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Digital addressing in South Africa: As a form of citizenship, inclusivity, and catalyst for faster service delivery in informal settlements

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Digital addressing in South Africa: As a form of citizenship, inclusivity, and catalyst for faster service delivery in informal settlements.

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ABSTRACT

This study examines the significance of granting digital addresses addressing unrecognised areas, such as informal settlements in South Africa. The focus of the research is to explore how having an address in an informal settlement affects residents' quality of life. By using a case study approach, this research will compare the Thembelihle and Skoonplaas informal settlements.

The study argues that the absence of an address in informal settlements undermines the residents' right to dignity, citizenship, and overall access to the right to the city. It will analyze the effects of the addressing system in informal settlements and identify the system's deficiencies.

The research draws upon international literature, observations, and interviews conducted for the study. It also references South Africa's progressive legislation and post-1994 programs aimed at upgrading informal settlements, which emphasize the need for incremental improvements. The empirical data for this research will be based on interviews with municipal officials, policymakers, intermediary organizations, community leaders, and a review of relevant literature.

Key Words: South Africa, Informal settlements, digital address, dignity, citizenship, inclusivity, right to the city.

Declaration

I declare that this research report is my unaided work. It is being submitted to the Degree of Masters Urban Studies in the field of Human and Housing Settlements at the University of the Witwatersrand, Johannesburg, South Africa. It has not been submitted before for any degree or examination to any other University.

23 October 2025

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LIST OF ACRONYMS

African National Congress	**ANC**
Auditor General	**AG**
Breaking New Ground	**BNG**
Centre for Development Enterprise	**CDE**
City of Ekurhuleni	**CEO**
City of Joburg	**COJ**
Democratic Alliance	**DA**
Early Childhood Development	**ECD**
Emergency Medical Services	**EMS**
Financial Intelligence Centre Act	**FICA**
Gauteng City Region Observatory	**GCRO**
Gauteng Cooperative Government and Traditional affairs	**COGTA**
Gender-Based Violence	**GBV**
Geographic Information system	**GIS**
Industrial Development Corporation	**IDC**
Independent Electoral Commission	**IEC**
Integrated Urban Development Framework	**IUDF**
Integrated Development Planning	**IDP**
Millenium Development Goals	**MDGs**
National Development Plan	**NDP**
Non-Governmental Organisation	**NGO**
Plus Code Address	**PCA**
Regulation of Interception of Communications and Provision of Communication-related Information Act	**RICA**

Small, Medium, Macro enterprises	**SMMEs**
South African Police Service	**SAPS**
Sustainable Development Goals	**SDGs**
Spatial Planning and Land Use Management	**SPLUMA**
United Nations	**UN**
Upgrading of Informal Settlement Programme	**UISP**

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction

Many individuals avoid visual contact when passing the expansive informal settlements encroaching upon urban areas in South Africa. Ndlovu-Nachamba (2019:1) contends that 'informal settlements are not going to go away. They are proliferating everywhere because poverty is increasing, and people are migrating in search of economic opportunities. Ndlovu-Nachamba (2019) emphasize that Informal settlements are increasing at an alarming rate, and the limited budget/funds cannot cater for the growth and demand. Department of Energy (2011: 2) argue that 'although they are generally considered "temporary", informal settlements tend to be there for many years, some for up to 30 years. Pieterse (2008:30) emphasizes that slums are a manifestation of informality, and South African cities are not exempt from this phenomenon. Like other urban centres globally, South African cities attract individuals seeking opportunities and services, despite the country's critical shortage of adequate and affordable housing. South African cities continue to reflect apartheid spatial planning.

Considering these pressures, the government is facing reality checks. An estimated one in five South Africans lives in informal settlements, and there is a critical shortage of state housing (Marutlulle, 2021). Having 20% of the national population in squatter camps is in direct conflict with Section 26 of the Constitution, enforcing the right for all to have access to adequate housing (National Authorities, 1996). This also poses great challenges for the planning processes of local authorities and is compounded by the lack of up-to-date statistics on existing informal settlements. The ever-growing number of informal settlements that have sprung up over time has overtaken formal planning processes and pushed the municipal urban edge to the limit.

The Constitution not only grants us the right to access adequate housing but also the right to dignity and citizenship (National Authorities, 1996). The right to dignity and citizenship does not exclude citizens from the informal settlements. The Constitution (1996) in Chapter 2 of the Bill of Rights affirms human dignity in Section 10 by stating that 'everyone has an inherent right to have their dignity respected and protected'. Perhaps to proceed further, Section 20 of the Bill of Rights affirms the right to citizenship, it states: that no one may be deprived of citizenship unless in terms of law of general application. However, anyone can approach

relevant courts if they feel aggrieved. Human Rights and the right to citizenship are deprived when one lives in an informal settlement without a proper address. Not having a physical address can mean a difference between life and death for those who live in informal settlements. For example, the absence of a traceable address may hinder emergency services in locating and assisting a pregnant woman without in urgent need of care.

The Millennium Development Goals (MDGs) of 2000 set a target to 'significantly improve the lives of 100 million slum dwellers by 2015' under the slogan, 'Cities without Slums'. This research paper argues that this target was unrealistic because it did not take into consideration the rapid population growth, urbanization, and other factors that have been widely researched by academic scholars. Huchzermeyer (2011:77) in her book titled; Cities with 'Slums' points out that the inaccuracy of informal settlement data points not only to deliberate falsification but also to the constant and rapid change that informal settlements undergo. As the process of informality responds to changing pressures, newcomers add structures, settlements densify or expand, occupation change, a rental market may emerge and expand, and may be reversed, leadership emerges and may be challenges, struggles for formal recognition and servicing may be waged, sections may be bulldozed, and others may consolidate (ibid.).

In his book Planet of Slums, Davis (2006:5) points out that slum populations are often deliberately and sometimes massively undercounted. Lack of proper information has negative outcomes for residents of informal settlements. This means that most urban inhabitants cannot be included in the municipal planning processes and budgeting. Fabricius (2008:6) noted that they evade or exceed administrative or bureaucratic oversight, as a result their settlements don't appear on the cadastral and their statistic becomes inaccurate. Although property rights are enshrined in section 25 of the Constitution, if one does not have a proper address their right is undermined. The enjoyment of property rights is interlinked with the right to an address. The lack of a traceable address has negative consequences for citizens residing in informal settlements; enjoying their property rights is not a luxury for them (Ahmad, 2020).

1.2 Informal Settlement Discourse In South Africa

The challenge with informality in South Africa can be traced the historical context of apartheid spatial planning which segregated communities according to race, location, employment opportunities, housing, and exclusion from urban cities and its benefits. The Group Areas Act, 42 of 1950 assigned racial groups to different residential and business sections in urban areas. The effect of the law was to exclude black people from living in the most developed areas, which were restricted to whites only. The Natives (Urban Areas) Consolidation Act, 25 of 1945 consolidated the "influx control". This Act was meant to severely restrict the movement of black people primarily in urban areas.

Blacks were seen as sojourners in the city. The Act was meant to control the influx of blacks to urban areas in South Africa. It limited the number of blacks who could live in urban areas. It was used to manage what Li (2010:68) referred to as 'surplus population'. It required blacks to prove that they had lived in an urban area since birth or had lived there legally for fifteen years or had worked for the same employer for ten years to be granted permanent residence. It tightened control on who could enter urban areas. A range of apartheid laws enacted over time had negative outcomes on the lives of black people. They were criminalized for not adhering to the laws of apartheid.

The researcher makes deduction on the negative impact that the apartheid laws had on housing delivery for poor blacks which resulted in the mushrooming of informal settlements pre-democracy as a strategy of resistance against segregation laws. Post-1994 brought along democracy in South Africa. Segregation laws were repealed, and some were amended to respond to the new order. The Group Areas Act and other segregation laws were removed from the statute books making it possible for people of different races to live, work, and stay where they like. The new order introduced the Bill of Rights which are enshrined in the Constitution, and they protect all rights of persons residing in South Africa, including the right to housing.

Many informal settlements in South Africa started mushrooming in the early 1990s as a form of resistance against apartheid spatial planning, which reserved housing near urban economic centres for white people. Drawn to urban areas in search of work, but without affordable housing options, many black South Africans rented backyard shacks or lived on unoccupied land near employment opportunities (SERI, 2019:4). Huchzermeyer (2009:59) describes informal settlements as the 'uncommodified, human face of South African cities.' Huchzermeyer (2011:23) explains that informal settlements are complex manifestations of

more than just poverty, yet poverty and a human resolve to live in the city are intertwined with and reinforced by many of the causes of informal settlements. Rapid urbanization in the 21st century has increased dramatically and has contributed to people moving to cities to seek employment opportunities and shelter.

Furthermore, the Integrated Urban Development Framework (IUDF:2016) notes that the overall picture is stark; individuals and households in South Africa are 'voting with their feet', by moving into provinces and areas where jobs are being created, and where household incomes are higher (CoGTA, 2014:17). Davis (2016:7) brings to the attention that the migration of people to cities has also brought along urban poverty's 'BIG BANG.' In South Africa, there is a need to appreciate the existence of hunger, poverty, inequality, high unemployment, slow economic growth, and lack of livelihood strategies in informal settlements.

Tissington (2012:6) reinforces the point that the urbanization of poverty constitutes one of the major challenges of our times. Pieterse 2008:35) suggests that the underlying causes are well-known, rapid and unprecedented urban growth, inequitable distribution of wealth, and the inability of the formal economy to create sufficient jobs, combined with the failure of public policy to secure people's access to basic needs. The pervasiveness of urban poverty is well documented. Davy and Pellissery (2013:8) assert that violations of the right to housing seriously impair the livelihood of residents of informal settlements. This social construct can be reversed through better planning, cooperation, collaboration, and partnership among stakeholders.

Informal settlements have been described using different terminologies such as slums, squatter camps, shantytowns, Imijondolo and *Mkhukhu*. The National Housing Code (2000) uses five characteristics to define informal settlements: illegality and informality; inappropriate locations; restricted public and private sector investment; poverty and vulnerability; and social stress. All these descriptions point to poverty, lack of access to secure tenure and inadequate access to public services and goods. Planact (2009:256) observed that informal settlements are unauthorized settlements with no consent for occupation from the landowner. They note that residents' occupation contravenes the official land use and planning standards, and informal structures contravene building regulations.

The quality of housing in informal settlements is substandard. It is primarily constructed from materials such as zinc, wood, second-hand bricks, and plastic. Most informal settlements are often poorly located in hazardous areas, such as mine dumps, sinkholes, wetlands, floodplains,

mountain slopes, riverbanks, refineries, and hazardous factories that release toxic fumes and despite the challenges mentioned, shelter remains one of the most basic needs for all human beings (Tshumelo, 2012:16). Our needs for safety and security are expressed in decent shelters (ibid.). In Maslow's hierarchy of needs, safety is identified as the second most important need for humans to feel safe and secure (Maslow 1943). The key challenge facing most informal settlements is that they are unplanned and unproclaimed residential settlements that fall outside of the legal recognition. This means that they are often overlooked in municipal planning processes, including the budget allocation.

Arguably, poor people residing in informal settlements are generally considered to be a lower social class at the margins of society. The deplorable conditions in which residents of informal settlements find themselves have become a norm. They are prone to flooding due to poor drainage system. Most people, especially children and women, experience health problems due to poor or non-existence of proper sanitation system.

The reframing of informal settlement debates is critical. Centre for Development Enterprise (CDE, 2013:9) argues that portraying them as sinister, criminal, and harmful to the nation is not helpful as it perpetuates a negative stereotype. Informal settlements must be viewed in the context of their integration into the broader urban economy (ibid.). The key policy framework intended to respond to informal settlement crises is a Comprehensive Plan for the Development of Sustainable Human Settlements, popularly known as the Breaking New Ground, ' which was adopted in 2004. The plan emphasizes the importance of upgrading informal settlements and recognizing the need to integrate informal settlements into the broader urban fabric to overcome spatial, social, and economic exclusion. Informal settlements cannot be wished away; they are here to stay because the root cause has to do with poor urban management policies that are unresponsive to the needs of the urban poor.

Beattie *et al* (2010: 2) raised a concern that the growth of urban population is happening at a rate many times faster than the state's capacity to plan, build, and manage urban settlements to meet the housing demand. The provision of lifeline infrastructure lags far behind the pace of urbanization (Davis, 2006:7). Despite these challenges, the CDE (2013:2) reaffirms that the location of these settlements provides easier access to the opportunities that cities offer but must be integrated into the broader urban economy (ibid.). Davis (2006: 7) in his book Planet of Slums, sees that despite how deadly and insecure slums are, they have a brilliant future.

Street naming and addressing in South Africa's informal settlements is not explicitly stated by UISP and NUSP, but these programmes could consider and enable street naming and addressing in informal settlements. Municipal by-laws and donor-funded projects, such as those by the World Bank, often focus on roads and services but rarely prioritise address provision. Community demand for addresses varies residents typically prioritise basic services and tenure security, but support addressing when it helps with service access or recognition. NGOs like Planact have led digital addressing efforts, but these remain small-scale. Overall, the lack of clear policy, limited resources, and political sensitivities hinder widespread implementation, making addressing both a technical and socio-political issue. The author asserts that with a properly recognized address system in informal settlements, the future is bright and full of possibilities, as we shall see later in the case studies in chapter 3.

1.3. Rationale And Problem Statement.

This research advances the central argument that the provision of addresses in informal settlements has the potential to significantly enhance residents' quality of life. It explores how having an address can restore dignity, promote social inclusion, and act as a catalyst for broader transformation. Moreover, the study argues that municipal planning and budgeting processes can be more effectively aligned with the needs of informal settlement residents when reliable address data is available. The absence of addresses creates numerous challenges: it deprives individuals of formal recognition by the state and service providers, limits access to basic human rights such as obtaining identity documents, voting, or receiving social services, and weakens their standing in society despite holding citizenship. An address is not merely a spatial locator; it is a fundamental tool for citizen participation in governance, particularly in a representative democracy like South Africa. Without a traceable address, the full realization of citizenship rights remains out of reach.

The first challenge is that the legacy of apartheid has left dysfunctional rural and urban cities. Adegeye and Coetzee (2019:376) argue that many efforts have been made by the South African government to transform the distorted spatial landscape that resulted from the past apartheid planning, policies, and legislation. The various policies and legislations that were developed post-1994 did not fully achieve the transformation and development results that were promised by the government in 1994(ibid.). However, since the end of apartheid, urban centres have become a magnet attracting people who are searching for employment opportunities and services. This has resulted in the mushrooming of informal settlements at the periphery of cities

with no proper addresses. This informality has been growing at an unprecedented rate. MacFarlane (2012) argues that ‘as cities grow, they become increasingly unequal and fragmented.

Secondly, the COVID-19 pandemic further exacerbated the informality problem. Many people lost their jobs and bonded houses because of businesses adhering to the regulations of lockdown and temporarily closing their businesses. Some companies never recovered and were forced to either retrench their staff or close their businesses. Most people found themselves without proper shelter and opted to reside in informal settlements. This brought a host of challenges for local and national governments. The most visible challenge is to provide adequate urban services for new arrivals. The rapid growth of informal settlements places great stress on municipal infrastructure.

Denoon-Stevens and Jones (2023) conclude that urban spaces are characterized both by formal, regulated, planned practices and by their more informal, spontaneous, grassroots, and unplanned character. However, in South Africa, it is not unusual for informal settlements to be located side-by-side with affluent or formal areas. The location of the informal settlement is primarily influenced by employment opportunities and other urban benefits. This creates a binary situation that requires innovative policy and implementation interventions that caters to both contexts. Simone (2011:356) argues that as we try to grasp the multiple visible and invisible realities of the urban, they are ‘always slipping away’ from us.

Another challenge is that new arrivals in cities require the provision of services such as water, refuse removal, proper sanitation, and constant demand for electricity. UN-Habitat (2010) affirms that "this transition to a predominantly urban world is irreversible and brings with it equally irreversible changes in the way we use land, water, energy, and other resources.” Therefore, if informality is not addressed, the cycle of irreversibility continues.

Apart from residents in informal settlements being left out of planning processes and all other poor conditions due to the lack of services, the lack of addresses in communities exacerbates issues of safety and access to basic services. The South African Police Service and emergency health services use global positioning systems to access scenes of crisis (Planact, Digital Addressing in Skoonplaas, 2022). This leaves the most vulnerable residents of informal settlements at a greater risk, as police or ambulances may not arrive in time at a scene of domestic violence or medical emergency without a traceable address.

The invisibility of informal settlements in municipal planning processes makes it difficult for marginalised communities to be included in legislated planning processes, such as integrated development planning (IDP) and participatory budgeting (UN-HABITAT, 2010). Even though informal settlement dwellings have the lowest rank in the housing strata, the government does not give them the priority they deserve. South Africa has arguably one of the best programmes for upgrading informal settlements such as the Upgrading of Informal Settlement Programme (UISP). However, the implementation of these programmes could benefit from including traceable addresses. For instance, the UISP aims to upgrade informal settlements in situ rather than relocate residents, promoting citizenship through rights and responsibilities. It focuses on creating safe, inclusive environments by empowering communities, encouraging participation, and addressing social needs, grounded in principles of the right to the city, citizenship, and dignity (BNG, 2014). Although not explicitly mentioned in the UISP policy, providing address in informal settlements is a key component of the incremental upgrading process. An address restores the elements of dignity and citizenship.

Breckenridge (2014) argues that states have long used biometric systems as tools of control, identification, and coercion. In both colonial and post-colonial contexts, biometric technologies have supported bureaucratic functions such as vital registration, voter roll creation, welfare distribution, credit control, identity documentation, and immigration policing. South Africa is not an exception, with an estimated 2700 informal settlements (GCIS,2022), verifying addresses in these areas can be exceptionally challenging. Amongst the methods used for identification of citizens are the centralized fingerprint identification system, birth registration, issuing of identity document, passport, driver's license, marriage certificate and death certificate. With the move from paper to technological advancement, the form of identification has significantly changed, there is now automated recognition of individuals such as facial, hand and voice recognition. For undocumented immigrants and those who conflict with the law they would prefer to reside in informal settlements with the hope that they will not be detected due to lack of traceable address.

The difficulties of navigating informal settlements have resulted in emergency services being hesitant to respond to calls, leaving community members unattended to and being exposed to danger. Lack of addressing also affects the economic growth and sustainability of any community. Business owners rely on networks for the survival of their enterprises. Therefore, small businesses set up in informal settlements find it difficult to acquire business support from

large suppliers (Planact, Planning for Local Economic Development, 1998). They cannot connect to the larger network of entrepreneurs in their area and cannot advertise their businesses beyond word of mouth. Informal settlements cannot be divorced from the urban setting. They form part of the urban city ecosystem. Saunders (2010: 3) describes that cities provide the potential for people to move out of poverty and build better lives for themselves and their families. That much attention must be devoted to these areas as they "are not just the sites of potential conflict and violence but also [potentially] the neighbourhoods where the transition from poverty occurs, where the next middle class is forged, [and] where the next generation's dreams, movements and governments are discovered"(ibid.). Saunders argument reaffirms the notion of the "right to the city" trajectory. The right to the city is a collective right of all the inhabitants especially the vulnerable and disfavoured (Huchzermeyer, 2017).

1.3 Objectives

The objective of the research is to understand the following:

- Can an addressing system improve the lives of residents living in an informal settlement?
- What are the impacts of the addressing system in an informal settlement.
- What are some of the shortcomings of the addressing system in informal settlements.
- What are the possible solutions to these shortcomings.

1.4 Main Research Question:

The research question is primarily informed by different literature reviews on addressing informal settlements and personal experience and observation.

Main Research Question:

How does having an address in an informal settlement impact people's quality of life? An evaluation of address systems in Informal Settlements in South Africa: A case study of Thembelihle and Skoonplaas informal settlements.

Sub questions.

- Does South Africa have a policy on informal settlements addressing?
- What is the current practice on addresses for informal settlement at the municipal level (comparison between Ekurhuleni and City of Joburg)?
- How does the lack of an address impact the right to dignity in an informal settlement?

- What is the value of an address in an informal settlement?
- What key lessons about the importance of an address in an informal settlement in South Africa can be used to enhance policy?

Through this research, the intention is to contribute to the existing body of knowledge on digital addressing in informal settlements in South Africa, and to help fill critical gaps in understanding this emerging topic. The study focuses on a digital address pilot project implemented in the Skoonplaas and Thembelihle informal settlements, examining their similarities and differences in implementation and outcomes. It also draws on several other relevant case studies as reference points to broaden the analysis. The research aims to highlight how policy gaps have affected the implementation and effectiveness of addressing systems in informal settlements. Lastly, it seeks to document the tangible benefits of having an address in such contexts, particularly in terms of access to services, social inclusion, and enhanced governance.

1.5 Research Methodology

This section explores the methods that will be used in this research report. The research method to be used will be qualitative, using interviews as primary sources and using other literature as secondary sources. Yin (1994: 1) points out that case study is but one of several ways of doing social science research. In general, case studies are the preferred strategy when “how” or “why” questions are being posed (ibid). Yin (1994) points out that case study research is a linear but iterative process, which includes several steps. Patton (1990:54) supports the use of qualitative case studies indicating that this enables the research to describe the units of analysis in depth, detail, and context.

Patton (1990) argues that although there are criticisms of the use of qualitative inquiry, namely that such research is subjective; it is still useful as a research method tool. Burawoy (1998:5) makes a point that the extended case method applies reflexive science to ethnography to extract the general from the unique, to move from the “micro” to the “macro”, and to connect the present to the past in anticipation of the future (ibid). It must be acknowledged that a case study cannot be isolated from the political, social, and economic context within which it takes place (ibid). I am particularly drawn to Yin and Patton's (1994, 1990) case study approach.

The case study research is based on two informal settlements (Skoonplaas and Thembelihle) located in two Metros (the City of Ekurhuleni and the City of Johannesburg), these two Metros are both located in Gauteng Province. They are the sites where the digital address pilot project

took place. Both sites have people residing in them and have shacks built in the settlements hence both settlements were identified as research sites. The research drew comparisons between the two informal settlements with a focus on addressing policies.

Sampling and interview approach: 8 pre-selected people who fall under the different categories listed below were interviewed:

- Ward councillors: They are the representatives of the municipality, and they are responsible for developing and monitoring local by-laws of the municipality. They were able to share their experiences in crafting local policies, and 2 ward councillors were interviewed.

- Municipal officials: They are the representatives of the municipality, and they are responsible for implementing municipal policies. They are normally referred to as administrators or bureaucrats. They assisted with sharing their lessons regarding the applicability of the policies, and 2 municipal officials were interviewed.

- Community leaders: They are representatives of the community. They are responsible for engaging with the local municipality for improved, effective service delivery. They are the users of public services. They assisted with sharing information on the challenges and opportunities they face in their community, 4 community leaders were interviewed.

- Questionnaire: a questionnaire for each category of interviewees was developed. Also, the questionnaire was divided into themes for data capturing and processing purposes. The questionnaire had open-ended questions to stimulate responses, with each lasting for approximately an hour. Each questionnaire had a code for easy reference.

- Focus group: As part of the qualitative research approach, focus group discussions (FGDs) were conducted to gain in-depth insights into the impact and implementation of the digital address system. One focus group was held with community members to explore their experiences and perceptions of how the introduction of digital addresses has influenced their daily lives, access to services, and sense of inclusion within formal urban systems. This discussion aimed to capture the social and practical outcomes of the initiative from the

perspective of residents. A second focus group was conducted with the team from Planact, the organization involved in implementing the digital addressing process. This session seeked to understand the methodology, challenges, and strategic decisions involved in rolling out the digital system, including community engagement, technical processes, and institutional collaboration. Both focus groups were recorded and transcribed, with thematic analysis applied to identify key patterns, insights, and areas of convergence or divergence between community and implementer perspectives.

The research tools that were used during the study:

- Interviews: a tape recorder was used to capture the discussion and take notes when necessary. The data collected was according to the themes. The interviews were transcribed, and the transcript was returned to the informant to read and comment on it. This assisted in two folds, Firstly, the interviewee had the opportunity to correct or amend any misrepresentation that may have been committed during the interview, and secondly, this made the interviewee feel a sense of ownership of the product which in this case is the final research report.
- Secondary data: information from different outsourced documents relevant to the research was collected and analyzed. Desktop research was conducted, and observation and a literature review was compiled to gather information on trends and practices of other countries.
- Fieldwork: Throughout the fieldwork in Skoonplaas and Thembelihle informal settlements, a diary was kept which was used for appointments. This includes an entry for each day in which direct contact was made with interviewees.
- Data Capture, Processing, and Analysis: Once all the interviews have been completed, a long process of capturing and cleaning the data took place.

1.6 Ethical Considerations

According to Neuwirth cited in Weakly (2013) "the researcher has a moral and professional obligation to be ethical, even when research subjects are unaware of or unconcerned about ethics". Drawing from this and considering that my research is focused on humans, I must

ensure that my research interviewees clearly understand the nature of the research subject and its intention. I first explained the objectives of the research before conducting interviews. After obtaining consent, the interview then proceeded. If the interviewees requested for anonymity, the researcher obliged and even undertook to send them the scripted outcome of the interview. The guaranteed of anonymity is supported by Neuman cited in weakly (2013) who asserts that, "Anonymity is the protection of the identity of a specific individual from being known."

Interviewees who participated in this research, did so voluntarily and with the full understanding of the intention of this research report. The researcher explained to the interviewees that this research does not have any form of incentives. Participants were also assured that their responses or answers are stored on a password-protected computer available only for the researcher for three years.

1.7 Positionality

The author conceptualized and implemented the digital address pilot projects in Skoonplaas and Thembelihle informal settlements. In accordance with academic requirements and expectations as a master's student, the author will uphold high level ethical expectations and will not influence or otherwise the interviewees' opinions. The author will draw from personal observation during the implementation of the pilot projects without compromising the quality of the research report.

1.8 Limitations

There are several limitations that the research may come across. The upcoming national elections in 2024 pose a challenge to the availability of ward councillors who are busy campaigning for their political parties. Due to insufficient funds, the researcher not able to gain assistance with my fieldwork interviews, and this is posing a strain on my research output. The time allocated to finish the report may not be flexible.

1.9 Structure Of the Research

Chapter 1 covers the background and introduction to this research proposal. Included in the chapter is the following sections: informal settlement and discourse, objectives of my research report, rationale and problem statement identified, research question questions, conceptual framework, research methodology, limitations, and assumptions.

Chapter 2 covers the literature review exploring the following concepts: what and why is an address important, address as a tool for transformation, what does the right to the city mean for informal settlement residents without an address, spatial (in)justice as a tool for social exclusion in South African informal settlements and lastly the chapter draws summary of the literature review section.

Chapter 3 of this research covers the case studies of Skoonplaas and Thembelihle informal settlements. It covers their status and location, the policies informing an address, the implementation of the digital address process, and the response of respective municipalities on the digital pilot project.

Chapter 4 covers the outcomes of the interviews conducted using the questionnaire developed by the author, the critique of the interviews, and the lessons learned.

Chapter 5 covers the research findings and discussions.

Chapter 6 provides findings and recommendations, including issues that require further research and the conclusion of the research proposal.

CHAPTER 2: LITERATURE REVIEW.

2.1 Introduction

This chapter deals with a literature review on the concept of addressing informal settlements, what and why is addressing important for informal settlement residents, the benefits of having an address, and the negative impact of not having an address. The right to the city, dignity, and citizenship from the lens of informal settlement residents. This chapter will contribute to framing the discourse on the concepts mentioned above. The concepts of addressing, the right to the city, dignity, and citizenship have been researched and documented extensively by different scholars. The volume of literature available in the public domain bear testimony. However, this research intends to contribute to the already existing academic literature by researching the practices of digital addressing in the South African informal settlement's context.

The Integrated Urban Development Framework (IUDF, 2016) marks a New Deal for South African cities and towns. It sets a policy framework to guide the development of inclusive, resilient, and liveable urban settlements while addressing the unique conditions and challenges facing South Africa's cities and towns. Despite significant service delivery and development gains since 1994, apartheid spatial patterns have largely not been reversed. South Africa's urban areas continue to be hampered by a legacy of racial segregation, poverty, and exclusion from social and economic opportunities (IUDF: 2016). The National Development Plan (2012) recognizes that the fundamental reshaping of the colonial and apartheid geography may take decades to eradicate.

2.2 What And Why Is an Address Important?

Demir and Raskar (2018) make a case for 'addressing the invisible', they point out that more than half of the world's roads lack adequate street addressing systems. The lack of addresses is even more visible in the daily lives of people in developing countries (ibid). Currently, 75% of the roads in the world are not mapped, and this number is increasing in developing countries (ibid). Against this backdrop, systems of identifying streets, buildings, and other land use are simply unable to keep up with the pace of urbanization. This creates a troublesome predicament for urban services. With no proper system of street coordinates and no baseline information such as in informal settlements, how does one find their way around in a constantly growing city? The lack of street names and house addresses in informal settlements makes it more difficult for the residents of the settlements to enjoy urban benefits such as access to goods and services.

In the absence of a traceable address, fault reporting becomes a major challenge. Farvacque-Vitkovic et al (2015: vii) argues 'How do you locate urban facilities and infrastructure? How do you pinpoint breakdowns of water, electricity, and telephone systems? How do you improve the on-site collection of water and electricity bills? The lack of proper traceable addresses in informal settlements in South Africa exacerbates an effective fault reporting system of broken infrastructure such as communal taps, waste collection, and un-serviced chemical toilets that require maintenance. An address plays a vital role in identifying the location of different land-use such as a dwelling, a plot, a taxi rank, streetlamps, multipurpose buildings, churches, mosques, and communal taps. Once plotted on a map and assigned an address their key fixtures become useful for everyone. Farvacque-Vitkovic et al (2015) point out that one's home address is an integral part of personal identification.

Kubuga et al (2023: 1) outlining the implementation of the digital addressing system in Ghana has this to say; 'the traditional method of giving directions using prominent landmarks and physical features of a location has become outdated in modern times. The development of various types of addressing systems has led to the digital address system becoming the fundamental unit for location data (ibid). In modern times the digital address system has become more useful than other descriptive systems like personal identification numbers, and telephone numbers (ibid). In South Africa, it is common for people residing in informal settlements to use landmarks of prominent features that are well known, such as I reside on the first house on the right after Vodacom booth (SANS 1883-1:2009 Edition 1), or next to a spaza shop with big windows, or next to a big tree, or a green shack.

The challenge is that this kind of description is fraught with challenges, in case the tree is removed, or a spaza shop closes, or the shack is painted with a different colour the point of reference is lost. In the case of an emergency, how does an ambulance or fireman find you? How can law enforcement officers be dispatched quickly in the event of an emergency? The author Kubuga et al reiterates that an address in an informal settlement is not a luxury, but a human rights issue.

The South African electoral system requires one to have a traceable address for voter registration and participation. In the case before the South African Constitutional Court of Mhlophe and Others (Case CCT 55/16), The Court ruled that "the Electoral Commission's failure to record all available voters' addresses on the national common voters' roll is inconsistent with its rule of law obligations imposed by section 1(c) of the Constitution and

invalid". The court went further that linking every registered voter to a geographical location through a place of residence helps ensure the integrity of the voters' roll and therefore bolsters the sacredness of these promises. Tying voters to addresses is critical for two reasons.

First, they allow parties, particularly in tight races, to identify and reach individual voters for canvassing. Second, they provide a way to monitor voter fraud by letting candidates and parties review the voter roll, examining each voter and location, to prevent fake registrations, non-existent voters, and "bussing-in" the practice of transporting voters from other areas to a polling place for fraudulent voting.

The Court noted that the legal framework mandates the inclusion of voters on the voters' roll, with the Electoral Act connecting registration to a person's place of residence. It specifies that a voter's "name must be entered in the voters' roll only for the voting district in which that person is ordinarily resident and for no other voting district". Section 16(3) obliges the chief electoral officer to "provide copies of the voters' roll, or a segment thereof, which includes the addresses of voters, where such addresses are available, to all registered political parties contesting the elections".

These statutory responsibilities are the basis for this application. The Commission argues that the high number of address-less voters can be attributed to the prevalence of informal settlements and that rural provinces have a backlog due to the inability to gather meaningful descriptive data before the introduction of the REC AS form in 2016. The Commission highlights the steps it has taken to encourage address-less voters to provide their addresses. This court's decision prompts the Commission and government to seriously address the issue of addresses in informal settlements.

To open a bank or retail account, all which is required is an ID book and proof of residence, but for citizens living in informal settlements, these requirements present a challenge. They are often forced to find creative ways to bypass or navigate bureaucratic hurdles, as noted by Fabricius (2008:6). Frequently, residents of informal settlements "borrow" or use the formal addresses of relatives or friends living in formal areas. The municipality faces a significant decision in choosing whether to implement a street addressing system for informal settlements or allocate funds to other capital projects, especially considering the reduction in budget allocations from the national treasury. Farvacque-Vitkovic et al. (2015) suggest that municipalities might opt not to implement a street addressing system due to the illegal status of the settlements.

Farvacque-Vitkovic et al. (2015) highlight several advantages of having an address, including improved street coordination and easier navigation within settlements. The data collected during the addressing process can help local municipalities plan and allocate resources more effectively for informal settlements. With an address, municipalities can begin billing residents for services like water and waste collection, as they will be able to locate each household. The private sector, particularly delivery service providers, can also benefit from having traceable and recognised addresses, as it allows them to quickly and accurately find delivery locations. The address system must be simple and user-friendly, as a more complex system would undermine its purpose.

COVID-19 presented significant challenges, particularly for residents of unplanned settlements. How can the COVID-19 tracking system function in areas without proper addresses? If someone in an informal settlement contracts COVID-19 and has been in contact with others, how can they be traced without a street name or specific address? This underscores the urgent need for municipalities to accelerate the establishment of proper addressing systems in unplanned areas.

2.3 Address As a Tool for Transformation.

Addresses vary in type, as they serve different purposes. These address types must adapt to the current situation where no designated authorities are responsible for assigning standardized addresses based on specific guidelines. Any new addressing system must consider the distinct characteristics of informal settlements. There are alternative address systems, like What3Words, which have been implemented in other countries. What3Words is a proprietary geocoding system designed to pinpoint any location on Earth with a precision of around 3 meters. This research focuses on the Plus Code digital address system for informal settlements in South Africa, where no established guidelines or procedures exist for creating an address system. The Plus Code address system is a precise tool used in areas without formal addresses, such as informal settlements, and will be explained in detail in Chapter 3.

In 2015, member states of the United Nations (UN) adopted the 2030 Agenda for Sustainable Development, with the theme "Transforming our World." The Sustainable Development Goals (SDGs) provide a roadmap to create a healthier and more sustainable future for all. Seventeen interconnected goals aim to ensure that no one is left behind, including those living in informal settlements. The SDGs are set to be accomplished by 2030, street addressing, including digital systems such as Plus Codes, plays a vital role in achieving several Sustainable Development

Goals (SDGs), especially SDG 1 (No Poverty), SDG 11 (Sustainable Cities and Communities), and SDG 16 (Peace, Justice and Strong Institutions). While often overlooked in policy frameworks, recent literature highlights that addresses are essential for accessing basic services, social protection, financial inclusion, and formal recognition within the state system (Barry & Fourie, 2021; Gonzalez et al., 2020). For instance, the Universal Postal Union's "Addressing the Unaddressed" initiative demonstrates how giving addresses to informal settlements directly supports SDG 11.1 by aiding slum upgrading and ensuring inclusion in urban development (UPU, 2021). Similarly, UNDP and ITU (2023) report that digital infrastructure, including digital addressing, could directly support over 70% of SDG targets.

Empirical case studies from cities like Buenos Aires show how address provision can legitimise informal settlements, enable service delivery, and promote community integration into municipal systems (IISD, 2022). However, much of the literature treats addressing as an enabler rather than a core development goal, and few studies rigorously measure its socio-economic impact over time (Satterthwaite et al., 2020; Friedman, 2021). There are also institutional and technical challenges, including weak integration of community-generated addresses into formal systems, digital exclusion, and the lack of standardised indicators to monitor address coverage within SDG reporting (Lemanski, 2020; SDG Joburg Tracker, 2023). Thus, while street addressing clearly supports the delivery and monitoring of SDG targets, particularly in informal urban areas, further research is needed to assess its long-term developmental impacts and to embed it more explicitly into SDG-related policy and planning frameworks.

In the South African setting, the Integrated Urban Development Framework (IUDF, 2016) outlines Policy Level 3, which seeks to create "cities and towns that are liveable, integrated, and multi-functional, where all settlements are well-connected to essential services and areas of employment." This includes informal settlements. Achieving this goal will require a new approach to collaboration and partnerships, with informal settlement residents playing a central role in designing and upgrading their settlements. As noted by Slum Dwellers International (date unknown).

The Millenium Development Goals (MDGs) set a target to 'significantly improve the lives of 100 million slum dwellers by 2020 under the slogan, 'Cities without Slums'. Chitekwe-Biti cited by Reuters Foundation (2023: 1) argues forcefully that "getting cities without slums is a

pipe dream [but] having slums where people's dignity is respected is a possibility". Perhaps like pipe dreams, informal settlement residents have dreams.

Pieterse (2008: 1) makes a point that dreams are made up of desires and fears, even if the thread of their discourse is secret. Perhaps the right to dignity for informal settlement residents can significantly be restored through proper traceable addresses and the pipe dreams can be turned into reality. For the dreams to be realized, the process of 'bottom-up' approaches must be deliberately applied so that they feel a sense of ownership and this approach is most likely to restore the dignity of residents of informal settlements. Community-led digital addressing in informal settlements transforms communities by providing formal addresses, enabling access to essential services like emergency response and facilitating better data collection for planning and development. This community-driven process empowers residents, promotes data justice, and serves as a tool for urban transformation by creating a formal record of settlements and fostering community ownership of local data and development initiatives (Pérez-Serrano et al, 2024).

The Back to Basic document (COGTA, 2014) affirms the notion of putting people and their concerns first and ensuring constant contact with communities through effective public participation platforms including the residents living in informal settlements. The concept of "leaving no one behind," including residents of informal settlements, resonates strongly with the idea of using an address as a tool for transformation. Like any other community, residents of informal settlements aspire to improve their living conditions (Isandla, 2012: 3). Specifically, they aim to transform their settlements into safe, clean, and liveable spaces.

Residents of informal settlements recognize that lacking a proper address means lacking civic identity. Farvacque-Vitkovic et al. (2015) highlight that an address is fundamental to developing a civic identity. In an informal settlement, an address can serve as a catalyst for strengthening community bonds, building networks, creating sustainable livelihoods, and improving the settlement overall. The South African government's Upgrading of Informal Settlement Programme (UISP) acknowledges that communities possess "deep-rooted knowledge" of their settlements, which should be utilized (Isandla, 2019). Residents understand the spatial layout of their settlements and generally know who occupies which plot. This insight makes a community- led participatory addressing process a viable approach. The UISP policy stresses the importance of community participation for successful implementation.

South Africa is known for having one of the most progressive participatory local governance policies globally (van Donk, 2013a:12). Key policies, such as the Municipal Systems Act (2002), Chapter 4, require municipalities to develop participatory governance systems where citizens can contribute to decision-making. The author of this report argues that the digital addressing process should be community-driven, with strong participatory processes at its core.

Breaking New Ground (2005) emphasizes that upgrading interventions should be responsive to local needs and led by the community. Evidence shows that meaningful community participation is essential for creating sustainable neighborhoods, especially during the upgrading process. Outcome 8 (2010) asserts that such participation is crucial for ensuring that informal settlement residents adopt upgrading projects as their own, motivating them to maintain and care for their settlements.

The IUDF (2016) recognizes that communities can shape the development of their spaces and should be empowered to transform their quality of urban life. For example, “only the residents can produce an accurate socio-spatial map of an informal settlement because only they understand the social interaction with spaces" (Slum Dwellers International, date unknown).Although the BNG and IUDF do not explicitly state that informal settlements must have a traceable address, it is implied that any upgrading intervention should include the creation of some form of addressing system to effectively manage the settlement.

There are many informal settlements within and around cities, providing low-income households with improved access to livelihood opportunities and urban benefits. However, the absence of addresses for residents in these settlements prevents them from living in a well-organized and functional community with access to essential infrastructure like sanitation, water, and electricity, and economic opportunities. While the Upgrading program does not directly mention addressing in informal settlements, it is implied within the policy due to the incremental nature of development. Cirolia et al. (2017: 20) argue that incrementalism offers significant advantages. By embracing small, gradual changes, incremental upgrading is more adaptable and responsive to the evolving needs, demands, and aspirations of affected households and communities. With this approach residents are involved in the planning and design process, which allows for the development of a more adaptable and appropriate street addressing system. This fosters trust and ensures that solutions meet community needs.

Informal settlements, as they exist today, are full of life, social networks, and economic connections (Pieterse, 2008: 57). They not only consume goods and services but also engage in various informal activities, such as informal trading, waste recycling, early childhood development, "Spaza" shops, shebeens, barber shops, and more, which help create economic corridors, often without even realizing it. Pieterse observes that informal settlements are vibrant and dynamic. Perhaps an address in this context could further enhance the vibrancy of these communities. Simone (2013) notes that “what people can do with each other is largely a question of what it is that exists between them,” emphasizing that, as Pieterse noted, social networks and economic connections are crucial in strengthening community cohesion.

2.4. What Does the Right to the City Mean for Informal Settlement Residents Without an Address?

Informal settlements are often the first place where new arrivals to urban cities settle. When people move to a city, they establish themselves through the intersection of infrastructure, technical systems, and various forms of occupation, such as settlement and work, which are shaped by these factors (Simone, 2013:1). The IUDF (2016:10) highlights that cities cannot thrive without the energy and investment of their residents. The strength of cities lies in the critical mass of social and cultural diversity they possess (ibid.).

The argument advanced is that empowered communities contribute to shaping the development agenda of their space and transform their settlements into liveable areas. Informal settlements residents can creatively transform their space into liveable settlements including creating addresses or some form of identity albeit not recognized by the local municipality. Perhaps Saunders had an informal settlement in mind; 'cities should be places where all human rights and fundamental liberties are realized and where the dignity and collective wellbeing of all persons is assured under conditions of equality', Saunders, (2010: 3). This argument reaffirms the notion of the "right to the city" trajectory.

The right to the city guarantees that all residents can enjoy, occupy, and live in inclusive, sustainable, and safe urban environments (Planact, 2023: 5). In the South African context, the right to the city will influence a) active citizenship (such as recognizing and supporting the choices of the poor), b) urban planning and resource distribution, and c) local governance (Isandla Institute, 2011:11). World Charter on the Right to the City (2005) affirms that 'The Right to the City is defined as the equable enjoyment of the cities while respecting the principles of sustainability, democracy, and social justice, and is a collective right of all city inhabitants especially the vulnerable and disfavoured on whom is further conferred legality for such actions and organization as their culture and custom suggests as a means of achieving the complete enjoyment of the right to an adequate standard of living. The Right to the City is interdependent with all recognized international human rights; and its conception is based on an integral view, which includes civil, political, economic, social, cultural, and environmental rights enshrined in the international Human Rights Treaties.

Lefebvre (1993: 435) writes; "The right to the city" cannot be considered a simple visiting right or a return to the traditional city. According to Lefebvre (1996), there is no urban reality without

the city centre. The city centre is the place of encounter hence all city inhabitants should have access to it. Perhaps Lefebvre had South African cities in mind. Just like informal settlement citizens, they cannot the considered visitors in the urban cities. The recently released statistics census (2022) indicates that the South African population has increased by 1.8% from 2011 to 2022. Consequently, this has resulted in the high demand for housing and other services and goods.

Cities should be places where all human rights and fundamental liberties are realized and where the dignity and collective well-being of all persons are assured under conditions of equality. Harvey (2008: 31) advances a debate that the quality of urban life has become a commodity, as has the city itself. "Increasingly, we see the right to the city falling into the hands of private or quasi-private interests" (Ibid). As Harvey expands the argument, "this most recent radical expansion of the urban process has brought with it incredible transformations of lifestyle. In a world where consumerism, tourism, cultural and knowledge- based industries have become major aspects of the urban political economy''. This leads to negative consequences for residents of informal settlements, particularly as they are the first to accommodate new arrivals to urban areas. Informal settlements often feel excluded from the benefits of urban cities, as the lack of recognition, absence of tenure, and their illegal status prevent them from claiming ownership of property. Furthermore, their lack of a traceable address makes them effectively invisible.

The right to the city cannot simply be added to the current urban agenda (Huchzermeyer, 2011). The competitive urban agenda excludes the residents of informal settlements, who are pushed to the margins of society. These residents find themselves in a difficult position, becoming passive observers and casualties as cities compete to attract investors and maintain a clean, tourist-friendly image (Pieterse, 2008).

Harvey (2008) argues that the type of city we want is inseparable from the social ties, relationship to nature, lifestyles, technologies, and aesthetic values we aspire to. The right to the city is more than just the individual freedom to access urban resources; it is a right to transform ourselves by transforming the city. Moreover, it is a collective right, as this transformation depends on the collective power to reshape the urbanization process.

In the absence of sufficient formal housing, informal settlements become the only option for many South Africans. As Lefebvre observes, traditional cities have changed. Like South

African cities, they now attract diverse populations, including rural-to-urban migrants, newcomers from other provinces, and other migrants. Lefebvre argues that the right to the city can only be understood as the right to urban life in a transformed, renewed form. This right to urban life brings essential benefits, such as access to employment, economic opportunities, and goods and services.

Dikec (2001: 1790) argues that the right to the city is not just a participatory right, but more importantly, an enabling right that is shaped and defined through political struggle. Implementing an address system in informal settlements requires a policy that enables this system to function effectively. I will further explore this enabling right in my research. An enabling right demands recognition and support through political backing and a supportive legislative framework. Dikec (2001) also asserts that the right to the city is not just about access to urban space, but also about access to political space. Therefore, having an address in an informal settlement is a political right. As demonstrated in the court case between Mhlophe and Others (Case CCT 55/16), elections, as a political process, require a registered home address to participate in voting. Without a traceable address, one's political rights are diminished, which in turn reduces their right to the city in this context.

Thus, it is crucial for informal settlements to have some form of address. Demir and Raskar (2018:1) reject the idea that having an address is a luxury. On the contrary, the belief that having an address in an informal settlement is a luxury is false. An address is a human rights issue, as it restores dignity and reinforces the concept of the right to the city. Huchzermeyer (2011: 66) points out that for informal settlements in African cities, the first step in realizing the right to the city is securing the spaces of these so-called 'slums,' transforming them from temporary, uncertain spaces to permanent ones within the city. To truly realize the right to the city, the United Nations reports that 4 billion people are effectively invisible due to the lack of addressing systems in developing countries (Demir and Raskar, 2018:1). There is a high probability that most of them resides in informal settlements.

In addition to restoring dignity, confirming one's human rights, and affirming the right to the city, having an address also validates one's citizenship as a member of the global community. Pali (2024: 3) defines citizenship as the legal status of belonging to a nation-state, granting the right to reside there. Most people are legal citizens of some nation, which entitles them to certain privileges and rights, with the right to have an address being one of the fundamental rights.

An address is a public good that should be achieved through active citizenship. Active citizenship is inherently linked to the broader concept of citizenship. According to Hingels et al. (2009:4), active citizenship involves widespread participation in political actions, democratic processes, civil society, and community support. It is about individuals or collectives negotiating access to public goods and services in ways that are publicly sanctioned and protected. Von Sinner (2015:447) adds that citizenship should involve actions that contribute to the public good and be accompanied by constructive discussions that build the community.

The concept of citizenship extends beyond just the constitutional right to vote. Van Donk (2013:11), in his article Citizenship as Becoming, argues that active citizenship is multi-dimensional, encompassing both vertical relationships (citizens engaging with the state) and horizontal relationships (citizens engaging with one another). Mayson (2013:14) observes that residents have greater potential to influence development processes that affect them. These relationships will be explored further in the case study.

Cornwall et al. (2008:35) emphasize that citizenship is not merely an identity but something that is performed, affirmed, and reconstituted in various ways across different spaces. Van Donk (2013) supports this by stating that citizenship is lived, enacted, and redefined within a specific context. The idea of citizenship involves claim-making and the micro-politics of everyday life (van Donk, 2013). The two case studies will demonstrate how the absence of an address in informal settlements creates an ongoing struggle for residents, undermining their dignity and citizenship. However, the research will also show how community members, in response to the lack of a traceable address, become active social actors by implementing a digital address system with support from an intermediary organization.

2.5 Spatial (In) Justice as A Tool for Social Exclusion in South African Informal Settlements.

The issues of exclusion, poverty, inadequate service delivery, lack of open space, and other social challenges in informal settlements promotes unfair distribution of resource opportunities based on location. The location of these settlements undermines the dignity of their residents. Dikec (2001) in Justice and the Spatial Imagination suggests that the right to the city involves not only the recognition of specific rights and the political engagement of urban residents but also a rethinking of the spatial dynamics that shape the city. Simone (2013) argues that cities must broaden their boundaries and strengthen areas of economic potential. This view is

reflected in the fragmented nature of South African cities, which perpetuate spatial inequality and injustice.

Rawls (1971: 60) developed two principles of justice. The first principle emphasizes equal liberty, asserting that everyone should have equal rights to basic freedoms, including residents of informal settlements. The second principle focuses on social justice, which Rawls describes as the fair distribution of benefits. Spatial justice is one of these essential benefits that informal settlement residents should have access to. Citizens living in informal settlements already face a harsh reality of poor reception from local municipalities, constant threats of eviction, shack fires, environmental degradation, and social exclusion, all stemming from spatial injustice. Feinstein (2010:5) argues that the primary objective of a just city is to guide urban policies to ensure that they do not worsen the plight of the disadvantaged. She points out that from the 1960s onwards, urban policymakers have faced criticism for enacting policies that have exacerbated the suffering of marginalized groups.

South African policies continue to work towards achieving spatial justice. Tools like the Integrated Development Plan (IDP) and the Spatial Planning and Land Use Management Act (SPLUMA: 2013) aim to rectify the effects of spatial apartheid. SPLUMA contains key principles of spatial justice, which include: (1) addressing past spatial inequalities and exclusions, (2) integrating previously excluded populations and areas, and (3) upgrading informal settlements. SPLUMA mandates that municipalities incorporate these principles in their spatial development frameworks, land use plans, and decisions on development applications (van Wyk, 2015:1). To paraphrase Lefebvre, the right to spatial justice is the highest form of rights.

2.6 Connection Between a Street Address and Payment for Service Delivery

The presence of a formal street address is increasingly recognized as a critical factor in facilitating access to and payment for basic service delivery, particularly in urban and peri-urban contexts. A street address not only enables service providers such as water, electricity, and waste management utilities to locate households, but also allows them to establish billing systems linked to identifiable properties (Mitlin & Satterthwaite, 2013).

Without formal addresses, service providers often face logistical and administrative challenges in connecting households to infrastructure, issuing bills, or collecting payments, especially in informal settlements where spatial layouts are irregular and residents lack legal tenure (Banerjee et al., 2008). In such contexts, the absence of an address contributes to the exclusion

of low-income households from formal service networks and forces them to rely on informal bor secondary providers, often at higher costs and with lower quality and reliability (UN-Habitat, 2020). Moreover, street addresses are not only technical tools but also institutional mechanisms that integrate residents into formal urban governance systems, including municipal billing and taxation frameworks (Durand-Lasserve & Royston, 2002).

Studies have shown that when residents receive formal addresses particularly through participatory or digital mapping initiatives, they are more likely to perceive themselves as part of the formal city and are thus more willing to pay for services, especially when service quality improves in parallel (Marx, Stoker, & Suri, 2013). Digital addressing systems further strengthen this connection by providing geolocated data that can be integrated with billing platforms, improving accuracy in service provision and payment tracking (World Bank, 2019). As such, the availability of a reliable street address plays a central role in both enabling and incentivizing payment for services, supporting financial sustainability for utilities and promoting more equitable access for underserved populations.

2.7 Conceptual Framework

This section discusses key concepts used in this research proposal, namely, informal settlements, digital address, citizenship, dignity, and the right to the city. The Sustainable Development Goals (SDGs) will be used as reference to the concept of quality of life. The Gauteng City Region Observatory (GCRO) 2020/21 quality of life survey includes access to basic services, health care services, safety, and inclusive economy as some of the perceived indicators used to measure the quality-of-life index.

Arimah (2011: 20) notes that informal settlements are typically located on the outskirts of cities or in high-risk areas such as steep slopes, deep gullies, near dumpsites, beneath overpasses, and in flood-prone zones. These areas lack basic infrastructure and services, and the housing is of poor quality, often constructed from makeshift materials. Informal settlements are unplanned and not officially recognized by the government.

In the words of Cornwall et al (2008: 35), ‘Citizenship is less an identity than something that is performed, affirmed, and reconstituted in different ways in different spaces. It is intimately linked with the ways people come to constitute themselves as social actors in their space’. (Van Donk, 2013) affirms that after all, citizenship is lived, enacted, and reconstituted in a particular context). The notion of citizenship is about claim-making.

The right to dignity is explicitly affirmed in the Constitution of the Republic of South Africa (1996). Chapter 2 of the Bill of Rights affirms Human Dignity in Section 10 by stating that 'everyone has an inherent right to have their dignity respected and protected. The right to dignity and citizenship does not exclude citizens living in informal settlements. The lack of an address deprives citizens of informal settlements of the right to dignity and citizenship.

The right to the city affords all inhabitants to enjoy, occupy and inhabit inclusive, sustainable, and safe cities (Planact, 2023: 5). The right to the city in the South African context will have an impact on a) active citizenship (for example, recognizing and enabling the choices of the poor), b) urban planning and resource allocation, and c) local governance (Isandla Institute, 2011:11).

World Charter on the Right to the City (2005) affirms that 'The Right to the City is defined as the equable enjoyment of the cities while respecting the principles of sustainability, democracy, and social justice, and is a collective right of all city inhabitants especially the vulnerable and disfavoured on whom is further conferred legality for such actions and organization as their culture and custom suggests as a means of achieving the complete enjoyment of the right to an adequate standard of living. The Right to the City is interdependent with all recognized international human rights; and its conception is based on an integral view, which includes civil, political, economic, social, cultural, and environmental rights enshrined in the international Human Rights Treaties.

The report will cover the policy around street naming and addressing in informal settlements and the role of local government in the process, particularly in the City of Ekurhuleni and the City of Joburg. The report aims to do so by unpacking the concepts and their relationship between and amongst them. These concepts will underpin this research report in a way that explores the value of an address in informal settlements, and how the lack of an address impacts the right to dignity of informal settlement residents. The concepts will be explored further in chapter 2.

Perhaps it is important to define what an address is; Coetzee and Cooper (2007: 1) define an address 'as a point of service delivery, an actual location where a service could be provided'. For instance, a courier delivery service, serving summons, conducting household surveys, responding to household emergencies, and electricity supply all require a point-of-service delivery (ibid.). (SANS 1883-1:2009 Edition 1) Defines an address as a physical location of a point of service delivery, and that could be geo-referenced. Contrary, in the absence of a

physical address, an informal address consists of an informal reference followed by an optional landmark. In some informal settlements, popular shebeens or spaza shops are used as points of service delivery because services such as mail are delivered at those facilities. However, not all services are necessarily performed at the household's physical address, for instance, one must provide proof of an address to open a bank account at a designated bank or when buying goods on credit, applying for a passport, or applying for an identity document (Coetzee and Cooper, 2007: 2).

For a long time, communities have been using different forms of an address to receive goods and services and to communicate with one another. SANS 1883-1:2009 Edition 1 Describes types of addresses, which include Street Addresses, Building Addresses, Intersection Addresses, Site addresses, Landmark addresses, SA Post Office Box addresses, SA Post Office Street Address, SA Post Office Poste Restante Address, SA Post Office Poste Village Address, SA Post Office Site Address, Farm Address, and Informal Address. SANS 1883-1:2009 Edition 1, points out that most households used to have a mailbox outside their houses where mail or letters were delivered by a mail courier. The mailbox was linked to the household address making it easy for the mail courier to identify where to deliver the letters or parcels. The mail was delivered on the prescribed days. Some people resorted to using private mailboxes which are mainly found at the post office.

In South Africa, private mailboxes were mainly used by corporate and white people. The private mailboxes are secure and limit the threat of one losing their belongings. Black people who lived in rural areas depended on a local store to receive their letters and parcels. The letter only had the name and the surname no physical address. This required the receiver of the letter or goods to constantly check if mail had not been delivered. In African townships, such as Alexandra, one mailbox served several families, and the risk of losing one's letters and parcels was high. However, in black townships such as Soweto, each household had its mailbox or post-box. The mailbox is linked to a house address for easy reference. The lack of proper address is a significant hindrance to personal growth and well-being. It impedes progress and development opportunities in life. With the increase in e-commerce and globalisation, address accuracy has become more important.

CONCEPTUAL DIAGRAM: DIGITAL ADDRESS FRAMEWORK IN INFORMAL SETTLEMENTS.

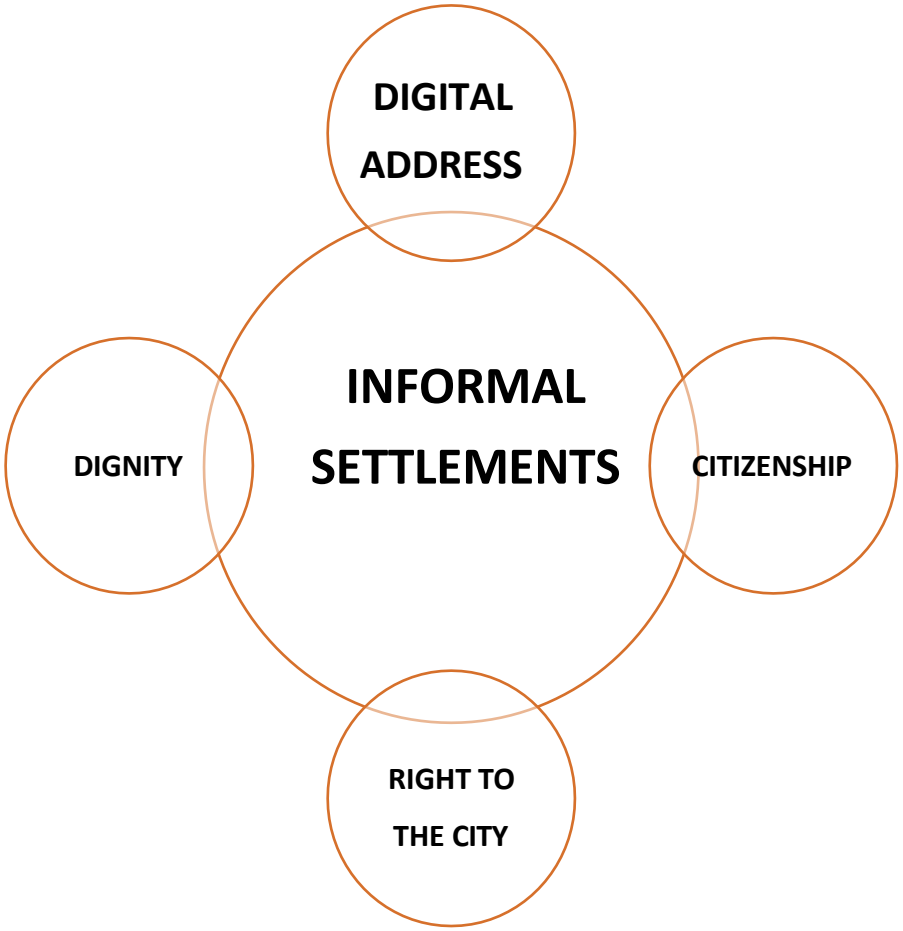


Figure 1: Conceptual diagram: digital address framework in informal settlements

2.7 Conclusion

The right to the city and the right to an address are intertwined with issues of justice, equity, citizenship and human dignity. An address is more than just a location, but it is a symbol of belonging, access, and recognition within a society. Without it, individuals are marginalised, denied basic services, and excluded from the networks that enable full participation in social, economic, and political life.

The right to the city, in this context, demands that all people, regardless of their status or circumstances, have access to the spaces and resources that allow them to thrive. It is a call for cities to be more inclusive, more equitable, and to prioritize the needs of the most vulnerable.

In ensuring that every person has an address, this upholds not just the legality of their existence but also their right to shape and contribute to the urban environments they inhabit. The struggle for these rights is a fight for dignity, autonomy, and a more just and humane society.

Matanyaire (2014:18) reminds us that towns and cities are the main engines of South Africa's economy but are characterized by huge inequality and high concentrations of poverty. Risk implications are higher in areas characterized by social exclusion and spatial injustice. Informal settlements are not immune, they bear the highest brunt of high unemployment and poverty. They must manage and mitigate the risk of vulnerabilities. Perhaps Kornieko (2013: 76) is correct in framing the conditions of informal settlements as "bleak", "dangerous" and "desperate'; posing this as a violation of human rights. To build resilience against vulnerability, Matanyaire (2014) argues that it is important to harness individual and collective coping strategies that communities employ in the face of vulnerability. However, the lack of an address especially in informal settlements exacerbates vulnerability. The interviews will help provide some answers as to how the residents of informal settlements survive vulnerabilities in the absence of a traceable address.

CHAPTER 3: A CASE STUDY ON DIGITAL ADDRESS- SKOONPLAAS AND THEMBELIHLE INFORMAL SETTLEMENTS.

3.1 Introduction

Gauteng Province is one of the nine Provinces found in South Africa. It is the only Province that has three metropolitan municipalities, (popularly referred to as 'Metros'). The three Metro are classified as category A municipalities. Local Government: Municipal Structures Act 117 of 1998 in Chapter 1, defines a Category A Metro municipality as having a combination of factors, including high population density, and intense movement of people, goods, and services. Extensive development, they are centres of economic activities. These municipalities become hubs of attraction for people looking for employment opportunities and the benefits of city life. For this research report, I will only focus on two Metros, namely, Ekurhuleni Metropolitan Municipality ('City of Ekurhuleni or' 'COE'), and the Johannesburg Metropolitan Municipality ('Joburg City' or 'CoJ').

Street naming policies in South African municipalities, including the City of Johannesburg (CoJ) and the City of Ekurhuleni (CoE), are governed by formal procedures aimed at ensuring consistency, heritage recognition, and service delivery efficiency. In CoJ, the street naming and renaming process is guided by the *Street Naming and Numbering Policy*, which emphasizes public participation, alignment with spatial planning frameworks, and commemoration of historically significant figures or events. However, in informal settlements, these policies are rarely implemented systematically, and street naming often occurs informally through community initiatives. In CoE, while a formal street naming policy also exists, its application in informal areas is minimal, with limited community consultation and bureaucratic delays hindering the formal recognition of locally adopted names. As a result, informal settlements in both metros frequently operate without officially recognized addresses, complicating service delivery and governance. These institutional gaps partly explain the differing municipal responses to digital addressing initiatives and highlight the need for more flexible, community-responsive policy approaches.

Fixed (2023) documents the development and implementation of a digital address pilot project in Skoonplaas, an informal settlement in Gauteng with over 2,000 households. The project began in 2019 when the author, a Senior Programme Coordinator at Planact, struggled to navigate the area due to the lack of street names. Recognizing that the absence of addresses

rendered residents effectively invisible and excluded from essential services, he partnered with community leaders to map the settlement and assign street names. The process involved community consultations, volunteer recruitment, drone-assisted mapping, and adherence to city naming policies. This collaborative initiative aimed to "put Skoonplaas on the map" and improve residents' access to services, visibility, and civic participation.

This section will draw comparisons between the two informal settlements. Skoonplaas (popularly known as ‘Skoon’) informal settlement, which is situated in the City of Ekurhuleni, within the jurisdiction of Springs. Thembelihle (popularly known as ‘Thembelihle’) which is found within the jurisdiction of the City of Joburg, in Region G, South of Joburg. Both these settlements are pilot areas for the digital addressing project. The pilot areas were chosen based on their long-standing relationship with Planact, which made the process easy to navigate. This section will briefly cover how the digital address project came about, how these two settlements came about, the role of the intermediary organisation, and the report will also cover in detail the process of digital address in both settlements using Plus Code address, which will include community mobilization, recruiting community volunteers, mapping process using transit walk, creating work packages, generate Plus Code address, fixing digital boards and quality assurance.

The digital addressing pilot implemented in Thembelihle and Skoonplaas informal settlements revealed key differences in community engagement, spatial conditions, municipal support, and perceived value. In Thembelihle, strong civic organisation and prior informal street naming enabled higher community participation and uptake of the digital addresses, while its dense and complex layout made the digital system especially useful for navigation and service delivery. Conversely, Skoonplaas, with a more dispersed layout and weaker community structures, experienced lower engagement, and the digital addresses were perceived as less relevant. Municipal responsiveness also varied: Thembelihle, located within the City of Johannesburg, received some informal attention from local authorities, whereas Skoonplaas in Ekurhuleni saw minimal municipal involvement, limiting the addresses’ formal recognition and utility. These differences are shaped by spatial, political, and institutional contexts, demonstrating that while digital address systems offer potential benefits, their impact depends on integration into municipal systems, community ownership, and alignment with local upgrading processes.

3.1.1 Background on how the digital address project came about

The research conducted by Fixed (2023) outlines the process on how the digital address pilot project was conceptualised and implemented in Skoonplaas. In winter 2019 the author found himself lost in Skoonplaas (Springs), an informal settlement founded in 1974, with 2165 households and a population of approximately 8000 people, a few kilometres from the Putfontein offramp of the N12, east of Johannesburg, Gauteng Province. The author is the Senior Programme Coordinator at Planact, a South African NGO with a long history of empowering and supporting residents of informal settlements and marginalised communities to strengthen governance, service delivery and quality of life in their environments.

When the author was eventually able to locate the community leadership a few weeks later he said: 'I wish these streets had street names, it's impossible to find anything if you are not from around here'. This was the beginning of a powerfully transformative project to bring street addresses to informal settlements in South Africa. The more the author reflected on it, the more he saw that without an address a person in an informal settlement, is, in many ways invisible. Without an address it is not possible to register to attend school, to register to vote, to apply for services from the city, to receive deliveries, to receive emergency services, to direct friends to your home or obtain bail, even on minor offences.

The author and the community leaders agreed to collaborate to create a map of Skoonplaas and adopt street names, to 'put Skoonplaas on the map' to enable people to be more easily found. Community consultation and a raffle to select volunteers followed and a transect walk and a drone assisted in the creation of a map. Residents were then invited to participate in a process to identify and agree street names. This process included open and inclusive consultation, investigation of the policy of the City around street names: 'the name cannot be offensive, spelling must be checked, history and motivation for the name must be provided, if you want to call it Slovo Street you need the family's permission' author. Once the street names were agreed, they were submitted to COE for consideration and registration.

3.2 The Role of Intermediary Organisation in Spatial Development

Non-governmental organizations (NGOs) are defined as intermediary groups between the people and the state, speaking for or on behalf of the poor and disadvantaged without being City planning department. Among them (Cariño, 2002). According to Anheier and List (2006: 137) intermediary organizations "exist primarily in the social service delivery fields, where they tend to connect smaller organizations and the people they serve to the local delivery

system, as well as in the field of international development and humanitarian relief, where they often mediate between foreign funding agencies and local government agencies or community organizations". Planact can be categorised as a participatory, empowering and advocacy NGO.

According to Lee (1998), not all societal sectors can contribute to societal development, and not all areas of need can be served by the resources of government and business. In areas that are inaccessible to the government and the corporate sector, NGOs can significantly contribute to the development of partnerships and skills. It is impossible to overestimate the significance of these organizations. According to Vivier and Sanchez-Betancourt (2020), intermediary organizations foster influence at scale, promote cohesive efforts across varied partners, and unite them around a shared purpose. To create a shared vision and set of objectives, intermediaries' band together and work with all important partners (Lee, 1998). To help communities mobilize their resources and obtain outside inputs that strengthen their capacity to improve their habitat, external intermediary institutions are required (Lee, 1998).

Accordingly, the roles of intermediary organizations would comprise the following:

Community mobilization and support, which aims to strengthen a community's capacity to recognize and speak up for its own needs as well as communicate with authorities and other professionals with confidence (Görgens and van Donk, 2012).

Participatory planning, which allows community members to actively participate in the development and design of their communities by utilizing appropriate participatory approaches (Görgens and van Donk, 2012). Training and capacity building (in communities), which could entail creating and putting into action opportunities for community members to receive training or build their capacity (Görgens and van Donk, 2012). Coordination and management of the project: according to Görgens and van Donk (2012), the intermediary organization is essential to coordinating stakeholders' efforts to accomplish the desired results.

Görgens and van Donk (2012) also grouped research, learning, and advocacy to emphasize the significance of developing evidence-based policy recommendations in all three activities and effectively communicating them to relevant stakeholder groups.

The involvement of an intermediary organization like Planact was essential in implementing a digital address system in informal settlements in South Africa. Planact, with its deep understanding of the challenges faced by marginalised communities, was crucial in bridging the gap between local government, technology solutions, and the residents of informal settlements. In informal settlements, issues like lack of official documentation, inconsistent infrastructure, and disconnectedness from formal systems create significant barriers to accessing essential services like healthcare, education, and social grants. A digital address system is a critical tool to solve these problems, but it requires more than just technology— it demands community engagement, trust building, and ensuring that the system works within the context of these marginalised communities.

Planact's role is advocating for the inclusion of residents in the process and ensuring that the system aligned with both local governance structures and broader urban planning policies. Furthermore, as an intermediary, Planact played a key role in mobilising resources, providing technical support, and ensuring that the project was inclusive and responsive to the needs of informal settlement dwellers. This report argues that without intermediary organization like Planact, there is a risk that such projects could fail to meet the needs of the communities they are designed to serve, either due to a lack of local understanding or insufficient engagement with residents. In this sense, the intermediary organization is essential in translating policy and technology into a meaningful solution on the ground. Planact played a significant role as an intermediary organisation during the implementation of the digital address pilot projects.

Planact was formally established in Johannesburg in 1985 by a group of development professionals working at the University of the Witwatersrand and in private practice (Abbott, 1996:200). Planact is a non-governmental development organization, incorporated as a Section 21 company in 1995, whose mission is to bring about local development for the poor within an integrated framework.

3.3 Background Of Skoonplaas and Thembelihle Informal Settlements.

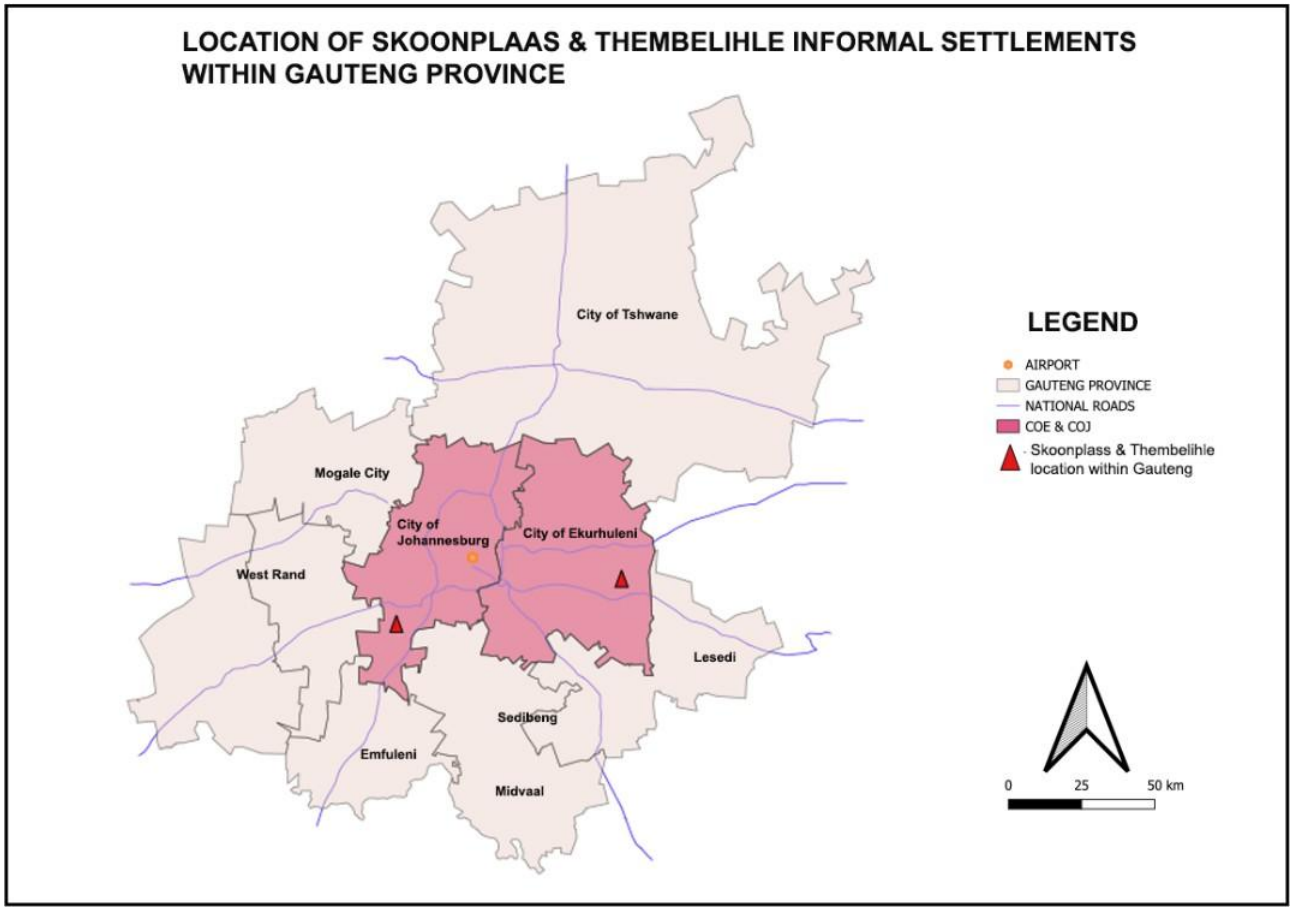


Figure 2: Map showing the location of Skoonplaas and Thembelihle informal settlements. Source: Nonjabulo Magubane, Planact Intern. (2024)

3.3.1 Skoonplaas informal settlements

Ekurhuleni is one of the three Metros forming Gauteng Province. It was previously referred to as East Rand. In 2000, nine different towns were amalgamated to form Ekurhuleni Municipality. Skoonplaas informal settlement is situated within jurisdiction of Springs on the eastern side of Ekurhuleni Metropolitan Municipality, Gauteng the Province. It is situated on Cloverfield Farm erf 75, a few kilometres from the Putfontein offramp on the N12.

Over time the number of farm dwellers grew as more and more people from adjacent townships moved in. The land where the informal settlement is situated is owned by the municipality, and it has leased it to Kleinfontein Goldmine. It is not clear how many people live in the settlement; through observation, it could be approximately 6000- 7000 people. Huchzermeyer (2011) argues that the inaccuracy of informal settlement data points not only to deliberate falsification

but also to the constant and rapid change that informal settlements undergo; as such, it is difficult to know the number of households and persons living in informal settlements. The settlement is neatly laid out and immaculately clean which reveals that rubbish is being collected in this settlement. This settlement lives out its name; Skoonplaas an Afrikaans name meaning clean farm in English.

The settlement has rich vegetation with trees scattered around making the settlement look beautiful. There are communal taps in each corner of each street. Each plot had a temporary chemical toilet supplied by the City of Ekurhuleni. Two community crèches and the community have a few "Spaza shops," but there are no primary or secondary schools in the area. A mobile clinic visits once a week.

There is a piece of land used as a soccer pitch, with a community office located next to it. The office serves as the central hub of the community, but it is a metal container with no proper office furniture. The local shebeen, owned by one of the women in the settlement, doubles as an informal postal service point. Letters are kept in a box and stored safely in the shebeen. If any community member needs to check for mail, they must go to the shebeen to do so.



Figure 3: Aerial view of Skoonplaas informal settlement: Source (Pic. Sanele Makhubo, 2023)

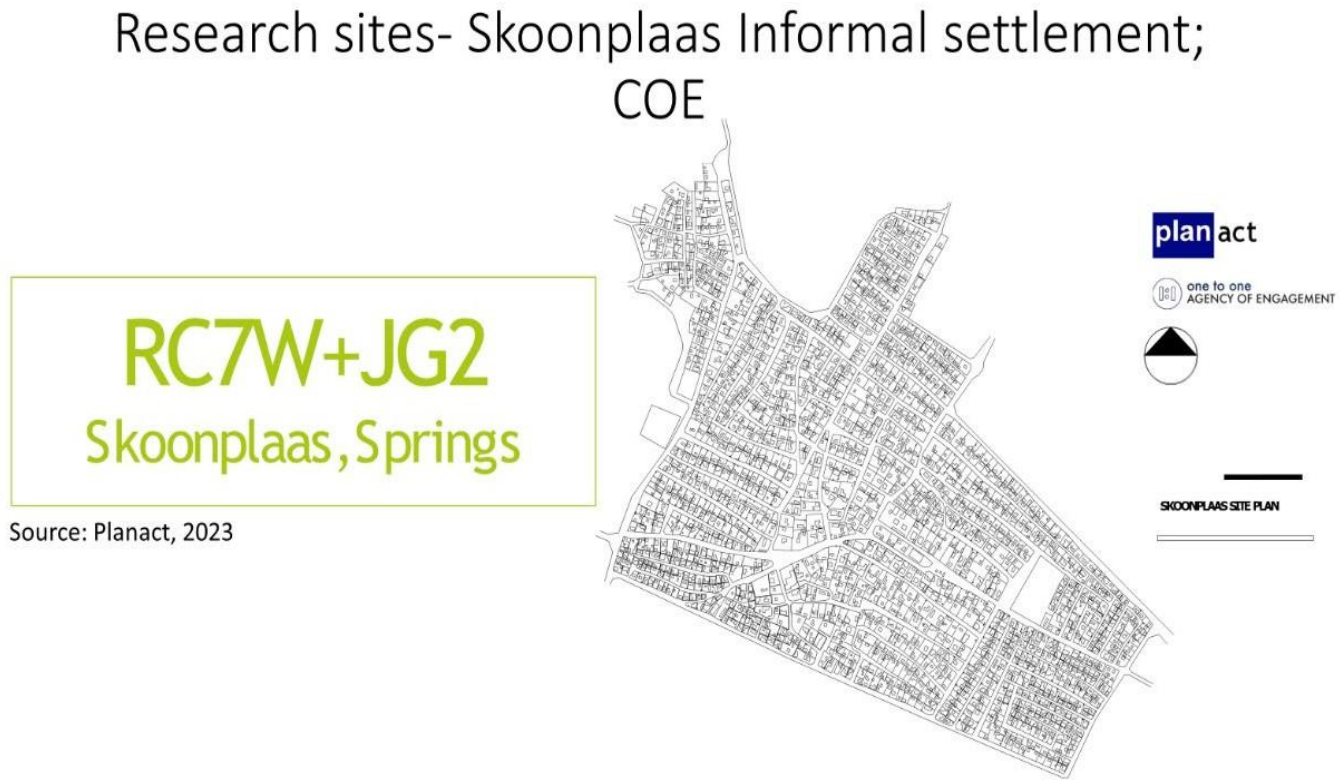


Figure 4: Map of Skoonplaas informal settlement not drawn to scale: Source: One to One Agency of Engagement (2023).

3.3.2 Creating a socio-spatial map in Skoonplaas informal settlement.

"Only the residents can produce an accurate socio-spatial map of an informal settlement because only they understand the social interaction with spaces" (Slum Dwellers International, date unknown). The main challenge is the absence of a layout design for the settlements. These settlements are considered illegal and are not included in the cadastral records. The stands are not registered with the deeds office, which is common in most informal settlements that lack proper maps.

The settlement exhibits all the characteristics of informality: structures are temporary and built from second-hand materials. Both the City of Ekurhuleni and the City of Johannesburg have provided each household with temporary chemical toilets/VIPs, and the settlement has communal taps. Skoonplaas receives a mobile clinic visit once a week, while in Thembelihle, one clinic serves over 3,000 households. Waste collection happens once a week, and chemical toilets are emptied weekly. There are open spaces in these settlements that function as soccer fields on weekends and are also used for community gatherings.

Adjacent to Skoonplaas informal settlement is an affluent suburb called Eastvale some also refer to it as Modder East. The suburb contrary to Skoonplaas informal settlement, is a formal township with a laid-out design, with a proper map of the area. In contrast, the land uses in this area are clearly demarcated and recorded on the cadastral map. The streets are well- marked with street names, and each house has a proper address that can be easily located using GPS.

The suburb is equipped with functioning streetlights, making it easy to navigate even at night. Emergency services such as the police, ambulance, fire brigade, and funeral services can easily find their way around the suburb. Residents in this area have secure tenure, allowing them to invest in their properties without the fear of illegal eviction, unless they default on their mortgage payments. Unfortunately, these advantages are not enjoyed by the residents of Skoonplaas.



Figure 5: Community volunteer numbering a shack (Pic: Sanele Makhubo, 2019)

The shacks had numbers, but they were not in any specific sequence, making it hard to identify each household quickly. To address this, the volunteers began a process of numbering the shacks. They started with the larger section of the settlement and numbered the shacks in sequence, ensuring that none were missed. They decided not to number empty plots, focusing only on occupied households. The goal of this task was to assign sequential numbers to the

shacks for easier identification. The main shack was marked with large numbers, while subletting units were given smaller numbers to distinguish them.

They used different colours to show the different land use, the blue colour was reserved for main roads, red for open spaces and green for passages and short streets. This helped in distinguishing the different legends and understanding the interrelationship of spaces on the settlement.



Figure 6:Community Volunteers creating socio-economic map of Skoonplaas informal settlement. (Pic: Sanele Makhubo,2019

The lack of a lay-out map or base map provided the volunteers with the opportunity to design their own settlement map. The map was not drawn to scale, later it was taken to a professional to produce a proper map.

3.3.3 Street naming: participation of the community in the street naming process

Buccus et al. (2007:3) argue that public participation is crucial in any society as it promotes development and improves service delivery. Ramjee and van Donk (2011:15) expand on this

by stating that public participation provides ordinary people with a meaningful opportunity to have a say in processes that influence outcomes directly impacting their daily lives. Central to the digital address system in informal settlements is the concept of community participation, which is essential for democratizing innovative processes and fostering a sense of ownership.

This initiative can only be successfully implemented if the community members fully participate in the process, and to volunteer their time and effort. The process of street names included the following steps.

Each volunteer was assigned a set of streets and tasked with inviting all the residents of those streets to propose two possible names for their street. The residents would discuss and debate the options until they reached a consensus on the name they preferred. The volunteer overseeing the street would then record the chosen name on the map. Rather than allowing residents to vote on the names, the volunteers encouraged engagement and persuaded participants to share their perspectives and reach an agreement. Voting occurred only in a few instances. All participating residents signed a register, which served as evidence that the process was transparent and participatory.

The volunteers referred to the Ekurhuleni Metropolitan Municipality Geographical Naming and Renaming Policy (ITEM A-SRAC 0C 03-2016 CM 22/06/2017) for guidance. Although the policy did not officially recognize street naming and addressing in informal settlements, it provided useful guidelines for the process. Proposed street names were required to be respectful, not overly long, and to reflect local languages and meaningful context. Some of the proposed names included: Harmony Street, symbolizing the love and respect between neighbours; Khomanani Street (support each other), reflecting the residents' mutual support during difficult times; Boitirelong Street (self-reliance), representing the community's self-sufficiency and entrepreneurial spirit; Thabang Street (Happy Street), which signifies the residents' pursuit of happiness and positivity; and Green Acres Street, highlighting the community's commitment to preserving green spaces and the environment.

The street-naming process facilitated meaningful engagement and dialogue, promoting community participation. It fostered social cohesion and strengthened relationships between neighbours, contributing to a positive sense of community and Ubuntu. Neighbours who typically did not interact were provided a safe space to communicate and come to an agreement.

3.3.3.1. South African Police Service (SAPS)

A captain from the South African Police Service (SAPS) stationed at the Springs police station shared his frustration with working in informal settlements that lack street names, describing it as a significant challenge for law enforcement. He explained that police are frequently blamed for not performing their duties, when having street names would make it much easier for them to respond promptly in emergencies.

He also indicated that it is difficult for ambulances to access informal settlements in the absence of street names, more often the police and the ambulances must wait at the entrance of the settlement so that someone can come and fetch them to go to the scene of an accident. He indicated that it is not safe for the police to drive through an informal settlement at night because there are no streets light.

3.3.3.2. Community member in Skoonplaas

A community member in Skoonplaas had this to say; “Being able to name my own street gives me a sense of identity. We may be living in squatter camps but, as South Africans, we want to be recognised as people, too. If government can give us electricity but cannot give us street names, we will do it ourselves.”

3.4 Thembelihle informal settlement.

Thembelihle informal settlement is located in Region G, on the southern side of Johannesburg Metropolitan Municipality, Gauteng Province. It was established in the mid-1980s, primarily by Sotho-speaking individuals who worked at the brick-making company where SA Block is now situated (Tselapedi and Dugard, 2013:57). According to community leaders interviewed, the population of Thembelihle is estimated to be between 8,000 and 10,000 (Tselapedi and Dugard, 2013). The settlement is well-organized, with clearly defined plots. Several years ago, Eskom provided electricity to each household in Thembelihle.

The settlement has a single clinic serving the entire community, but there are no schools within the settlement itself, so children must take a bus to nearby schools. Both Skoonplaas and Thembelihle share similar challenges, including the threat of eviction, which has led both communities to contest their evictions in the Constitutional Court. Planact played a crucial role in implementing the digital address project in both settlements.

Thembelihle is located next to Lenasia, a predominantly Indian formal community that is well-developed, with proper street names and traceable addresses listed on the cadastre. This system

makes it easy for Lenasia residents to receive mail and other services. Lenasia is also equipped with streetlights, social amenities such as tennis courts and a library, and well-paved roads with clear markings. In contrast, Thembelihle lacks many of these amenities.

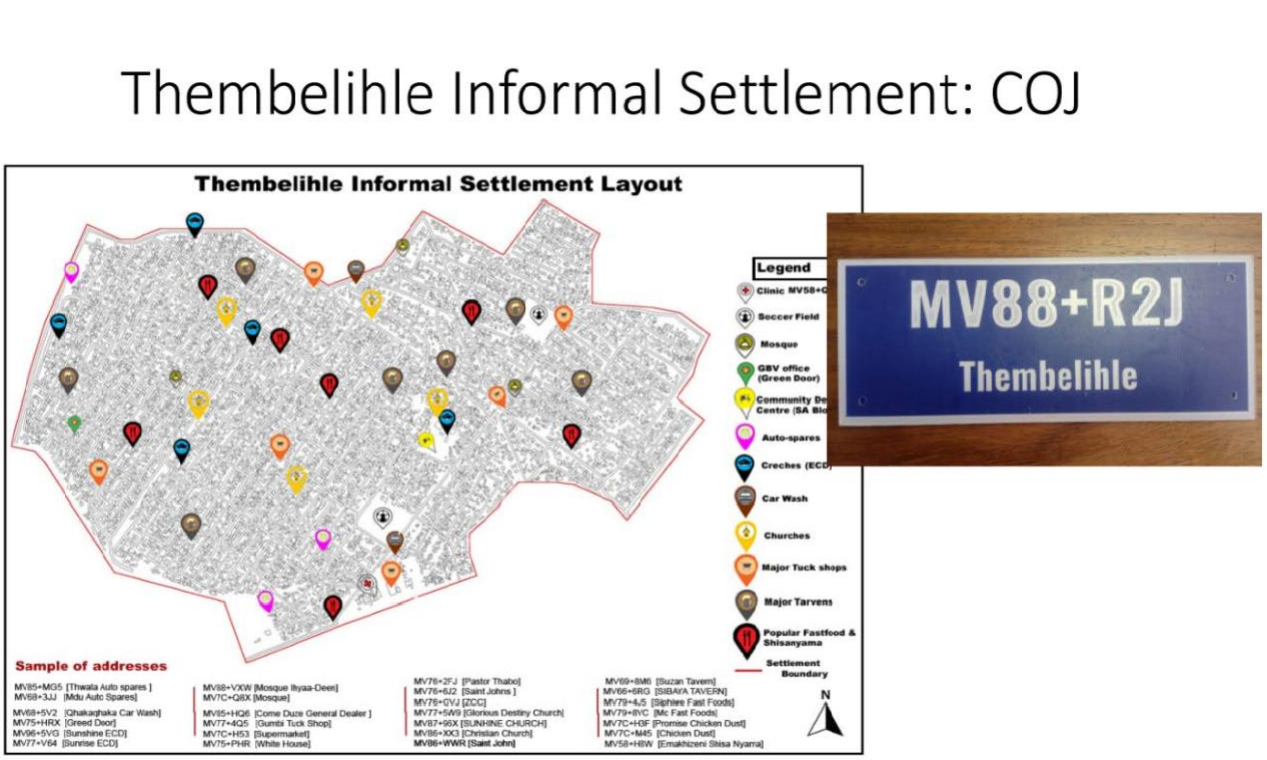
3.4.1 Creating a socio-spatial map in Thembelihle informal settlement

Before beginning the transect walk in Thembelihle, a base map was downloaded from Google Earth. The community participants used this map during the walk as a reference to identify any structures and roads that were missing or unclear. They placed film paper over the base map and manually marked the missing structures and roads they identified. Subsequently, Planact's town planner intern used the draft maps created by the community participants as a guide to produce the final layout map of the settlement.

The original base map downloaded from Google Earth was inserted into AutoCAD. Thereafter the map was rescaled according to the dimensions measured from Google Earth using one building as a reference point. The base map created by the participants revealed that the boundaries of the informal settlement had expanded, and both Google Maps and the City's maps were outdated. By manually drawing the spatial layout of the informal settlement using AutoCAD, it was ensured that all structures were included and that the street pattern was accurately represented. This manual approach ensured that the actual conditions on the ground were accurately reflected on the map.

The process of manually mapping each structure was labour-intensive and time-consuming. The final map was created using AutoCAD, and the file format produced was dwg. The City of Johannesburg uses Geographic Information Systems (GIS) to create its maps, and the challenge was converting the dwg file into a shapefile so that the city could upload and merge the updated map into their system. The map was submitted to the City of Johannesburg's Development Planning Department: GIS Section, and it was well received by the city officials, as noted by the city official in the Fixed (2023:6) Municipal Safety Case Studies Project; 'The kind of information captured in this project is vital for our municipal entities, for emergency services, reporting of faults, revenue generation, from waste management to water and electricity supply, we have no information from these settlements that we can include on our system to ensure the City has the information it needs to deliver services, generate revenue, and conduct proper development planning we don't have the capacity to it all ourselves, so this partnership is very important to us'. Mapping informal settlements is on our Executive Director's performance scorecard.

This viewpoint is supported by Ragheb & El-Ashmawy (2021:10), who argue that digital mapping can effectively map settlements even without census data, and can be used as an initial tool to collect information for strategic planning.



Source: Planact, 2023

Figure 7: Map of Thembelihle informal settlement.

The process of generating the plus code address, affixing the digital address boards, and the quality assurance process followed a similar process as undertaken in Skoonplaas.

3.4.2 Community participation

Planact introduced the project to the leaders of the Skoonplaas community, who received it positively. The first step involved the community leaders organizing a public meeting to inform residents and gain their support for the initiative. The meeting was well-attended, and the project was explained to the community, who expressed their approval. During the meeting, the leaders emphasized that the success of the project depended on community members volunteering to help with the street naming process. Although only 20 volunteers were needed, more than 20 people signed up, demonstrating the community's enthusiasm.

The Committee decided to use a raffle method to choose the 20 volunteers. This is one of the fairest methods of choosing the volunteers, the Committee did not want to be accused of nepotism and favouritism. Four boxes were used in this process, one for youth, one for adults, one for women and the one for men. The purpose of this method was to make sure that there is a fair distribution of gender and age. Two pieces of paper were put into a box; one was not written anything on it and the other had a letter “P’’ written on it. If one picks up a paper with

a “P’’ on it, it will mean they are on the list of volunteers. Eventually 20 volunteers were recruited for this project. The first task of community volunteers was to recreate a map of the settlement.

Planact employed parallel strategies for community mobilization and volunteer recruitment in Thembelihle as they did in Skoonplaas, but in Thembelihle, 28 community volunteers were recruited due to the larger size of the settlement. In contrast to Skoonplaas, where 40% of the volunteers were women, 60% of the volunteers in Thembelihle were women. This higher proportion of women volunteers was a result of their significant attendance at the public meeting.

3.5 Digital addressing process

The digital address initiative is a creative solution introduced by Planact to address the issue of informal settlements being excluded from municipal development planning. The project involves providing informal settlements with digital addresses, known as 'Plus Codes.' Google is a globally recognized organization with a strong reputation for providing information, storage technology, and distributing it for social good. Despite the existence of other mapping platforms, Google dominates the worldwide search engine market, and Google Maps is widely used and trusted by governments, the private sector, and development practitioners alike.

This made Google the preferred partner for Planact's ground-breaking digital address project. In 2020, Planact approached Google for technical support, which comprised access to their open- source addressing system. This system allows anyone with mapping data to generate geographic coordinates and create precise, location-based addresses. Google's contribution to the project included providing standardized address boards, training, and quality assurance. Skoonplaas volunteers were trained in Plus Code Addressing (PCA) using the Address Maker App.

Rajuai (2023), a Google employee, explains that Plus Codes are digital addresses developed by Google, serving as street addresses for people or places without one. These addresses can be assigned to locations even without roads, offering accuracy within a 3m x 3m area. Plus Codes provide nearly instant addresses for households in informal settlements. The digital addresses are uploaded to the Google Maps platform, which is widely used by delivery services and GPS systems worldwide.

Plus Codes are a system based on latitude and longitude, represented as alphanumeric codes. They are open-source, free to create and use, and shorter than traditional global coordinates,

making them easier to share. Plus Codes can be used both online and offline, without requiring an internet connection, and consist of 20 alphanumeric characters. Plus Codes avoid using easily confused characters, are not case-sensitive, and exclude vowels. They represent an area, with the resolution of the area adjustable by adding or removing characters after the "+" sign.

The training covered topics such as an Introduction to Plus Codes, App & Device Setup, Operations Workflow, Field Operations, and Field Quality Assurance. The structure involved three days of theoretical instruction and two days of practical fieldwork. The final day was reserved for reviewing the demo work completed by the team during the week, providing an opportunity for questions and sharing case studies encountered during the demo of Plus Code addressing. The training was successfully conducted virtually Planact staff and community volunteers by the Google team from India due to Covid-19 restrictions.

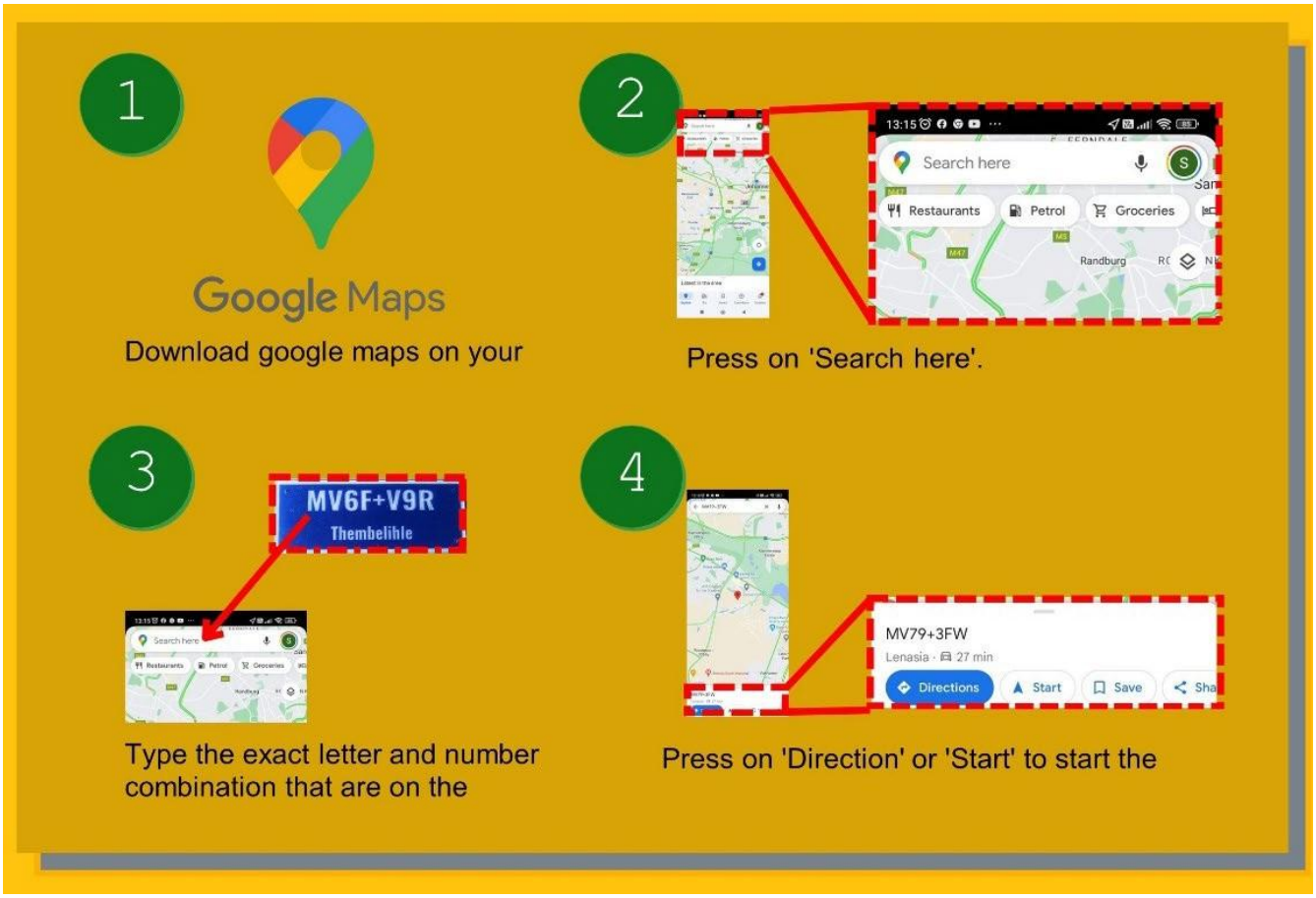


Figure 8: The diagram about how to navigate using the Plus Code address. Source: Hlengiwe Mbambo, Planact Intern (2023)

Creating boundaries on Address Maker, an open-source navigation app by Google Maps, involves several steps:

- Users input the area's name, which must be recognized by local authorities.
- The appropriate Plus Code format is selected based on municipal addressing policies.
- Project administrators must create Gmail accounts for each volunteer, as these are required to log into the Address Maker app.
- Volunteers can access the app through the Google Play Store but do not have access to the project's operating system console.

Volunteers are organized into pairs, with each team given a boundary that includes two or three neighbouring streets, making the work manageable. They may be given multiple boundaries to address. Prior to beginning, volunteers perform a transect walk to identify properties and landmarks, which are then used to set up address types (such as residential, business, or school) in the project console.

The next step involves setting up the road widths and street lengths. Road widths range from 1m to 30m, with the correct width being chosen based on the characteristics of the area being addressed. The road width and length help volunteers accurately measure the distance from one end to the other to ensure that the generated address doesn't exceed the property boundaries.

Once a volunteer has been set up with a Gmail account, they are assigned roles to access the Address Maker app. One volunteer uses a measuring wheel to determine the distance from the entrance of one property to the next. The second volunteer uses a phone to generate a Plus Code address. This process continues until all properties within the assigned area have been addressed.

A Plus Code address follows a format like: Example: MV95+2MJ, Thembelihle, Residence and RCCV+96G, Skoonplaas, Springs. After completing their work packages, volunteers submit their allocated addresses. The administrator then redistributes the work packages to other teams for quality checks. These teams use Google Maps to verify that each address corresponds to the correct property. By entering the allocated Plus Code into Google Maps/GPS, they confirm that the navigation leads to the correct location. The quality check

process is crucial in ensuring the accuracy of the address allocation. Once verified, the team places a digital address board on each household, ensuring it matches the correct Plus Code.

3.6 Conclusion

Street naming and digital coding are distinct but complementary processes that, when combined, create a more effective address system in informal settlements. Street naming involves community participation to assign familiar, human-readable names to pathways, fostering local identity and improving navigation. Digital coding, on the other hand, uses technologies like GPS or Plus Codes to generate precise, machine-readable location identifiers for individual structures. While each can function independently, their integration leads to a hybrid address system that is both technically accurate and socially meaningful. In informal settlements such as Thembelihle and Skoonplaas, combining these processes helps bridge the gap between informal spatial realities and formal municipal systems, enhancing service delivery, visibility, and urban inclusion. Community volunteers and leaders acquire valuable skills in communication, leadership, and technology through digital mapping. According to Brown, Raymond, and Corcoran (2015), digital mapping allows communities to gain a deeper understanding of themselves, their environment, and their history. By creating their own settlement map, communities become more familiar with the layout of their area, including patterns of mobility, trade, and land use. This process fosters greater social interaction and community involvement.

The digital addressing pilot in Thembelihle and Skoonplaas informal settlements highlighted the importance of local context in determining the success of technological interventions. Thembelihle's strong civic organisation, history of informal street naming, and dense spatial layout facilitated higher community engagement and demonstrated the practical value of digital addresses for navigation and service delivery. In contrast, Skoonplaas's dispersed layout, weaker social structures, and limited municipal interaction resulted in lower participation and perceived relevance. Variations in municipal responsiveness greater in Johannesburg (Thembelihle) than in Ekurhuleni (Skoonplaas) further influenced the effectiveness and institutional uptake of the system. These findings underscore that the success of digital address initiatives in informal settlements is contingent on spatial conditions, community dynamics, municipal integration, and alignment with broader upgrading strategies.

Digital mapping also helps communities visualize the advantages of having a proper address and being recognized. Digital neighborhood mapping and street addressing improve outcomes

beyond what traditional mapping can achieve by integrating real-time data, enabling service delivery, and increasing community visibility in formal systems. While both methods can enhance local understanding, digital mapping allows for dynamic updates, participatory data collection, and better access to services and property recognition. This leads to more equitable planning, stronger tenure security, and greater inclusion in economic and governance systems.

CHAPTER 4: PARTICIPANT VOICES AND PERSPECTIVES

4.1 Introduction

This chapter presents the responses from community members, leaders, government officials, ward councillors, and representatives of intermediary organizations to questionnaires and interviews. The collected data was analysed, and findings were discussed. The research aims to understand how an addressing system can improve the lives of informal settlement residents, analyse its impact, identify its shortcomings, and propose solutions to address these issues.

4.2 Data from focus group interview

4.2.1 Is an address important for your community (informal settlement) Yes/No?

Having an address gives individuals a sense of identity, belonging, and connection to the community, allowing them to engage in civic activities and access services. In Skoonplaas informal settlement, 30 focus group participants emphasized the importance of an address for inclusivity, providing clear directions to services like the police, ambulances, Uber, and for tasks such as school registration and job applications. Similarly, 35 participants in Thembelihle recognized that an address could be crucial in emergencies and for dignity, noting that without one, receiving deliveries becomes impossible.

4.2.2 Have you been able to use the digital address, Yes/No?

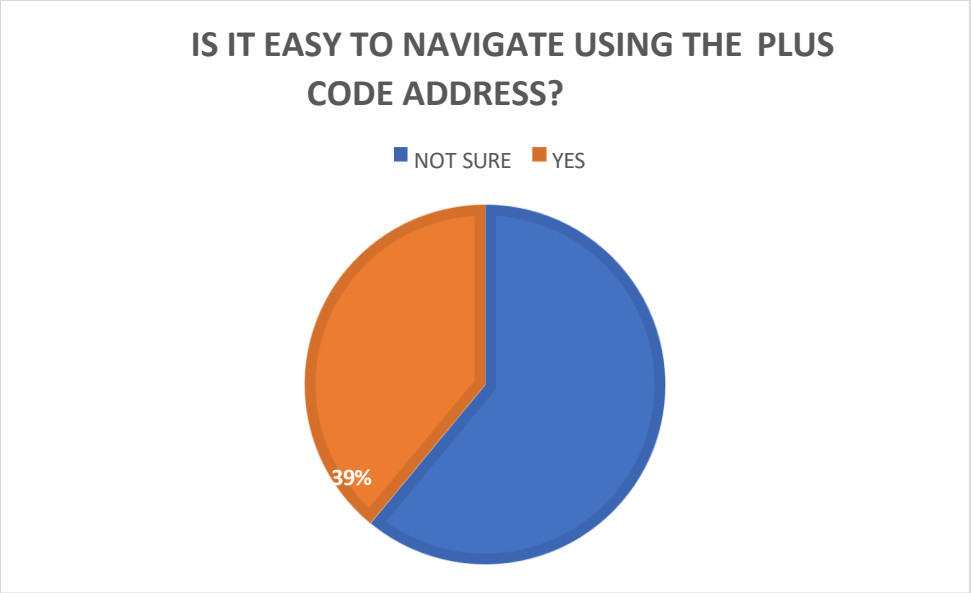
In Skoonplaas, 20 out of 30 participants responded positively, while 10 said no. The safety patroller mentioned that providing the police with a digital address has significantly improved the speed of their response to crime scenes. One community leader expressed appreciation for the fact that the app can be used without data, making it easier to communicate with the community when organizing public meetings.

“The introduction of a digital address system in Thembelihle Informal Settlement has brought about significant positive changes for the community. The project has made essential services

more accessible, improved navigation, and provided formal recognition to the settlement. South Africa, formal recognition often plays a role in acknowledging historical injustices, ensuring the inclusion of marginalized groups, while also promoting legal and social equality), which was previously lacking" said by one of the participants.

Thirty-three participants reported using the digital address since Planact installed it. In Thembelihle, a community volunteer mentioned that she can now send the location for waste collection pick-up. Another volunteer noted that fault reporting has greatly improved; for instance, if a chemical toilet hasn't been emptied, he can send the digital address to the service provider. Most participants said they use the Plus-code for deliveries, such as pizza. Two respondents mentioned that due to their age, they haven't used the address yet, but they recognize its importance.

4.2.3 Is it easy to navigate using the Plus Code address? Yes/No?



In Skoonplaas, participants found Plus Code addresses easy to use and precise, allowing them to confidently share locations. Some even taught their children to use Plus Codes in case of emergencies. In Thembelihle, younger people quickly adapted to Plus Codes due to their familiarity with technology, while older individuals had difficulty, as they were more accustomed to traditional addresses like "42 Makwela Street." This made it harder for them to provide directions or share their location, particularly when asked by younger people.

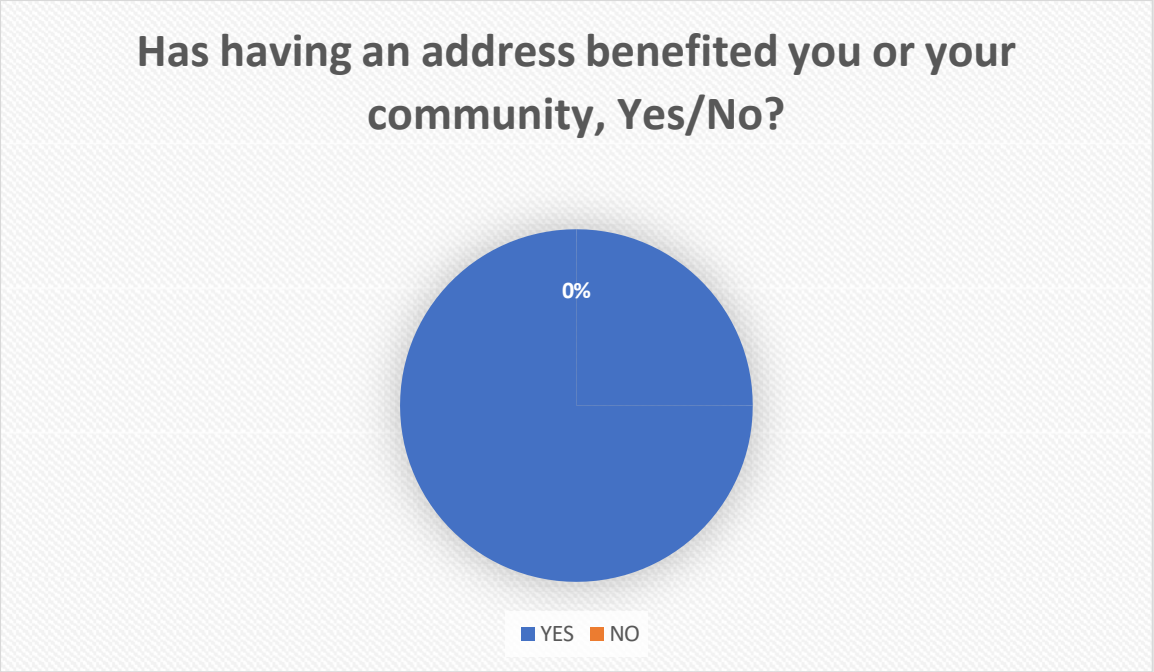
4.2.4 Was the digital address project community-led process, Yes/No?

In both Skoonplaas and Thembelihle informal settlements, the digital address project was fully community-driven, with residents engaged from the outset. Prior to the project's implementation, a community meeting was held to inform residents about the initiative and its potential benefits. This openness promoted a sense of ownership among the community members, motivating them to actively contribute to the project's successful execution.

The response to this question was a resounding yes, as a result community volunteers that were involved in the process produced the map of the settlement, created Plus-code addresses, inserted the digital boards, conducted training on the use of the digital address map were local community members. Although the mapping initiative was participatory, it was initially introduced by Planact rather than emerging directly from the community. This raises important questions about the extent into which the process can be considered truly community led. While residents were involved implementation, the problem and solution were externally defined.

4.2.5 Has having an address benefited you or your community, Yes/No?

In both informal settlements, the entire community is now benefiting from the digital address system. Navigating within the settlement has become much simpler, as people can use Google Maps to find directions using the Plus-code coordinates, making it easier to locate specific areas. The digital address system has become crucial for residents when requesting services. Before, accessing emergency services or deliveries was difficult due to the lack of a formal address system. However, with the introduction of the digital address, residents can now easily request services like Uber, significantly improving daily life for everyone.



4.2.5.1 Community Leader- Thembelihle

A community leader mentioned that since the introduction of digital addresses, service delivery has greatly improved. For instance, in Thembelihle, on July 20th, 2024, an ambulance was called for a woman in labor. The ambulance was able to find her precise location using the digital address and pick her up right at her gate. Before digital addresses, people would have had to meet the ambulance partway, resulting in preventable delays and inconvenience. This was the prime talking point during the focus group interaction; this was because it was the first time that an ambulance traversed the settlement without getting lost in the settlement.

4.2.5.2 Community Leader- Skoonplaas

In Skoonplaas, the digital addresses have enhanced the community's ability to organize various activities. Residents can use the coordinates to find specific locations or track community initiatives, such as the Social Enterprise Fund, which supports the community safety patrollers' project. In emergencies, patrollers can quickly contact the police, ambulance, or fire brigades and provide them with digital addresses.

The coordinates are also utilized to organize community meetings and events, simplifying the coordination of gatherings. With access to digital addresses, the community can now gather data on residents and their locations. This information is being used to improve services, and the Plus-code system helps identify individuals within the community. A community register has been established, making it easier to know who resides in the area.

4.2.6 What challenges did you face around procedures (i.e. registering children to school, clinic, studying online, opening a bank account etc.) without an address?

4.2.6.1 Focus group – Thembelihle

In Thembelihle one of the focus group members said the following: 'Definitely, says a young resident in Thembelihle. Because we didn't have street names and traceable addresses, we could not receive letters. People doing online and distance learning were supposed to go all the way to Lenasia post office to get their study material'. Since the installation of the addresses those studying via correspondence can now get their study materials delivered.

4.2.6.2 Community member- Thembelihle

One community member said, 'often, we have more than seven different addresses for one shack because of the renumbering by the municipality. The numbers are not often helpful because they cannot be found on Google map'.

4.2.6.3 Focus group- Thembelihle

One of the focus group members had this to say; 'Ambulances and the police could not reach us if there is an emergency. When you report to 10111, they would tell you to go and wait at a spot outside Thembelihle in the middle of the night. By doing that you put your life at risk. We had pregnant women that almost gave birth on the wheelbarrows because we were expected to push them in a wheelbarrow, so we can meet the ambulance somewhere outside the settlement'. Community members indicated that there has been a drastic change in this regard due to having traceable addresses, this was also attested to by a local social worker

4.2.6.4 Focus group- Thembelihle

One of the focus group members said the following, "Yet when the police are chasing after us during protests, they have no difficulty navigating the whole settlement to arrest the leaders. But when it comes to assisting with service delivery, they will tell you, sorry, we can't find our way in Thembelihle'. What the community has observed is that some SAPS members are welcome the use of digital address while others do not.

4.2.6.5 Focus group- Skoonplaas

In Skoonplaas, a community member shared that prior to the introduction of digital addresses, many residents struggled due to the lack of formal addresses. While the municipality carried out an enumeration process and assigned each household an address, this was solely for counting the number of shacks in the settlement. These provisional addresses could not be

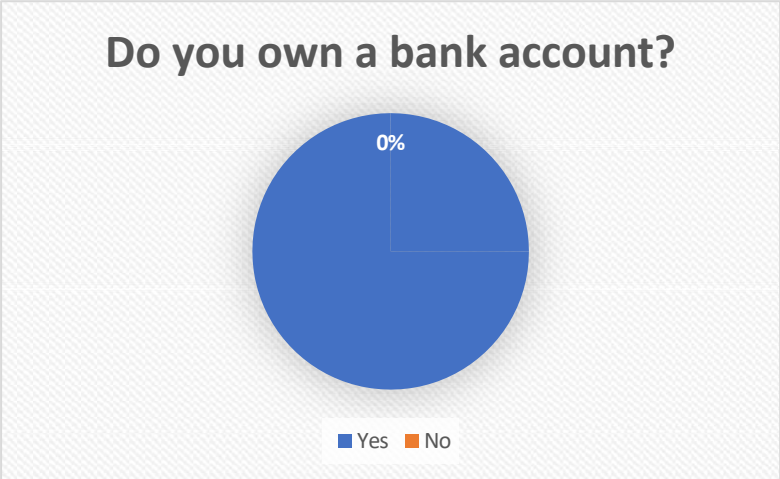
verified by banks or municipal authorities, which created barriers for residents trying to access services such as banking and government aid.

4.2.6.6. Focus group – Skoonplaas

One of the community leaders said during the focus group interview, 'When you live in an informal settlement, services cannot reach you because you do not have an accessible address. The police can't respond, you can't get bail, the ambulance can't find you, and the fire brigade can't enter. Everything but a ballot box. A ballot box will find you.'

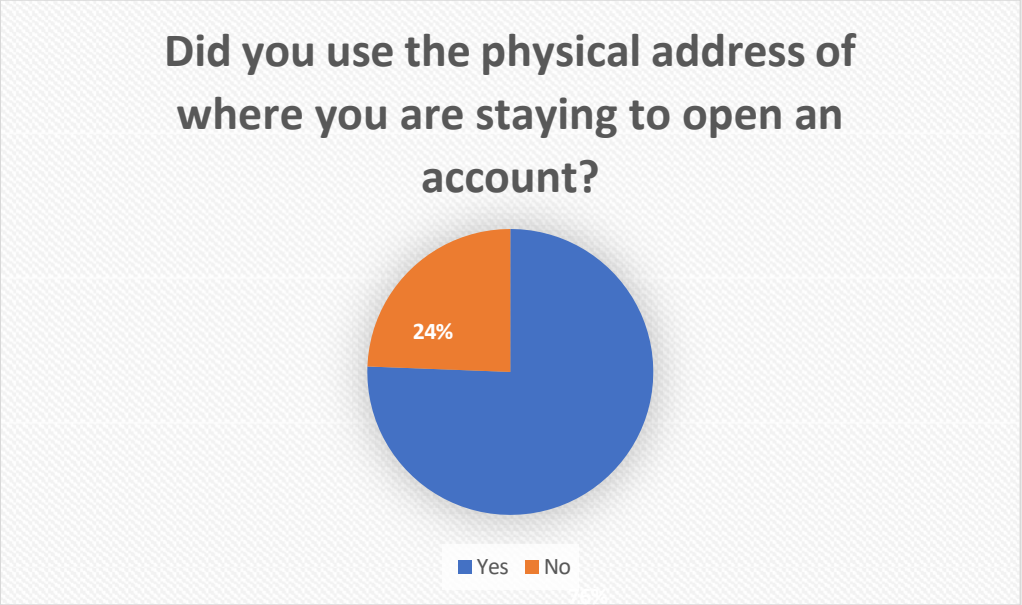
4.3 Do you own a bank account?

To further support the evidence, the researcher conducted a survey to explore how residents of informal settlements manage to open bank accounts without a verifiable address. The survey was distributed to 41 participants from both Thembelihle and Skoonplaas, and the results showed that all participants had bank accounts with various banks in South Africa.



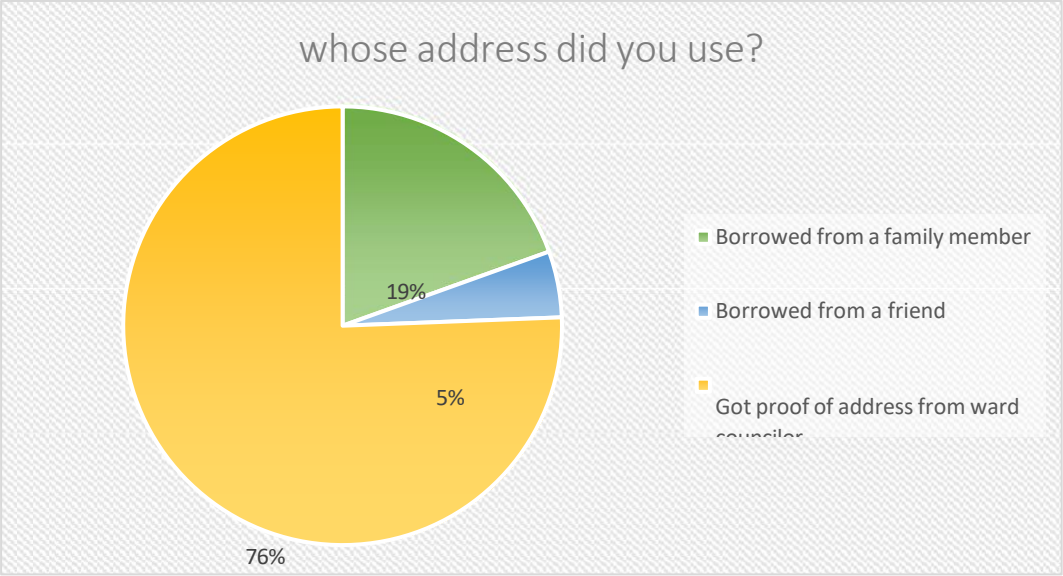
4.3.1 Did you use the physical address of where you are staying to open an account?

When asked if they used their residential address to open their bank accounts, 31 participants confirmed that they did, while 10 stated that they did not use their actual residential address.


Did you use the physical address of where you are staying to open an account?
24%
Yes
No

4.3.2 Whose address did you use?

The research posed this question to determine whose address was used when opening bank accounts, as neither Thembelihle nor Skoonplaas had traceable addresses before the digital address initiative. Most participants reported using proof of address obtained from the councillor, while 8 participants mentioned borrowing an address from a family member, and 2 said they borrowed one from a friend. This survey was conducted to prove to banks that they are taking risks by lending or allowing an individual to open an account without verifying their address.



4.4 Despite the challenges you face, why did you continue to stay in this informal settlement (Skoonplaas/Thembelihle).

One community member shared that he has lived his entire life in Thembelihle and has formed a deep connection to the area. He values the knowledge, education, and opportunities he has gained while living there, and despite the challenges, he hopes to have a stable home in Thembelihle. Another participant mentioned that Thembelihle's proximity to job opportunities was a key factor for staying. One respondent stated that many people choose to live in the informal settlement because their livelihoods have always been tied to the area. For instance, some moved from places like Durban to Thembelihle after high school because they saw many opportunities within the community. Over time, the area became a place of personal growth,

where people learned new skills, became involved in activism, and even completed various courses.

The hope that Thembelihle would eventually develop into a formal area kept people motivated to stay. For many, it wasn't just about their own well-being but also about providing their children with a stable home. Even those who hadn't grown up in the area, after facing challenges like job loss, found a renewed sense of purpose through community work. Moving to Thembelihle allowed them to follow their passion for community involvement, which strengthened their connection to the place and its people. In many cases, residents looked to their leaders for support in meeting their needs, with organizations like Planact playing a crucial role by offering workshops to build community capacity.

Skoonplaas, located near a mine, attracts residents seeking job opportunities, which is why many chose to settle there despite the challenges. Most moved with the hope of eventual development, including basic services like electricity and proper addresses, but these expectations were not met. For some, relocating to Skoonplaas provided an opportunity for independence, leaving behind living situations with parents or renting elsewhere. Many residents, having grown up in the area, hoped the municipality would eventually address their needs.

Before receiving digital addresses, residents faced difficulties such as opening bank accounts (they must borrow an address) and enrolling children in school, often relying on informal systems like loan sharks that didn't require proof of address. Parents struggled with school registration, as proof of a stable address was often needed. To help, community leaders wrote endorsement letters to verify families' residence in the area, as schools often viewed those without fixed addresses as less stable. Having a digital address supports school registration by providing families with formal proof of residence, which is often required for enrollment and catchment-based placement. It enables children from informal settlements to access schools more easily by legitimizing their location, simplifies administrative processes for schools, and improves communication with parents.

4.4.1 How would you describe some of the improvements to your standard of living now that you have an address?

In Thembelihle, a community leader shared that before the digital address system, residents had to meet emergency medical services halfway, causing delays in urgent situations. With the new system, emergency services can now locate residents directly at their homes. Previously,

bank statements were used to verify addresses for FICA purposes, but this often wasn't sufficient. The digital addresses have streamlined this process. Digital addresses can significantly streamline the FICA (Financial Intelligence Centre Act) compliance process by providing a more accurate, standardized, and verifiable form of address proof compared to informal or inconsistent alternatives like bank statements. While bank statements are commonly used, they often lack reliable location data especially for residents in informal settlements where addresses are not formally recognized. Digital addresses, by contrast, can be geo-referenced, linked to official mapping systems, and validated through digital platforms, offering financial institutions a more trustworthy and consistent method for verifying a client's location. This can help reduce fraud, improve access to financial services for underserved communities, and simplify compliance for banks by integrating address data directly into onboarding systems. Since their introduction, daily life has improved, with residents now able to order goods online and have deliveries, such as groceries, brought directly to their homes, which was previously impossible due to the lack of addresses.

In Skoonplaas, older individuals can now easily call taxis by providing their Plus-code. This has made travel much more convenient, especially for those who cannot walk long distances to reach transport services. The digital address system has made life simpler for everyone, as delivery services can now use the blue number (digital address) to locate homes within the settlement. This has greatly improved the efficiency of locating houses for deliveries or service calls. Although the digital address system is still relatively new, it is starting to gain recognition. For example, when residents file complaints with the sanitation department, they are asked to provide their digital address (blue number) to pinpoint the exact location of the issue. This has led to faster response times and better service delivery. However, residents feel that more needs to be done to improve their living environment.

4.5 Do you feel greater recognition from the city with your address (access to basic services)?

In Thembelihle, a community member shared that they couldn't check the status of their indigent grant application due to not having a registered address, highlighting how the lack of addresses in informal settlements hinders access to government benefits. They also noted that burial benefits are difficult to access, requiring verification of addresses from both a social worker and a councillor, causing delays. Since receiving digital addresses, the community has felt more recognized by the city, with easier service complaints and successful deliveries, such as books, directly to residents' gates.

In Skoonplaas, the community pointed out that accessing government assistance packages, such as those for families experiencing loss, is challenging due to the absence of a formal address. The complex process, which involves obtaining affidavits, social worker engagement, and council approval, further complicates access to vital support for informal settlement residents.

A significant challenge for the community in Skoonplaas is that the City of Ekurhuleni does not officially recognize the digital address system or street names in informal settlements. This lack of official recognition complicates matters further for the community. According to the Ekurhuleni Metropolitan Municipality Geographical Naming and Renaming Policy (ITEM A-SRAC 0C, 03-2016 CM 22/06/2017), streets in unapproved or informal townships cannot be named unless the settlement is slated for regularization. Focus group members noted that they rely on landmarks recognized by the community instead.

4.5.1 Would you be willing to pay for services, now that you have an address and better access to basic services? If not, what would it take?

In Thembelihle, participants had mixed responses. While they expressed a willingness to pay for services like water, sanitation, electricity, and waste collection now that they have an address, they also emphasized the need for the municipality to officially recognize and upgrade their area to make it more livable. This reflects the community's readiness to contribute to development, provided the government formalizes the settlement and offers proper services.

In Skoonplaas, the community expressed a willingness to pay for services as well, but their hesitation stems from feeling neglected by the municipality and lacking proper facilities. The issue isn't their ability to pay, but rather the inconsistency and unreliability of service provision.

4.5.1.1 Community Leader-Skoonplaas

The community leader alluded 'We don't pay for services because we feel neglected and don't have access to the proper facilities that come with paying for such services. It's not that we have a problem with paying—many of us pay for services like DSTV—but we can't justify paying for services that are not provided, such as water, sanitation, or electricity'.

If the municipality provided essential services like electricity, waste collection, and water consistently, the community would be happy to pay for them. However, paying for just one service while other important needs remain unmet feels unfair. Similar to how services like water and electricity are bundled together in suburban areas, the same approach should be applied in informal settlements. There is a need for service packages tailored to the unique

needs of informal or disadvantaged communities, ensuring that all necessary services are included. If this were implemented, the community would be willing to contribute.

4.6 COGTA official interview.

A representative from the Gauteng Cooperative Government and Traditional Affairs (COGTA) in the public participation department highlighted several concerns for consideration.

4.6.1 Do you think digital address promotes public participation?

Indeed, public participation focuses on inclusion and equity, ensuring that every voice is heard and considered in the process. The digital address initiative is a bottom-up approach that guarantees the active involvement of all community members in the project.

4.6.2 Do you think there is a need for a uniform provincial digital address policy?

From a government standpoint, this will assist in the targeted delivery of services, ensuring they reach the intended locations. The province needs to invest in a consistent policy to improve synchronization and planning for service delivery in informal settlements. This would help reduce the confusion resident’s face regarding the possibility of naming streets and having formal addresses in these areas.

4.6.3 Why is it important to have an address in formal or informal areas?

An address fosters a sense of belonging, restores dignity, and affirms an individual's identity, whether in a formal or informal area. It provides essential data that helps municipalities plan more effectively for settlements. An address is a valuable asset to the community, driving economic, social, and cultural activities. It boosts the local economy, allows parents to enroll their children in schools, enables individuals to open bank accounts, and access municipal services such as indigent grants. With an address, one can be easily located, register a phone, and comply with national laws.

4.6.4 What are the possible risks of having an address?

The official expressed concerns about the unintended consequences of this well-intentioned initiative. He highlighted the limitations of digital addresses in informal settlements, particularly regarding how they identify undocumented migrants or immigrants. He questioned what would happen if individuals, such as criminals, refuse the digital address because it conflicts with the law and choose to hide in informal settlements. Additionally, he raised concerns about the risks of assigning an address in an unproclaimed area and questioned who holds the authority to verify these addresses.

4.6.5 The City of Ekurhuleni, Housing department official interview

Municipal officials are the representatives of the municipality, responsible for carrying out municipal policies. They are often referred to as administrators or bureaucrats. These officials help share their experiences regarding the relevance of policies, and two municipal officials were interviewed. However, the official from the City of Ekurhuleni (CoE) was hesitant to fully participate in the interview, citing a lack of permission from his superiors. Despite this, he commented, "A housing official from the Community Services and Management unit of the City of Ekurhuleni stated during his visit to the Skoonplaas community, 'This project is long overdue... It is groundbreaking... this process is an initiative that is creating a Policy Statement.' He congratulated Planact for conceptualizing and implementing the pilot project in Skoonplaas."

4.6.6 What is a Street Address or Physical Address?

The official from the City of Johannesburg's planning department shared the following perspective:

From a municipal viewpoint, street address is crucial for the delivery of municipal services such as water, electricity, waste collection, and related correspondence. A street address consists of a street number, street name, suburb name, and street code (postal code). Therefore, a street address can only exist if a street name is assigned to the street number. As a general rule, street addresses are assigned sequentially along a street, with odd numbers on one side and even numbers on the opposite side.

Every resident has the constitutional right to an address, but without a street name, an address cannot be assigned according to the formal human settlements process in urban and peri-urban areas. Lacking an address denies individuals their dignity, leading to exclusion and preventing access to essential services. This exclusion results in several challenges, including delays in emergency services and police response, issues with the delivery of council services, incorrect billing for services, and the inability to receive postal services or related correspondence. A street address is also required for FICA and RICA compliance purposes.

Street addresses are also required by several key legislations:

- Local Government: Municipal Systems Act 32 of 2000
- Spatial Planning and Land Use Management (SPLUMA) Act 16 of 2013

- The Development Planning Department, Valuations, Billing, and Service Departments (Property Value Chain)
- Section 60 of the City of Johannesburg Town Planning By-Law of June 2016, which mandates the allocation of a property street address as a legal prerequisite for development planning processes in township establishments, subdivisions, and consolidations of township erfs.
- The Municipal Finance Management Act 56 of 2003
- The Valuation Roll of 2023, as stipulated by the Property Rates Act (No. 6 of 2004)
- The Financial Intelligence Centre Act (FICA) 38 of 2001
- The National Credit Act (June 2007)
- The Regulation of Interception of Communications and Provision of Communication related Information Act 70 of 2002

By not implementing these requirements, the city and its entities are violating their own laws. Furthermore, compliance with the South African National Addressing Standards (SANS-1883), established by the South African Bureau of Standards (SABS), is crucial. These flexible standards allow for the use of various addressing systems (including Google Address Codes) and offer solutions for addressing informal settlements. The City of Johannesburg is currently working on digitizing and updating its spatial database for informal settlements. Various methods are available for digitizing the locations of informal settlements, including mapping boundaries and counting the number of informal structures within each settlement.

4.7 How can we get the City entities to start using the digital address in informal settlements?

It is essential to analyze attribute data and its effect on service delivery. This data should focus on the needs of Emergency Services (EMS), Joburg Water, City Power, Pikitup, and Disaster Management, while also incorporating service delivery points such as water and electricity meters, crime hotspots, Telkom Towers, and, where possible, population demographics. Stakeholders and city entities from the City of Johannesburg (CoJ) must finalize their strategy for collecting and organizing data on informal settlements to ensure it is thorough and meets community needs. This data will be crucial in securing funding for the enhancement of these areas.

4.7.1 Ward councilor interview

Ward councillors are elected representatives under the current laws of the country. They act as the community's voice in the municipal council and are responsible for the development and oversight of local by-laws. They also play a key role in approving and managing the municipal budget and urban management. The African National Congress (ANC) ward councillor from Region G, Ward 8 in the City of Johannesburg (CoJ) took part in the interview. However, the Democratic Alliance (DA) ward councillor from Ward 78 in Ekurhuleni declined to participate, citing his opposition to the illegal occupation of land and informal settlements.

4.7.1.1 Is an address important for your community (informal settlement) Yes/No?

Absolutely, an address is crucial, especially for my community, which is an informal settlement. There have been numerous occasions when I struggle to provide directions to municipal officials due to the absence of an address in our community. As a result, I often have to wait for them at the entrance to the settlement or meet them at the regional office, which is quite far from here.

4.7.1.2 Have you been able to use the digital address, Yes/No?

A member of the focus group mentioned that he also lives in an informal settlement where Planact has implemented the digital address system. He stated, "Yes, I use it frequently when calling public meetings or during emergencies in the community. They send me an MV number, and I can reach the location within minutes. This has greatly improved my work as a ward councillor. I've also shared the project with my fellow ward councillors in the City of Johannesburg." Additionally, the neighbouring ward councillor has reached out to Planact for help, and the digital address system is now being installed in one of his informal settlements.

4.7.1.3 Was the digital address project community-led process, Yes/No?

"Before Planact introduced the digital address system, they met with me to explain the project's benefits. I then organized a public meeting to introduce both Planact and the project to the community." The project was warmly received by both the community leaders and the entire community. Volunteers were chosen from within the community and worked closely with Planact officials. Every two weeks, I held meetings with Planact officials and the volunteers to assess progress and address any challenges the volunteers had identified. As a ward councillor, I am satisfied that the project was led by the community.

4.7.1.4 How would you describe some of the improvements to your standard of living now that you have an address?

A community leader shared that there has been a noticeable improvement in the community's standard of living. The leader, who had also been impacted by the lack of an address, mentioned that they provided the Plus Code address to the local police station, the emergency department, and ambulances. As a result, the police have responded more quickly to emergencies, such as incidents of gender-based violence (GBV). The leader also highlighted that it has become easier for parents to register their children at nearby schools. Additionally, they observed elderly residents using Uber to avoid walking long distances to the mall, which has also enhanced their safety.

4.7.1.5 What do you think should be the role of the CoJ in the address process in informal settlements?

A focus group member and community leader suggested that the municipality should partner with organizations like Planact to enhance service delivery to informal settlements. He emphasized the need to review the current street naming policy to include traceable addresses for these areas. He also proposed charging services provided to informal settlements. The data collected during the address implementation process would help the municipality plan more effectively, improve budgeting, and determine the number of households in each settlement.

4.6. What is the value of an address in formal and informal areas?

An address serves as proof of residence, whether in formal or informal areas, and legitimizes a person's place of residence. It is used to identify individuals and determine the allocation of state resources. In the era of e-commerce, having an address allows one to order goods and

services online for delivery. The data collected from addresses helps the government plan and budget more effectively for efficient service delivery.

4.7 What is the role of intermediary organisations such as Planact in the digital address?

Intermediary organizations like Planact play a crucial role in connecting communities to resources. They facilitate communication between local communities and the government and organize civic empowerment workshops that the government may not adequately provide. These organizations help communities recognize their potential and enhance their local assets for their own benefit and development. In the case of the digital address project, Planact was instrumental in conceptualizing the initiative, partnering with Google for technical support, mobilizing the communities in collaboration with local leaders, engaging with local government, and implementing the digital address system.

4.8 What do you think should be the role of other stakeholders in the digital address initiative?

The implementation of the digital address in informal settlements involved several key stakeholders. Local government, with its developmental agenda outlined in the constitution and other legislation, played a crucial role. Their responsibilities included approving the settlement map and recognizing the importance of addresses in informal settlements. Effective urban management relies on proper addressing, street names, policing, refuse collection, fault reporting systems, the ability to trade, good local governance, and fostering a sense of identity and citizenship. It is hard to envision successful urban management without proper addressing for the millions of residents in informal settlements.

The community played a vital role in the successful implementation of the digital address project, as they were the main beneficiaries. Their support was crucial, as they attended public meetings and expressed their backing for the street naming project. Volunteers were granted full access to their properties to number the shacks and assisted in recruiting and vetting other community volunteers. These volunteers collected data to design the settlement map, conducted walks to identify open spaces and land usage, and helped number the shacks in different sections, correcting any previous numbering issues.

Community leaders oversaw the project, managing its progress and ensuring effective communication. They organized public meetings to update the community on the project's developments and provided regular feedback. Additionally, they were responsible for

recruiting and supporting the volunteers, offering mentoring throughout the process. The leadership kept a register of all households and shacks in the area, even before addresses were assigned, ensuring they knew who resided in each shack. Newcomers were easily identifiable, and any transactions involving shacks, like buying or selling, had to be reported to the leadership office, which also resolved any disputes. This office served as the central point of the community.

Funders such as Misereor, Raith Foundation, and the Industrial Development Corporation (IDC) provided financial support for the project. Policymakers played a key role in ensuring that every household, including those in informal settlements, had a traceable address. This initiative helps the municipality plan more effectively and allocate the necessary resources to these

4.8 Do you think the Plus-code address is user friendly for communities?

Plus Codes are digital addresses that provide precise, scalable location coverage for areas without traditional street addresses. Unlike conventional addresses with street names and numbers, Plus Codes are based on latitude and longitude, represented by a combination of letters and numbers, such as RF54+6F Springs. While the Plus Code doesn't indicate ownership of a property, it accurately shows the location of a residence on a map, including on platforms like Google Maps. Every household is assigned a precise Plus Code address. These codes are easy to use, work both online and offline, and don't require an internet connection. They are short, memorable, and are visually distinctive with their blue and white color scheme. While tech-savvy youth have no difficulty using them, older individuals who are less familiar with technology may find them challenging. To assist communities with the Plus Code process, Planact has developed a simple, user-friendly guide.

4.9 What are the possible risks about digital addresses in informal settlements?

The absence of tenure security is a significant risk, as the constant threat of eviction prevents communities in informal settlements from achieving stability and fully benefiting from having an address. One unintended consequence of assigning addresses is the rise in land value in property in areas with proper address, which has made these areas more expensive. However, residents of informal settlements acknowledge and appreciate the importance and value that an address brings to their community.

An official from Modderbee Correctional Centre, which houses convicted offenders, commented on the project, stating, "It is often challenging to grant bail to offenders without a

valid address. Tracking offenders who skip bail or are on parole is difficult if they reside in areas without proper street names or household addresses. This project will greatly aid in monitoring parolees and tracking offenders who violate their bail conditions."

Chapter 5: INSIGHTS AND INTERPRETATIONS

5.1 Introduction

This chapter provides a summary of the findings derived from the data collected and analysed in relation to the main research question, which explores how having an address in an informal settlement affects people's quality of life. The study examines address systems in informal settlements in South Africa, specifically focusing on pilot projects conducted in the Thembelihle and Skoonplaas informal settlements in the City of Johannesburg and Ekurhuleni, respectively. The chapter presents the findings, key lessons learned, and highlights areas that require further research. The study revised policies of COE and COJ and found that former does not permit street naming while the latter allows for street naming in informal settlements. The study evaluated the present-day practice on addresses for informal settlement at the municipal level.

The participatory research conducted in this study revealed a policy gap regarding traceable addresses for informal settlements in South Africa, creating an opportunity for further investigation into this issue. Given that this study was limited to Gauteng Province, additional research is needed, as South Africa's various municipalities (rural and urban) may have different systems of address, potentially leading to diverse outcomes.

This study also found that no previous research has been conducted on the use of the Plus Code digital address system in South Africa, making it a groundbreaking effort that will likely inspire further studies and discussions among development practitioners. It could also contribute to policy revisions on this topic.

The findings indicate that the absence of an address negatively affects the quality of life for residents of informal settlements. Additionally, the lack of a traceable address diminishes the dignity and citizenship of these residents. An address holds social value and plays a critical role in promoting social justice and ensuring residents' right to the city and its benefits.

5.2 How does having an address in an informal settlement impact people's quality of life? An evaluation of address systems in Informal Settlements in South Africa: A case study of Thembelihle and Skoonplaas informal settlements.

The SDGs provide perceived indicators of the quality of life of citizens. They form part of the criteria for evaluating the research question. Different SDG goals will be linked to the findings of the literature review and the outcomes of the interviews with different stakeholders. Residents of informal settlements also have aspirations, such as taking out loans to improve their home-based businesses, receiving mail, opening bank accounts, and being recognized as citizens. In the absence of secure land tenure, an address serves as a substitute, enabling access to various public and private services. An address can be viewed as a social asset, contributing to the overall well-being of the community, particularly for informal settlement residents who lack formal addresses. It affirms their dignity and sense of citizenship. As Frediana et al. (2023) suggests, improving the lives of those in informal settlements has broader societal implications (when informal settlement residents improve, society as a whole benefits). The Plus-code digital address is an innovative solution that facilitates spatial transformation and promotes inclusive urban development. It also addresses the exclusion of informal settlements from municipal planning processes, while the data collected helps municipalities improve their budgeting and planning for these areas.

5.2.1. Sustainable Development Goals

The Sustainable Development Goals (SDGs) are global objectives that every country is expected to achieve by 2030. Central to these goals is the idea of localizing plans and development indicators for each sector, with the principle of "no one must be left behind," emphasizing the inclusion of residents in informal settlements. In South Africa, the National Development Plan (NDP) serves as the framework to help the country meet its development goals (Stats SA, 2023:4). As a signatory to the SDGs, South Africa is committed to fulfilling these goals despite challenges such as high unemployment, poverty, inequality, widespread crime, and inadequate shelter provision.

SDG 1 focuses on eradicating poverty in all its forms everywhere.

These goals are intended to improve the well-being of citizens, and monitoring and evaluating the impacts of poverty are vital for understanding human development. For marginalized residents in informal settlements, the absence of an address hinders efforts to reduce poverty and hunger. An address is a valuable tool for improving a household's livelihood opportunities. It serves as an asset that can help alleviate poverty, strengthen social networks, and increase economic opportunities, especially for entrepreneurs who can be located more easily. Social networks help reduce community vulnerabilities, and an address can mobilize residents to respond effectively to challenges.

SDG 5 aims to achieve gender equality and empower women and girls.

Women play a crucial role in managing households, raising children, and performing tasks like collecting water from communal taps or rivers. Despite these important contributions, women and girls in South Africa are often victims of gender-based violence (GBV). The absence of traceable addresses in informal settlements worsens the issue of GBV, as emergency services and police struggle to reach victims on time. To achieve SDG 5, it is crucial to leverage technologies like the digital address or Plus Code to enhance response times for police and emergency services. While South Africa has progressive policies to protect women's rights, more needs to be done to shield women and children from violence and other social challenges to improve their well-being.

SDG 6: Ensure availability and sustainable management of water and sanitation for all.

Sanitation infrastructure in informal settlements is generally inadequate. In the two studied settlements, residents are provided with chemical toilets, which are unsafe for women and children. These toilets are meant to be emptied twice a week, but this service is inconsistent, negatively impacting the community's health. This lack of proper sanitation causes people to miss work and school, affecting their livelihoods and education. Poor health and well-being hinder community participation in activities and diminish residents' dignity. Ultimately, these conditions lead to a decline in both individual and community well-being. One of the key challenges is the absence of an address, which hinders the ability to report issues such as unemptied toilets. In both communities, residents have resorted to illegally connecting water to their yards because the communal taps provided by the municipality are insufficient for the population size. When the community lacks water, reporting problems becomes nearly impossible due to the lack of a traceable address.

SDG 11: Make cities and human settlements inclusive, safe, resilient, and sustainable.

Researchers and scholars recognize that cities are growing rapidly due to urbanization, internal migration, and population growth. As cities attract new residents, local governments are being forced to rethink how to build sustainable, livable cities that support the well-being of all residents. With the looming threat of climate change, which brings challenges such as flash floods, extreme heat, and inconsistent rainfall affecting food security, informal settlements are likely to be particularly vulnerable. These areas often lack trees to prevent soil erosion and flooding. Some settlements are located near riverbanks and are at high risk of being swept away during floods. The absence of traceable addresses in informal settlements makes it difficult to locate and assist those in need during times of crisis.

5.2.2 Promotes community-driven development.

With over 50% of the global population residing in cities, urban issues have once again become a central focus of the global development agenda (Daphnis et al, 2008: vii). Cities are grappling with significant challenges, including social, economic, and cultural issues, as well as poverty, unemployment, inequality, infrastructure decay, and transportation, to name a few. One of the primary challenges for cities is how to significantly improve the lives of the urban poor. For those living in poverty, the path to prosperity is often steep and difficult (Daphnis et al, 2008). Cities frequently rely on the poor for cheap labour, as they form the backbone of the city's economy.

In the face of high unemployment and poverty, where job opportunities are scarce, residents of informal settlements often resort to creative ways to sustain their livelihoods. Most residents in informal settlements engage in the informal economy, with little to no regulatory protection. They work as small-scale street vendors, waste pickers, recyclers, spaza shop owners, shebeen owners, and operate businesses like shisanyamas (buy and braai) and car washes. Additionally, they sell fruits and vegetables, work as small-scale construction workers, and run early childhood development centres (ECDs). These small-scale enterprises are typically located near market opportunities, such as along main roads, major intersections, and close to train stations. They have the potential to generate employment for many residents of informal settlements, where conditions can often be bleak. According to interview participants, the digital address plays a significant role in promoting and marketing their businesses, leading to profitability and the ability to meet their socio- economic needs. This, in turn, helps restore their dignity, fosters a sense of belonging, and contributes to the overall well-being of the community.

While both informal settlements lack primary and secondary schools, education remains a priority for the residents. Every effort is made to ensure that children attend nearby schools. As noted by Daphnis et al. (2008: 7), the poor are acutely aware of the value of education. Education not only improves personal well-being and increases employment opportunities but also helps break the cycle of poverty across generations, restoring dignity, building knowledge, and boosting confidence. However, the absence of an address presents a barrier for many children in informal settlements, as an address is required for school registration. In the absence of one, parents often resort to using addresses from friends or family members, or even create false addresses. For those attending long-distance universities, the lack of an address poses a serious challenge, forcing them to spend limited funds to collect study materials or use someone else's address for delivery. During the interviews, school-going participants expressed deep gratitude for the digital address project, noting that it has greatly improved their lives and created new opportunities for further education.

5.2.3 Integration of marginalized citizens to the city through an address.

Residents of informal settlements should not be treated as second-class citizens, stripped of their rights to citizenship and dignity. Their dignity is upheld through the socio-economic rights guaranteed in the Constitution (1996). One of these rights is the right to vote, which allows them to elect their preferred representatives, ensuring their voices and choices are considered in municipal processes. According to IEC regulations, a voter must have a traceable address, which affirms their citizenship, including for those living in informal settlements. For marginalized communities, having the right to vote recognized is significant, and an address plays a crucial role in ensuring they are identified and properly integrated into government systems.

A formal address is essential for accessing vital socio-economic services, and without one, individuals may be excluded from government benefits, emergency services, and support systems. Since the introduction of the digital address system in Thembelihle, service delivery has improved, allowing the community to report illegal dumpsites to Pick-it-Up by sharing locations through the Plus Code address. Access to financial services, such as opening a bank account, applying for loans, or obtaining credit, often requires an address. A formal address helps integrate marginalized citizens into the formal economy, allowing them to build credit, save money, and plan for their future. Without one, individuals may be excluded from these vital financial services.

Community leaders observed that in both informal settlements, the growth of the areas has been contained, and no expansion has been noticed. This enables the municipality to plan more effectively. New arrivals often feel out of place when they realize they don't have an address, leading to a sense of disconnection from the community. They also fear eviction due to the lack of an address, which would result in losing access to municipal services and other urban benefits. A formal address serves as a key for excluded individuals to access the rights, services, and opportunities needed for full participation in city life, helping them to be recognized as part of the social structure and reducing exclusion while promoting social, economic, and political integration.

5.3.4 Inclusive Urban development

The 2013 CDE report highlights that poor urban management contributes to the expansion of informal settlements, stating that informal development, including such settlements, is directly linked to inadequate urban management (Workshop, 2013). However, when marginalized groups, such as informal settlement residents, are provided with a formal address, they become integrated into the urban planning and development processes of the municipality. According to Lefebvre (1996) in the literature review, there is no urban reality without the city centre, which serves as a place of interaction. Therefore, all urban residents, including those from informal settlements, should have access to it. City planners, policymakers, and service providers can better allocate resources, programs, and infrastructure to marginalized areas, ensuring these communities are part of broader efforts to enhance the urban environment. It is crucial for all municipal departments—such as health, housing, transport, sports, arts and culture, community safety, environmental services, waste management, and others—to recognize an address as a vital tool for effective urban management, particularly in informal settlements.

Drawn for literature review Feinstein (2010:5) argues that the main goal of the just city is to guide urban policy to produce outcomes that would not have a negative effect on the already disadvantaged. The non-recognition of informal settlements by local authority exacerbates the negative effect on the already disadvantaged citizens of informal settlements due to lack of a traceable address. An address plays a crucial role in identifying the residents of each settlement, making it easier for local authorities to engage with them on important urban development matters, such as allocating trading spaces for small-scale vendors. The data gathered during the addressing process helps municipalities plan more effectively when upgrading informal

settlements, avoiding haphazard planning. An address encompasses several factors, including accessibility, location, and serves as a pathway to human development for informal settlement residents. With credible data collected through the address implementation, municipalities and other stakeholders can better support community-led resilience in a more organized way, such as by developing poverty reduction strategies, creating effective transport networks, and providing essential social amenities.

There is a need for a city-wide response to address the challenges faced by informal settlement residents due to the absence of traceable addresses. It would be wise for every municipality in South Africa to implement the address process in marginalized settlements. According to the World Charter on the Right to the City, the right to the city is the "equitable enjoyment of cities while respecting sustainability, democracy, and social justice" and is a collective right of all city inhabitants, particularly vulnerable and disadvantaged groups. Informal settlements, therefore, must be integrated into the right to the city, and municipalities should encourage inclusivity in their urban management systems and local governance.

5.3.5 Financial exclusion because of lack of an address.

Financial segregation not only prevents individuals from gaining access to banking services but also restricts their ability to participate in the broader economy. Without right to use to formal financial services, residents of informal settlements often turn to informal financial networks, which can be unsafe and unregulated. These networks, such as money lenders, community savings groups, and pawn shops, frequently charge high interest rates. As a result, individuals face additional financial strain, exacerbating cycles of poverty (Faisal & Karim, 2020).

This situation is worsened by the lack of secure tenure and the fact that municipalities do not recognize these settlements. The root of these challenges lies in limited financial literacy, coupled with a lack of trust from financial institutions toward informal settlement residents. These residents are often stigmatized as unreliable, dishonest, and criminal, and their lack of a traceable address makes it difficult for financial institutions to locate them if they default on payments. Contrary to these misconceptions, residents in informal settlements often participate in stokvels (savings clubs), where each member contributes a set amount monthly, and the funds are deposited with a reputable financial institution of their choice. Engaging with the financial institutions, they indicated their reluctance to engage with informal settlement residents. They admitted that engaging with communities would be challenging for them, as

they are not trained as social facilitators and are cautious about raising unrealistic expectations within the community regarding financial support. However, they recognize the need for financial literacy, with a focus on entrepreneurship, and aim to inform the community about the investment opportunities offered by banks. They expressed a preference for collaborating with a reputable non-profit organization to help with community mobilization and to provide guidance on the financial literacy topics to cover.

Banks and other financial institutions typically require proof of identity and a proof of address to open accounts. This requirement poses a significant barrier for individuals living in informal settlements, as they often lack a formal or fixed address. The absence of an address makes it difficult for these individuals to access various financial services such as savings accounts, credit facilities, and insurance products. In many developing countries, informal settlements do not have proper postal addresses or are not included in official address registries, exacerbating the issue of financial exclusion (Lerner, 2018).

The failure of the state to provide reliable addresses to informal settlements has given Planact an opportunity to innovate and create solutions to the challenges faced by residents without credible addresses. Financial institutions were reassured during their visit to Thembelihle, where they engaged with community leaders and local business owners to understand how the Plus-code address works in an unproclaimed area and the positive impact it has had on the community. They shared personal experiences, detailing how the digital address has significantly improved their lives.

5.3.6 NEGATIVE OUTCOMES OF DIGITAL MAPPING AND ADDRESSING IN INFORMAL SETTLEMENTS.

Digital mapping and digital addressing in informal settlements, including Planact's piloted initiatives in areas such as Thembelihle and Skoonplaas, present both opportunities and risks that require critical examination. While such interventions aim to enhance visibility, improve service access, and strengthen participation in municipal processes, they also produce a range of negative outcomes. Chief among these is the heightened risk of surveillance and eviction: by making informal dwellings precisely locatable, digital addressing can inadvertently expose communities to forced removals or securitised forms of state control, particularly in contexts where tenure remains insecure (Roy, 2020; Goodfellow, 2023). Closely related are concerns over privacy and data misuse, as geo-located household information constitutes sensitive

personal data that can be exploited for profiling, policing, or speculative development in the absence of strong governance mechanisms (Donovan, 2019; Kitchin, 2021).

Even where mapping is introduced under the rubric of "participation," processes frequently risk tokenism, since communities may have limited control over datasets and outcomes, resulting in maps that prioritise external institutional agendas over residents' lived needs (McCall & Dunn, 2012). Moreover, digital mapping often reproduces digital divides: households lacking smartphones, internet access, or digital literacy may be excluded from both the process and its benefits, while rapid or volunteer-generated mapping can generate inaccuracies that misinform planning and inadvertently worsen vulnerabilities (Hagen, 2017). Additional risks include intra-community tensions and elite capture, where local leaders may control access to data to consolidate influence, as well as commodification of informal space once settlements become more visible to investors, thereby accelerating processes of gentrification or displacement (Donovan, 2019). Finally, mapping exercises often raise expectations of empowerment and recognition; however, empirical evidence suggests that without accompanying institutional reforms or explicit municipal commitments, digital addressing alone rarely secures tenure security or equitable service delivery (Roy, 2020). Planact's pilots, while addressing some barriers by providing devices, data bundles, and training to enable participation in planning processes, nonetheless underscore these challenges by raising unresolved questions of long-term data stewardship, privacy protection, and resident agency. Thus, without embedding mapping within robust data governance frameworks, community ownership mechanisms, and protective policy commitments, digital mapping risks deepening rather than alleviating the vulnerabilities of informal settlement residents.

5.4 CONCLUSION

Although digital addressing provides residents of informal settlements with a traceable address, which is valuable for navigation, service requests, and in some cases emergency response, it does not equate to having an official address or recognised proof of residence. This distinction is significant because, while a digital address enhances visibility and allows residents to be located on mapping platforms, it does not translate into formal recognition by municipal authorities. As Planact's pilot projects illustrate, households with Plus Codes remain without the documentation normally required to access public services, register for utilities, or secure tenure. This finding highlights a central limitation of digital addressing initiatives: they increase

spatial legibility without conferring legal status. In contexts where local governments continue to resist in-situ upgrading, digital addressing risks functioning as a stopgap measure that improves traceability without advancing residents' rights to secure tenure or formal urban citizenship. Recognising this difference is therefore essential for evaluating the actual impact of digital addressing and for situating it within broader struggles for recognition, service delivery, and housing justice.

CHAPTER 6: RECOMMENDATIONS AND CONCLUSION

6.1 Introduction

This chapter provides a summary of the recommendations and draws conclusions based on the main research question, which explores how having an address in an informal settlement affects people's quality of life.

6.2 How does having an address in an informal settlement impact people's quality of life? An evaluation of address systems in Informal Settlements in South Africa: A case study of Thembelihle and Skoonplaas informal settlements.

The provision of addresses in informal settlements significantly influences residents' quality of life by enhancing access to essential services, formal recognition, and social inclusion. In contexts like Thembelihle and Skoonplaas, where state services and spatial governance have historically been uneven or exclusionary, the presence of an address whether traditional or digital can serve as a gateway to improved urban citizenship. Empirical studies show that residents with identifiable addresses are more likely to receive municipal services such as water, sanitation, waste collection, and emergency assistance (Barry & Fourie, 2021; Lemanski, 2020). Moreover, an address often enables access to formal systems of communication, credit, and identification, such as opening a bank account, registering for social grants, or receiving mail and deliveries, all of which contribute to socio-economic mobility and resilience (Gonzalez et al., 2020). In both Thembelihle and Skoonplaas, local data and community feedback reveal that residents perceive street naming and address allocation not merely as administrative acts, but as symbols of recognition and inclusion in the city. However, the quality-of-life improvements associated with addressing are not uniform; they depend heavily on whether the address is officially recognised by state institutions and integrated into broader infrastructure and service networks. Without formal acceptance by municipalities or integration into spatial planning systems, address initiatives—particularly those led by NGOs or using digital platforms risk becoming symbolic rather than transformative. Therefore, while addresses can materially and symbolically improve the lives of informal settlement residents, their impact is contingent upon broader urban governance structures, institutional legitimacy, and sustained service delivery (Friedman, 2021; Satterthwaite et al., 2020).

6.3 Does South Africa have a policy on informal settlements addressing?

South Africa does **not have a dedicated national policy** specifically focused on addressing informal settlements. While broader frameworks like the Upgrading of Informal Settlements Programme (UISP) and the National Upgrading Support Programme **(NUSP)** support spatial planning and service delivery, they do not explicitly mandate street naming or house numbering. Local governments may carry out addressing through by-laws, but these typically assume formal layouts. As a result, most address initiatives in informal settlements are ad hoc—often led by NGOs or communities—and lack formal recognition unless adopted into municipal systems. National policies like SPLUMA (2013) and the Integrated Urban Development Framework (IUDF, 2016) promote spatial inclusion but do not include specific provisions for addressing. This reflects a policy gap where addressing is seen as beneficial but is not systematically implemented across South Africa.

6.4 What is the current practice on addresses for informal settlement at the municipal level (comparison between Ekurhuleni and City of Joburg)?

Currently, addressing practices for informal settlements in South Africa vary across municipalities, with Ekurhuleni and the City of Johannesburg demonstrating different approaches in both implementation and institutional support. In Ekurhuleni, structure numbering is actively integrated into reblocking programmes, particularly through initiatives such as the Self-Reblocking Integration Programme, which includes numbering of dwellings and reorganising layouts to improve service access and safety. This structure numbering, while not formal addressing in the legal sense, serves as a functional proxy that enables service delivery and data collection (Ekurhuleni Municipality, 2024). The municipality also employs GIS-based occupancy audits, as seen in the Ulana settlement, to map dwellings and register household information laying the groundwork for potential address systems. In contrast, the City of Johannesburg is in the process of drafting a new Informal Settlements Policy that includes the GPS mapping of structures and community profiling. While this signals a move toward formal recognition, there is limited evidence of consistent structure numbering or street naming being implemented across all settlements (City of Johannesburg, 2025). Civil society organisations have raised concerns about the lack of clarity and inclusivity in the policy's definitions, which may hinder implementation. Both cities face common challenges such as rapid settlement growth, community resistance to reblocking, and limited institutional capacity,

which affect the sustainability and recognition of address systems. Overall, while Ekurhuleni appears more advanced in applying structure-based identifiers, Johannesburg's policy direction suggests a longer-term commitment to spatial inclusion. However, in both contexts, the transition from informal numbering to officially recognised addressing remains uneven and heavily dependent on broader urban governance and land regularisation processes.

6.5 What is the value of an address in an informal settlement?

An address in an informal settlement provides significant practical and symbolic value, contributing to both service access and social recognition. Practically, it enables residents to access basic services, receive mail, open bank accounts, and register for government support, thereby facilitating inclusion in formal economic and administrative systems (Barry & Fourie, 2012; Gonzalez et al., 2020). Symbolically, an address affirms residents' presence in the city and can serve as a tool for spatial justice, particularly when communities participate in naming and mapping processes (Friedman, 2021; Lemanski, 2020). However, the value of an address depends on its official recognition and integration into municipal systems. Without this, addresses may remain informal and lack the legal and institutional power to fully support residents' rights and entitlements. Despite these limitations, addressing is increasingly recognised as a low-cost intervention that enhances inclusion and supports global development goals, including SDGs 1, 11, and 16.

6.6 What key lessons about the importance of an address in an informal settlement in South Africa can be used to enhance policy?

When looking over or creating street naming policies for informal settlements in Johannesburg and Ekurhuleni, it is essential to approach the task with sensitivity, inclusiveness, and realism. Informal settlements often experience rapid growth, limited access to formal infrastructure, and a lack of documentation, presenting distinct challenges to the street naming process. Below are some recommendations for addressing the street naming policy in these areas:

6.6.1 Inclusive and participatory approach

Community-Driven Naming Process: It is important to involve residents of informal settlements directly in the street naming process. This can be achieved through public forums, community meetings, or voting systems, enabling people to propose names that reflect their culture and history. Allowing communities to participate in decisions about their environment fosters a sense of ownership and pride.

6.6.2 Cultural Sensitivity

Informal settlements are often composed of diverse communities, so it is essential that street names represent the multicultural and multilingual character of these areas. This could involve blending names from different ethnic groups, acknowledging local history, or even honouring local heroes, cultural figures, or influential community members.

6.6.3 Addressing the Legacy of Informality

Recognise the Informal Nature: One of the main challenges is that many informal settlements do not have proper street names or addresses, which complicates service delivery, emergency responses, and legal documentation. In this context, the street naming policy should focus on establishing a clear and official addressing system to help integrate informal areas into the city's broader urban structure. However, despite the value of incorporating informal areas into the city's framework, Farvacque-Vitkovic et al. (2015) suggest that municipalities may opt not to implement a street addressing system due to the informal and illegal status of these settlements, thus hindering residents from accessing the benefits of urban life.

6.6.4 Pragmatic and Flexible Criteria

Establish Clear and Simple Naming Criteria: Create easy-to-follow and practical guidelines for naming streets in informal settlements, ensuring that they reflect local significance while also being functional. These criteria could include:

- Naming streets after notable local figures or community leaders.
- Using prominent local landmarks or natural features (such as rivers, hills, etc.).
- Incorporating the native language or dialect spoken in the settlement.
- Naming streets after virtues that embody the community's values (for example, Unity Street or Freedom Road).

6.6.5 Periodic Policy Review

The policy should undergo regular reviews to ensure it stays relevant and adaptable to the evolving needs of informal settlements. This evaluation should include input from community members, local government representatives, and urban planning experts.

6.6.6 Policy Synergy on Street Naming Policy

The policy should specifically state that all informal settlements, regardless of status, must have an address. This is our policies' weakness; they must allow for innovation, creativity, and flexibility to respond to current challenges and possibilities. All metros and municipalities in Gauteng province must work together to develop a policy on street names and addresses, particularly for informal settlements, to avoid confusion and misalignment with the street naming policy. The template must be simple and user-friendly, even for communities in informal areas.

6.7 Recommendations

6.7.1 Recommendations for the City of Johannesburg and the City of Ekurhuleni

Johannesburg: Given the scale of informal settlements in Johannesburg, including large areas like Soweto and Alexandra, a street naming strategy should balance practical needs, such as service delivery, with social empowerment. Street names should capture the city's historical and cultural significance while helping marginalized communities feel included and valued.

Ekurhuleni: In this rapidly developing area, with many working-class families, street naming in Ekurhuleni's informal settlements should highlight local contributions to industrialization and labor movements. It would also be useful to incorporate themes of community resilience and social activism to strengthen ties to the broader urban landscape.

6.7.2 Implement a systematic strategy for addressing informal settlements

Adopt a structured approach to address informal settlements by introducing an official system for naming streets and assigning house or plot numbers. This could involve a phased implementation, starting with the most densely populated or underserved areas, and gradually extending to other communities.

6.7.3 Facilitating Social Inclusion and Citizenship.

Launch a national or city-wide initiative to incorporate informal settlements into official databases using a standardized addressing system. This would enable better tracking of population demographics and needs, ensuring that residents of informal settlements have complete access to the national economy and social services.

6.7.4 Promoting Urban Integration and Formalisation

The formalisation of informal settlements should be integrated with the assignment of street addresses. This process should involve mapping, upgrading infrastructure (like roads, water,

and electricity), and offering residents the opportunity to secure legal tenure (such as land rights, property ownership, or rental agreements). It could be implemented in phases, aligned with the region's current urban development plans.

6.7.5 Strengthening Governance and Public Administration

Establish a reliable and uniform geographic information system (GIS) database that incorporates formal addresses for all informal settlements. This information would support the city's efforts in planning future developments, optimizing resource allocation, and ensuring a more equitable distribution of public services and amenities.

6.7.6 Financial inclusion

Financial institutions should support Planact's efforts in implementing digital addresses in unrecognized informal settlements to help scale the project. There are significant benefits for financial institutions, as they will gain access to a new and unique client base from informal settlements, prompting the development of tailored financial products and services for these residents. Evidence from both the literature review and interviews highlights the vital role an address plays in the lives and well-being of informal settlement residents, particularly in terms of financial inclusion. As noted by Lerner (2018), the lack of proper addresses prevents residents from being included in official address registries, further exacerbating their financial exclusion.

6.8 Conclusion

Municipal budgets have been drastically cut because of the national treasury's austerity measures, inadequate revenue collection by local governments, and public fund mismanagement, as revealed by the Auditor General (AG). Adopting and growing the digital address system will be difficult, even though local municipalities are facing major service delivery issues. Given the limited budget, municipalities are unlikely to prioritize addressing informal settlements, which continue to grow daily. Instead, they would likely focus on investing in infrastructure development. The implementation of addresses in informal settlements is not a priority, especially since many of these areas are associated with illegal utility connections, and residents don't pay for services, making it difficult to bill them due to the lack of proper addresses.

The Government's Rapid Land Release Programme highlights that informal settlements are a direct result of failed government housing policies. These settlements, though informal, show the ability of communities to identify land, occupy it, and gradually build their homes. They challenge formal, legal processes that are slow to implement, reshaping urban land, pushing municipal spatial plans, and transforming city landscapes. According to the United Nations, by 2030, 71.3% of South Africa's population will reside in urban areas, reaching nearly 80% by 2050 (UN-Habitat, 2010:1). Despite this growth, informal settlements continue to face poor living conditions, with inadequate urban services being one of the most visible challenges, as stated by Basset et al. (2003:3). The lack of a traceable address in informal settlements makes it even harder for residents to access essential urban services.

Informal settlements are areas where residents lack secure land tenure and strive for better living conditions, access to mail, banking, and recognition as citizens. A formal address, such as the Plus-code digital address, is vital for enhancing community well-being, affirming dignity, and fostering social inclusion. It supports spatial transformation and community-driven development, encouraging social entrepreneurship. In areas with high poverty and unemployment, residents often work in the informal economy with little regulation. Digital addresses help promote their businesses, meet socio-economic needs, restore dignity, and strengthen their sense of belonging, improving the overall well-being of the community.

Education remains a priority for informal settlement residents as it improves well-being, increases employment prospects, and helps break the cycle of poverty across generations. However, the lack of a formal address creates obstacles for many children in these areas,

forcing them to borrow or fabricate an address. Integrating marginalized citizens into the city through a formal address is essential for securing their rights to citizenship and dignity. A formal address is often a prerequisite for accessing vital socio-economic services offered by both the public and private sectors. The implementation of digital addresses in Thembelihle has already led to improvements in service delivery. Inclusive urban development is crucial for addressing the growth of informal settlements, as poor urban management is a key driver of their expansion. By recognizing marginalized citizens through formal addresses, municipalities can integrate them into the urban planning and development processes, enabling city planners, policymakers, and service providers to more effectively allocate resources and services.

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PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I Michael Malovela (Student number: 0111221R) am a student registered for the degree of MUS(Hons) in the academic year 2024.

I hereby declare the following:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this in not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

Signature: M. Mc/M Date: 11/04/2025

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

SCHOOL OF ARCHITECTURE PLANNING TURE

20 August 2024

Mike Makwela

0111221R

TO WHOM IT MAY CONCERN

RESEARCH ETHICS APPROVAL

Digital addressing in South Africa: As a form of citizenship, inclusivity, and catalyst for faster service delivery in informal settlements.

This letter serves to confirm that the Ethics application for the above titled study has been approved. The researcher has been granted clearance to proceed with the research study or project.

Protocol/clearance number is: **SOAP065/05/2024**

Yours sincerely

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