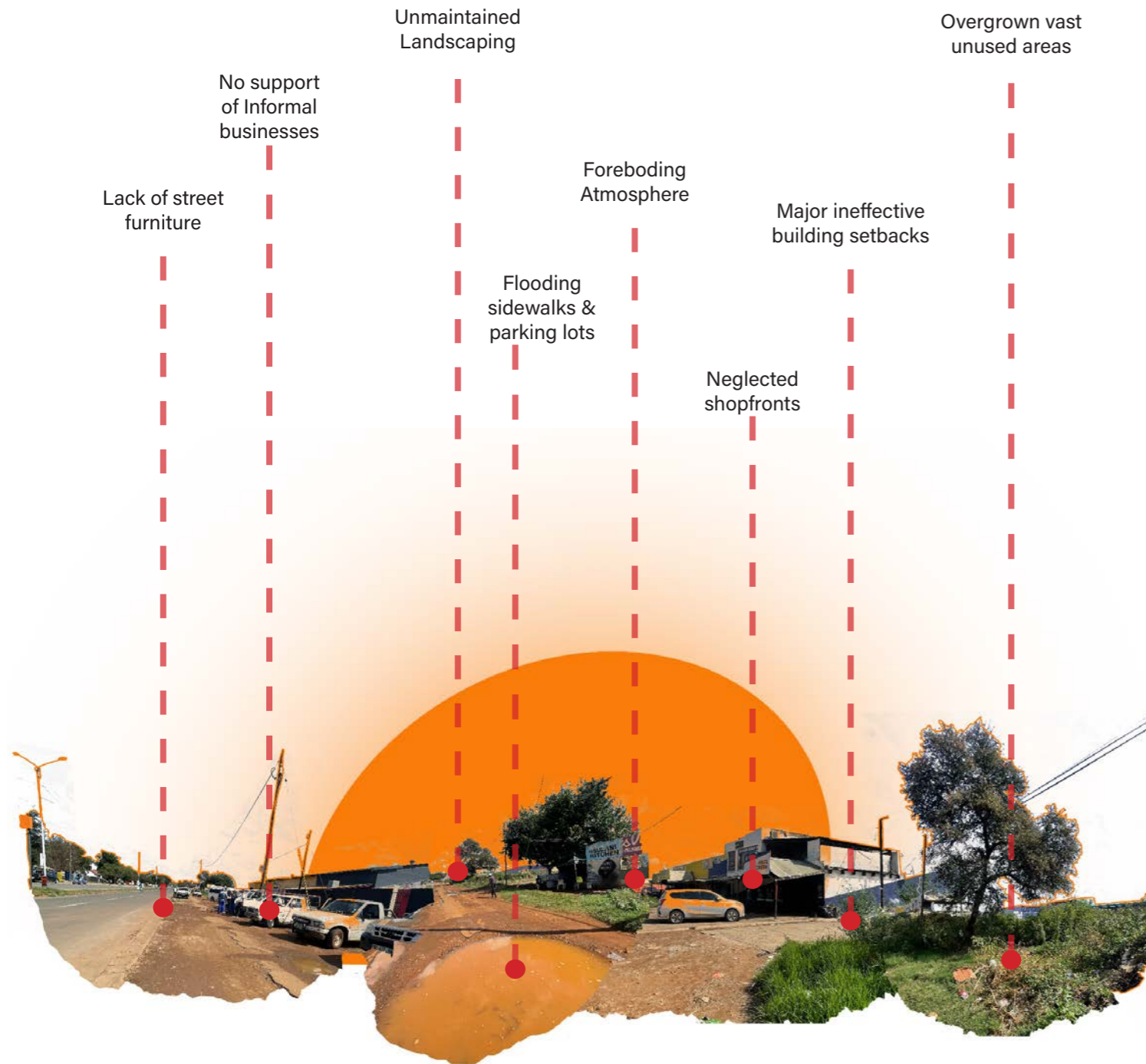


Figure 32: Collage of local businesses on Ikageng Gateway Corridor (source: author's own, 2024).

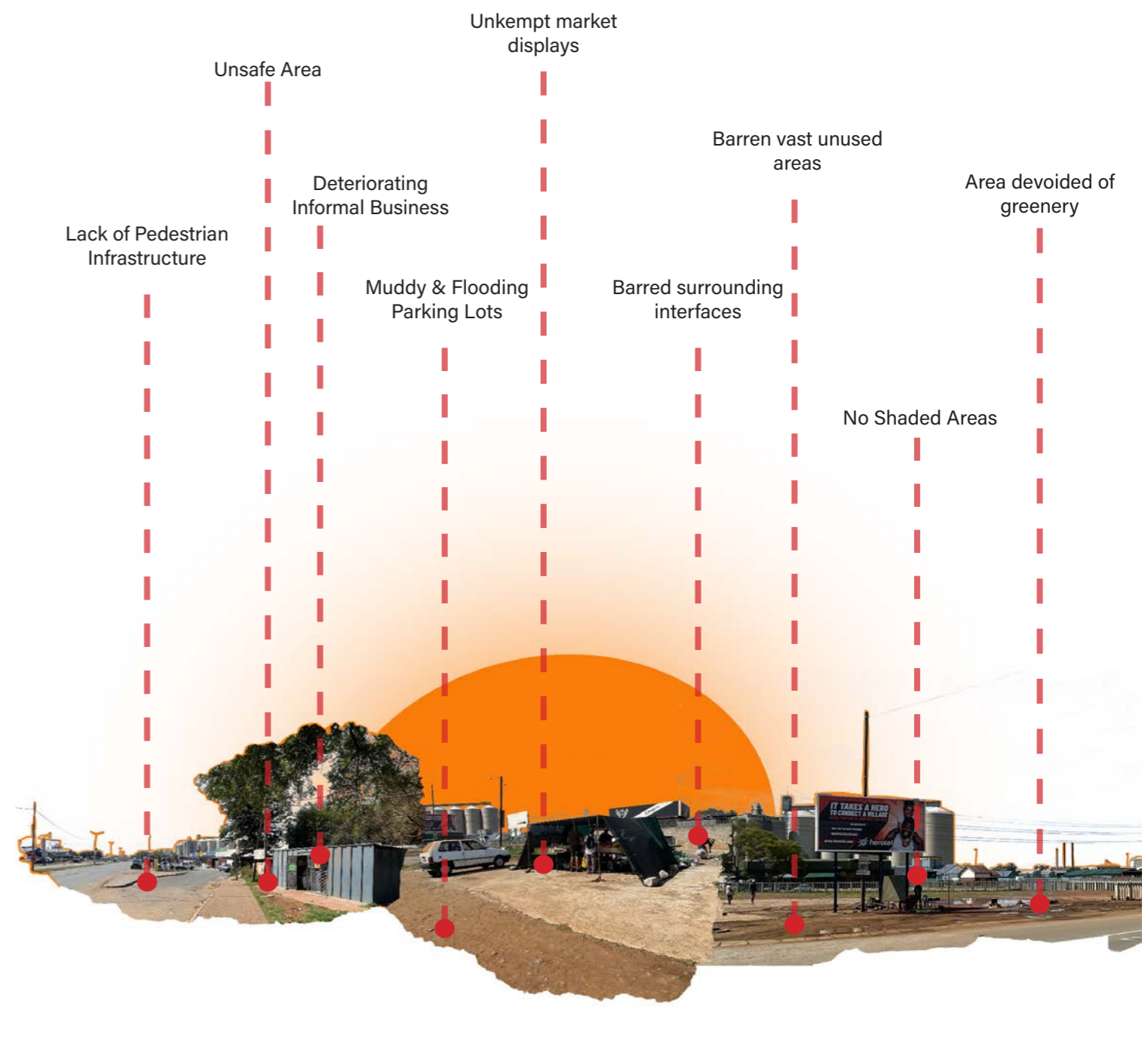


Figure 33: Collage of Informal businesses on Ikageng Gateway Corridor (source: author's own, 2024).

# Methodology

## Sectional Montage of Semi-structured Interviews

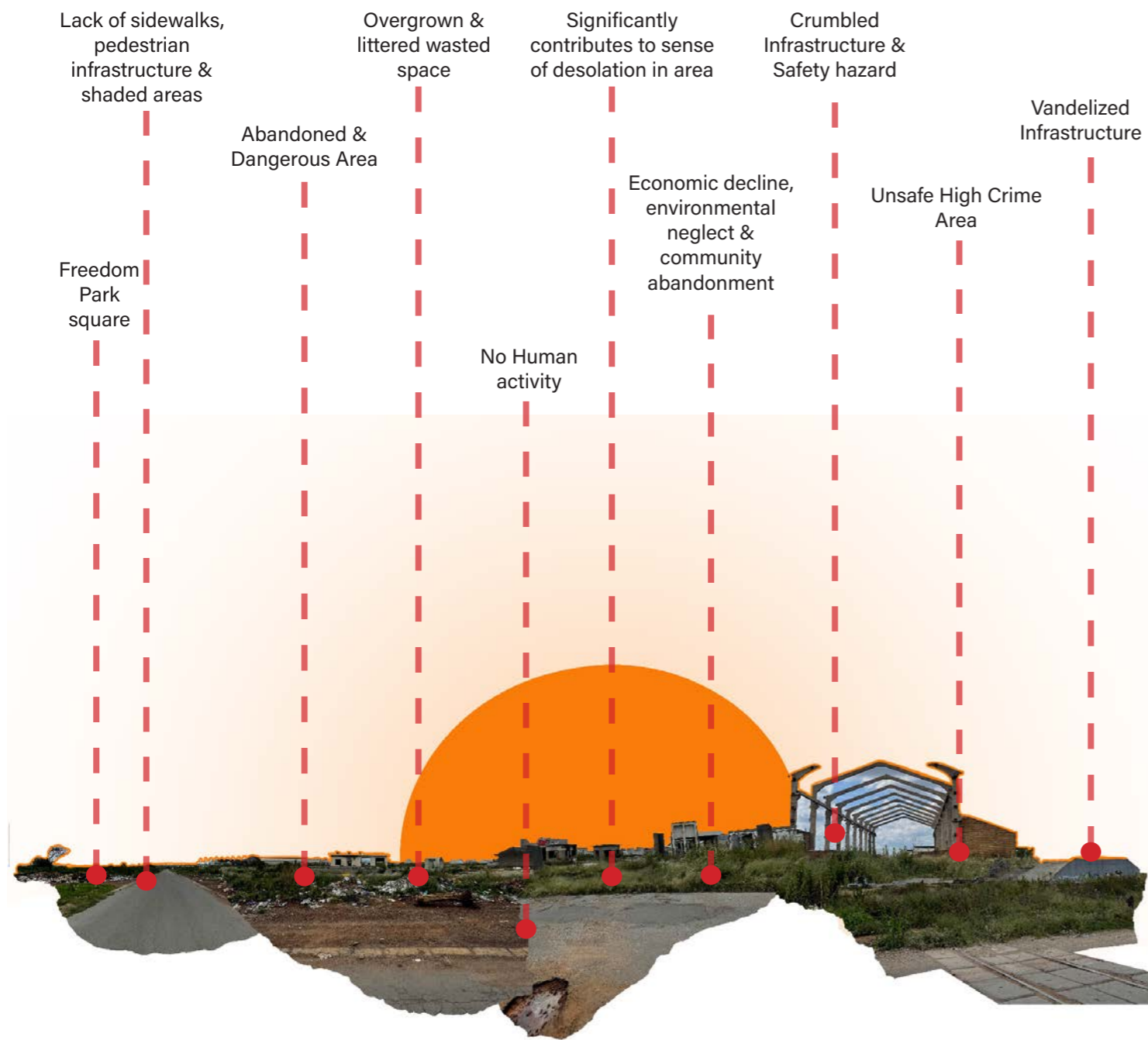


Figure 34: Collage of decayed major factory in industrial area (source: author's own, 2024).

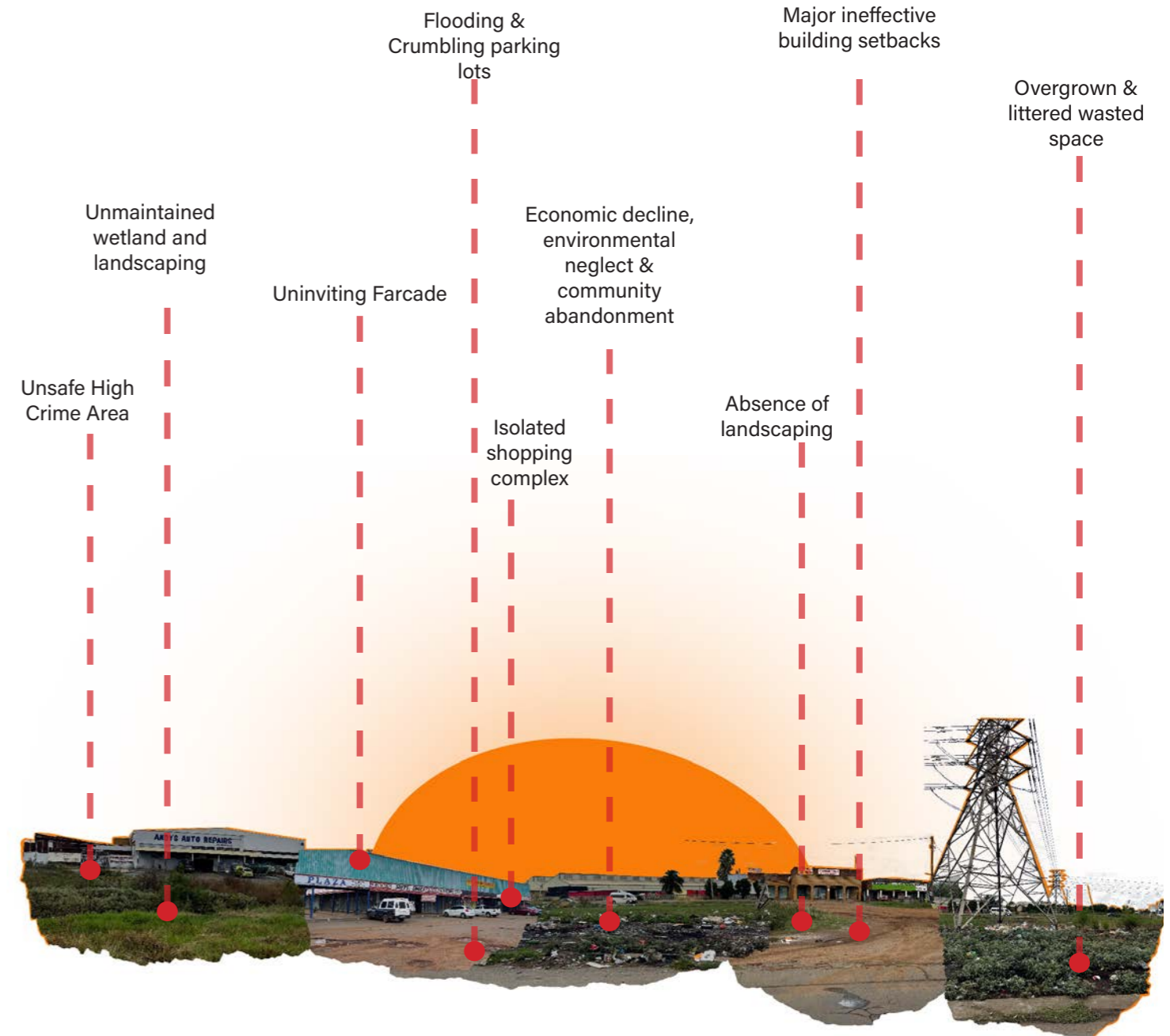


Figure 35: Collage of decaying Indian Center "Kogo Mokwena" (source: author's own, 2024).

# Methodology

## Social-Mapping Application

- 1 "You need to wake up early otherwise you will be caught up in vehicular and pedestrian traffic. Hurry up we are already late!"
- 2 "Let's stop by Seun, I want to buy dikuku (biscuits) from his stall for tea time at work, because there aren't any stores near where I work."
- 3 "Let's cross the road because of that continuous sewage outburst. Beware of bicycles and cars, as they run over people on a daily."
- 4 "Hurry and walk across while the traffic officer has closed off the traffic, if you do not cross now, you will struggle ahead as there is no pedestrian crossing ahead."
- 5 "Mme Luka's (Ms Luka's) stall at this doggy park always runs out of vetkoek during lunch, let me buy now because the walk all the way back here for lunch is not worth it."
- 6 "Let us walk on the other side of the road because the current sidewalks turns into sand and mud within a few steps."
- 7 "Fudge, the traffic officer just opened for turning cars which means we will be trapped this side for about 10 minutes."
- 8 "You might want to cover your eyes here, if the wind blows, the unpaved and sandy sidewalks blows dust in your eyes and a car might run over you if you are not careful enough."
- 9 "Please hide your phone here because you will get mugged here, we are about to enter a bush, and jump over railway lines to get to the other side."
- 10 "Nothing frustrates me more than crossing streets in the industrial area because there is not even a single official pedestrian crossing or calming measure and cars are always speeding."

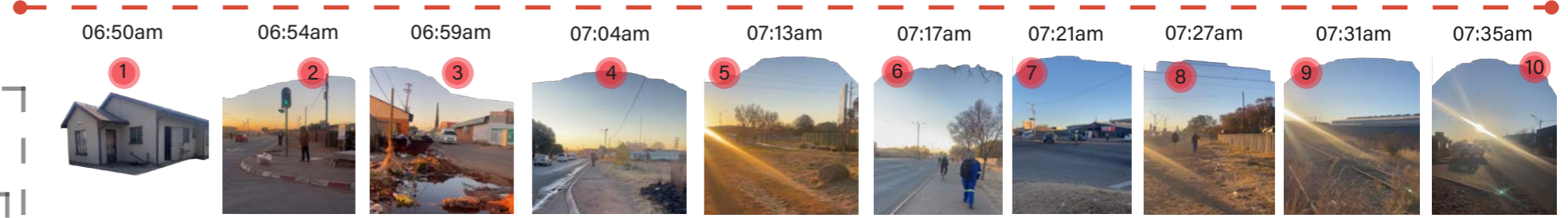


Figure 35: Screenshot of a walk with active participants engaging in the journey (source: author's own, 2024).

- KEY:**
- Active Participant Informal Route
  - Active Participant Formal Route
  - Congested Zone
  - ( ) Convergence Zone
  - Pedestrian-Infrastructure need
  - Track and Trace Formal Route
  - Marked Zone AM
  - Track and Trace Marked Zone
  - Unsafe Area



Figure 36: Social map of active participant overlaid with tracking and tracing map of pedestrian observation (source: author's own, 2024).

# Methodology

## Social-Mapping Application

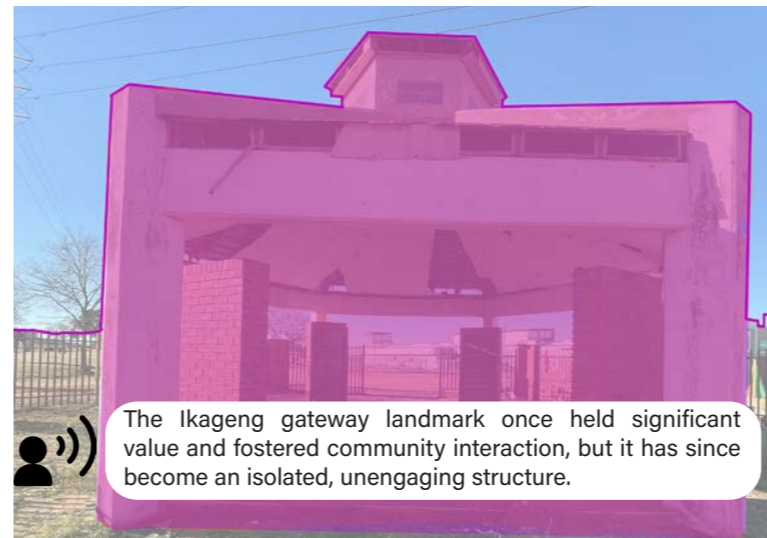
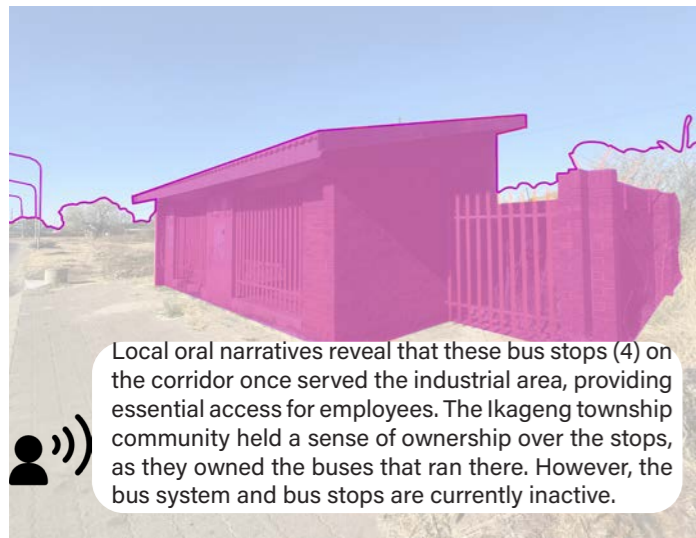
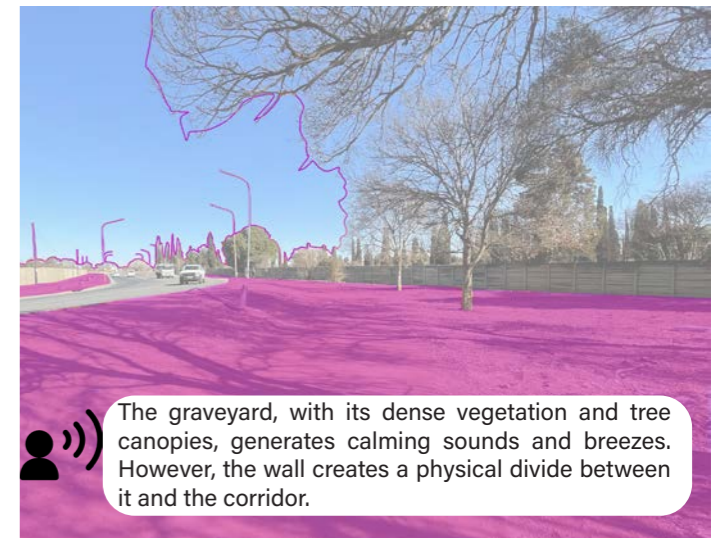
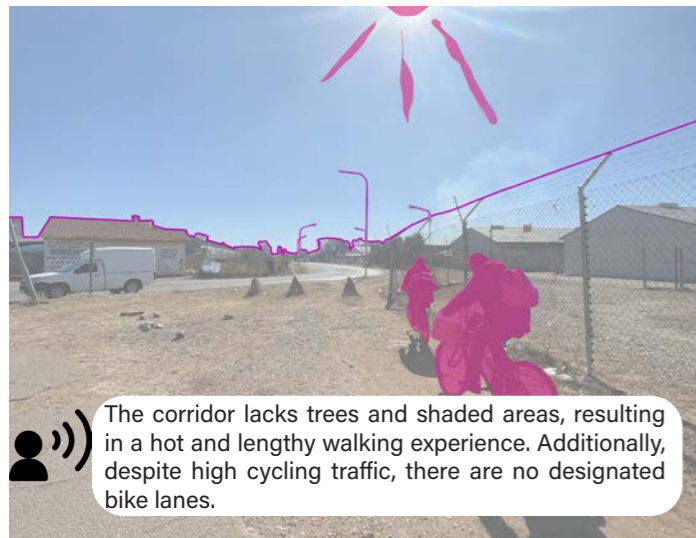
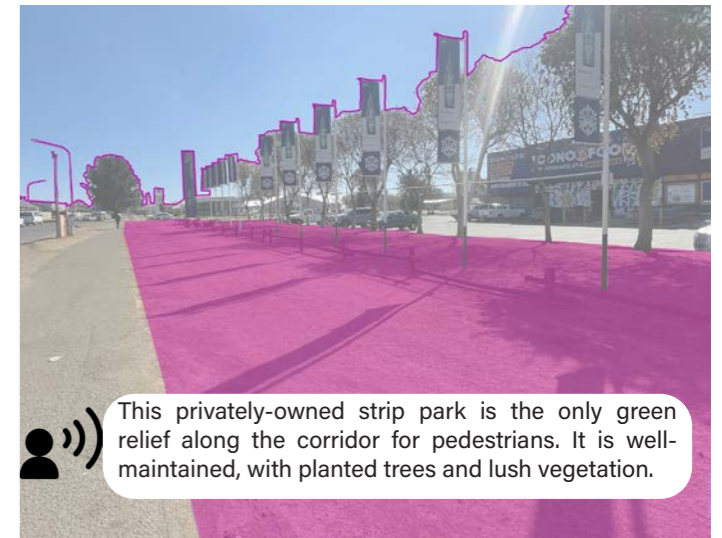
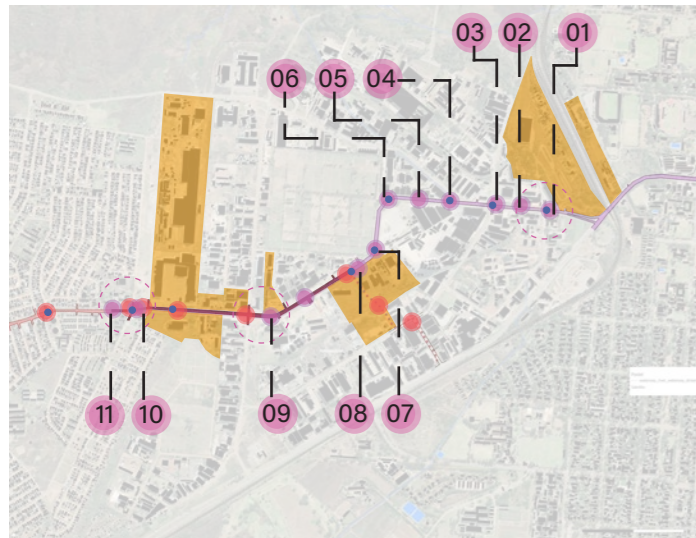


Figure 36: Tracking and tracing of pedestrian observations on the corridor (source: author's own, 2024).

# Research Findings

## Interpretation

### Infrastructure and Economic Decline



The Potchefstroom Industrial area is facing significant infrastructure deterioration, including poorly maintained roads, inadequate sidewalks, and a lack of essential services like traffic lights. This decline is compounded by a reduction in business activity and local employment, contributing to visible urban decay.

### Safety and Utilization Issues



Safety concerns are prevalent, with high crime rates in poorly lit and underutilized spaces. Dilapidated buildings and areas lacking street lighting exacerbate the sense of insecurity, making the region less attractive for both residents and potential investors.

### Community Engagement and Needs



Effective transformation requires active community involvement, including local businesses and residents. There is a need for better maintenance of public infrastructure, improved safety measures, and the creation of mixed-use developments to address economic and social needs.

### Revitalization Opportunities



Revitalizing the area involves addressing underutilized spaces and enhancing green areas, pedestrian-friendly infrastructure, and mixed-use developments. Economic incentives for businesses, improved waste management, and community-driven projects can stimulate economic growth and improve overall livability.

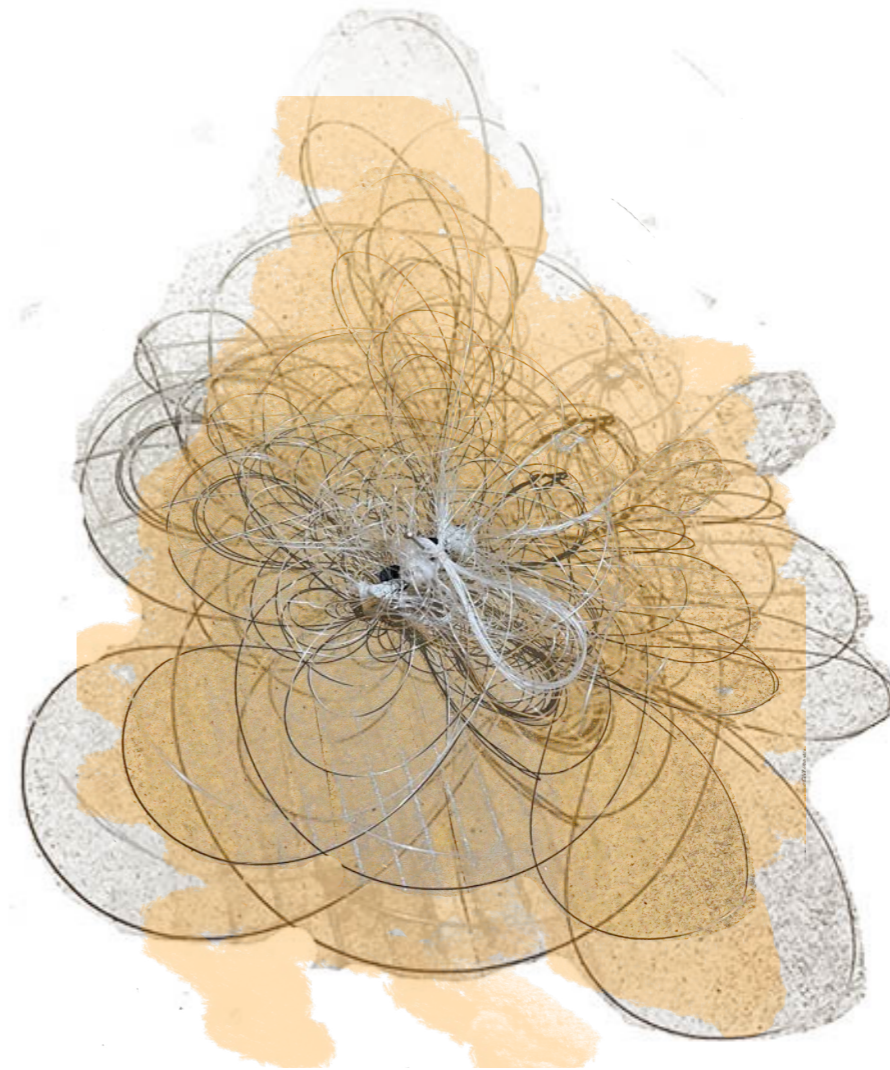
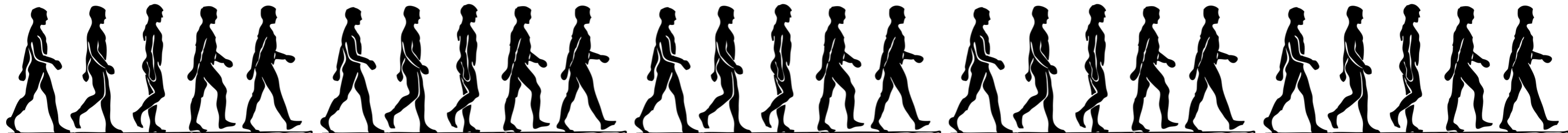


Figure 38: Artifact illustrating the interconnectedness of research interpretations, showcasing how key findings form a network centered on placing people at the forefront of the urban transformation envisioned for the industrial area.



# Theoretical Reflections

The observations of how individuals navigate and utilize the Ikageng Gateway Corridor, particularly in the context of urban decay and the limitations imposed by the built environment, resonate profoundly with the theoretical framework presented by Simone (2004), which posits that people can be viewed as infrastructure. This perspective argues that daily rituals and social interactions serve as a form of social infrastructure, fundamentally shaping urban spaces.

Simultaneously, the tracking and tracing exercise revealed that residents' movements, choices, and adaptations to their existing environment form a network of activities that illuminate the drivers and indicators of urban decay.

These lived experiences, akin to Simone's concept of "people as infrastructure," demonstrate how social and spatial dynamics intersect, enabling a semblance of functionality and potential amidst infrastructural neglect.

This intersection underscores opportunities for rejuvenation and transformation, fostering enhancements that support and amplify the inherent patterns of daily use within the corridor, emphasizing urban transformation to align with the lived realities of people.

The observations gathered from the Ikageng Gateway Corridor illuminate its unique character and underscore the theoretical reflections inspired by Alex Krieger's (2006) "Territories of Urban Design." Krieger advocates for an understanding of urban design that transcends mere physical space creation, emphasizing the necessity of engaging with the social, economic, and cultural dynamics that shape urban life.

A distinct contrast emerges in how individuals utilize the Ikageng Gateway Corridor at different times of the day. During the day, interactions with the surroundings are minimal, primarily limited to the use of public facilities along the corridor. However, by afternoon, the corridor transforms as people congregate at informal traders for lunch. As night falls, the adjacent industrial area becomes a hub of nightlife activities, with entertainment spilling onto the streets, fostering greater engagement and interaction with the environment.

These observations highlight the corridor and the decaying industrial area as dynamic spaces, taking on a vibrant territorial character that beckons for transformation. This transformation must address the intricate interplay of human behavior, urban decay, and spatial opportunities, reflecting the need for responsive urban design that revitalizes these areas.

The findings from the semi-structured interviews highlight the need for various forms of equity outlined by Soja (2009), including procedural, geographic, social, distributional, and generational equity. A critical theme emerging from the interviews was the issue of ownership. There is a notable lack of clarity regarding who benefits from the industrial area and who it serves. While the corridor offers connectivity and a sense of hope, remnants of spatial apartheid planning continue to persist, channeling marginalized communities through a singular corridor into the central town, a control mechanism established during apartheid.

The industrial area functions as a "Kunckle" (critical junction) between the township and the town, yet it is impeded by spatial barriers such as green buffer zones and railway infrastructure. These obstacles restrict movement, accessibility, and opportunities. This urban decay, bordered by spatial barriers, limits the potential for integration and hinders access to resources necessary for social and economic transformation.

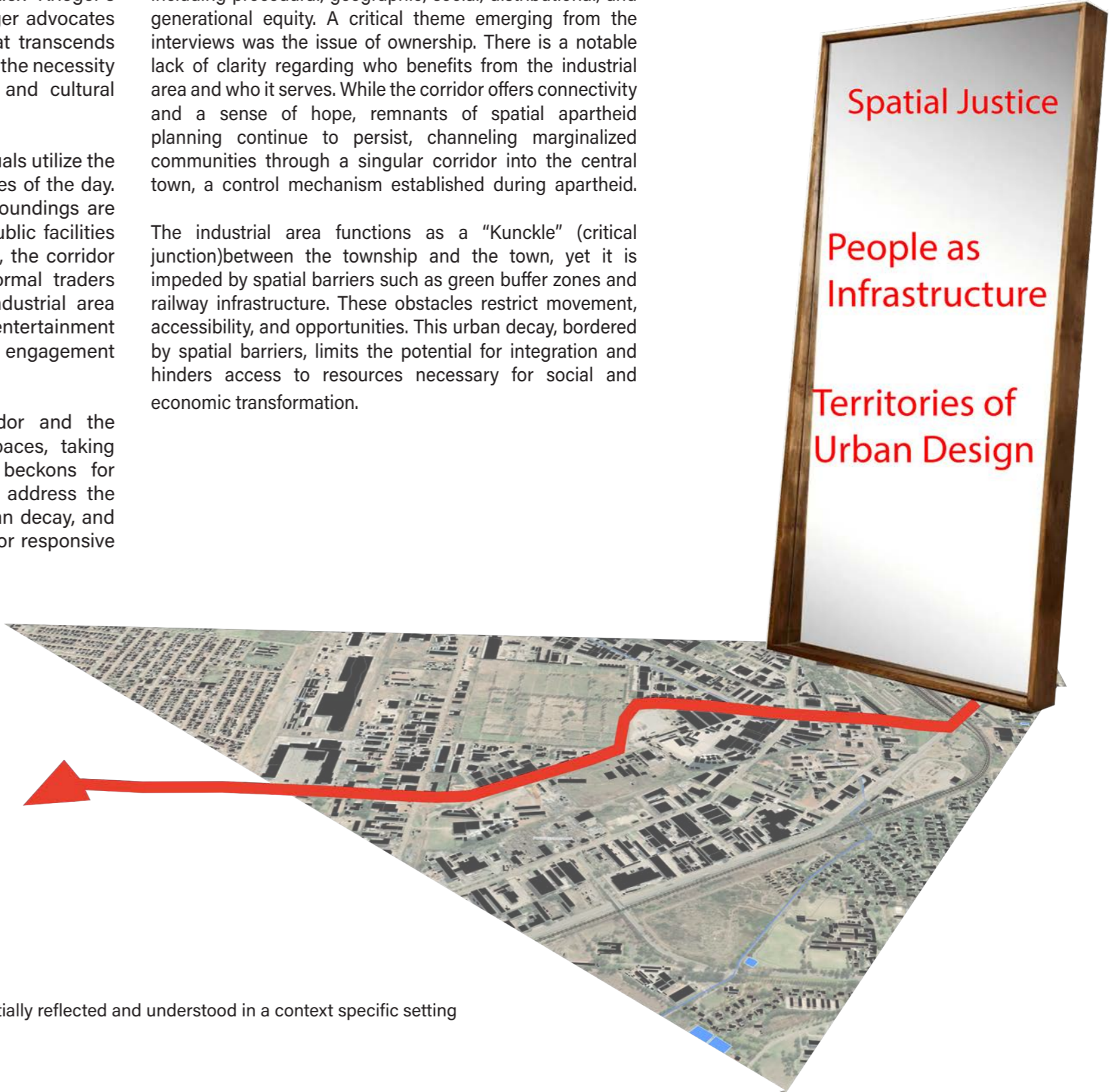


Figure 39: Image illustrating how theory can be spatially reflected and understood in a context specific setting

# Emerging Design Informants

Research

## Key Themes



WORK



PLAY



LIVE

## Key Takeaways

### Distribution of Facilities

Strategically distribute facilities and services throughout the area to reduce congestion, enhance accessibility, and encourage localized economic and social activity

### Mixed-Use Activity

Integrate residential, commercial, and recreational uses within the same spaces to create vibrant, multifunctional areas that support diverse activities and foster a dynamic environment.

### Investment and Maintenance of Public and Pedestrian Infrastructure

Prioritize the upgrade and upkeep of roads, sidewalks, street lighting, and other infrastructure to ensure safety, accessibility, and the overall functionality of the area.

### Community and Public-Private Collaboration

Engage with local residents, businesses, and stakeholders in a collaborative approach to address development needs and improve public spaces, enhancing overall walkability and area vitality

## Node Distribution and Connectivity

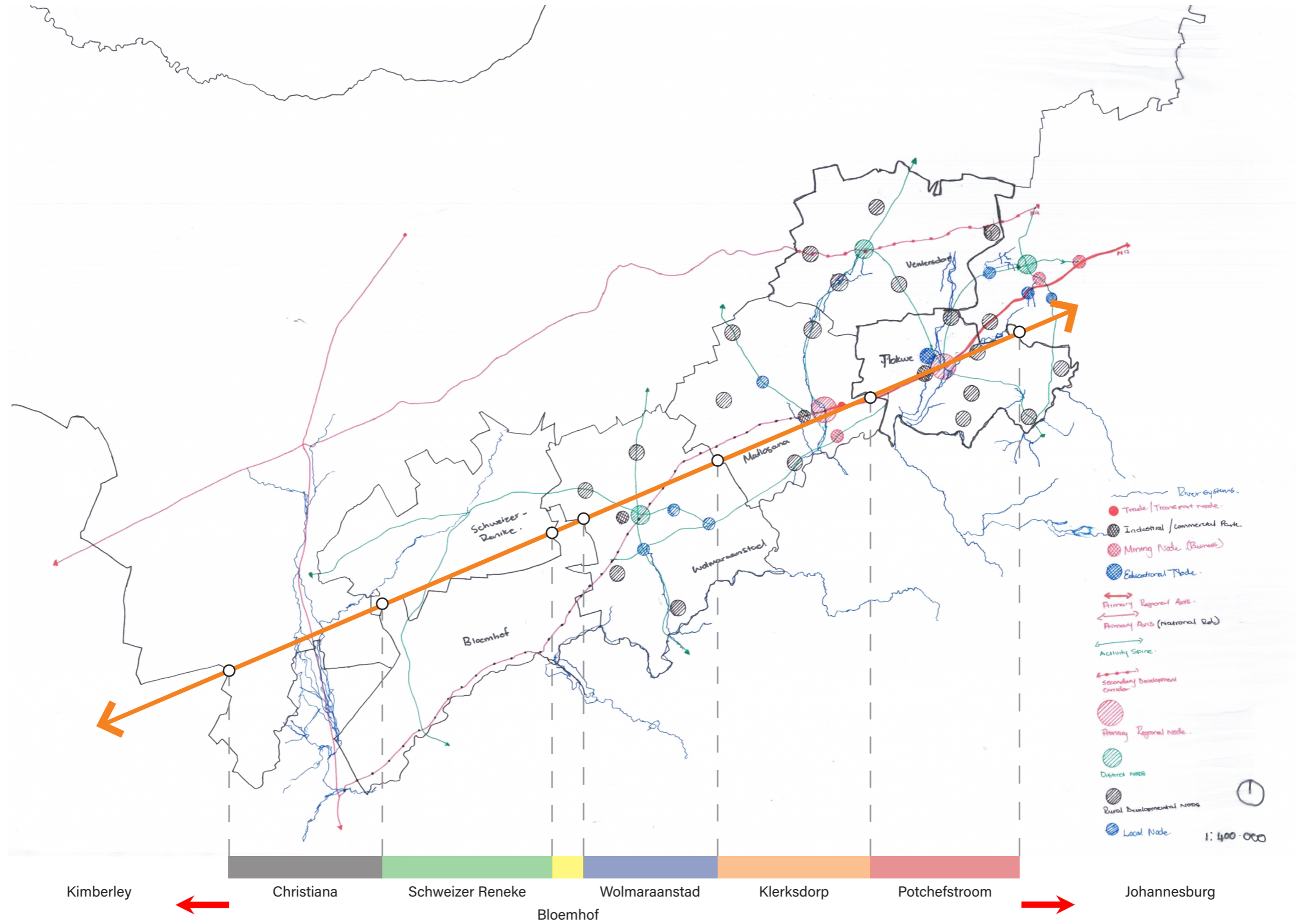


Figure 40: Map of node distribution in the Northwest Province (source: author's own, 2024).

# Analysis

## Regional Scale

**Location:** Potchefstroom finds itself nestled in a prime location with regards to economic development, situated between key mining towns in South Africa as the first mining operations were recorded in 1852, with copper exploration in the Springbokfontein own in the Northern Cape Province, followed by Coal mining in 1879 and 1895 in Vereeniging and Witbank (Pretorius et al, 2023). The first diamonds were discovered in 1860 and 1871 which were in Kimberly at the Big Hole Site (Casey, 2019). Followed by the discovery of the Gold Reefs inn Johannesburg in 1886 (Britannica, 2022).

Given Potchefstroom's rich history on the establishment of the town and its settler. According to Van den Bergh (2009) Potchefstroom constructed its first railway line in 1897, introducing modern technologies to the area and, making the town into an indispensable supply town, connecting the town to broader trade and transportation networks boosting economic activities and development in the region which significantly contributed to the industrial area of the town .

**Function:** According to Tlokwe SDF (2014) Potchefstroom serves as a vital, Trade Node, Transport Node, Industrial Node, Commercial Node, Educational Node, and Rural Development Node. This positioning underscores the critical role of Potchefstroom's industrial area in driving economic growth and development at both local and regional levels.

**People:** According to Hall et al (2011) social networks is a vital force in political organizing, social interactions, and economic development in a towns development, which contribute to the functioning and developing of urban spaces, Hall et al continues to argue that social networks can improve the socioeconomic well-being of communities. Eagle, Macy, & Claxton (as cited in Hall et al, 2011) found the structure of social networks and related diversity of individual also relationships is strongly correlated with the economic development of communities.

This approach can be employed when unpacking Potchefstroom's economic, industrial and social networks making them essential to the town's function as a Trade, Industrial, Commercial, Educational, and Rural Development Node. Using the notion of Simone (2004) of Ontological Spatiality, Social Production of Space, and Socio-spatial dialect which are all principles which recognize that space is a shaped by social structures, human activities, and community practices.

This way of thinking can be applied to Potchefstroom in the various nodes namely: In regards to the trade and transport node, people can be seen as infrastructure as they form informal networks that connect Potchefstroom to broader regional markets due to economic development and the production of goods and services, linking Potchefstroom to the regional and international nodes, which alludes back to Potchefstroom's railway history which linked the town broader trade and transportation.

In the lense of the Industrial Node, people can be viewed as infrastructure as they influence how space is constructed on the concept of socio production of space, the construction of the industrial area and its railway station heavily depended on the local workforce and their skills and ability forming a from of infrastructure which supports the local economy. "Instead of using, electronically equipped equipment in the Potchefstroom Industrial area, we are still using force, manpower (Koos, Interview, 12 July, 2024). "The whole Kynoch and Triomff closure situation has destroyed a lot of hope in the community... Kynoch was the biggest company in the industrial area and it gave shape to the industrial area and the Ikageng area" (Menya, Interview, 09 July, 2024).

In regards to the Commercial node people can be viewed as infrastructure as infrastructural development and quality are not just driven by individual de-mand but are also the result of individual social networks and the social and economic structure of the community itself (Morton, 2003).

In the lenses of an Educational node, people can be view as infrastructure as "Postchefstroom was intended to be an academic epicentre"(Sanqa, interview, 28 June, 2024). Therefor employing Simone (2004) principle of socio-spatial dialect where space and society influence each other, where social structures shape spaces, and these spaces, in turn, impact social behavior and opportunities.

Potchefstroom's intention of being an academic epicentre would view students, educators and the institutional staff as insfrastructure as these institutions contribute to the knowledge economy, and their needs would resort to physical infrastructure, such as the need for housing, services, and entertainment, and foster innovation through research and learning, which has spatial factors. Wobmann (2003) argues that The acquisition of knowledge and skills is an investment in the sense that people forego consumption in order to increase future income, referring to this approach as humal capital, which as a result attracts investment and propels community development project, enriching a towns economic landscape.

In the lenses of a Rural development node, people can be viewd as infrastructure as Potchefstroom is known for being a agricultural powerhouse "when you think academics, you must think Potchefstroom, the Agricultural center, the Pukke, Vuselela etc..." (Sanqa, interview, 28 June, 2024). People can be view as infrastructure due to the social network which exists between, farmers and traders which impacts a towns economy, this social network intergrates, rural and urban communities and economies, which as a result distributes knowledge, resources and supports rural development and overall regional growth.

This positioning underscores the critical role of Potchefstroom's industrialareaindrivingeconomicgrowthanddevelopmentatbothlocal and regional levels. Additionally, Potchefstroom's natural connectivity through the Mooi River, which links various towns via the Vaal River, highlights its environmental and ecological importance in the region.

"people as infrastructure, was intended to resituate urban human existence ina way that acknowledged the constellation of accompaniments to the eventfulness of urban life" (Simone, 2004, p.1343)

# Analysis

## Town-Scale

Mobility and Connectivity

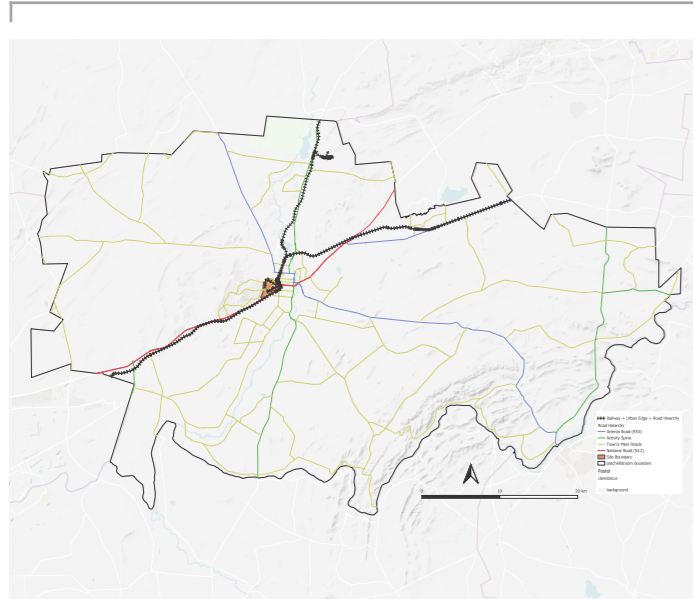


Figure 41: Connectivity and Mobility (source: author's own, 2024).

**Strategic Location:** Potchefstroom is ideally positioned within a network of road hierarchies that connect it to major metropolitan areas, mining nodes, district nodes, and rural development areas, making it a pivotal regional node.

**Industrial Area Catalyst :** The industrial area strengthens the town's connectivity and mobility, serving as a hub that links various regions and functions as a catalyst for economic and logistical movement.

**Primary Link - N12 Road:** The N12 highway, a primary corridor, runs through Potchefstroom, linking it to neighboring towns and facilitating access from local to regional and macro scales.

**Activity Spines:** Several activity spines in the town reinforce north-south axis developments, connecting Potchefstroom with surrounding towns and enhancing its mobility framework.

**Railway Connectivity:** Potchefstroom's railway line integrates the town into national and international networks, supporting both freight and passenger transport.

**Arterial Road Access:** An arterial road provides crucial connections to tourism nodes and mining towns, boosting the town's accessibility and economic interaction with surrounding areas.

Blue Green Network

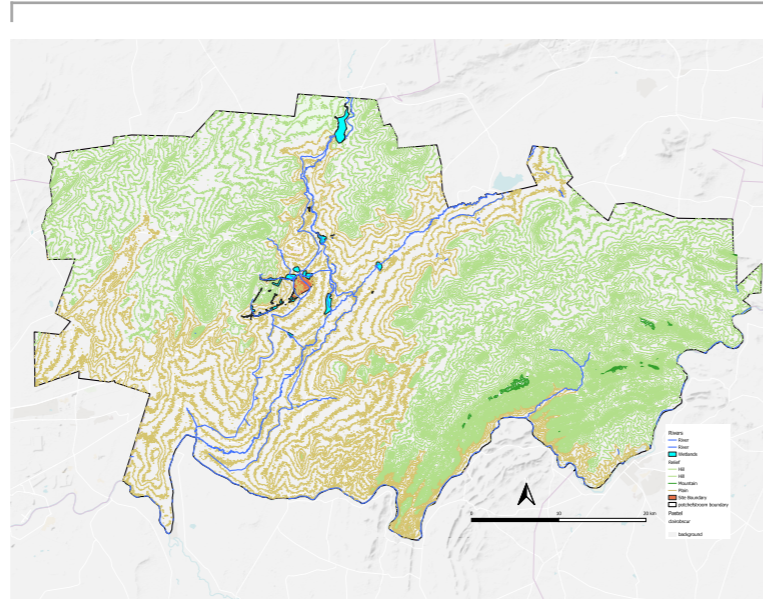


Figure 42: Relief and Hydrological Cycle (source: author's own, 2024).

**Valley Plain Setting:** Potchefstroom lies on a valley plain, surrounded by a vibrant blue-green network that defines its natural landscape.

**Strong North-South Connection:** The town boasts robust north-south blue and green axis, with natural connections that enhance its ecological integrity and aesthetic appeal.

**Moorivier River:** Flowing through Potchefstroom, the Moorivier River is a key element of this network, ultimately linking the town to the Vaal River in the south and forming a lifeline for the town's ecosystems.

**Interconnected Relief and Green Systems:** Potchefstroom's natural relief supports seamless connectivity between rivers and green spaces, sustaining its identity as a lush, green town.

**Ecological and Visual Identity:** The rich blue-green network is central to Potchefstroom's ecological and visual character, deserving of ongoing protection to maintain its intended lush and vibrant landscape (Sedi, Interview, 03 July, 2024).

Economic Nodes and Land Use Distribution

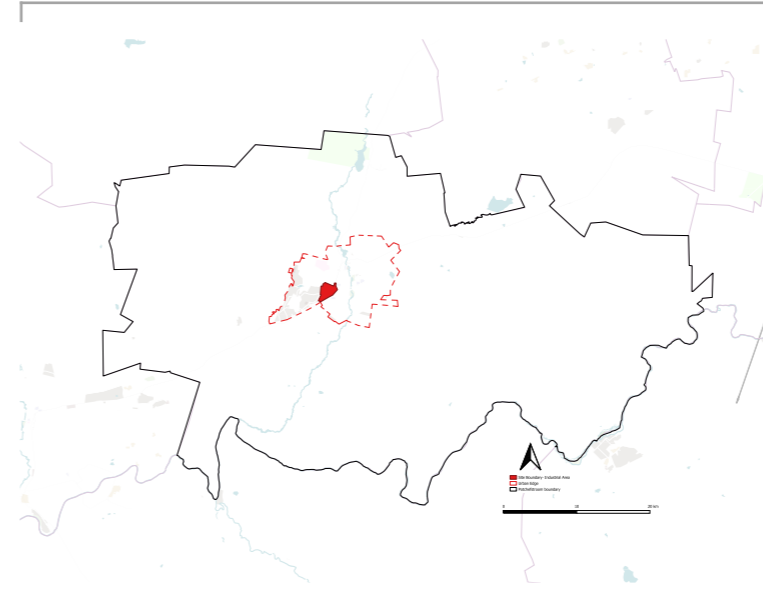


Figure 43: Map Of Potchefstroom's Urban Edge (source: author's own, 2024).

**Urban Edge and Landscape Integration:** The town's urban edge highlights its connection to expansive plains and rich natural landscapes, particularly where the town is nestled along the river.

**River as a Vital Asset:** The river serves not only an aesthetic role but also enhances the quality of life within the urban edge, supporting both ecological and recreational functions that benefit residents.

**Green Spaces for Balance:** Surrounding green areas, designated for agriculture and ecological preservation, create a buffer that limits overdevelopment at the town's periphery.

**Reduced Congestion Potential:** The strategic presence of agricultural and protected ecological spaces around the urban edge prevents excessive congestion, promoting a balanced urban growth model while preserving the town's natural assets.

Biodiversity Node

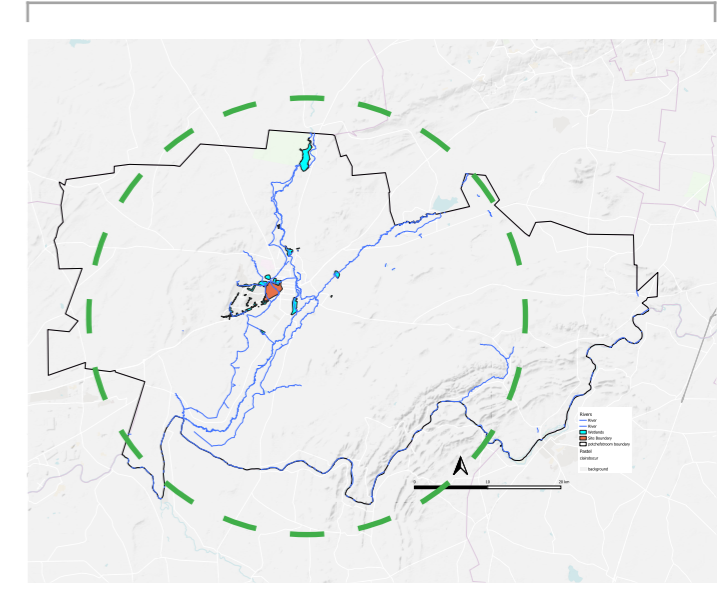


Figure 44: Map Of Potchefstroom's Urban Edge (source: author's own, 2024).

**Biodiversity Node:** Potchefstroom falls under a biodiversity node, acting as a critical point in the larger ecological network, which is essential for the region's overall ecosystem, with high ecological value, and should be protected and sustainable development should be encouraged to maintain ecological balance, support environmental resilience, which according to Evaluating the Landscape (2018), it has social, economical and environmental benefits.

# Analysis

## Urban Edge

Mobility and Connectivity

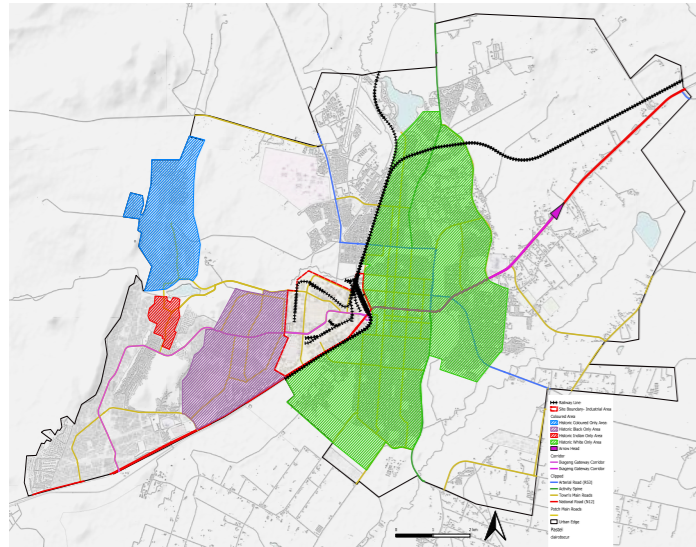


Figure 45: Map illustrating the spatial injustices of apartheid-era planning: the east side of the railway features enhanced access and permeability, while the west side is limited to a singular main route system, funneling residents through one corridor to access the town.

Social Infrastructure

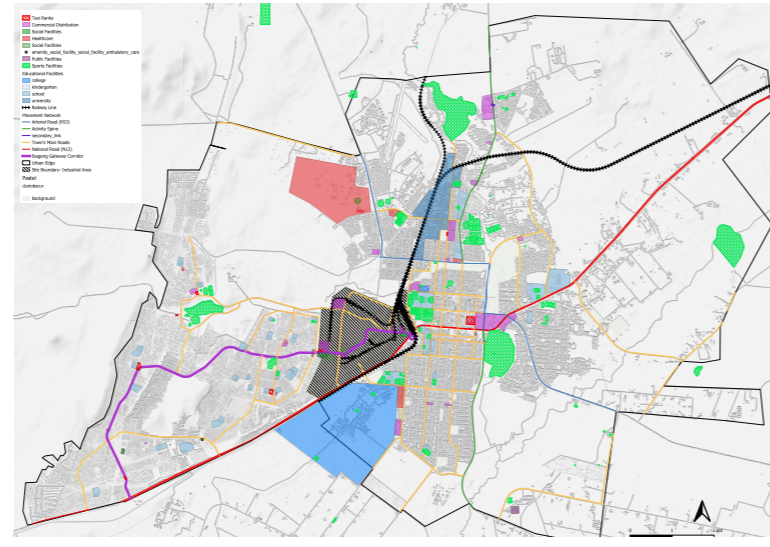


Figure 46: Map illustrating a highly connected social network on the east side of the corridor, where all higher educational institutions and amenities are located, contrasted with a disconnected system on the west, lacking social networks and facilities needed to foster meaningful connections and accessibility.

Economic Nodes and Land Use Distribution

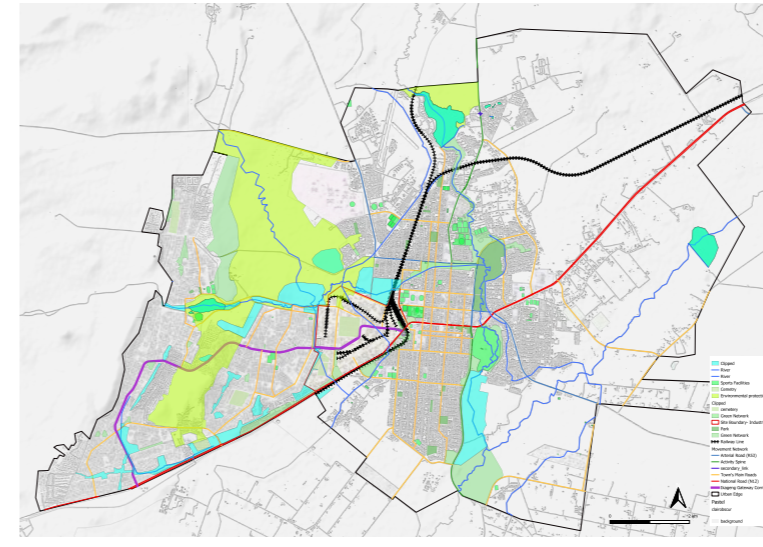


Figure 47: Map illustrating ecological connectivity across spatial barriers, revealing that nature transcends the divide of apartheid-era planning. Ecological richness is more prominent on the west side, challenging expected patterns.

Blue-Green Network and Ecological Value

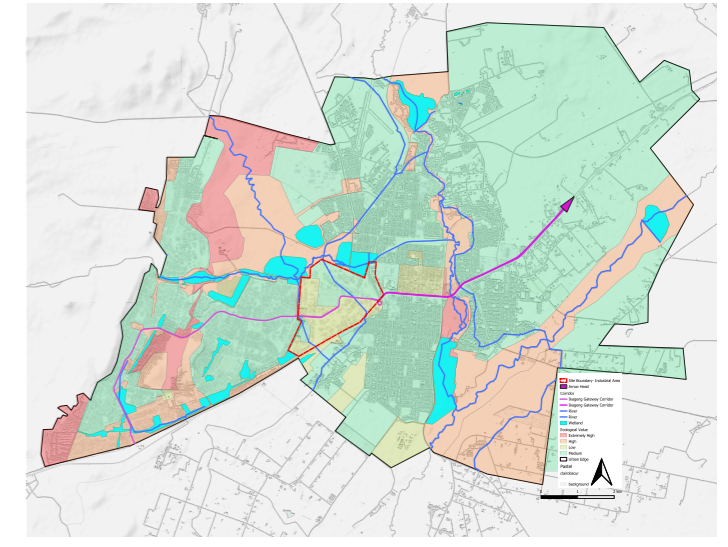


Figure 48: Map illustrating the ecological value of the urban edge, highlighting areas with rich landscapes that require protection from development, as well as zones needing remedial interventions due to significant habitat loss and declining biodiversity.

Proposed New Township Establishment

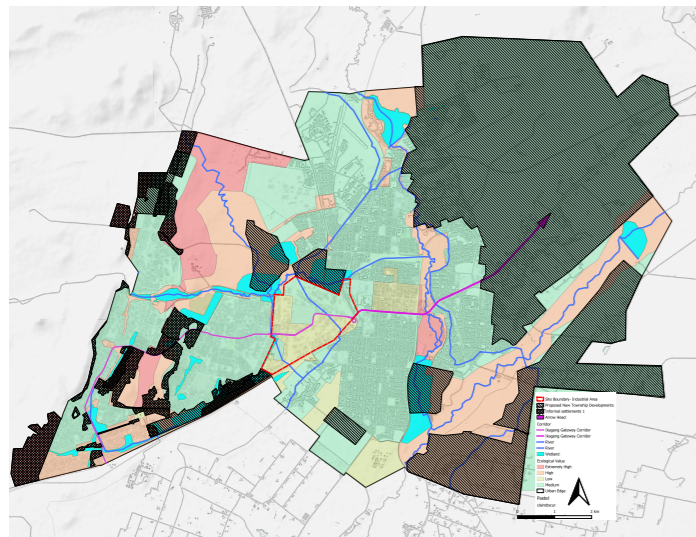


Figure 49: Map illustrating the town's Spatial Development Framework (SDF) proposal, showing planned new township developments and residential expansion areas in relation to the town's ecological value.

# Analysis

## Neighbourhood Scale

Mobility and Connectivity



Figure 50: Map illustrating the prioritization of vehicular connectivity over pedestrian activity, with large impermeable urban blocks and spatial barriers, such as buffer zones and railway lines, hindering walkability despite high pedestrian volumes in the area.

Green-Blue Connectivity



Figure 51: Map illustrating the rich blue-green connections surrounding the industrial area, which experience disruptions due to insufficient considerations for the environment. The East-West corridor has minimal green connections but serves as an anchor point for the north-south blue-green linkages.

Ownership and Decay



Figure 52: Map illustrating ownership of the industrial area and key decaying sites that have altered the trajectory of urban development.

Socio-economic Land Use Distribution



Figure 53: Map illustrating social and economic clusters within the industrial area, highlighting where people congregate and the locations of entrances. Showing that the Ikageng Gateway Corridor consists of various nodes which take on various characters<sup>1</sup>

Opportunities and Constraints

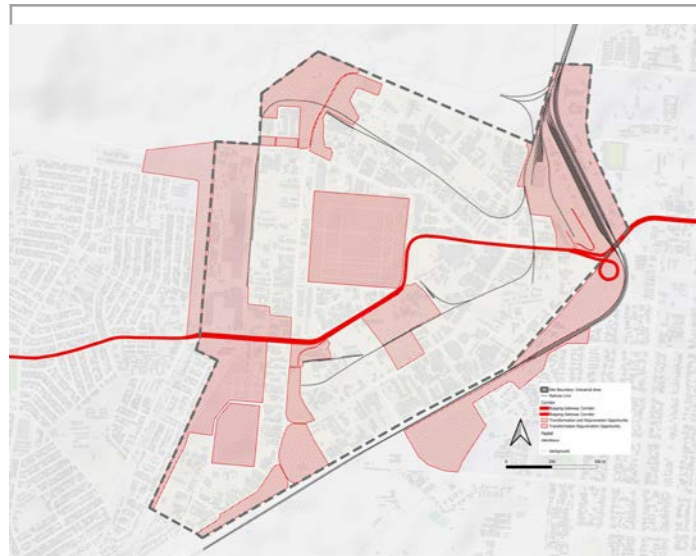
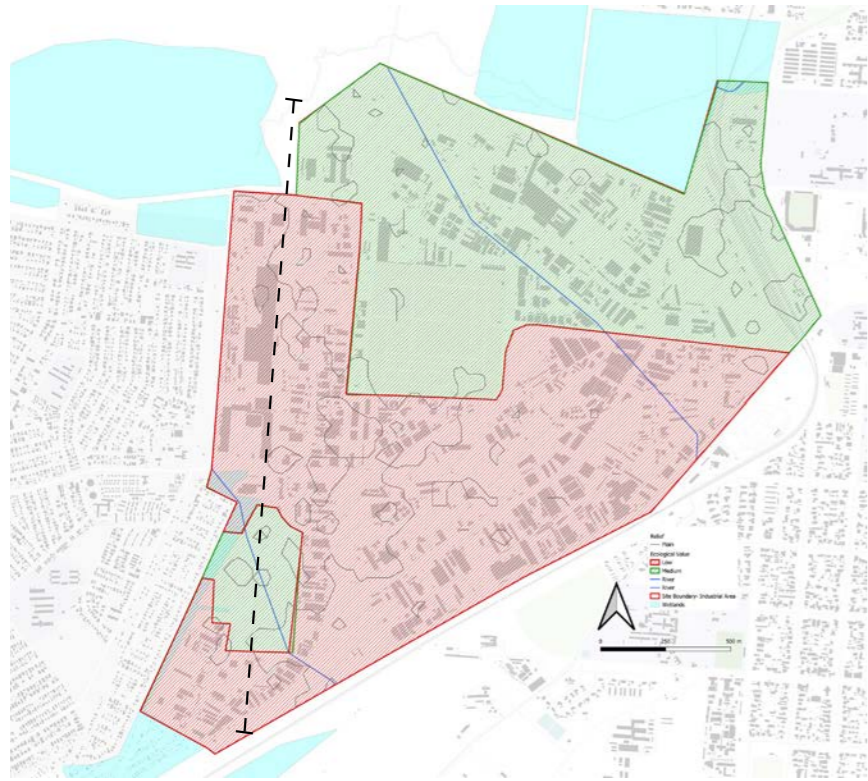


Figure 54: This map illustrates the critical areas within the industrial zone that require transformation and rejuvenation based on a comprehensive analysis of ecological, socio-economic, and spatial factors. The aim is to unlock the area's potential by dismantling spatial barriers that perpetuate social divides, thereby promoting access, permeability, livability, safety, and opportunity.

# Analysis

## Potchefstroom Industria Ecosystem

A landscape system analysis was initiated to understand and integrate ecological, social, and economic factors that could revive the Potchefstroom Industrial Area. This approach seeks to combat urban decay by creating a resilient, vibrant space that aligns natural systems with sustainable urban development.

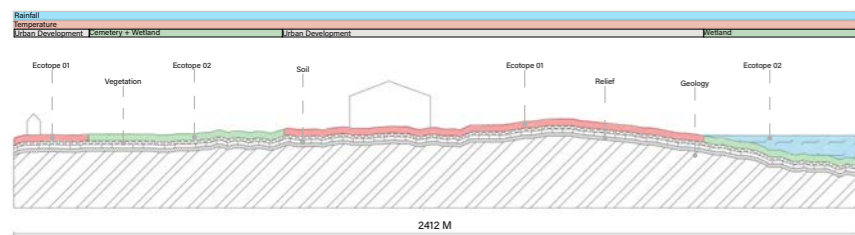


Ecological value / Ecotope of Potch Industria

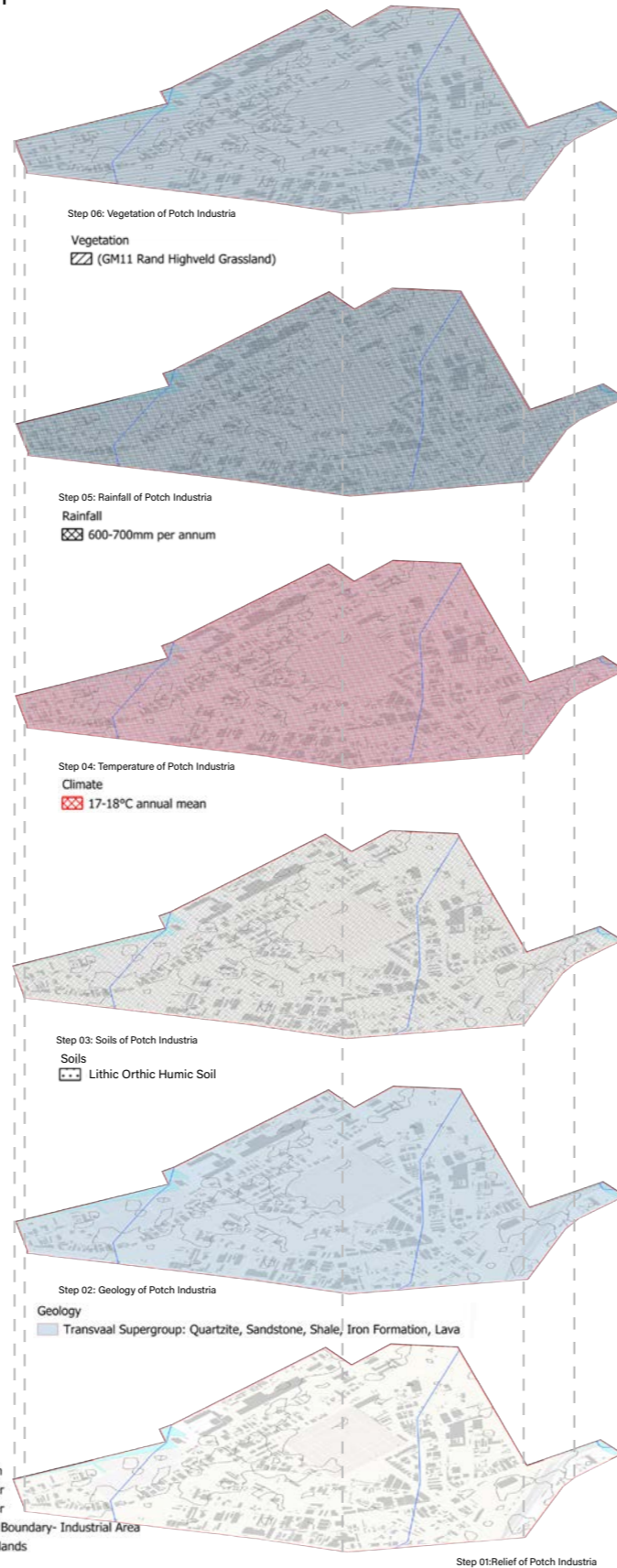
Ecotope Component	Description	Environmental Significance	Urban Design Implications
<b>Geology</b> (Transvaal Supergroup: Quartzite, Sandstone, Shale, Iron Formation, Lava) Source: /Cole et al., 2021	Diverse geology with hard quartzite and sandstone, softer shale, iron-rich layers, and volcanic lava deposits.	- Hard rock formations provide a stable foundation for infrastructure. - Iron formations can affect soil chemistry, influencing vegetation types. - Volcanic rocks can add mineral diversity to soils.	- High resistance to erosion quarries, but water infiltration may vary by rock type. - Use geological stability to high density development. - Geologically informed green spaces can highlight local rock features in public design (e.g., ecological parks, rock gardens).
<b>Landform</b> (Plains) Source: QGIS	Flat or gently undulating terrain, supporting easy urban expansion and development.	- Plains facilitate water drainage and ease infrastructure layout. - Minimal soil erosion due to the flat terrain.	- Encourage large-scale developments with minimal grading. - Design for natural drainage to prevent flooding.
<b>Soil</b> (LX) Source: SOTER-2A	Luvicols (LX), moderately fertile with a clay-rich subsoil layer, generally derived from weathered volcanic or sedimentary rocks.	- Supports vegetation growth, essential for green infrastructure. - Moderate water retention, reducing surface runoff.	- Ideal for green roofs, community gardens, and revegetation areas. - Supports vegetation buffers for stormwater management.
<b>Water</b> (Streams, Channelized Rivers, Wetlands) Source: QGIS & 2008 Flowe SDF	Permanent streams and channelized rivers running through wetlands.	- Wetlands are crucial for water purification, habitat provision, and flood control. - Water bodies support biodiversity corridors.	- Integrate riparian buffer zones, bio-walls, and wetland restoration. - Establish riverside walkways for recreation. - Water bodies support biodiversity corridors.

Ecotope Component	Description	Environmental Significance	Urban Design Implications
<b>Water</b> (Streams, Channelized Rivers, Wetlands) Source: QGIS & 2008 Flowe SDF	Permanent streams and channelized rivers running through wetlands.	- Wetlands are crucial for water purification, habitat provision, and flood control. - Water bodies support biodiversity corridors.	- Integrate riparian buffer zones, bio-walls, and wetland restoration. - Establish riverside walkways for recreation. - Water bodies support biodiversity corridors.
<b>Vegetation</b> (GM11 Rand Highveld Grassland) Source: Cape Farm Mapper	Dominated by native grasses, shrubs, and sparse tree cover.	- Highveld grasslands offer habitat for native species, pollinators, and help prevent soil erosion. - Utilize native plants for drought resilience.	- Preserve grassland patches within urban areas as parks and natural buffers. - Support urban farming and community green spaces.
<b>Rainfall</b> (600-700mm per year) Source: Cape Farm Mapper	Moderate annual rainfall, concentrated during the summer season.	- Supports natural vegetation and potential urban agriculture. - Adequate for rain-fed systems and sustainable water management.	- Implement rain gardens and retention ponds for stormwater. - Support urban farming and community green spaces.
<b>Temperature</b> (17-18°C annual mean) Source: /Cole et al., 2021 & Cape Farm Mapper	Moderate, with warm summers and mild winters.	- Suitable for year-round plant growth and outdoor activities. - Moderate temperatures mitigate heat island effect.	- Design outdoor public spaces for year-round use. - Use materials and vegetation to maintain cool microclimates.
<b>Ecological Value</b> (Low to Medium) Source: Flowe SDF 2014	Limited but valuable biodiversity potential due to disturbed landscapes and moderate ecological function.	- Restoration efforts can elevate ecological value. - Green infrastructure can improve habitat connectivity and ecosystem services.	- Restore ecological value through planting native vegetation. - Promote green jobs through habitat restoration initiatives.

Table providing a comprehensive framework for integrating environmental characteristics into urban design



Catena of Ecotope Analysis



Ecotope	Provisioning Services	Regulating Services	Cultural Services	Supporting Services
<b>Ecotope 1:</b>	Limited timber and fodder resources	Basic flood regulation	Opportunities for local recreation	Soil formation and nutrient cycling
Transvaal Supergroup, quartzite	Potential for small-scale agriculture	Water purification through wetlands	Educational opportunities related to ecology	Habitat for basic grassland species
Low ecological value		Carbon sequestration potential (low)	Scenic value of grassland landscapes	Maintenance of local biodiversity (limited)
<b>Ecotope 2:</b>	Improved agricultural yield potential	Enhanced flood regulation and water retention	Increased opportunities for community events	Biodiversity support through varied habitats
Transvaal Supergroup, quartzite	Potential medicinal plants	Pollination services for surrounding areas	Cultural significance of grassland ecosystems	Diverse flora and fauna for ecosystem stability
Medium ecological value		Improved air quality through vegetation	Nature-based tourism potential	Nutrient cycling and habitat diversity

Ecosystem Services Table

Ecotope	Urban Development	Negative Implications on Ecosystem Services
<b>Ecotope 1:</b>	<b>Transportation Infrastructure</b>	Habitat fragmentation reduces biodiversity.
Low ecological value	<b>Utility Infrastructure</b>	Water quality degradation from runoff.
	<b>Physical Infrastructure</b>	Soil compaction affects soil health and nutrient cycling. Increased impervious surfaces lead to more flooding and reduced groundwater recharge. Loss of recreational spaces and scenic views.
<b>Ecotope 2:</b>	<b>Transportation Infrastructure</b>	Increased traffic can lead to air pollution, affecting plant health.
Medium ecological value	<b>Utility Infrastructure</b>	Overextraction of water resources impacts wetlands and aquatic life.
	<b>Physical Infrastructure</b>	Urban heat island effect diminishes local climate regulation. Development may encroach on biodiversity corridors, reducing ecosystem connectivity. Loss of cultural spaces and natural tourism areas.

Urban Developments and their negative implications on the ecosystem

Aspect	Proposed Design Prior to Development	Proposed Remediation Interventions
<b>Land Use Planning</b>	Preserve natural areas as green belts and wildlife corridors. Design zoning regulations that prioritize eco-friendly industries.	Create mixed-use developments that incorporate green spaces. Implement zoning changes to protect sensitive areas from future encroachment.
<b>Transportation Infrastructure</b>	Design pedestrian-friendly pathways and bicycle lanes connecting communities to nature.	Retrofit existing roads with green corridors and permeable pavements to manage runoff. Enhance public transport connectivity to reduce traffic congestion and pollution.
<b>Utility Infrastructure</b>	Develop sustainable utility systems, such as rainwater harvesting and solar energy.	Upgrade utilities to include eco-friendly systems that minimize ecological impact.
<b>Physical Infrastructure</b>	Ensure infrastructure supports natural water systems, such as wetlands. Use eco-sensitive materials in construction to minimize environmental impact.	Implement greywater recycling systems to reduce water demand on natural resources. Retrofit buildings for energy efficiency, promoting green roofs and walls to improve insulation and biodiversity.
<b>Public Spaces</b>	Design parks and recreational areas that mimic natural ecosystems. Include educational installations about local ecology and sustainability.	Restore and enhance existing parks, wetlands, and biodiversity corridors for community use and habitat. Create community hubs that blend infrastructure with nature, providing social and recreational spaces.
<b>Community Engagement</b>	Involve local communities in planning and decision-making processes. Facilitate workshops to educate residents about sustainable practices.	Establish community stewardship programs to maintain green spaces and promote ecological awareness. Create job opportunities in eco-restoration and maintenance of green infrastructure.

Urban Developments and their negative implications on the ecosystem

**Principles Addressed:**

- Accessibility:** Ensure that all community members have easy access to natural areas and public transport, fostering connections to the landscape.
- Safety:** Design public spaces that feel safe and inviting, integrating adequate lighting and clear sightlines to enhance community use.
- Livability:** Improve overall quality of life by integrating green spaces, enhancing air quality, and providing recreational opportunities that foster community well-being.
- Opportunity:** Create economic opportunities through sustainable practices and community engagement, promoting social equity and reducing spatial inequities.

Category	Project Goals	Performance Objectives	Design Intent	Expected Outcomes	Unanticipated Outcomes
<b>Environmental</b>	Land Efficiency & Preservation	Minimize habitat loss	Integrate green belts and wildlife corridors	Improved biodiversity support	Increased public interest in local conservation
	Soil Preservation	Prevent erosion, enhance soil health	Use eco-sensitive construction	Stable, nutrient-rich soils	Need for ongoing soil management programs
	Water Quality & Conservation	Protect water resources	Utilize permeable pavements and wetlands	Improved stormwater management	Limited initial community understanding of new systems
	Flood Protection	Control flooding risks	Retrofit roads with green infrastructure	Reduced flood risk	High initial costs may delay some interventions
<b>Social</b>	Carbon Sequestration	Reduce carbon footprint	Use native plants and green roofs	Improved air quality	Possible maintenance challenges
	Recreational & Social Value	Enhance community well-being	Design multi-use parks and social spaces	Increased outdoor activity, social cohesion	Unanticipated demand for maintenance in public areas
	Cultural Preservation	Promote local heritage	Integrate cultural elements in public spaces	Enhanced cultural connection	Increased local engagement in space utilization
	Health & Well-Being	Encourage active lifestyles	Create safe, walkable areas	Improved physical and mental health	Potential noise increase in popular public spaces
<b>Economic</b>	Educational Value	Raise ecological awareness	Include educational installations	Improved community knowledge on sustainability	Varying engagement levels across age groups
	Safety	Improve public safety	Incorporate lighting and clear pathways	Reduced crime, safer environments	Possible increase in visitor footfall
	Property Value	Increase local property value	Enhance green spaces and scenic views	Higher real estate values	Potential displacement due to rising property costs
	Job Creation	Create eco-restoration jobs	Establish green infrastructure programs	New employment opportunities	Need for ongoing job training programs
<b>Visitor Spending &amp; Income</b>	Operations & Maintenance Savings	Reduce maintenance costs	Use durable, low-maintenance materials	Long-term cost savings	Long-term cost savings
	Visitor Spending & Income	Boost local economy	Develop eco-tourism and nature-based activities	Increased revenue from tourism	Seasonal variations in visitor spending
	Economic Development	Support sustainable growth	Promote eco-friendly industries	Attracts sustainable businesses, job growth	Potential pressure on infrastructure due to growth

Table of sustainable urban design, focusing on preserving the ecological value of the Potchefstroom Industrial area while providing social and economic opportunities for the community.

# Policy Review

## Tlokwe 2014 SDF

The Tlokwe Spatial Development Framework of 2014 consist of the following Spatial vision: "A transformed leading competitive and preferred world class city". With a mission statement, which is to "Provide quality sustainable services that are responsive to our communities within a healthy, safe and green environment through good governance" the SDF mission aligns with the national spatial vision that states that economic growth and employment creation should focus in areas where it is most effective, and sustainable supporting restructuring and by fast tracking development on the basis of local potential

The Spatial vision for the Tlokwe City Council can therefore be formulated as follows: "To reconstruct the urban framework of Tlokwe in order to create an integrated and sustainable city by focusing on the inherent economic potential the area has to offer"

### Key Themes

The Tlokwe Spatial Development Framework of 2014 is guided by key principles outlined in Spluma chapter 2, with the overarching aim of achieving equitable and sustainable spatial planning and land-use management. The **key principles** include the following:

- **Spatial Justice-** Focusing on redressing past imbalances through improved land access, inclusion of marginalized communities, flexible management of disadvantaged areas
- **Spatial Sustainable-** emphasizes development within the country's capacity, protection of agricultural land, and promotion of sustainable communities while curbing urban sprawl.
- **Efficiency-**ensures the optimal use of resources, streamlined decision-making, and efficient development procedures.
- **Spatial Resilience-**promotes adaptability in planning to support communities vulnerable to economic or environmental changes.
- **Good Administration-** calls for an integrated approach by all government levels, compliance with legal requirements, and transparent public participation in planning processes.

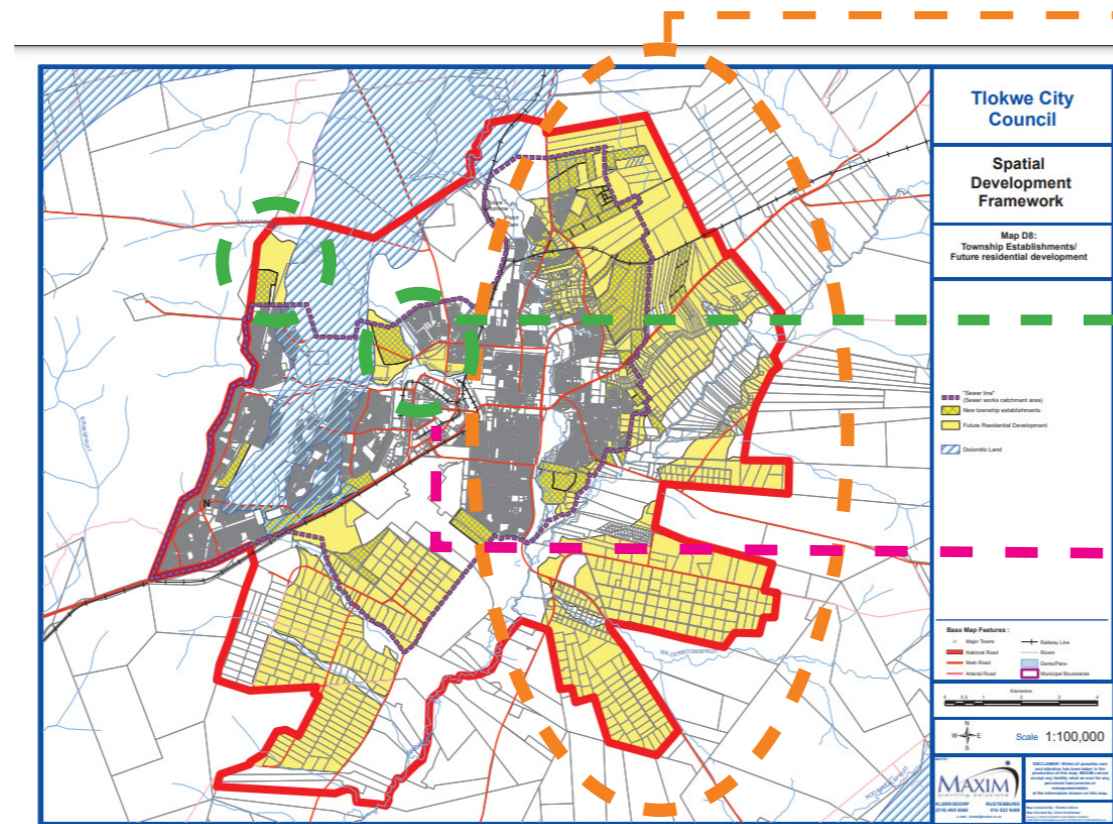


Figure 55: Map D8 Township Establishment Map

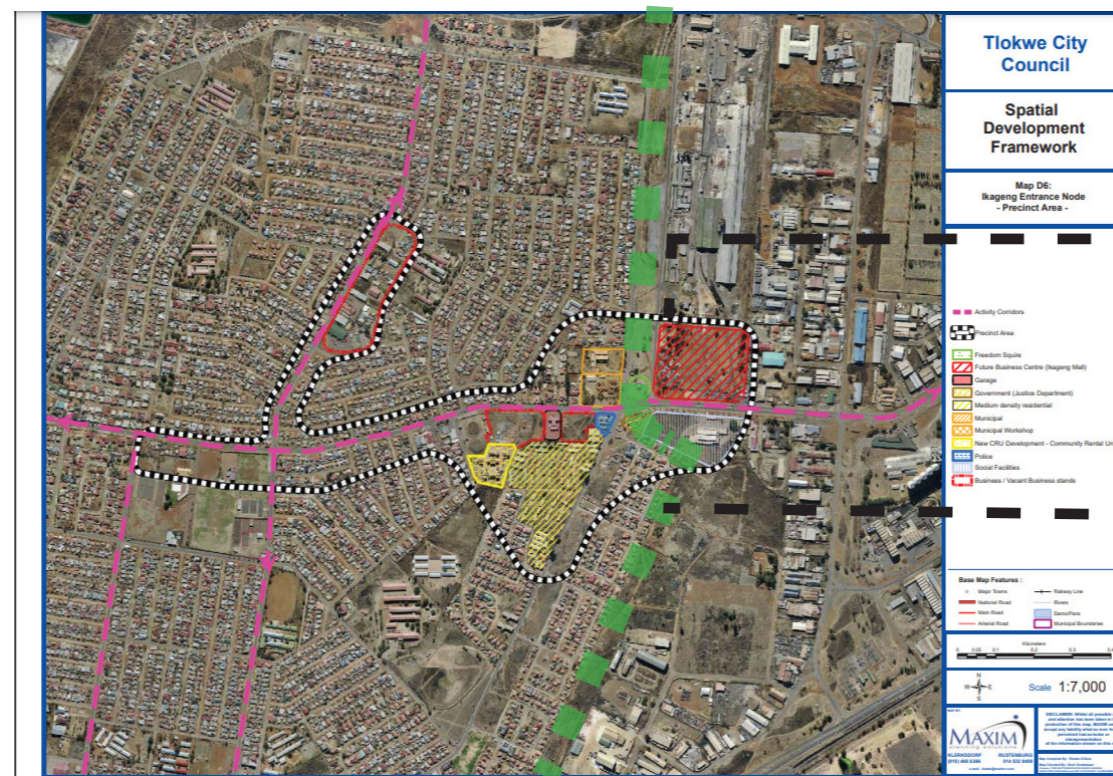


Figure 56: Map D6 Ikageng Entrance Node

**Lack of Spatial Understanding and Misalignment with Spatial Justice:** The proposed focus remains targeted towards previously advantaged areas across the railway line , which continues to reinforce apartheid-era spatial planning approaches. The SDF overlooks the spatial needs of disadvantaged areas, failing to promote inclusivity and equitable distribution of resources.

**Ignoring Ecological Considerations Contradicts Spatial Sustainability:** The proposed township developments are situated on high and medium ecological value land, potentially harming these environments. This approach directly contradicts the goal of sustainable development and environmental preservation. Introducing infrastructure in sensitive ecological areas could have negative social, economic, and ecological consequences, undermining the long-term sustainability the SDF aims to achieve.

**Absence of Interventions for Industrial Area Decay:** The lack of plans to rejuvenate the decaying industrial areas reflects a gap in implementing the SDF's principle of spatial resilience, which is meant to support adaptability and economic renewal. Addressing the needs of the industrial area is crucial for adapting to the current century's economic dynamics and community requirements. The omission of such interventions contradicts the vision of fostering a "transformed and competitive" city.

**Top-Down Planning Ignores Human-Scale Considerations:** The critique points out that the SDF's approach to planning in areas like the Ikageng entrance node is predominantly top-down. This method disregards how people interact with and use space, failing to tailor land use and zoning plans to the actual needs of residents. The SDF's methods remain detached from the lived realities of the community, contrary to the stated mission of providing "quality sustainable services" that respond to community needs.

**Failure to Integrate Townships and Maintain Agricultural Integrity:** The SDF's vision of creating an integrated city is undermined by the continuation of spatial barriers that isolate townships and industrial areas. This approach perpetuates the segregation of townships, treating them as separate, inward-facing developments rather than integrating them into the broader urban fabric. Furthermore, the conversion of agricultural land into industrial parks and residential areas shows a disregard for maintaining agricultural viability, opposing the goal of sustainable spatial development.

# Precedent Study

## Huaqiangbei- Shenzhen, Guangdong-China

According to Hatuka and Ben-Joseph (2022) Shenzhen was established as a special economic zone (SEZ) in 1979, contributing to the area becoming a major industrial hub in the country's industrial revolution. Shenzhen evolved in four phases which were characterized by a blend of state-led policies and grassroots industrial activities:

### Phase 01: 1979-1986

This era pivoted on low-cost manufacturing and cheap and manual labour with the creation of Industrial Parks such as Shangbu Industrial Park.

### Phase 02: 1987-1997

During this era Shenzhen expanded its industrial zones and transitioned them into high-tech industries developing into commercial districts (Huaqiangbei) with a focus on electronics. Low-cost manufacturing shifted to developing areas.

### Phase 03: 1998-2008

During this era Shenzhen accelerated high-tech growth and innovation, redeveloping old industrial zones and emphasizing high-tech manufacturing through policy (Shenzhen Municipality High-Tech Industrial Belt Development Plan). This acceleration led to the formation of hybrid zones (Huaqiangbei), where commerce and industry co-existed.

### Phase 04: 2009- Current

Currently Shenzhen has emerged as a regional innovation hub, which has fostered new developmental zones which has combined commercial, residential, and industrial functions. (Hatuka and Ben-Joseph, 2022).

Shenzhen's growth was driven by a combination of policies and grassroots social networks and entrepreneurship, known as the Shanzhai system. Which formulated an unconventional knowledge economy, of shared skills and knowledge, namely shanzhai electronic economy. Highlighting shanzhai as an open innovation system.

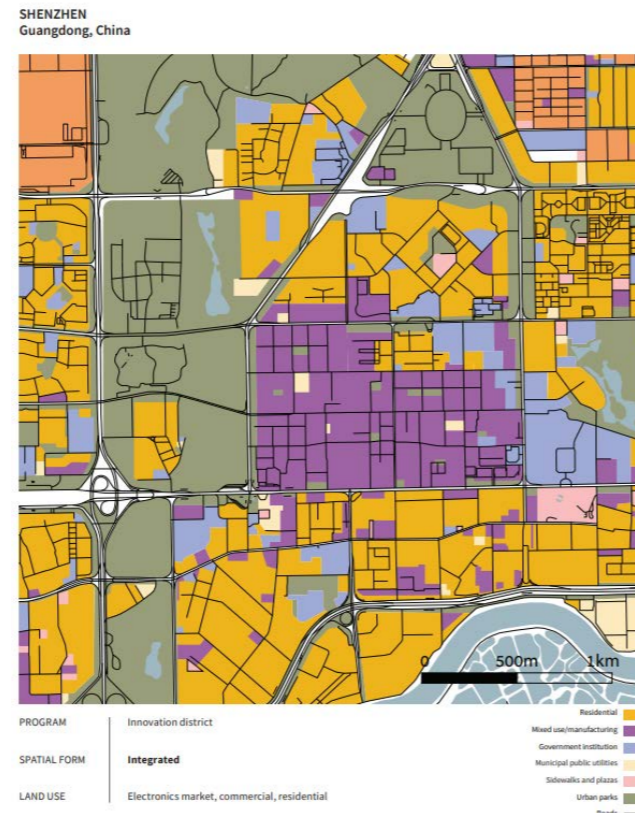


Figure 57: Landuse Map of Shenzhen (source: Hatuka and Ben-Joseph 2022)

As Shenzhen was experiencing accelerated growth and expansion through various phases, policies such as the BECL policy in SZ which aimed to address pressures and constraints on the future growth and economic prosperity of the city, leaning itself towards eco-state restructuring, which is environmental and ecological protection in the regulation of the economy, society, and space:

### Economic lense:

Wu et al (as cited in Lin and While , 2022) argue that 'ecological fixes' should be employed in the development or redevelopment of cities to mitigate the negative impacts of urban development with the aim of making cities sustainable and resilient by enhancing their ability to manage resources like water, air, and energy, while also restoring or protecting natural systems. And Investments in ecological measures and low-carbon restructuring are seen as vital for maintaining urban competitiveness and

attracting more traffic within areas, which in Shenzhen the transition from resource-based growth to high-tech industries showcases how economic growth can align with ecological management

### Social lense:

Dooling (as cited in Lin and While, 2022) cautions this approach as Urban ecological restructuring can generate support and resources for the remaking of urban space that serves the interests of elite groups, leading to environmental gentrification. Potentially further displacing vulnerable populations as the picturesque idea of a 'clean and green' is often aimed at attracting the urban middle class and service sector (Pow and Neo, 2013). As the BECL policy in Shenzhen led to the displacement of residents and restricted local industries in newly hybrid zoned areas (Lin and While, 2022).

### Spatial lense:

Rodenbiker (2020) argues that urban ecological restructuring involves reorganizing land use and zoning, such as through Shenzhen's BECL policy, which supports green spaces, however cautions the direct adoption of the policy as it tends to also cater to specific growth interests by those in power. Hodson and Marvin (2009) argues that from a spatial lense Shenzhen city-scale ecological control line measures spatial planning can be intergrated with ecological preservation, however cities with industrial areas should address challenges related to pollution, water management, and climate change.

### Ecological lense:

Lin and While (2022) argue that ecological considerations which are intergrated in policy has overall positive implications in cities which affect the economy, society, and urban spaces, however needs to skillfully be executed to be inclusive and accommodating to the larger demographic.

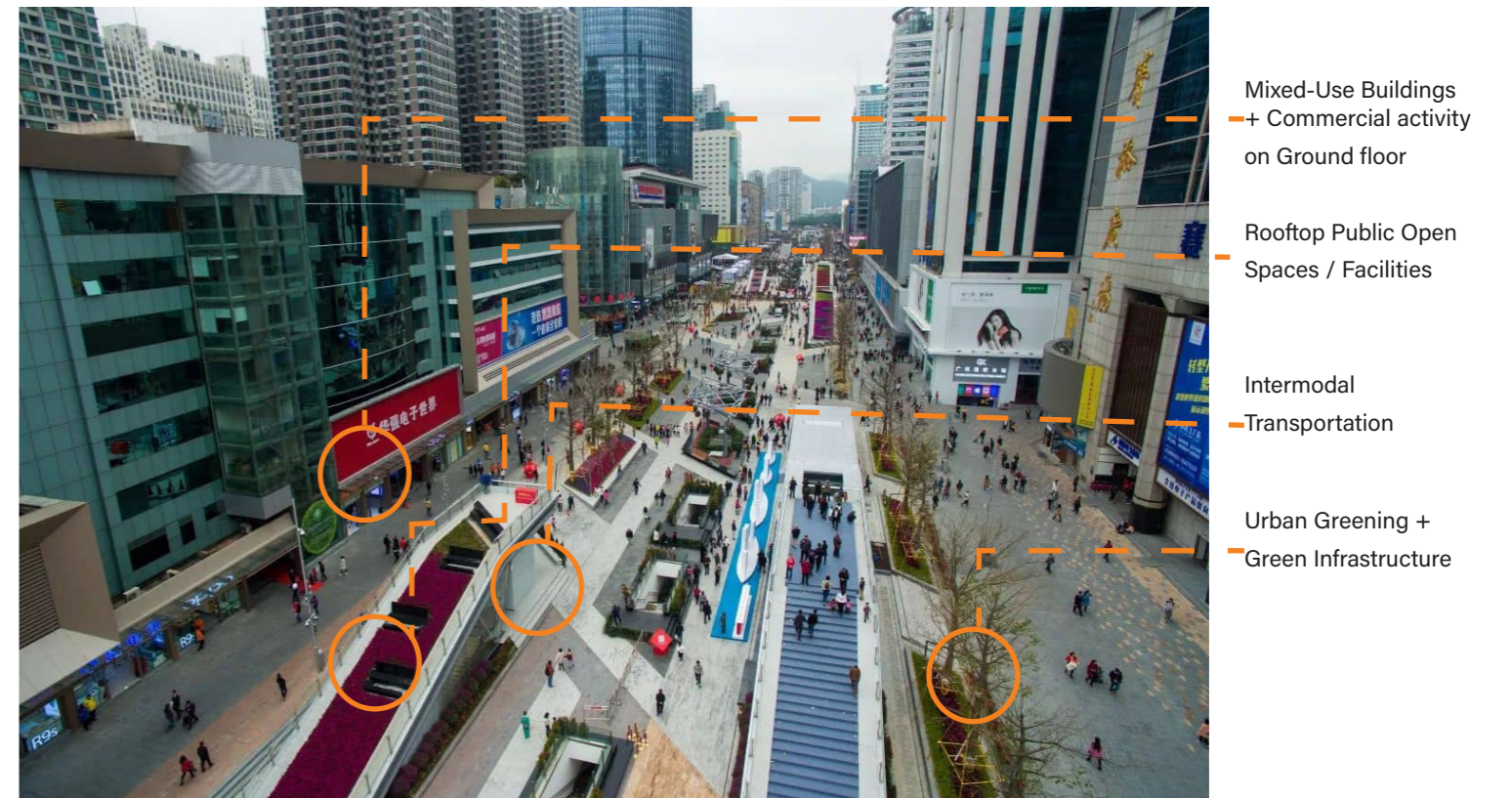


Figure 58 : Street condition of Huaqiangbei Electronics Market, Shenzhen (source: <https://www.pond5.com/stock-footage/item/86666917-huaqiangbei-electronics-market-shenzhen-china>)

# Precedent Study

## Medellínnovation District- Colombia

The Medellíninnovation District has a long history of turning challenges into opportunities. Medellín has been inventing new enterprises and ways of living since it emerged as a great industrial city in the late 19th century, overcoming geographic isolation to create major industries in textiles, concrete, food and energy production. These traditional industries remain important to Medellín.

**Social:** The district provides acts as a space where traditional and new industries can converge in a creative clusterwith the aim of inventing 21'st century products, ways of business and ways of living. The vital approach is the cluster of people who will live, work and play in the district as well as proposed public facilities supporting social interactions, education and training . Using social networks to inform physical infrastructure. The project primarily aims on attracting young people who assits Medellín to innovate its way into a new and inevitable economy.

**Economic:** Traditional Industrial culture remains important to Medellín, however the area has a rich history of inveting new enterprises and ways of living since its emergence in the late 19'th century, which creates an adapting response to the evolving world. The Medellíninnovation District is designed to host and cater for 21'st century industries as well as still hosting traditional industry practices. The district csters hosts enterprises in the ICT, medical, healthcare, and pharmaceutical areans as advanced teaching hospitals with ambitious expansion plans. Sites have been unlocked and made available for research and development within the Districtand larger production spaces in the new Innovation park across the river. Consisting of the following design strategies: 46% Housing, 2% Public Facilities, 18% Production, 23% Office Space / R&D, 10% Hotels and Retail, Flexible spaces, Mixed-use, Networked innovation, Democratized manufacturing, and Spreading hubs.

**Spatial:** The District is shaped by the surrounding context of the surrounding neighbourhoods, and the distriict is home to RutaN, the innovation and business centre for the city of Medellín, and its home to several of Medellín's most important research institutions, as well as recreational and cultural amenities. The fundamental spatial element of this project is a network of parks, public spaces, and pedestrian-oriented streets (Bike-lane connectivity, a downgraded highway, and a new university gateway that will create an open, healthy, and productive environment. Public amenities such as the university and other research and educational facilities are clustered along spine connecting to the river. With a New Innovation Park across the river connecting to the university through the spine.

### Ecological:

- Created sprawl of biodiversity, supported by the cities ecology
- Sensitive urban equipment
- Respoensive furniture
- Interactive ecology
- Smart Roads
- Digital Plaza/Hub
- Sustainable awareness
- Nature connection
- Network of parks and green open space
- Water Intergration

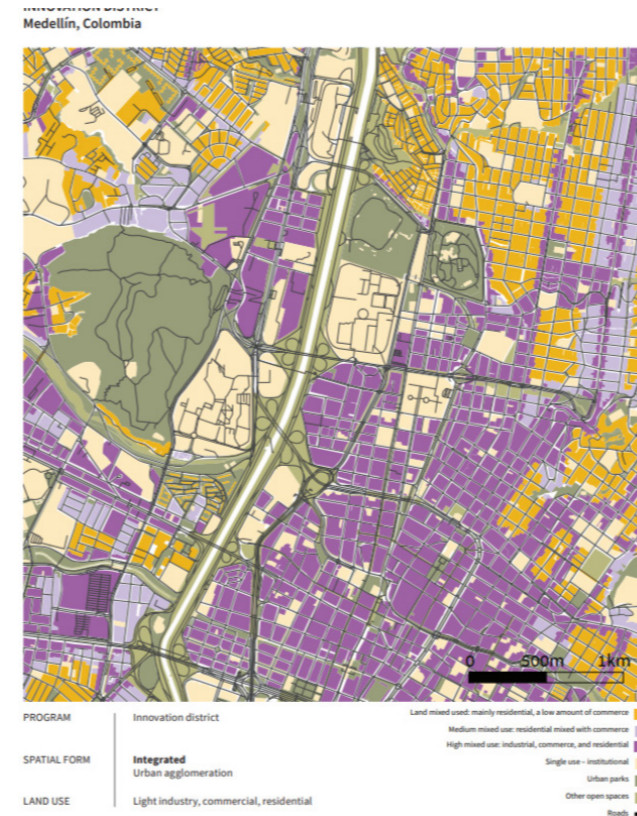


Figure 59: Landuse Map of Medellíninnovation District- Colombia (source: Hatuka and Ben-Joseph 2022)



Figure 60: Medellíninnovation District- Colombia (source: Hatuka and Ben-Joseph 2022)

# Precedent Study

## Los Angeles Fashion District-California, USA

LA Fashion District takes into account past history and current conditions, and encourages and motivates for equity in the planning process. The Downtown Community Plan aims to equitably meet the needs of all stakeholders in the area and reduce racial disparities, especially those unequally present in historic cultural communities and communities of color. In doing so, issues of equity, health, and climate justice have become fundamental goals. The District plan consists of seven design strategies to achieve these goals:

- 01: TRANSIT PROXIMITY**
- 02: HOUSING FOR ALL**
- 03: SMALL BUSINESS PROTECTION**
- 04: INDUSTRIAL PRESERVATION**
- 05: COMMUNITY HEALTH**
- 06: SERVICES & AMENITIES**

### Social:

Equity in the planning process and Issues of equity, health, and climate justice being fundamental goals places people at the forefront of any design strategy. Along with Strategy 02: which guides where housing can be built to ensure affordable housing and other community benefits. And with the inclusion of more people in the area services such as daycares, health facilities, grocery stores creates opportunities for small businesses. The plan guides where residential development should not happen due to heavy industrial activity. Strategy 07 offers incentives for providing services for health and social services, childcare, social enterprise, and public services.

### Economic:

Equity in the planning process puts people at the forefront to guide financial priorities, fostering economic growth while addressing historic and current disparities. Strategy 03 incentivises development to support small businesses through tenant spaces and rent subsidies. Which as a result supports sidewalk vendor commissaries and living and working spaces for creatives, manufacturers

and fabrications. Strategy 04 protects and preserves various industrial areas to support economic development while transforming other areas to accommodate mixed-use development.

**Spatial:** The area's close proximity to transit stations make it a vital area for future growth and development, the plan aims to accommodate 80% of its new residents and its employees close to transit, resulting in the promotion of convenience with easy access to schools, parks, and work, resulting in walkability within the area. Strategy 02 allows for a mix of uses in close proximity to residential areas, enhancing walking and cycling as other transit options. Strategy 06 is enabled by strategy 02 and supports it through the inclusion of additional public facilities and amenities within walking distances of residential and employment areas enhancing accessibility. Strategy 4 reserves various areas for purely industrial use and employment opportunities and economic development.

### Ecological:

The plan calls out Equity in the planning process which Incorporates climate justice as a guiding principle emphasises the need to plan and design with nature. Strategy 01 reduces the reliance on private automobiles through planning for future developments through transit stations, lower carbon emissions and significantly contribution to a healthier environment. Which supports Strategy 05, steering future residential development away from heavy industries, limiting negative environmental health effects. Strategy 06 supports all strategies 01-06, which expands access and services with walkable distances promoting sustainable living patterns within industrial areas.

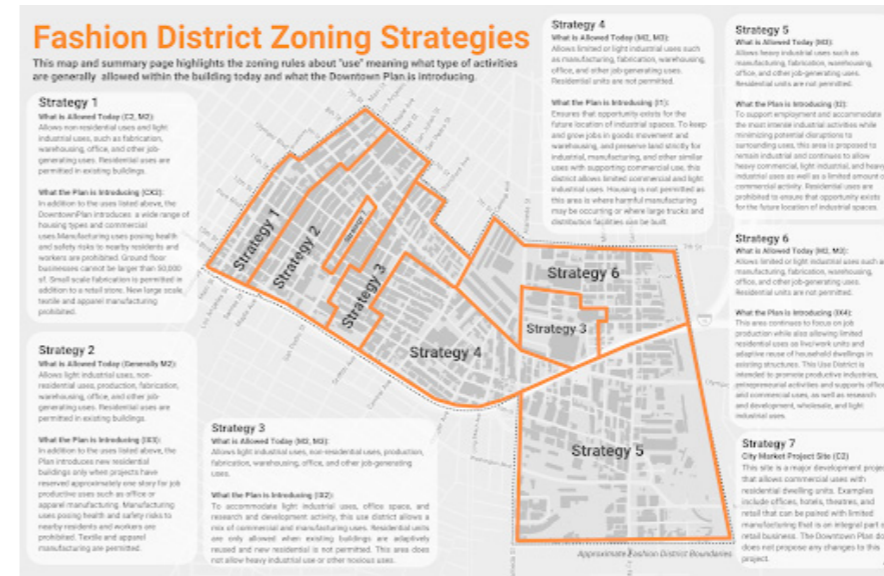


Figure 61: Fashion District Zoning Strategies (source: Hatuka and Ben-Joseph 2022)



Figure 62: Santee Alley LA Fashion District (source: Hatuka and Ben-Joseph 2022)

# Precedent Study

## EASTERN MARKET- Detroit, USA

The Eastern Market Project consists of two strategies. Strategy 01 takes form of a network of stormwater management landscape, and Strategy 02 takes form of sensitive and respectful reuse of existing buildings through zoning revisions and design guidelines.

### Social:

Strategy 01 features as a public recreational greenway, which increases the quality of life for communities by fostering recreational opportunities and improving health, and reduce flooding.

### Spatial:

Strategy 02 encourages the reuse of existing infrastructure through policy and design guidelines aiding in preserving the identity of the area, rather than demolishing existing infrastructure.

### Economic:

Strategy 02 Policy and design guidelines steers economic investment to renovating existing infrastructure rather than new construction, fostering sustainable development.

### Ecological:

Strategy 01 the storm water management landscape features are designed to capture and manage the entire stormwater of the area, preventing the water runoff to enter within existing sewage infrastructure mitigating overflow on existing and proposed development.

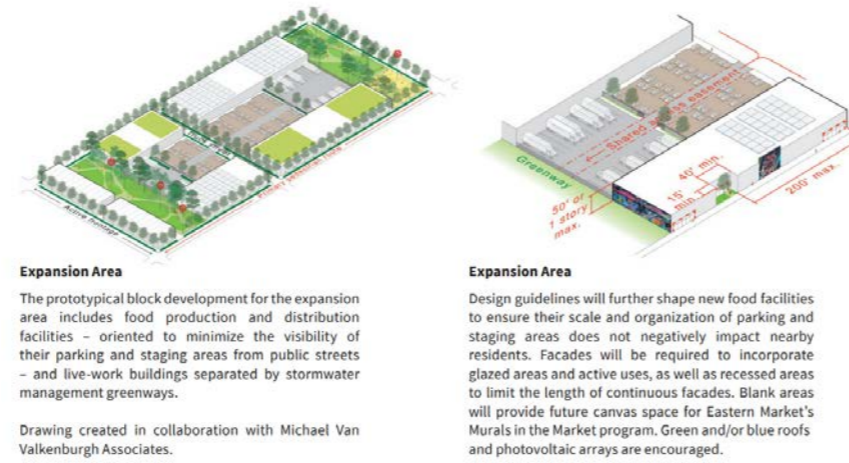


Figure 63: Eastern Market Block Development (source: Hatuka and Ben-Joseph 2022)

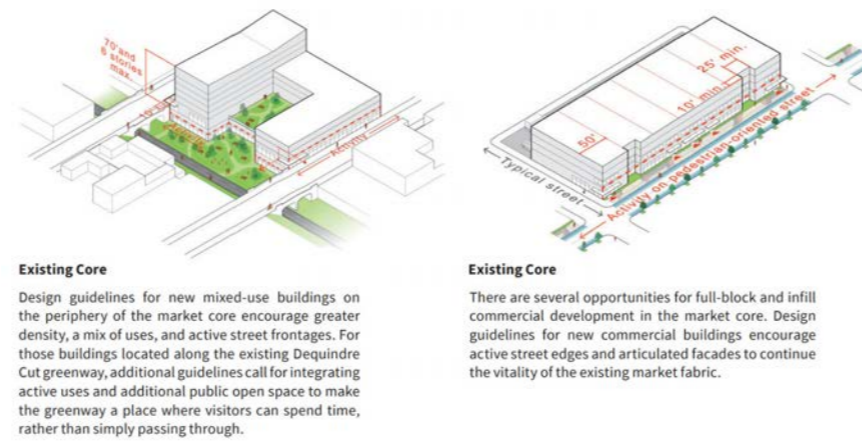


Figure 64: Eastern Market Block Development (source: Hatuka and Ben-Joseph 2022)

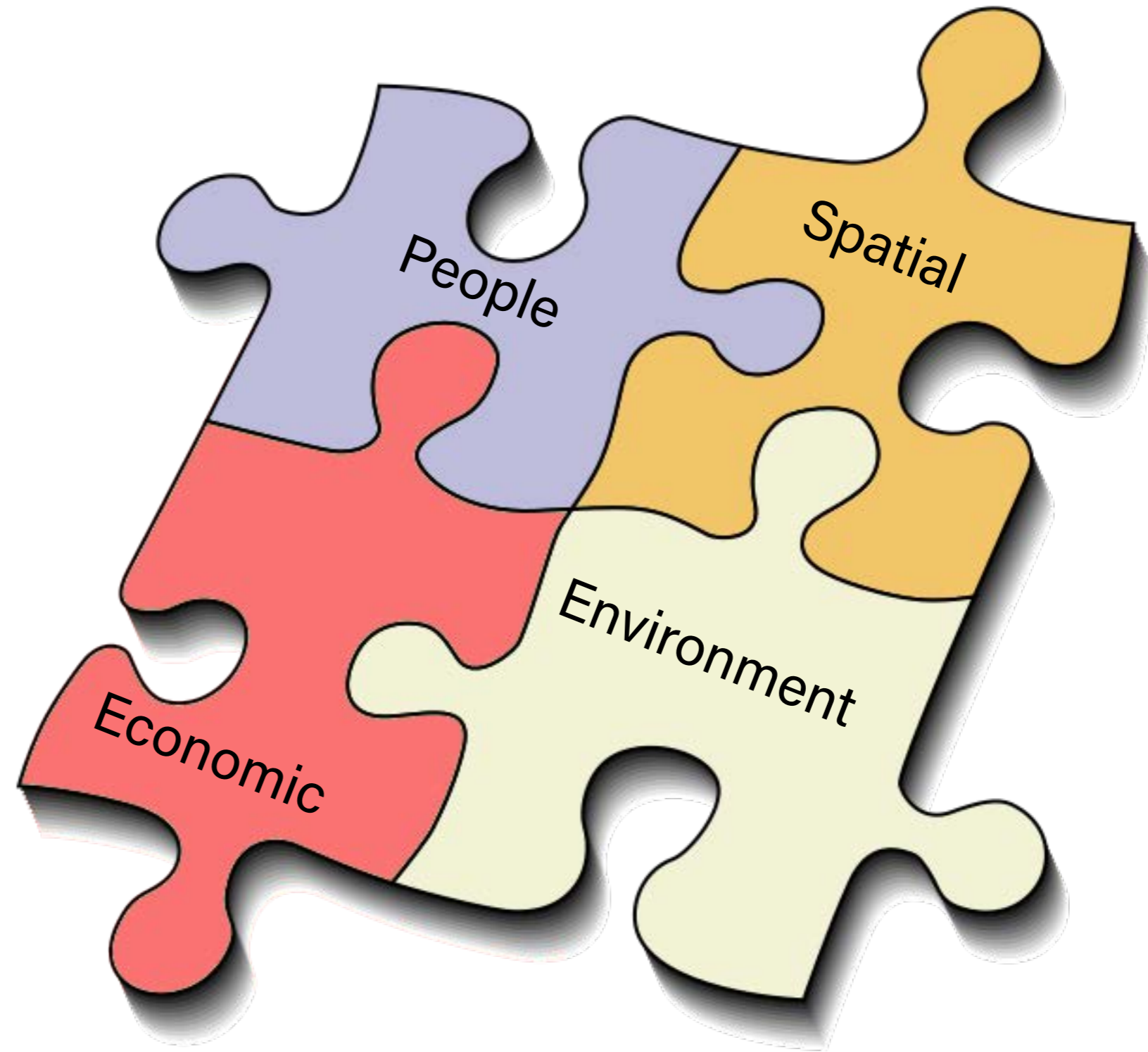


Figure 65: Eastern Market (source: Hatuka and Ben-Joseph 2022)

# Chapter 04

Phetogo ya ga Potchefstroom

(Potchefstroom's Transformation)



# Principles and Strategies

Accessibility, Livability, Safety, Opportunity and Permeability

## Strategy 01: Greenway Development

Establish a comprehensive greenway network within the industrial area, creating spatial buffer zones that connect cemeteries, public green open spaces, and designated ecological protection zones. These greenways will link key areas throughout the industrial area, integrating native vegetation, wildlife habitats, and accessible recreational spaces. Exposing and restoring channelized rivers within the industrial area will enhance ecological presence, support biodiversity, and rejuvenate the natural landscape, contributing to a healthier environment and improved urban aesthetics.

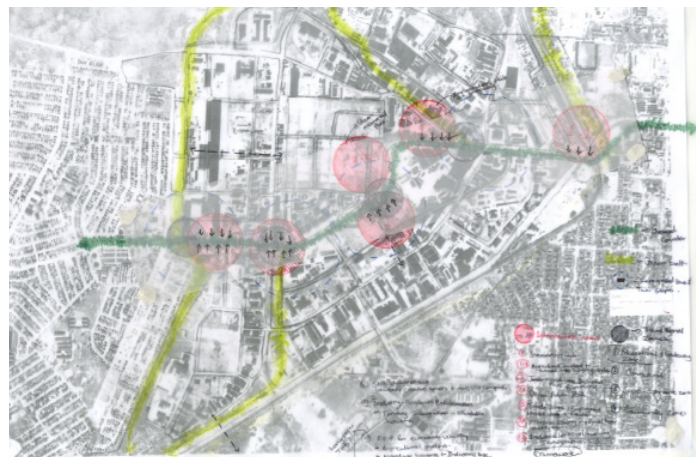


Figure 66: Maps illustrating proposed green connections to reinforce the north-south axis and strengthen the Ikageng Gateway corridor through urban greening mechanisms. The proposal includes enhancing internal railway lines, which currently serve as underutilized infrastructure, by converting them into green connections to further improve permeability within the industrial area.

Tshepo Mokwaledi-MKWTS027

## Strategy 02: Subdivision of the Industrial Area

The industrial area currently consists of large, impermeable urban blocks that hinder access and connectivity. This strategy aims to subdivide these blocks to enhance walkability and improve connections to township roads, fostering a stronger sense of accessibility. The area is characterized by a coarse grain layout with significant setbacks from the pavements, resulting in vast, underutilized open spaces. This strategy introduces build-to lines, encouraging developments to align with the pavements and include active frontages to create a more dynamic streetscape.



Figure 67: Maps illustrating subdivision of the industrial area and road hierarchy of the new proposed connectivity system

## Strategy 03: Public Transportation Improvement and Multi-Modal Connectivity

Potchefstroom once had a community-owned bus system that served the broader area, giving township residents a sense of ownership across the town. This strategy aims to reintroduce diverse transportation modes, including Bus Rapid Transit (BRT) systems, while also providing dedicated cycling lanes. Although bicycles are commonly used, there is currently insufficient infrastructure to support cyclists. By improving accessibility and promoting equitable access, this approach seeks to create a more connected and inclusive transportation network.



Figure 68: Maps illustrating support for existing underutilized bus stops (shown in red), located within a 500m walking radius, alongside proposed new stops (shown in black) strategically placed in areas where people cluster and congregate.

## Strategy 04: Development of Innovation Hubs and Business Incubators

This strategy aims to leverage the existing infrastructure in decayed areas of the industrial zone to support technology-driven enterprises and creative industries. By integrating educational facilities within the industrial area, it seeks to foster a synergistic relationship between education and industry. This approach will reactivate the historical system in Potchefstroom, where higher education institutions collaborated with the industrial sector—students conducted practical work within the industrial area and completed theoretical studies at academic institutions.

## Strategy 05: Mixed-Use Redevelopment

This strategy leverages the existing infrastructure of decaying industrial buildings by converting them into mixed-use developments that accommodate people across different income levels, providing affordable housing within the industrial area. These mixed-use developments will integrate light industries along with residential, commercial, and recreational spaces, creating a vibrant and diverse community.

## Strategy 06: Safety

The industrial area's decay has created a hostile experience within the area, the proposal is to densify and cluster development on these unsafe and decaying spaces to introduce more eyes on the street and foot traffic

# Framework

## Urban Edge

Batho-Pele (People-First) Framework

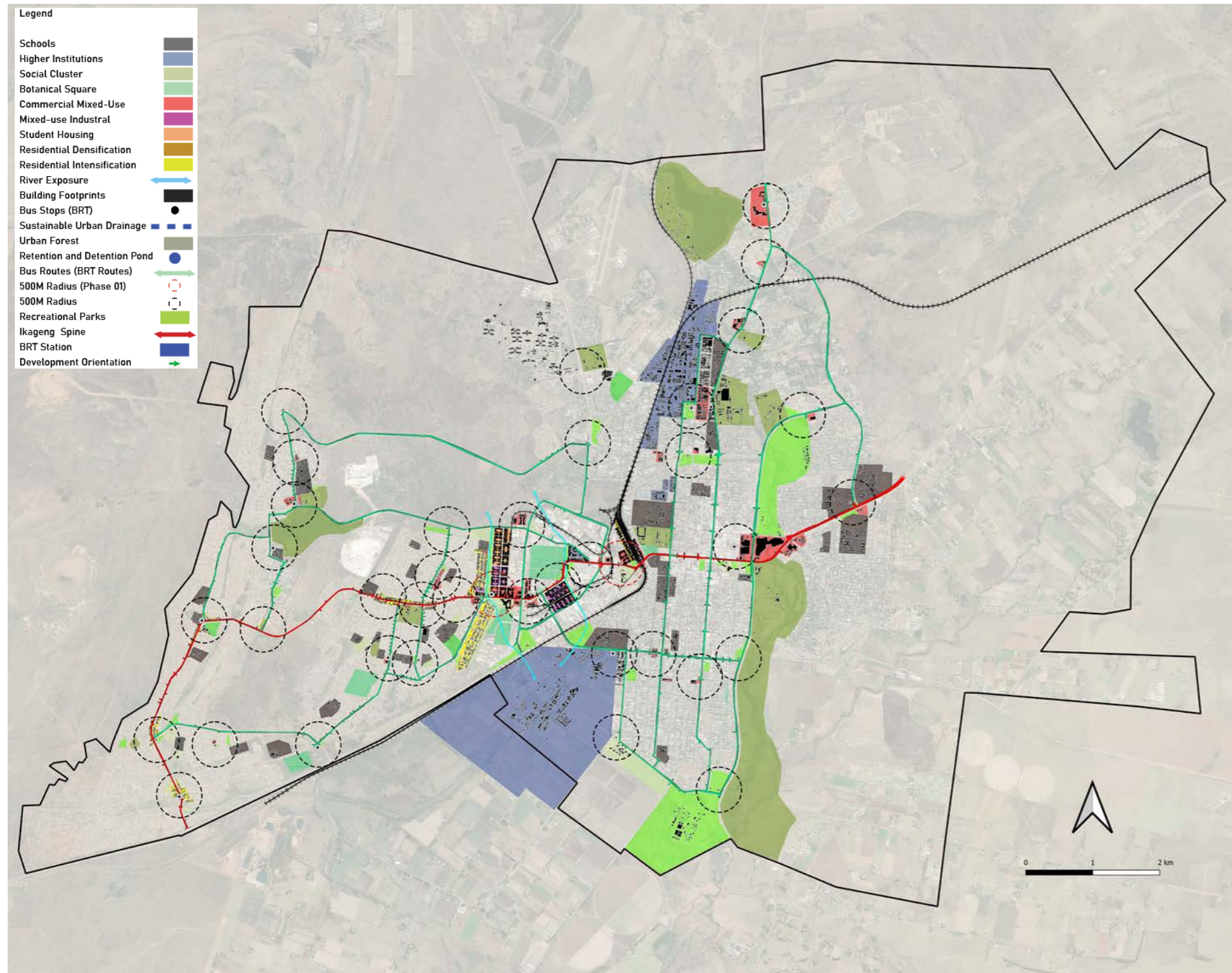


Figure 72: Map illustrating urban edge framework of Potchefstroom

Framework enhancing accessibility, opportunity, livability, and safety within a town, creating a pedestrian friendly environment that connects key areas such as the academic, recreational, and agricultural zones. Through improved access and intergration with the industrial area, unlocking its potential through green pathways, public transportation, and green spaces. Fostering opportunities, involving mixed-use development, new industries, while livability and safety is achieved with well-designed, active public spaces that emphasises comfort and security.

Framework focuses on the four key principles—Accessibility, Opportunity, Livability, and Safety—each tied to specific strategies and outcomes that create a pedestrian-friendly, connected, and vibrant town environment.

### 1. Accessibility:

Ikageng Spine and Brt Routes consists of green pathways, cycling lanes, and public transportation improving access throughout the town, focusing on seamless connections between academic, recreational, agricultural, and industrial areas. Integrating the industrial area into the town's overall layout, highlighting how enhanced connections make it more accessible and inviting.

### 2. Opportunity:

The framework incorporates mixed-use development, encouraging new industries and co-working spaces in the town's urban edge and within the industrial area to support local economic growth. Inclusive of a variety of housing, business, and recreational options created, offering people flexibility in where and how they live and work.

### 3. Livability:

The transformation of spaces into active public zones with landscaping, green spaces, and amenities foster a sense of community and well-being, emphasising residential opportunities within the industrial area, promoting a balanced mix of living and working spaces for a thriving neighborhood.

### 4. Safety:

Pedestrian-friendly design, increases street visibility, and enhanced lighting create a secure environment for residents and visitors. Active public spaces ensure comfort and security, making the town an inviting place for people of all ages.

# Framework

## Industrial Area

Batho-Pele (People-First) Framework

Blue-Green Framework

Ikageng Gate Precinct

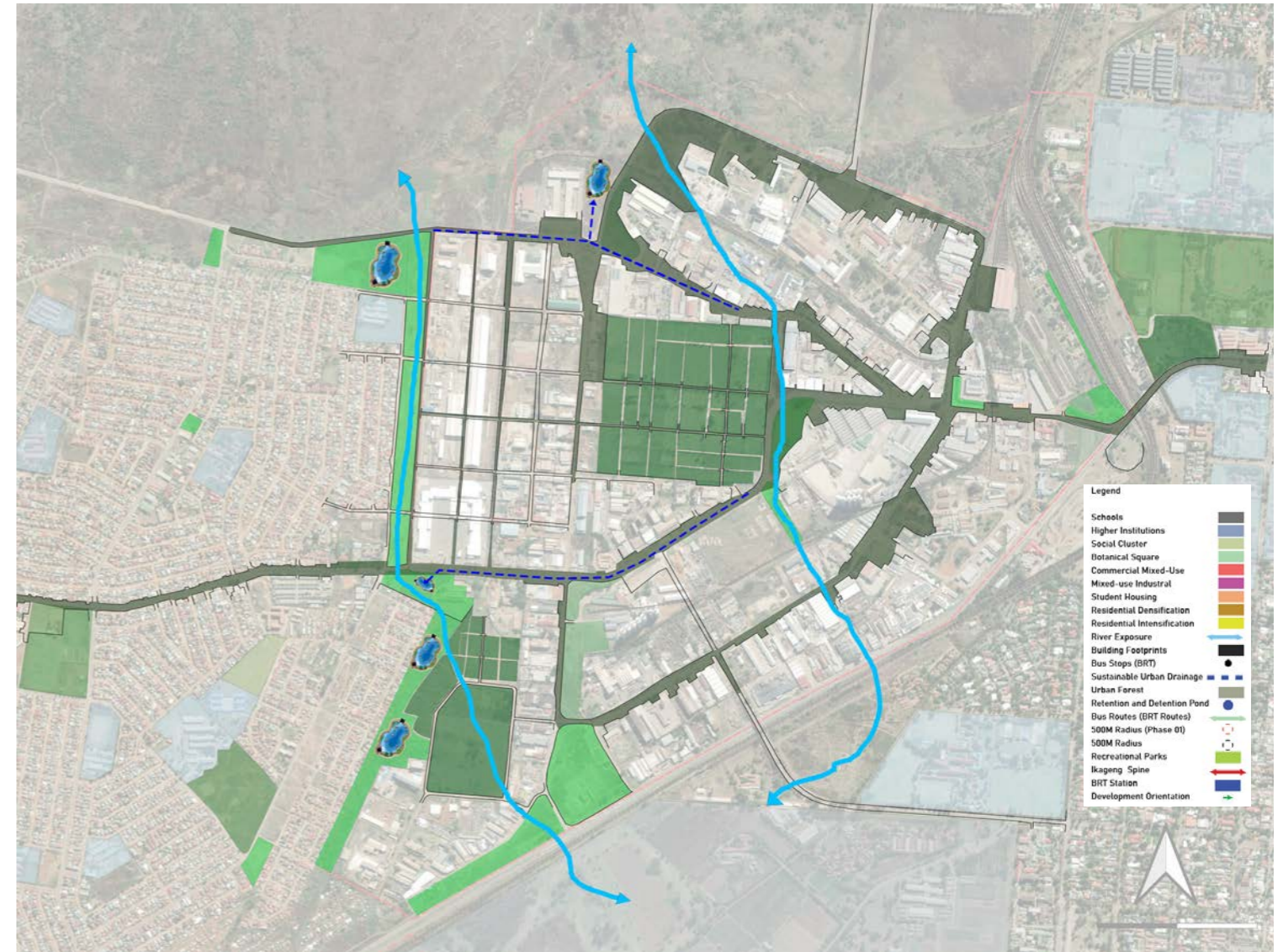
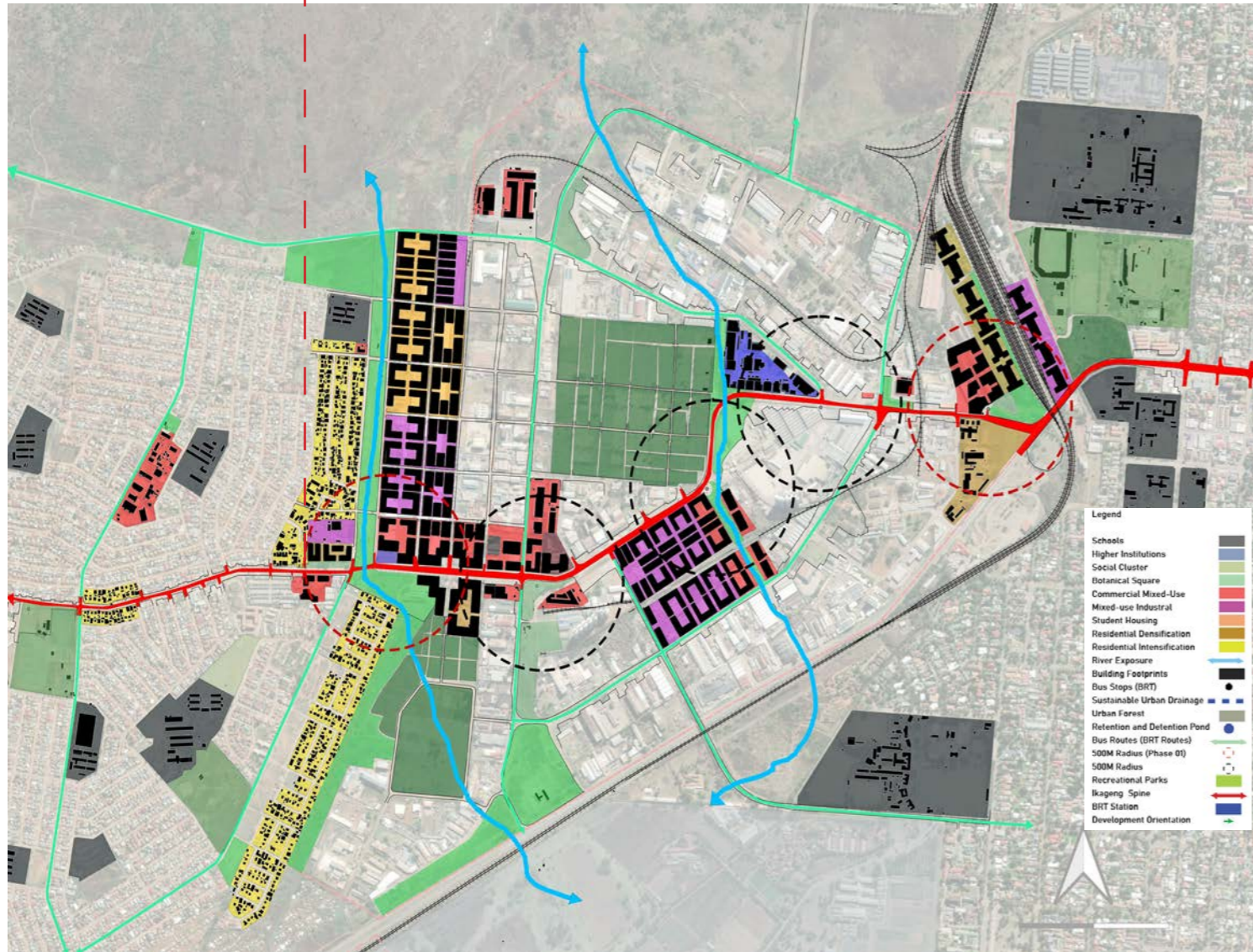


Figure 73: Map illustrating Industrial Area framework of Potchefstroom

Figure 74: Map illustrating Industrial Area blue-green framework of Potchefstroom



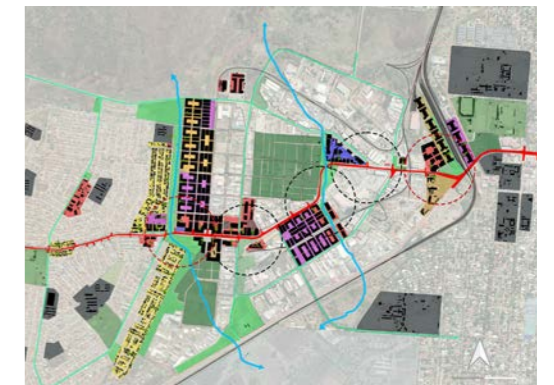
Land-use Map



Movement Network



Building Footprints



Nodes and Building Orientation

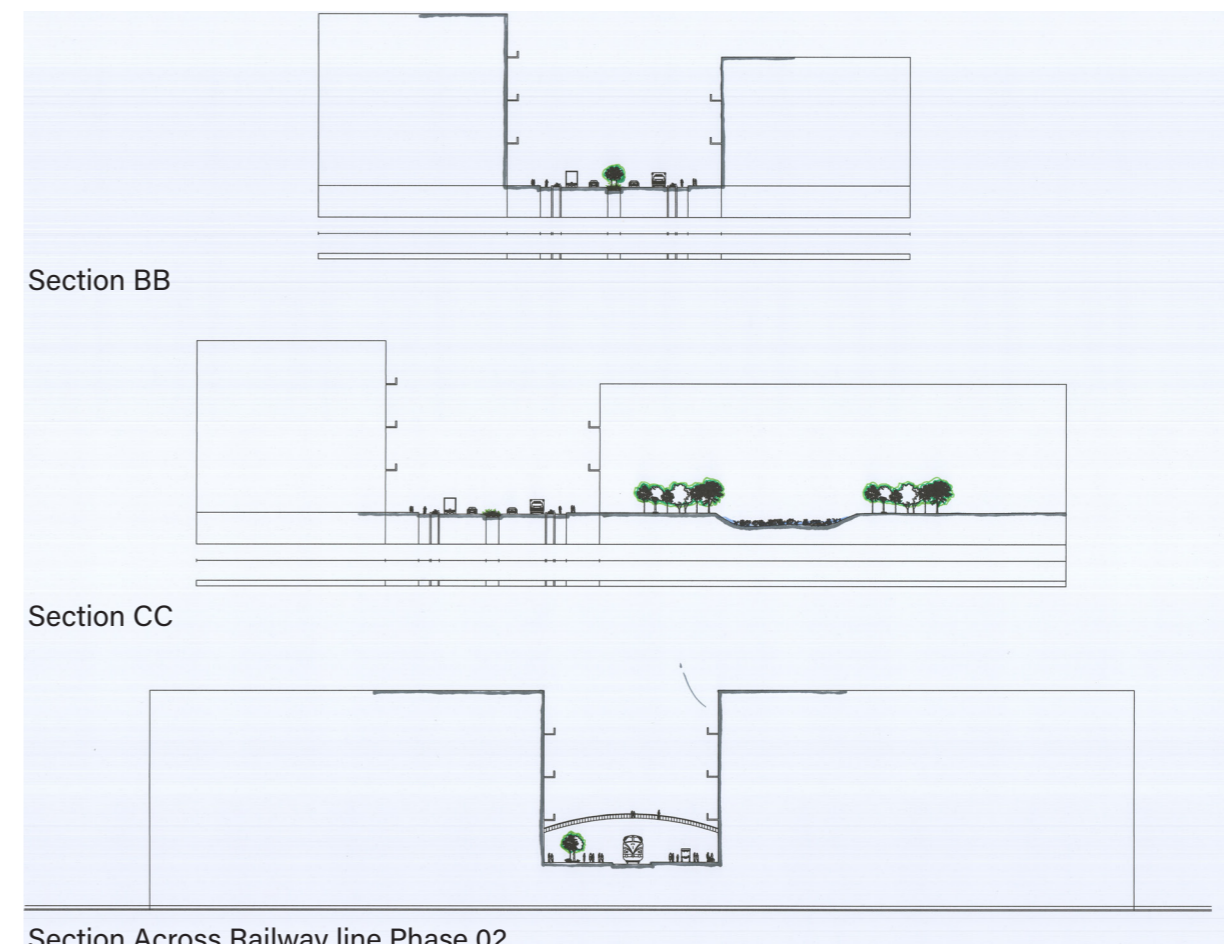
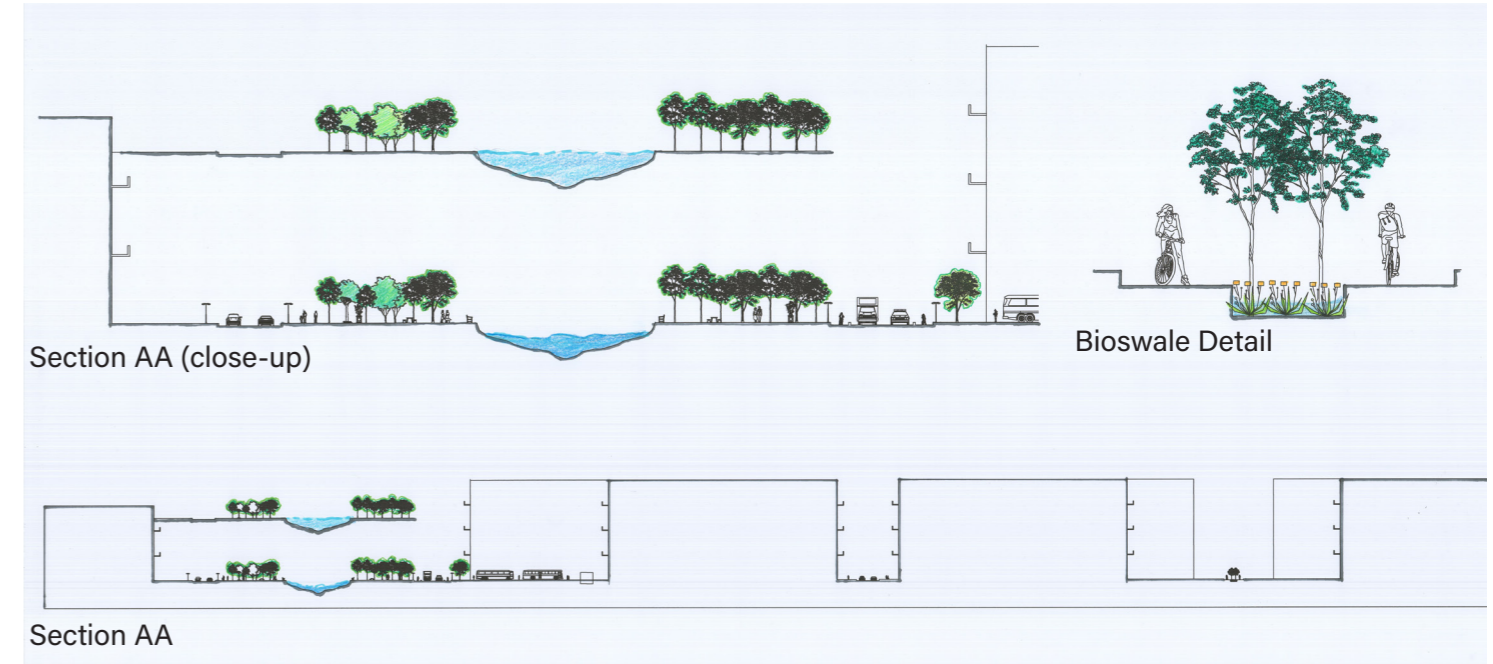
# Precinct Plan

## Ikageng Gate



Ikageng Gate Precinct

- |                                    |                                 |
|------------------------------------|---------------------------------|
| 1 River Exposure                   | 9 Market                        |
| 2 Memorial Park of Batlokwa Giants | 10 Public Transport Interchange |
| 3 Mixed-Use Commercial Development | 11 Tree Canopy                  |
| 4 Social Cluster                   | 12 Bioswales                    |
| 5 Detention Pond                   | 13 Street Lighting              |
| 6 Cycling Lanes                    | 14 Public Park                  |
| 7 Street Art to slow down traffic  |                                 |
| 8 Walkways                         |                                 |



Section Across Railway line Phase 02

The Precinct Plan centers on the Ikageng Gate, addressing it as a key barrier limiting the industrial area's potential. By bridging this gap, the plan enhances accessibility, with a public transport interchange and non-motorized options like cycling lanes that link the township to the industrial area across Potchefstroom. Fostering opportunity by providing diverse housing, and lifestyle choices, to improve livability, the plan integrates residential options within the industrial zone, while safety is bolstered by pedestrian crossings and active street surveillance, creating a vibrant, pedestrian-friendly environment.

# Precinct Plan

## Ikageng Gate



1. River Exposure
2. Memorial Park of Batlokwa Giants
3. Mixed-Use Commercial Development
4. Social Cluster
5. Detention Pond
6. Cycling Lanes
7. Pedestrian Crossings
8. Boardwalks / Walkways

Ikageng Gate Precinct



1. River Exposure



1. River Exposure

Tshepo Mokwaledi-MKWTSH027

- 7x7 (aside) Sports Pitches
- Outdoor Gyms



2. Memorial Park of Batlokwa Giants

- Sculptures of Tlokwe Giants
- Educational Floor Games
- Park Seating



2. Memorial Park of Batlokwa Giants

- Walls of Truth (Promises made by municipality to the people)
- Park Lighting



3. Mixed-use commercial development

- Tree Canopy
- Street Lighting
- Ground-floor Commercial
- Permeable Paving
- Street Furniture

# Precinct Plan

## Ikageng Gate



- 4. Social Cluster
- 5. Detention Pond
- 6. Cycling Lanes
- 7. Pedestrian Crossings
- 8. Boardwalks / Walkways

Ikageng Gate Precinct



4. Social Cluster

- Sports and Recreational pitches
- Affordable Housing Above
- Public facility on ground floor



5. Detention Pond

Tshepo Mokwaledi-MKWTSH027

- Pavillion
- Detention Pond acts as Amphitheater during dry seasons
- Sustainable Urban Drainage connections



6. Cycling lanes

- 2m Bike lanes
- 1.5m Vegetation buffer from road
- Permeable paving



7. Pedestrian crossing

- Floor Art
- Raised pedestrian crossing



8. Boardwalks

- Structural raised crossings
- Street lighting

# Precinct Plan

## Ikageng Gate



Ikageng Gate Precinct

- 9. Market
- 10. Public Transport Interchange
- 11. Tree Canopy
- 12. Bioswales
- 13. Street Lighting
- 14. Public Parks



9. Market

- Shading mechanisms
- Shrubs and vegetation
- Water feature
- Seating
- Bike storage & Recycling bins
- Permeable paving



10. PTI

Tshepo Mokwaledi-MKWTSH027

- BRT Station
- Seating
- Recycling bins
- Bike storage



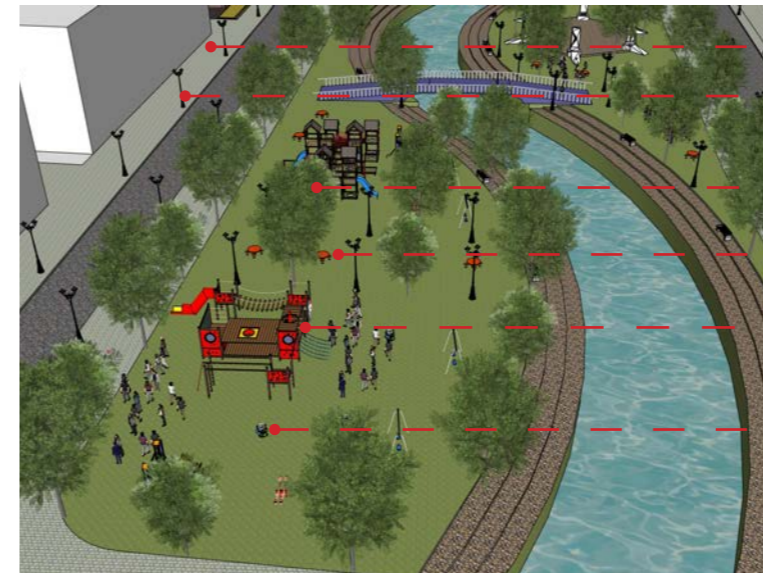
11 & 12. Tree canopy and Bioswale

- 10x10m Tree planting
- Sustainable Urban Drainage & Vegetation



13. 10x10m Street Lighting

- 10x10m Street lighting



14. Public Park

- Permeable paving
- 10x10m Street lighting
- 10x10m Tree planting
- Seating
- Playsets
- Recycling bins

# Renders

## Ikageng Gate Precinct

3D exploration and build-up of the Ikageng Gate Precinct envisioning the transformation of the physical space, reimagining the industrial area and key nodes to enhance accessibility, opportunity, safety, and livability. The goal is to foster a more integrated neighbourhood across Potchefstroom as a whole, celebrating and reinforcing blue-green infrastructure to create a cohesive, sustainable environment.



# Phase 01

## Short Term 2025-2030

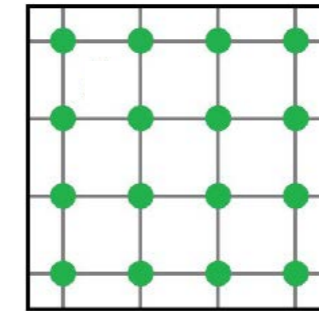
1. Break down spatial barriers dividing the township and the industrial area through subdivision and new connector routes
2. Planting of trees, converting of cemeteries into botanical squares and memorial parks, and vegetating the Ikageng Spine, to enhance green spaces and environmental quality
3. Exposing rivers and wetland construction & support within the industrial area, transforming them into community intergration areas, with parks and recreational spaces
4. Intensification of PTI, bus stops Public facilities, skills development centers and residential homes to increase more foot traffic, and densification of key areas facing towards the township and the railway station
5. Implementation of pedestrian infrastructure and traffic calming measures



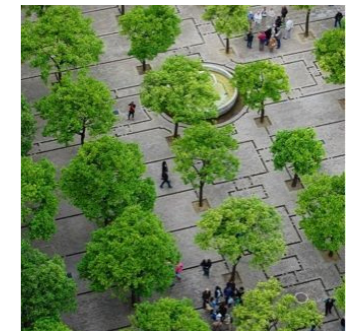
1.Subdivision



2.Tree Planting



2.10x10M Planting Grid



2.10x10M Planting Grid



3.Exposing Rivers & Wetland support



3.River Exposure



3.Multi Functional Retention & Detention Ponds



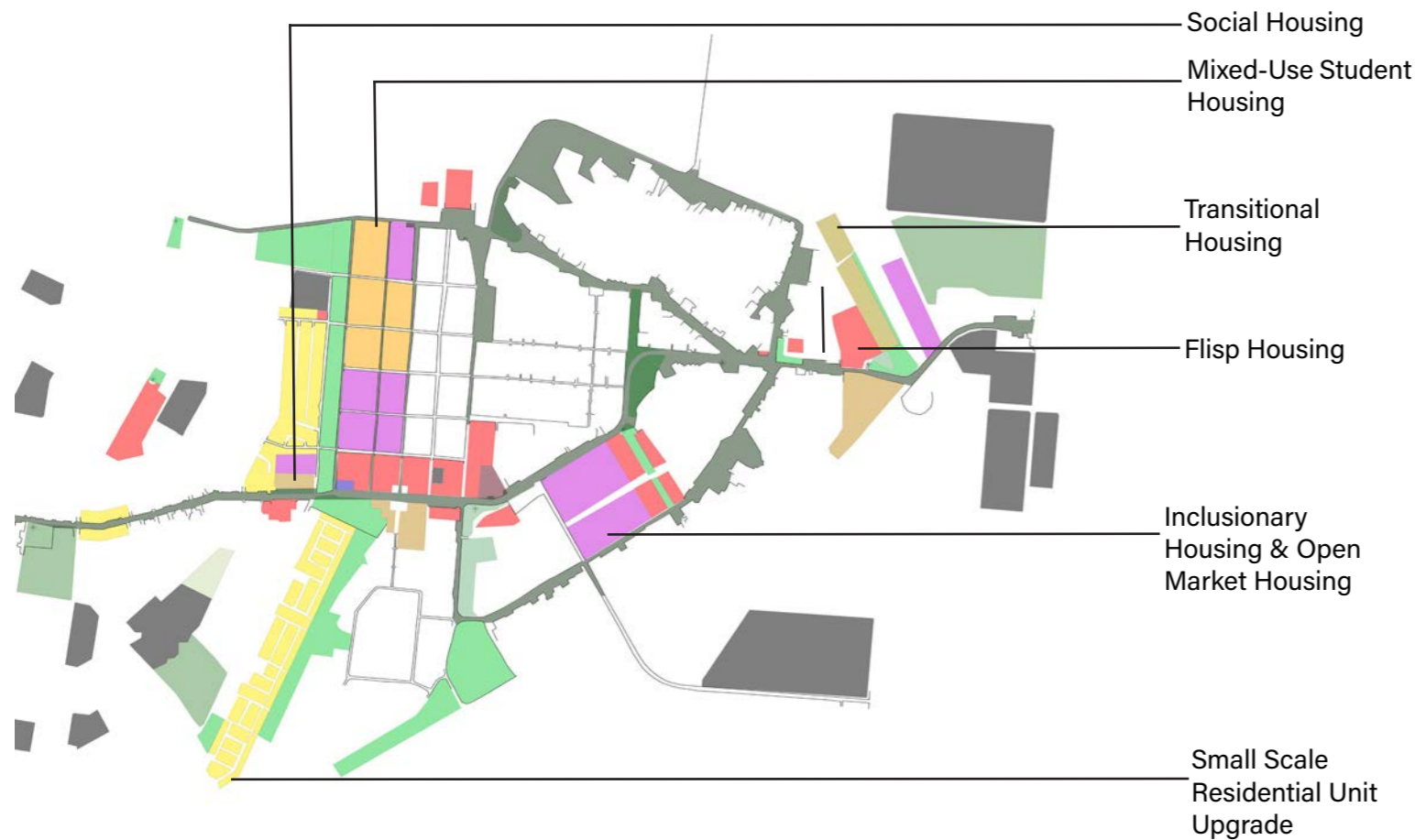
5.Exposing Rivers & Wetland support



5.Pedestrian Crossing ●



5.Traffic Signs ●



Mixed-Use Student Housing



Inclusionary Housing & Open Market Housing



Flisp Housing



Transitional Housing

## 4.Intensification & Densification

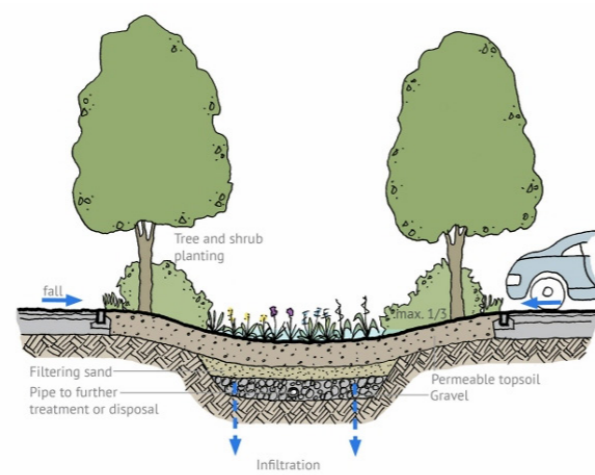
# Phase 02

## Medium Term 2030-2045

1. Construction of sustainable urban drainage systems to improve stormwater management and accommodate future proposed housing developments
2. Introduce build to lines for private and public development along the spine to create an interactive and inviting urban edge
3. Propose tree canopy & pedestrian friendly infrastructure within new developments, connecting Parks, Social Clusters, Botanical Square, and High Ecological Value areas to the Ikageng Spine, promoting pedestrian safety, walkability, accessibility and unobstructed view lines of nature's connection



1.Sustainable Urban Drainage



1.Bioswales & Rain Gardens



1.Bioswales & Rain Gardens



3.Tree Canopy & Pedestrian Infrastructure



3.Tree Canopy & Pedestrian Infrastructure

# Phase 03

Long Term 2045-2050

1. Development of University Satellite campus & Innovation Hub, reinforcing academic-industry collaboration, harnessing educational & Technological opportunities within the industrial area

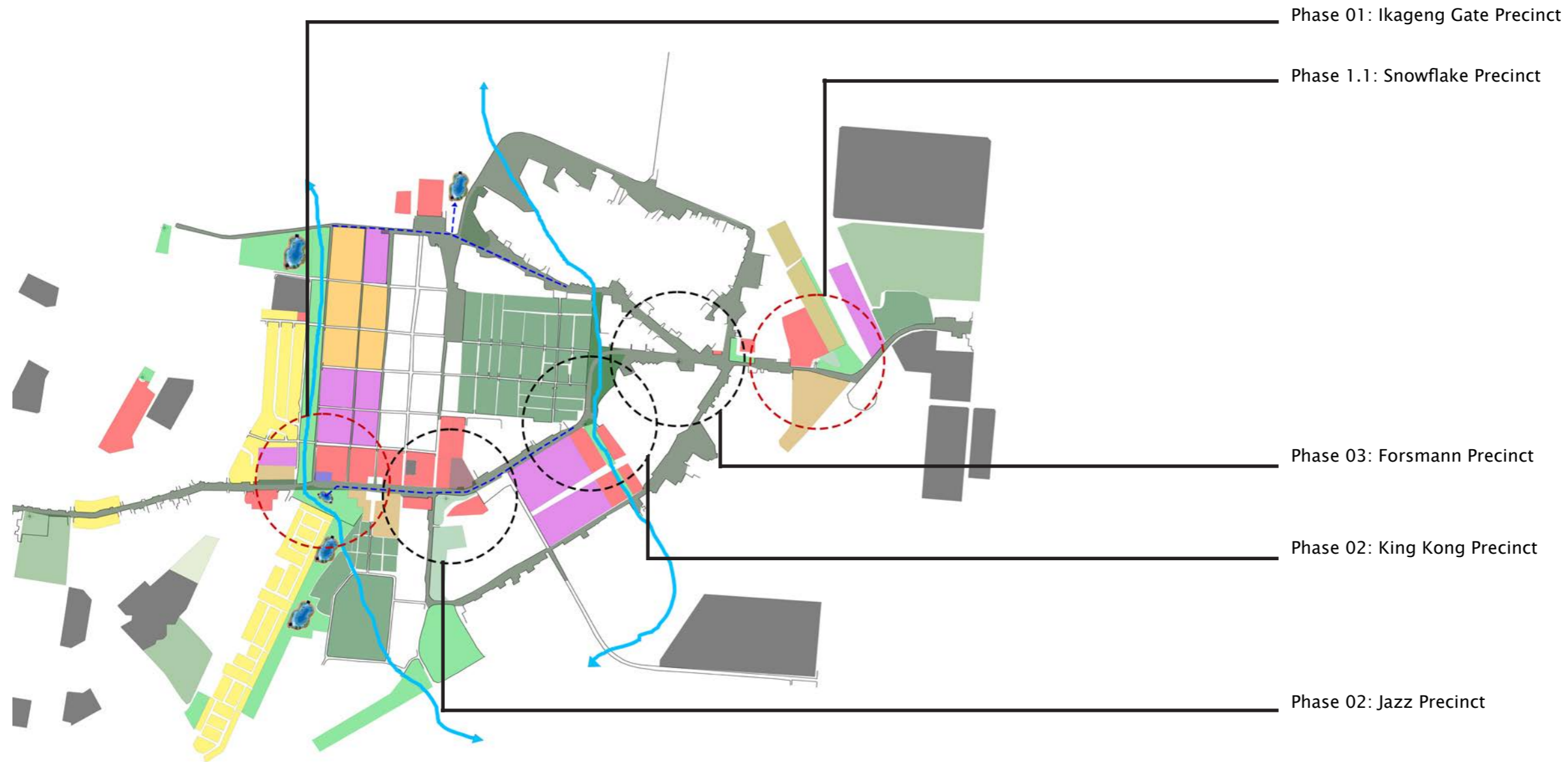


1.Green Intergrated University



1.Green Intergrated Innovation Hub

## Focus Areas



Potchefstroom Industrial Area Phasing

# Stakeholders

## Local Stakeholders



Figure 74: Local Stakeholders

I aim partner with key stakeholders—Ikamva Youth, Sportistics SA, MD Marketing Solutions, and Ikageng Youth Development—to transform Potchefstroom's industrial area and foster sustainable livelihoods for youth from under-resourced communities. Ikamva Youth offers educational support and safe spaces for learners, while Sportistics SA promotes athletic development and provides resources for young athletes. MD Marketing Solutions enriches the community through music events and support for disadvantaged schools, and Ikageng Youth Development builds connections among public amenities to address local needs. Together, these initiatives aim to create an inclusive environment that integrates education, sports, culture, and community development, enhancing social cohesion and economic opportunities for all residents.

## Industrial Stakeholders



Figure 75: Industrial Stakeholders

My goal is to engage with the large industrial businesses in Potchefstroom that employ a significant portion of the town's population. These companies are not only highly visible but also serve as powerhouses in the local economy. By involving them in the urban transformation, I hope to make their commitment to social corporate responsibility more tangible, particularly in light of the industrial area's current state of decline.

This partnership is about encouraging them to invest in their workers' quality of life and the surrounding environment, fostering an improved, maintained industrial area. This transformation would ultimately benefit their businesses as well by attracting greater attention and activity to the area.

## Educational Stakeholders



Figure 76: Educational Stakeholders

I aim to involve and integrate North-West University, Vuselela College, and Potchefstroom Agricultural College as key stakeholders in the transformation of the Potchefstroom industrial area. Historically, these major higher education institutions had a strong relationship with the industrial area before 1994, as mentioned by interviewees. This collaboration contributed to Potchefstroom being recognized as the "city of expertise" because students would combine their theoretical studies at these institutions with practical work experience in the industrial area.

My goal is to reestablish this system to foster sustainable growth in the industrial area. By leveraging the skills and knowledge that students gain from these tertiary institutions, we can create a more integrated relationship between academia and industry. This partnership will provide opportunities for students to apply their learning in practical settings, whether through student housing, innovation hubs, or even satellite campuses within the industrial area.

Reintroducing this collaboration will not only support the transformation of the industrial area but also ensure that it becomes a space for education, innovation, and development, benefiting both the institutions and the broader Potchefstroom community.

## Recreational Stakeholders



Figure 77: Recreational Stakeholders

I aim to involve BLK Lounge and CSA Fire and Safety as key private stakeholders in the transformation of the Potchefstroom industrial area. These two recreational spots, located within the industrial zone, play a significant role in bringing together a large number of youth from both the township and the more advantaged communities in town. By facilitating a partnership between the private sector, public institutions, and the community, they can contribute to both fostering and maintaining sustainable transformation in the industrial area.

BLK Lounge and CSA Fire and Safety are well-positioned to make their social responsibility efforts more visible and impactful by actively supporting the transformation process. Given the high volume of youth they attract, these stakeholders can leverage their platforms to promote growth in key areas like sports, academics, industry, recreation, and livability. By fostering relationships between different communities and providing spaces where youth from diverse backgrounds can come together, they have the potential to drive significant social and economic change within the industrial area, ensuring its long-term development and inclusivity.

# Conclusion

Let us revisit the research question “How can the industrial area be transformed with a specific emphasis on the Ikageng Gateway Corridor to counter urban decay?”

Through a transformed lens, the Potchefstroom industrial area has evolved in three key spheres: spatially, socially, economically, through the presence of ecological intergration. The central driving force behind this transformation the PEOPLE. People have led the urban transformation, and have significantly contributed towards reshaping the industrial area’s ecological performance through habitat restoration and rehabilitation, and enhancing its capacity.

People have driven economic revitalization, converting the industrial area into not just a rejuvenated industrial hub, but a vibrant space where people live, work, and play. The economy has diversified, with the inclusion of small, localized businesses and light industries, providing ownership opportunities for individuals from all intergrated areas of Potchefstroom.

This transformation has provided opportunities for small- and large-scale development to co-exist within the same area, catering to the needs of Ikageng and empowering Potchefstroom as a whole, and its surrounding context. The industrial area provides access and choice through the broken down barriers of spatial injustice, integrating historically segregated area of Ikageng into a more inclusive urban fabric.

The overall Potchefstroom framework promotes spatial justice, ensuring that housing, employment, and education are more accessible. The industrial area now hosts educational facilities, skills development centers, and innovation hubs, all while integrating nature into its design. As Dewar et al (1991) state that human actions on the landscape must be conscious of ecological processes and this principle has been embraced in the transformation.

The Potchefstroom industrial area, once closed off, decayed and stagnant knuckle, has opened up—extending its reach across the city and becoming a flourishing, dynamic, inclusive space for growth and opportunity. This transformation has not only rejuvenated the area but has connected it to the broader Potchefstroom community, embodying a new era of urban resilience and integration.

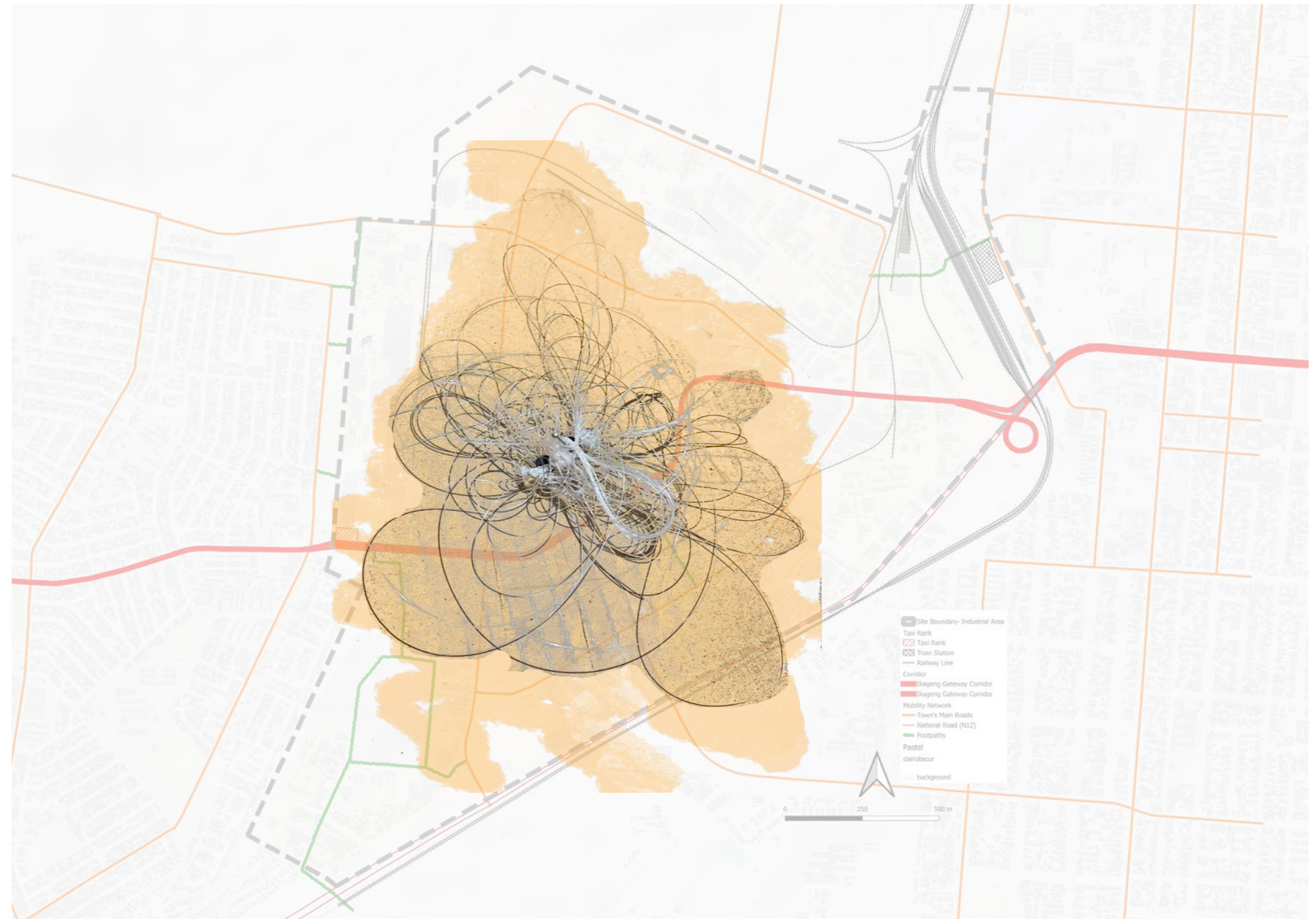


Figure 78: Industrial Transformation and Rejuvenation

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Figure 57: Hatuka and Ben-Joseph .(2022). New Industrial Urbanism: Designing Places for Production. [Landuse Map of Shenzhen]. Routledge. <https://doi.org/10.4324/9780367855000>

Figure 59: Hatuka and Ben-Joseph .(2022). New Industrial Urbanism: Designing Places for Production. [Landuse Map of Medellíninnovation District- Colombia]. Routledge. <https://doi.org/10.4324/9780367855000>

Figure 60: Frenchman,T. (2013). Medellíninnovation District- Colombia [Render]. <https://tekumafrenchman.com/portfolio/medellin-innovation-district/>

Figure 61: Hatuka and Ben-Joseph .(2022). New Industrial Urbanism: Designing Places for Production. [Fashion District Zoning Strategies]. Routledge. <https://doi.org/10.4324/9780367855000>

Figure 62: California.com. (2021, October 8). Santee Alley LA Fashion District [Photograph]. <https://www.california.com/a-guide-to-las-fashion-district/>

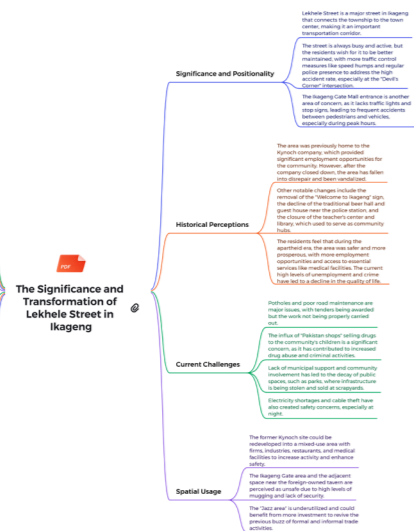
Figure 63: Hatuka and Ben-Joseph .(2022). New Industrial Urbanism: Designing Places for Production. [Eastern Market Block Development]. Routledge. <https://doi.org/10.4324/9780367855000>

Figure 64: Hatuka and Ben-Joseph .(2022). New Industrial Urbanism: Designing Places for Production. [Eastern Market Block Development]. Routledge. <https://doi.org/10.4324/9780367855000>

Figure 65: Local Difference. (2021,August 11). Eastern Market [Photograph]. <https://www.localdifference.org/blog/5-things-eastern-market/>

# ANNEXURE A

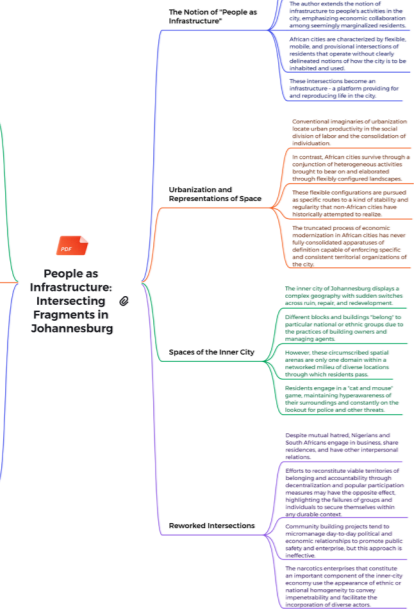
## The Significance and Transformation of Lekhele Street in Ikageng



## Perspectives on the Ikageng Corridor



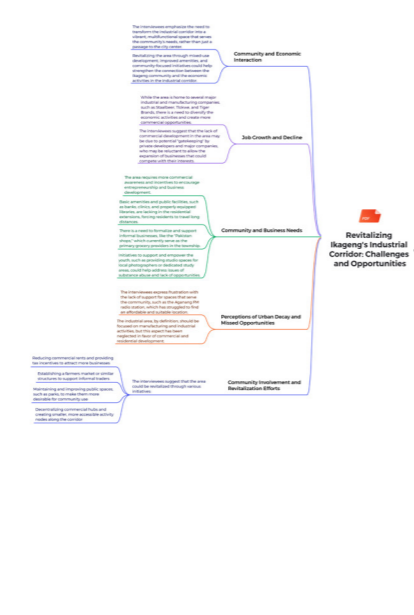
## People as Infrastructure: Fragmenting in Johannesburg



## The Significance and Challenges of Potchefstroom's Industrial Area



## Revitalizing Ikageng's Industrial Corridor: Challenges and Opportunities



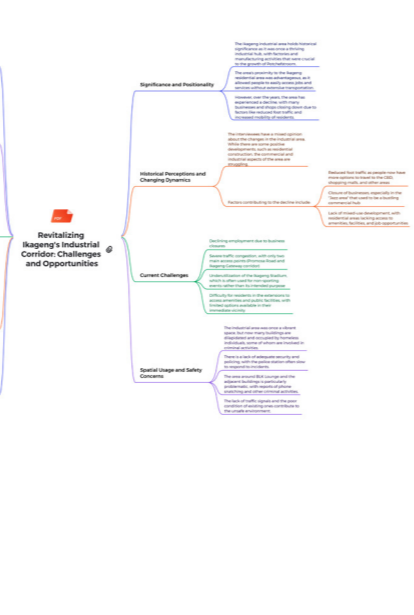
## Rejuvenating the Ikageng Corridor: Unlocking the Potential for Community Development



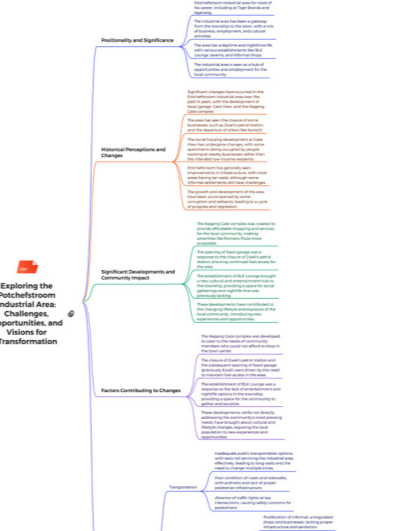
## Reclaiming the Ikageng Corridor: Empowering the Community through Inclusive Development



## The Territories of Urban Design



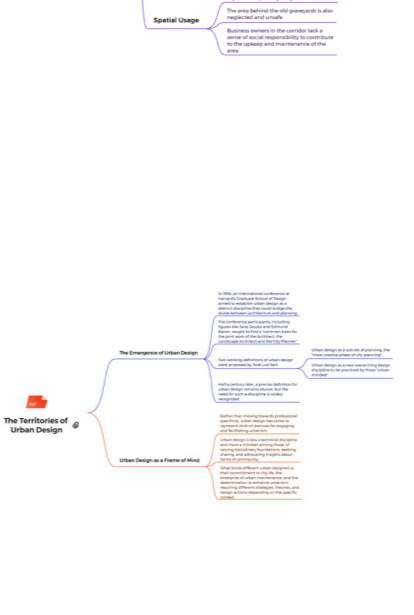
## Exploring the Potchefstroom Industrial Area: Challenges, Opportunities, and Visions for Transformation



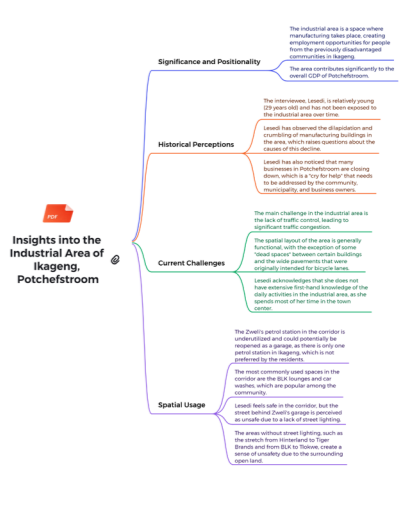
## Reclaiming the Ikageng Corridor: Empowering the Community through Inclusive Development



## The Territories of Urban Design



## Insights into the Industrial Area of Ikageng, Potchefstroom



Transcriptions from the interviews have been added to Mapify to create a mind map structure based on my work.

# ANNEXURE B

## Interviewee Consent Form

**Consent Form**

**Participant Information**  
 Name of Researcher: Tshepo Mokwaledi  
 Institution: University of Cape Town  
 Degree: Master's in Urban Design  
 Research Area: Potchefstroom Industria Area, with a specific focus on the Ikagang Gateway Corridor

**Project Overview**  
 This consent form acknowledges your participation in the research project titled: "How can the Potchefstroom Industrial Area be transformed, with a specific emphasis on the Ikagang Gateway Corridor, to counter urban decay?"

The project aims to:

- Investigate socio-economic factors contributing to urban decay along the Ikagang Gateway Corridor.
- Evaluate the impact of urban decay on local businesses, informal traders, and the overall economy of Potchefstroom.
- Identify best practices and innovative approaches for rejuvenation and regeneration along the Ikagang Corridor.
- Propose design interventions aimed at promoting economic development, enhancing safety, and fostering community resilience.

**Research Objectives**

- Socio-economic Factors:**
  - Investigate poverty, unemployment, and weak economic activity.

**Implementation:** The design project will not be implemented in the area; it serves solely as an investigation.

**Consent**  
 I, \_\_\_\_\_, acknowledge that I have read and understood the information provided above. I agree to participate in the research project conducted by Tshepo Mokwaledi. I understand that my participation is voluntary and that my responses will be used for academic purposes only.

**Participant's Signature:** \_\_\_\_\_  
 Date: 05/08/2024

**Researcher's Signature:** \_\_\_\_\_  
 Date: 05/08/2024

If you have any questions or need further information, please contact:  
**Tshepo Mokwaledi**  
 Email: H5xsh027@myuct.ac.za  
 Phone / WhatsApp: 064-195-2010  
 Supervisor: Dr Kathryn Ewing  
 Email: Kathryn.Ewing@uct.ac.za  
 Thank you for your participation.

**Research Methods**

- Storytelling:** To capture and interpret narratives spatially through maps and storyboards.
- Social Mapping:** To capture social relationships, networks, and interactions.
- Emotional Mapping:** To capture and analyze participants' experiences and emotional responses.
- Semi-structured Interviews:** To explore participants' viewpoints, beliefs, and attitudes.
- Diaries:** To record the researcher's thoughts, experiences, and activities.
- Tracking and Tracing:** To analyze movement patterns and activities.
- Policy Analysis:** To review existing policies and propose new initiatives.

**Participation Details**

- Anonymity:** The interview will be held anonymously, and a pseudonym will be assigned to you.
- Usage of Data:** Your responses will be used to explore the stipulated topic and for academic purposes only.
- Compensation:** There will be no compensation for your participation.

**Implementation:** The design project will not be implemented in the area; it serves solely as an investigation.

**Consent**  
 I, \_\_\_\_\_, acknowledge that I have read and understood the information provided above. I agree to participate in the research project conducted by Tshepo Mokwaledi. I understand that my participation is voluntary and that my responses will be used for academic purposes only.

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**Researcher's Signature:** \_\_\_\_\_  
 Date: 05/08/2024

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**Participant's Signature:** \_\_\_\_\_  
 Date: 06/07/2024

**Researcher's Signature:** \_\_\_\_\_  
 Date: 06/07/2024

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**Participant's Signature:** \_\_\_\_\_  
 Date: 07/07/2024

**Researcher's Signature:** \_\_\_\_\_  
 Date: 07/07/2024

If you have any questions or need further information, please contact:  
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**Participant's Signature:** \_\_\_\_\_  
 Date: 12/07/24

**Researcher's Signature:** \_\_\_\_\_  
 Date: 12/07/24

If you have any questions or need further information, please contact:  
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**Participant's Signature:** \_\_\_\_\_  
 Date: 27/06/24

**Researcher's Signature:** \_\_\_\_\_  
 Date: 27/06/24

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**Participant's Signature:** \_\_\_\_\_  
 Date: 28/06/2024

**Researcher's Signature:** \_\_\_\_\_  
 Date: 28/06/24

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**Researcher's Signature:** \_\_\_\_\_  
 Date: 28/06/24

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**Participant's Signature:** \_\_\_\_\_  
 Date: 08/07/2024

**Researcher's Signature:** \_\_\_\_\_  
 Date: 08/07/24

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 Date: 27/06/24

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**Participant's Signature:** \_\_\_\_\_  
 Date: 09/07/2024

**Researcher's Signature:** \_\_\_\_\_  
 Date: 09/07/24

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 Thank you for your participation.

# Ethics Clearance



2024/06/05

EBE/00873/2024

RE: Research Ethics Committee Project Approval Letter

Dear Tshepo Mokwaledi,

Your application for ethics review of your project titled

Enlivening Potchefstroom: Transforming the Ikageng Gateway corridor to combat urban decay.

has been reviewed and evaluated by the

Faculty of Engineering&Built Environment Research Ethics Committee (REC).

Based on the information supplied your application has been successful and is approved.

You may proceed with your research project.

Please note that should:

- (i) any serious or adverse effects to participants occur and/or,
- (ii) aspect(s) of your current project change and/or
- (iii) any unforeseen events that might affect continued ethical acceptability of the project occur then you should immediately report this to the approving REC. You may be required to submit an amendment to this application, in order to determine whether the changed aspects increase the ethical risks of your project.

Please note the following additional conditions associated with this approval:

- (i) You might want to think about how you will engage key informants e.g. local government officials, urban managers and whether there might be any gatekeepers.

Regards,

APG:School of Architec,Planning&Geomatic

Research Ethics Committee