



**SPATIAL (IN)JUSTICE AND STREET SPACES OF SELECTED SMALL RURAL
TOWNS IN VHEMBE DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA**

By

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of Environmental Sciences at the University of Venda in fulfilment of the
requirements of Doctor of Philosophy in Urban and Regional Planning**

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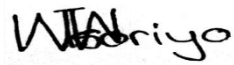
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2021

DECLARATION

I, Wendy Tsoriyo, hereby declare that this thesis submitted to the Department of Urban and Regional Planning, School of Environmental Sciences at the University of Venda has never been submitted for a degree at this or any other institution. This is my work in design and execution, where appropriate, I have made acknowledgement of the works of others.

Signature of student:



Date:

14/07/2021

DEDICATION

To my husband, Gift.

To my children Anotida, Tadiswa and Ariel.

To my parents Collin and Jenitta who believe in me more than I do.

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RESEARCH OUTPUTS

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ABSTRACT

Street spaces of small rural towns of Thohoyandou, Musina and Louis Trichardt in South Africa are characterised by spatial (in)justices as urban space is produced and reproduced every day through planning and design and management imperatives. In some cases, the spatial (in)justices are also inherited from the towns' historical past and geographical location. These are perpetuated unwillingly over time to date. This study, therefore, seeks to interrogate the spatial (in)justices flowing from the streets themselves as distributors of (in)justices as street space users interact on street spaces in their everyday activities; and through processes of street planning, design and management. The study developed a framework of analysis that can be used by other researchers, planners and policy makers to redress spatial injustices on streets as important everyday spaces. The study employed a street space spatial justice case study survey design, which utilises the mixed methods approach. The primary data collection methods used include a street space design qualities inventory of forty-three street spaces in the towns' Central Business Districts; street intercept surveys with five hundred non-vehicular users; and structured interviews with eight spatial planners and city planning professionals knowledgeable about street design and management. Secondary data collection was done through reviewing literature sources from books, journals, municipal records, and internet sources. Analysis of data was done both qualitatively and quantitatively. Variables of safety, security, permeability, accessibility, legibility, robustness, and maintenance, and management were interrogated to measure spatial (in)justice on street spaces. The research findings show that thirty- six out of forty-three street spaces had low to least performing spatial justice qualities. Significant differences ($p < 0.05$) exist between the different categories of users' perceptions of each spatial justice attribute, and also between users' satisfaction and expectations on street spaces. The local municipalities in the selected small rural towns provide packaged and controlled forms of justice which are often not context-specific. A significant output from this research is an improved street space spatial (in)justice analytical framework that can ensure spatial justice on street spaces of small rural towns. Multiple-lensed spatial (in)justice analyses and multi-stakeholder collaboration remain imperative for municipalities to ensure just street spaces.

Keywords: spatial (in)justice, street spaces, street users, small rural towns, street design and management.

LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
AGNES	Agglomerative Hierarchical Clustering
AHP	Analytical Hierarchy Process
ANOVA	Analysis of Variance
AASHTO	Association of State Highway and Transportation Officials
CABE	Commission for Architecture and the Built Environment
CBD	Central Business District
COJ	City of Johannesburg
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CUSSP	Community and Urban Services Support Project
DIY	Do It Yourself
DOH	Department of Housing
DHS	Department of Human Settlements
DM	District Municipality
DOH	Department of Housing
DOT	Department of Transport
DRDLR	Department of Rural Development and Land Reform
EFA	Exploratory Factor Analysis
HCA	Hierarchical Cluster Analysis
IDP	Integrated Development Plan
Ireland DOT	Ireland Department of Transport, Tourism and Sport and the Department of Environment and Community and Local Government
ITPs	Integrated Transport Plans
ITDP	Institute for Transportation and Development Policy
IUDF	Integrated Urban Development Framework
NACTO	National Association of City Transportation Officials
MCDA	Multi-Criteria Decision Analysis
NMT	Non- Motorised Transport
NRF	National Research Fund
NYCDOT	New York City Department of Transportation
PEAT	Pedestrian Environment Assessment Tool
PEQI	Pedestrian Environmental Quality Index
PPS	Project for Public Spaces
RMSEA	Root Mean Squared Error of Approximation
SA	South Africa
SACN	South African Cities Network
SAGNC	South African Geographical Names Council
SANRAL	South African National Roads Agency
SCC	Southampton City Council
SDF	Spatial Development Framework
SDGs	Sustainable Development Goals
SPACES	Systematic Pedestrian and Cycling Environmental Scan
SPLUMA	Spatial Planning and Land Use Management Act
SPOs	Spatial Planning Outcomes
SRTs	Small Rural Towns

SSSJ	Street Spaces' Spatial Justice
SWAT	Scottish Walkability Assessment Tool
UCLG	United Cities and Local Governments
UN DESA	United Nations Department of Economic and Social Affairs
UNPD	United Nations Population Division
UN-Habitat	United Nations Human Settlement Programme

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CHAPTER 1 : OVERVIEW AND CONTEXT

1.1 Introduction

This study problematised the concept of spatial justice on street spaces of selected small rural towns (SRTs) of Limpopo Province of South Africa (SA). The dynamics of spatial (in)justice¹ emanate from within and outside the streets. The purpose of this chapter is to unpack and contextualise these research concerns.

Street spaces are an integral part of people's lives as they have the potential to offer multiple social, economic, environmental and physical functions, that can improve the quality of life of their everyday users (Oranratmanee and Sachakul, 2014; Mehta, 2015; Middleton, 2018). The critical question is how spatial justice is animated on street spaces.

Most cities worldwide are finding ways of improving the street space environment to be spatially just by redesigning and regulating streets to become more non-vehicular user friendly (Shreshtha, 2011; Hartman and Prytherch, 2015). Bertolini (2020:5) outlines four key options that some cities in both the Global North and South are employing namely: "re-marking of streets for a clear demarcation of uses and regulation; repurposing parking space to semi-public spaces; repurposing parts of or an entire street to accommodate more the needs and activities of non-motorised transport users". Nevertheless, due to differential development trajectories and resource limitations, cities in the global south seemingly face more complex challenges in their street environments compared to their counterparts in the north (Bivina and Parida, 2019). These challenges include design patterns that are poorly responsive to the needs of diverse users, contestations of space amongst different users, inequalities in physical resources distribution, increase in informal street trading, a continuous boom of the automobile and rapid spurious growth of the human population amongst a myriad of other challenges (Shrestha, 2011; UN-Habitat, 2018).

¹ Since no space is entirely spatially just, the absence of spatial justice is spatial injustice. The term (in)justice is used only when emphasis is on both spatial justice and spatial injustice.

In light of Sustainable Development Goal (SDG) Number 11, which is "to make cities and human settlements inclusive, safe, resilient and sustainable", it is important to reflect on the question of spatial justice on street spaces. Sustainable Development Goal 11 seeks to ensure spatial justice on street spaces by recognising safe, accessible, and inclusive towns and cities that embrace the less advantaged groups of street space users (United Nations, 2018). In the South African context, the demand for what Soja (2009:1) terms a "spatial turn" is more critical in this epoch more than ever, because of its unjust apartheid planning history. The spatial justice agenda in SA is driven by post-apartheid progressive policy frameworks, such as the Spatial Planning and Land Use Management Act (SPLUMA) 16 of 2013; whose main thrust is to redress spatial imbalances emanating from the historical past and current institutional practices (Adegeye and Coetzee, 2019).

Although spatial (in)justices are evidenced in both metropolitan cities and SRTs, this study focuses on street spaces of SRTs. Local researchers concur that the South African rural space economy at both micro and macro levels is often characterised by inherent inequalities that exist because of the geographical and political history of these SRTs (Toerien and Marais, 2012; Van Wyk and Orange, 2014; Hoogendoorn and Visser, 2016; Mashiri et al. 2017; Baffi et al. 2018; Adegeye and Coetzee, 2019). Therefore, there is a need to improve spatial consciousness and to develop a culture to decisively address spatial injustices on streets as important public spaces in the context of SRTs of South Africa.

1.2 Contextualising spatial (in)justice on street spaces in small rural towns

Spatial justice is defined as the "fair and equitable distribution of socially valued resources and the opportunities to utilise them" (Soja, 2009: 2). Williams (2013: 4) expounds that spatial justice is, "first an analytical framework that foregrounds the role of space, [as well as a] set of material and ideological relations that act on, yet are formed by, social relations in producing justice and injustice". This reveals that the traditional belief held by various spatial planners about space as "a stage of human activity or merely the physical dimensions of fixed form," (Soja, 2009:2) is shifting to space as both the "content and context" of spatial (in)justices (Dikec, 2001:1788; Williams, 2013:10). In the South African context, Adegeye and Coetzee (2019:387) conceptualised spatial justice as:

"A spatial distribution of socially valued resources such as education, employment, transport, health and housing in any society in such a way that everyone would have adequate access to them, with the disadvantaged of the society being the first beneficiaries rather than last. Spatial justice is attainable through principles of promoting diversity, democracy, equity and a just distribution based on merit or need".

The definition above shows that spatial justice is a multi-faceted phenomenon premised on broad and complex principles of the concept of justice or fairness (Pirie, 1983, Adegeye and Coertzee, 2019). At a micro-level analysis of street space, Hartman and Prytherch (2015:32) define a spatially just street space as "a fair street, which distributes safety and the capabilities of mobility with maximum equality among all modes where any inequalities should benefit the vulnerable". Stratford, Waitt and Harada (2020:125) define spatially just street spaces as those that are "concerned with rights to the city and involves the democratising politics of walking more specifically".

Although the definitions of spatial justice differ among scholars, the issues of fair distribution of resources on space and prioritising least advantaged users or modes of travel are constant principles. The opposite of these justice principles, however, represents injustice. In this study, spatial justice on street spaces is understood from three interconnected lenses or dimensions, namely: street space content, users' physical perceptions of street space qualities (these affect their 'Right to the City' claims) and street production processes (namely street planning, design and management). These three perspectives of spatial justice are the concerns that this research problematises, looking at street spaces in the Central Business Districts (CBDs) of three selected SRTs in Limpopo Province of South Africa.

1.3 Small rural towns in the South African context

Small rural towns in South Africa are service centres that serve the surrounding urban and predominantly rural communities under their jurisdiction (Artkinson, 2008). According to Toerien and Marais (2012:5), "the South African small-town context does not differ from small towns researched elsewhere in the world, although the presence of large-scale commercial farming environment perhaps differentiates them from the rest of small towns in Africa". Although the rural villages surrounding most SRTs in

South Africa are characterised predominantly by peasant agricultural practices, the economies in these SRTs are shifting to a monetised economy where manufacturing, education, transportation, and real estate are significantly increasing (Toerien and Marais, 2012; Bolay, 2015; Baffi et al. 2018). At the same time, the populations in these SRTs are also rapidly increasing beyond the projected estimates (Statistics South Africa (StatsSA), 2016). This places a greater demand on the quantity and quality of services required on street spaces in the towns' CBDs which are already confronted by huge service delivery backlogs (South African Cities Network (SACN), 2014; United Nations, Department of Economic and Social Affairs (UN DESA), 2019).

There is generally no consensus on the population threshold of SRTs in local studies on SRTs (Artkinson, 2008; Donaldson and Marais, 2012; SACN, 2014). Local studies by Artkinson, (2008) and Toerien and Marais, (2012) show that they have an urban population range of between 5000-100 000 people. Likewise, each of the three towns (Thohoyandou, Musina and Louis Trichardt) selected for this study had a population of less than 100 000 (StatsSA, 2016). Interrogating spatial justice on street spaces in these SRTs unmask the challenges and opportunities of their municipalities in creating and maintaining spatially just street spaces in their urban cores. Arguing along the same lines, Jacobs (1993:314) states that, ". . . if we do right by our streets we can in large measure, do right by the city as a whole – and most importantly, by its inhabitants". This, therefore, confirms the importance of street spaces as key structuring elements of towns and cities (Lynch, 1960).

1.4 Street spaces in small rural towns and their production processes

Street spaces in SRTs of South Africa like anywhere else on the global arena are an integral element that forms the spatial framework of the urban centres (Department of Housing, 2000; Gehl and Svarre, 2013; Shrestha, 2011). A 'street' is described as the basic unit of urban space through which people experience a city (National Association of City Transportation Officials (NACTO), 2013; Hartman and Prytherch, 2015; Middleton, 2018). The street spaces of SRTs in SA follow a roads hierarchy from higher-order roads in the form of primary arterials and district distributors to lower-order roads in the form of local distributors and access streets (South African Roads Access Guidelines, 2002). This street classification is however, biased towards the

mobility function of streets at the expense of their multiple functionality (Department of Human Settlements (DHS), 2019).

A street's basic elements comprise road carriageways and sidewalks (Department of Housing (DOH), 2000; Ireland Department of Transport (IrelandDOT), 2013; Southampton City Council, 2015; New York City Department of Transport (NYCDOT), 2020). While the carriageway is ideally a reserve for vehicles, sidewalks are the key public spaces, which are the connecting points for street users (Jacobs, 1961; Loukaitou-Sideris and Ehrenfeucht 2009). It is along these public spaces that users negotiate and conflict over the use of space and where spatial (in)justices are apparent. In most cases, urban revitalisation programmes in SRTs focus on improving the carriageway and easing vehicle accessibility, while the needs of non-vehicular users, particularly on sidewalks, are trivialised (Shrestha, 2011; Middleton, 2018; Bivina and Parida, 2019). Resultantly, spatial (in)justices on these sidewalks are experienced, thereby, compromising the “Right to the City” claims of non-vehicular street space users.

Spatial (in)justices on street spaces in SRTs are better understood as outcomes of municipal processes of street planning, design, and management. Street planning establishes and organises streets in pursuance of a scheme or policy (Keeble, 1969). Street design is "an act of planning" (Madanipour,1997:22) that facilitates and encourages the use of streets by including dimensions of safety, security, sense of belonging, legibility, permeability, variety, and vital infrastructure among others (Bentley et al. 1985; Madanipour, 2010; Varna, 2014). Street management, on the other hand, ensures the success of planning by redressing all the malfunctions that may occur in the use of streets which may cause potential threats to the quality of life of urban dwellers (Department of Human Settlements, 2019; Ekurhuleni Municipality, 2017; Garau, 2014; Moroni, 2020). Local municipalities in South Africa's SRTs have the sole responsibility to manage street spaces. While this has the advantage of clear accountability structures, the major limitations relate to reliance upon the government as the major financier of capital and application of standards that are often devoid of contextual needs (De Magalhães and Carmona, 2008).

Through these key street space production processes, municipalities have considerable discretion and power to distribute justices over space (Department of Rural Development and Land Reform (DRDLR), 2017). Low, Taplin and Scheld (2009:1) postulate that, "in this new century, we are facing a different kind of threat to public space not one of disuse, but of patterns of design and urban management that are exclusive of some users". Likewise, some patterns of street planning, design, and management practices in SRTs have exclusionary tendencies in terms of meeting non-vehicular users' needs which translate into spatial (in)justices on street spaces. Purposeful design and management practices that prioritise all stakeholders with more emphasis on non-vehicular users are more likely to produce spatially just outcomes where users' diverse 'Right to the City' claims are met.

1.5 Street space users in small rural towns

In general, there are two broad categories of street space users, namely vehicular and non-vehicular users. These distinct categories of street space users are also visible in SRTs. This study focused on non-vehicular users as a category of least advantaged users on street spaces. These users constitute a dynamic and fluidal group that never assumes a permanent state because their street spaces' activities continuously change. These include pedestrians, vendors, visitors, shoppers, tourists, and those who come to town driving, but find themselves walking on streets for different purposes (Lynch, 1960; Jacobs, 1961; Shaftoe, 2008; Hartman and Prytherch, 2015). The varying activities and needs of street space users can generate differential (in)justice experiences and outcomes. These experiences are also influenced by the users' geographic and socio-demographic characteristics such as place of residence, age, and gender among others (Alfonzo, 2005; Mehta, 2009). At the heart of the concept of spatial (in)justice on street spaces are debates on users' 'Right to the City' (Purcell, 2003; Middleton, 2018). The 'Right to the City' is a "cry and demand" for a better city by urban dwellers (Lefebvre, 1996:147). In this study, I argue that the status quo of street space social-spatial qualities differentially affects the various 'Right to the City' claims that users can make on that space.

1.6 Research gap and rationale

There is generally a dearth of literature on studies that focus explicitly on spatial justice on street spaces of SRTs. A major turning point in the understanding of spatial justice

on street spaces is Jacobs' (1961) publication of 'The Death and Life of Great American Cities.' Jacobs (1961) raises concerns about the quality of urban spaces such as squares and streets. Whyte (1980) later established the first observational studies of people's social activities in public spaces in cities by assessing the interaction between public life and public space, including streets squares and plazas. Both Jacobs (1961) and Whyte (1980) characterise safe and good streets typologies as those in possession of qualities that encourage continuous use by everyday users, such as, spaces for sitting, vending, as well as smooth pedestrians flow. The assumption is that absence of such distinct qualities or parameters on street spaces can translate into spatial injustice. Henceforth, the understanding of street spaces as successful public places which are responsive to the needs of the public through conscious street planning, design and management has grown drastically (Whyte, 1980; Lusher, Seaman and Tsay, 2008; Shaftoe, 2008; UN-Habitat, 2013; Hartman and Prytherch, 2015; Smart Growth America and National Complete Streets Coalition, 2017).

A handful of international researchers, such as Hartman and Prytherch (2015); Middleton (2018); and Stratford, Waitt and Harada (2020) who attempted to characterise spatial justice on street spaces conducted their studies in the context of cities from developed countries namely Ohio in the United States of America (USA); London in the United Kingdom (UK); and Wollongong in Australia. Notably, the spatial (in) justice dynamics in the global north environments differ from those encountered in the global south (Bivina and Parida, 2019). While some researchers assert that complete streets are alternatives to spatially just streets (Hartman and Prytherch 2015: 40), others critique complete streets design as a model biased towards mobility, yet, streets are multi-functional public spaces (Desai, 2014; Zvestoki and Agyeman, 2015). On the other hand, Middleton (2018) and Stratford, Waitt and Harada (2020) describe spatial justice from the rights to the city's perspective. The debates from all the studies discussed above however do not provide a comprehensive framework for conceptualising spatial justice on street spaces. This study therefore, emphasises the importance of an integrated framework useful to understanding spatial (in)justice in SRTs reflecting on the street space content; street space users' perceptions; and the institutional context that produces and regulates activities on the streets.

Locally, in South Africa, the institutionalisation of SPLUMA 16 of 2013 - a policy guiding all spatial planning in the country - makes apparent the importance of spatial justice on rural and urban landscapes (Mashiri et al. 2017). However, there remains many vexing questions about the general meaning, intentions, indicators, deliverables, or outcomes on how spatial justice can be measured and understood (Adegeye and Coetzee, 2018; Uwayezu and de Vries, 2018). These questions have also proved to be problematic in the context of street spaces of SRTs.

Hoogendoorn and Visser, (2016:97) argue that there is an absence of studies that focus on small towns particularly in rural provinces of South Africa such as Limpopo (where the case study towns were drawn from), Mpumalanga and Northwest. Local studies that emphasize the concept of spatial justice do not focus on street spaces in SRTs (Dirsuweit, 2009; van Wyk 2015 Mashiri et al. 2017; Uwayezu and de Vries, 2018; Adegeye and Coetzee 2019). However, these local discourses provide a critical point of departure for analysing spatial (in)justices on street spaces in a South African context.

Mashiri et al. (2017) provide a framework to measure the desired spatial outcomes, as well as the indicators that can be measured at various planning levels (from local to national levels). Mashiri et al. (2017) acknowledge the need for developing a context-specific framework for analysing spatial justice. Uwayezu and de Vries, (2018) developed a Land Tenure Security Spatial Justice Framework. The framework establishes three crucial dimensions of analysing land tenure security spatial justice, namely; rules, processes, and outcomes. However, the later framework was not tested through fieldwork that is critical to confirm the suitability of the suggested indicators. Adegeye and Coetzee (2019:388) propose that the generalised working definition of spatial justice in South Africa (see Section 1.2 in this Chapter 1), needs to be operationalised through a framework of analysis.

In this study three significant pillars of the street space content, street users' perceptions, and the context of the street spaces were identified as key pillars useful to understanding spatial (in)justice on street spaces of SRTs. Through my personal experiences and orientation in the SRTs of Thohoyandou, Musina and Louis Trichardt, I discovered the need to address the research gap on addressing the concept of spatial

(in)justice on street spaces to generate strategies that can assist in improving the qualities of street spaces to be more spatially just, as well as to make the experiences of street space users (mostly non-vehicular users) more fulfilling. The success of these outcomes is to a greater extent dependent on the implementation of just street space production processes.

1.7 Statement of the research problem

Street spaces of small rural towns in South Africa are characterised by spatial (in)justices as urban space is produced and reproduced every day through planning and design and management imperatives. In some cases, the spatial (in)justices are also inherited from the towns' historical past and geographical location. These are perpetuated unwillingly over time to date. This study therefore, seeks to interrogate the spatial (in)justices flowing from the streets themselves as distributors of (in)justices; as street space users interact on street spaces in their everyday activities; and through processes of street planning, design, and management to develop a framework of analysis that can be used by other researchers, planners and policy makers to redress spatial injustices on streets as important everyday spaces.

1.7.1 Research aim

This study aimed to interrogate spatial (in)justice on street spaces of the CBDs of three selected small rural towns of Thohoyandou, Musina, and Louis Trichardt in Vhembe District of Limpopo Province in South Africa, in order to provide improved guidelines on spatial justice on street spaces in these and other small rural towns experiencing similar circumstances.

1.7.2 Research objectives

To address the research aim, the following specific research objectives were identified:

1. To characterise spatial (in)justice from the socio-spatial qualities of street spaces in the case study towns.
2. To analyse spatial (in)justice from non-vehicular users' perceptions of the physical qualities of street spaces.
3. To assess the implications of spatial (in)justice on street spaces flowing from opportunities and challenges of street design and management in the case study towns.

4. To propose an improved framework of guiding principles for analysing spatial (in)justice on street spaces of SRTs in South Africa, and elsewhere.

1.7.3 Sub-research questions

To problematise each research objective, sub research questions were generated as illustrated in Table 1-1.

Table -1-1: Sub-research questions

Research objective	Sub- research questions
1. To characterise spatial justice from the socio-spatial qualities of street spaces in the case study towns.	<ol style="list-style-type: none"> 1. How are the socio-spatial qualities of street spaces in SRTs distributed on street spaces in SRTs? 2. What are the similarities and differences in the performance of these socio-spatial qualities on the street spaces in SRTs? 3. What forms of spatial (in) justice do these reflect on the street spaces in SRTs? 4. Why are there (in)justices? 5. Where are the spatial (in)justice hotspots on street layouts in these towns?
2. To analyse spatial (in)justice from non-vehicular street space users' perceptions of physical qualities of street spaces.	<ol style="list-style-type: none"> 1. What is the level of satisfaction of street space users with the various measures of spatial justice? 2. How do the perceptions affect users' disparate 'Right to the City' claims? 3. Are differences in the perceptions dependent on the town or any social categorisation of users? 4. Is there a significant difference between the meanings given by users versus their actual experiences on street spaces?
3. To assess the implications of spatial (in)justice on street spaces flowing from opportunities and challenges of street design and management in the case study towns.	<ol style="list-style-type: none"> 1. What are the criteria by which street spaces are provided in the selected small rural towns? 2. What are the opportunities and challenges of street planning and design as evaluated by policymakers and users? 3. What are the opportunities and challenges of street management as evaluated by policymakers and users?
4. To propose an improved framework of guiding principles for analysing spatial (in)justice on street spaces of SRTs in South Africa, and elsewhere.	<ol style="list-style-type: none"> 1. What is the rationale for proposing an improved framework? 2. How were the key variables in the proposed framework identified and tested? 3. What are the strengths and weaknesses of other existing frameworks? 4. How can the framework be used? 5. What are the limitations of the framework? 6. What conclusions and lessons can be drawn from the case study streets? 7. How can street space' spatial justice be understood in SRTs? 8. What improvements can be made on street spaces of small rural towns to enhance spatial justice?

Source: Research survey (2018)

1.7.4 Research hypotheses

In order to address the study aim, the following study hypotheses were formulated:

1. At least one group of users (defined by various socio-demographic characteristics) has a statistically significant difference in the distribution of satisfaction scores of a spatial justice attribute.
2. There is a statistically significant difference between the meaning placed by users on a particular variable and their satisfaction with the same variable as they use street spaces.

1.8 Significance of the study

This study forms part of a larger collaborative project 'between' the University of Venda; Witwatersrand University, and the Durban University of Technology in South Africa. The project's theme was 'Resilience and Spatial Justice in South Africa's Built Environment: Generating Interdisciplinary Transformative Knowledge.' From this theme, my study contributes to the pool of knowledge on the overarching question of resilience and spatial justice in South Africa more generally; and particularly on how spatial (in)justice on street spaces in SRTs can be understood. This research is also located within the broader conversation that seeks to advance better the science of place-making and street designing in SRTs.

This study provides current knowledge on spatial justice and street spaces in SRTs focusing on visual representations of mapping (in)justices; and users' perceptions of spatial justice attributes on street spaces. The study also focused on prioritising users' needs; opportunities, and challenges of street design and management in SRTs; and their implications for spatial justice. My most significant contribution is the development of a multi-dimensional framework for analysing street space spatial justice from the content, users' needs and context, and the measurement criteria or indicators applicable for each lens. This study is therefore of great significance to town planners and policymakers for SRTs as it advocates for the creation of spatially just street spaces that prioritise maintenance, management, safety, and security needs of its users. The study seeks to raise awareness, political will, and capacity for the development of an appropriate framework for assessing and enhancing spatial justice on street spaces of small towns. Ultimately, this will enable street users to retain their 'Right to the City' claims. Above all, the thesis remains an important reference material

for other future related studies on spatial (in)justice and street spaces in the cores of SRTs.

1.9 Scope of the study

To understand the extent to which spatial justice on street spaces is interrogated in SRTs in South Africa, the scope of this study is divided into four distinct categories, namely: conceptual, theoretical, temporal, and spatial scopes as deliberated in the subsequent sections.

1.9.1 Conceptual scope

The study is an aggregate of five main concepts that interact in dynamic and complex ways. These are spatial (in)justice, SRTs, street spaces, street space users and the context of street design, planning, and management. My study focuses mainly on five key variables drawn from literature to define spatial justice on street spaces, namely: safety and security; accessibility and permeability; legibility and visual attractiveness; adaptability and robustness (or variety in the case of street users); maintenance and management. There is a deliberate and biased focus on pedestrians and street traders as the least advantaged street space users in SRTs.

1.9.2 Theoretical scope

Five modes of analysis were applied in this study, to conceptualise and extract meaning from the research findings. This is considering that the concept of spatial justice is multi-faceted and thus, cannot be understood from a single theoretical lens. These modes of analysis include the Legible City theory by Lynch (1960), 'Right to the City' theory by Lefebvre (1968); Responsive Design Elements by Bentley et al. (1985); the Public Space Management Framework by De Magalhães and Carmona (2008) and Spatial Planning Outcomes by Mashiri et al. (2017). These modes of analysis provided different perspectives on how street spaces and users interact in SRTs. They also unravelled an understanding of socio-spatial qualities, disparate users' rights, and the outcomes from the street space production processes.

1.9.3 Temporal scope

The study provides an account of the episodes on spatial (in)justices on street spaces from 2018 to 2019 when fieldwork data was collected. However, whenever applicable, the historical narratives of the past were used to understand the current scenarios. In that way, spatial (in)justices were fairly assessed.

1.9.4 Spatial scope

The spatial scope concerns street spaces of small rural towns in Thohoyandou, Musina and Louis Trichardt in Vhembe District of Limpopo Province of South Africa. Figure 1-1 shows the location of the case study towns in South Africa.

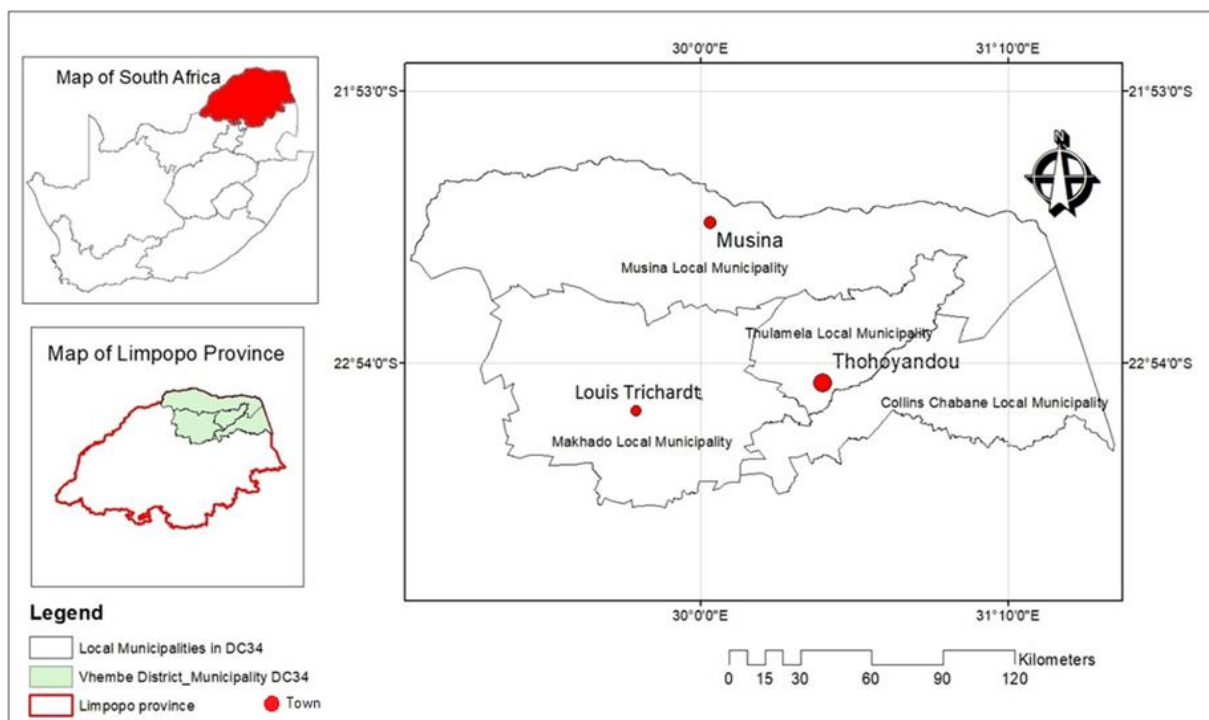


Figure 1-1: Location of the small rural towns of Thohoyandou, Musina and Louis Trichardt
Source: Author's construct (2020)

The SRTs were selected based on their location in Limpopo Province - a predominantly South African rural province (SACN, 2014). The three selected SRTs serve the surrounding urban and predominantly rural communities under their jurisdiction. The selection of the three SRTs was also according to their demographic profiles of less than 100000 inhabitants. The estimated urban population in Thohoyandou Town is 69453, while Musina Town has 42678, and Louis Trichardt has 25 360 (StatsSA, 2011). To date, the population in the three selected SRTs increased

by 0.8% as revealed by the Community Survey Report of South Africa (2016). An increase in the urban population of the SRTs of Vhembe District is also a pointer to proportional demand on the use of public spaces such as streets in the urban centres. Each of the three towns has its unique history. Thohoyandou Town is known for being a former homeland established under the Bantu Homelands Citizenship Act (1970) and later under the Venda-land Proclamation Act 45 of 1990. It is a territory set aside for black inhabitants living in the northern tip of South Africa. Bantustans were a creation of the apartheid of exclusion and segregation. Currently, Thohoyandou Town is an administrative hub for Vhembe District Municipality and looks forward to attaining city status in 2030 (Thulamela Local Municipality, 2018).

Musina Town was established as a mining town in 1904 (Musina Local Municipality, 2015). Later, it was put under the Town Planning Ordinance (Number 17 of 1939 and Number 15 of 1986). Unlike the Proclamation Acts, town planning ordinances provided planning standards and design guidelines for street spaces. As a result, towns such as Thohoyandou established under the Proclamation Acts have a somewhat inconsistent street layout pattern that appears to be less permeable and legible compared to towns such as Musina and Louis Trichardt which were established under the Town Planning Ordinances (Baffi et al. 2018).

Musina is a border town, which is the northern gateway to the rest of Africa. However, the town was not planned with expectations for further expansion. This is evidenced through the presence of National Freeway (National Road 1-N1), which cuts through the CBD of the town without providing an off-ramping service for express travellers (Musina Local Municipality, 2015).

Louis Trichardt was also established under the Town Planning Ordinance (Number 17 of 1939 and Number 15 of 1986) as a well-planned town for the white minority. Louis Trichardt Town is often referred to as Makhado or Chipambano in vernacular TshiVenda. The town has more expansive street spaces compared to the other two towns, that is, Musina and Thohoyandou. Thus, spatial (in)justices on street spaces are differentially experienced not only on street spaces as public spaces but also in the SRTs at large.

In terms of the administration, each of the three SRTs is administered by a different local municipality namely, Thulamela Local Municipality for Thohoyandou Town, Musina Local Municipality for Musina Town, and Makhado Local Municipality for Louis Trichardt Town. All three local municipalities fall under Vhembe District Municipality. The Vhembe District Municipality oversees the equitable application of spatial development planning and land-use management systems of the local municipalities. Resultantly, the spatial planning outcomes have significant similarities and differences which stem from these different contextual settings. Although higher-order arterial roads which pass through the CBDs of SRTs were analysed in this study to understand the dynamics of socio-spatial qualities, my main focus was on local distributor roads and access streets in the CBDs of these three selected towns which are directly under the jurisdiction of local municipalities.

1.10 Outline of the chapters of the thesis

This thesis constitutes eight distinct chapters. Chapter one is the introductory chapter that defines and contextualises the research problem. Chapter two provides a critical review of the key concepts of the study, namely: spatial justice, street spaces, street space users, street design and management processes, SRTs, and human-centred space production theories. Chapter three is a second literature review chapter that analyses the policy and legislative landscape of spatial justice in South Africa. The chapter also profiles the study towns in terms of administrative and socio-economic contexts. Chapter four details the research methodology that was used in the study. The study employed a spatial justice and street spaces survey approach which complements the multiple case study and survey design. Chapter five presents an analysis of the first research objective, which characterised spatial justice attributes from a street space content perspective in the case study towns. Chapter six is an analysis of the second objective, which examined spatial justice from the perspective of street users. This chapter further tested the two key research hypotheses. Chapter seven analyses the third objective which assessed the spatial (in)justice implications flowing from opportunities and challenges of street design and management in the case study towns. Chapter eight discusses the proposed framework for analysing spatial justice on street spaces. Chapter 9 is a concluding chapter that summarises the major research findings on the notion of spatial justice on street spaces in SRTs.

CHAPTER 2 : CONCEPTUAL AND THEORETICAL UNDERPINNINGS OF SPATIAL (IN)JUSTICE AND STREET SPACES IN SMALL RURAL TOWNS

2.1 Introduction

There is concern over how spatial (in)justice can be understood in the context of the built environment globally (Dirsuweit, 2009; Adegeye and Coetzee, 2019). Interrogating spatial (in)justice on everyday urban spaces such as streets provides better ways to understand the manifestations of this complex socio-spatial phenomenon in towns and cities. After all, street spaces are the life between buildings (Gehl, 2011).

This chapter reviews literature in light of the study's main concepts that interact in dynamic and complex ways. Unpacking these concepts is central to understanding spatial (in)justice on street spaces, and the perceptions of street space users as they live and experience the Small Rural Towns (SRTs). In this study, street planning, design and management are regarded as the primary conduits in delivering spatial (in)justices on street spaces. After this introductory section, the second section explicates the concept of spatial justice and injustice. The third section unpacks the concept of street spaces. In conceptualising street spaces, the third to eighth sections discuss integral parameters of street spaces, street space users and the production processes of street planning, design, and management. The ninth section unpacks the concept of SRTs. The tenth section discusses the various theoretical underpinnings adopted in this study. The eleventh section answers the question on what is spatial (in)justice on street spaces.

2.2 Exploring the concept of spatial (in)justice

In this section, I examine the complex notion of spatial (in)justice and the meaning of the separate terms which make up spatial justice, namely justice or injustice² and spatial. The various processes through which spatial justice is produced are then

² Throughout the study injustice refers to the opposite of justice.

deliberated to get a clearer understanding of the contextual meaning of spatial (in)justice on street spaces.

2.2.1 The concept of (in)justice

Justice as a concept is interpreted differently based on diverse periods, legal frameworks, as well as religious contexts, economic systems, or geographic contexts (Pirie, 1983: 465; Dikec 2001: 1788). Thus, defining justice becomes a conundrum because of the relativity of experiences as people in various places differentially perceive justice (Pirie, 1983; Brickell and Datta, 2011; Peth 2018). Soja (2010:20) defines justice as the quality of being just or fair. Lynch (1984:225) defines justice as the way in which the benefits and costs of any kind are redistributed between persons. The key justice question is about who is getting how much (ibid). Justice is conditional and is only attainable “if” the condition is met (Pirie, 1983: 466); for example, there is justice on the street ‘if’ one’s needs as a user are met. This shows that justice conditions are objective and subjective (Moulaert, Schreurs and Van Dyck 2011). Objective conditions of justice are envisaged through specific, measurable indicators, whereas subjective conditions are prone to different interpretations by different people who experience the justice phenomenon.

Rawls (2001:42) further explains that the basic requirements of justice are met when the equality of basic liberties and the distribution of all other social inequalities are of “greatest benefit to the least advantaged”. Lynch (1984:227) similarly argues that focusing on improving the condition of the least favoured or the least advantaged group is a clear understanding of addressing justice issues. Both Lynch (1984) and Rawls (2001) converge on the view that social inequalities can be redressed by focusing on the least advantaged group. This view is also strongly emphasised by Hartman and Prytherch (2015) and Adegeye and Coetzee (2019). The principles of justice are also embedded in the moral claim of the ‘Right to the City’ (Mitchell, 2003; Huchzermeyer, 2018). The ability of urban dwellers to claim their disparate rights on urban space is a justice tenet (Mitchell, 2003; Marcuse, 2012; Uwayezu and de Vries, 2018).

Mumford (1961:571) postulates that the society is moving more towards the justice vision witnessed through “the history of the progressive equalisation of classes”. This

societal progression is facilitated by condemning oppressive conditions that perpetuate injustices such as slave trade, forced labour, monopolisation of knowledge and racial segregation (Mumford, 1961; Bickford, 2000). Thus, justices and injustices are man-made conditions. One can therefore draw some principles of justice which include fairness in the application of rules, equity or benefiting the least advantaged, just distribution of resources and users 'Right to the City' claims.

2.2.2 The concept of space

'Spatial' as a concept emanates from the word 'space'. According to the Cambridge Advanced Learners Dictionary (2008), spatial is simply defined as happening or relating to space. Space is dynamic and subject to change (Mehta, 2015). Efforts to understand space are marred with "unpredictability and uncertainty" (Philippopoulos-Mihalopoulos, 2014:13). This is because space is a social product with a cultural meaning (Pirie, 1983; Lefebvre, 1996; Soja, 1996; Massey, 2005; Philippopoulos-Mihalopoulos, 2014). People embrace, contest, or reject spatial changes because physical space has different socio-cultural meanings (Erdiaw-Kwasie and Basson, 2018:3). The physical space can be urban or rural, and it can also be public or private (Butler, 2012; Lefebvre, 1991; Varna, 2014). In articulating the space trialetics, Lefebvre (1991:33) posits space as perceived by users (spatial practice), conceived by technocrats (representations of space), and lived or imagined in terms of representational space where the reality of conflicts and negotiations over space exist. Soja (1996: 56) describes this lived space as the "third space". It is a space of all "simultaneity where everything comes together, that is, "the abstract and the concrete, the real and the imagined, the knowable and the unimaginable, the repetitive and the differential" (ibid: 57). Capturing the simultaneity of space in "words and texts" is a problematic task as there are endless stories to be captured at once (ibid 1996:57).

In understanding the concepts of justice, injustice and spatial a very thin line can be drawn to separate these issues from space. As people interact and make meaning of spaces, manifold tensions, and contradictions emerge as well (Dikec, 2001; Wagner, 2011). These emergent conflicts and negotiations on space are natural, and they define space (Lefebvre, 1991; Loukaitou-Sideris and Ehrenfeucht, 2009). In the process (in)justices are produced and reproduced (Williams, 2013). Thus spatial (in)justice is an inevitable phenomenon on space. Therefore, this study intends to

interrogate how these (in)justices manifest on street spaces in urban areas where the dynamics are apparent.

2.2.3 What then is spatial (in)justice?

Spatial justice is a concept whose definition is not straightforward. Since “there is no perfect geography, and most geographies have traits of unevenness [inequality/unfairness],” injustices are inevitable during discussions about the notion of spatial justice (Adegeye and Coetzee, 2019:386; Erdiaw-Kwasie and Basson, 2018:3). Spatial injustice is simply the absence of spatial justice. According to Wagner (2011:4), spatial injustices are curable only by changing their spatial manifestations to become justices. DS4Si (nd:4) defines spatial justice as the formation of solidarities across differences between three factors: spatial claim, power, and link. These three factors frame the various categories of spatial justice. While “spatial claim entails the ability to live, work, or experience space, spatial power entails opportunities offered to succeed in and contribute to space, and spatial link entails access and connection to and with other spaces” (Basset, 2013:5). These three forms of spatial justices also describe the various rights that users should claim on public spaces under the broad framework of the ‘Right to the City’ (see Section 2.8.4).

Soja (2009: 2) defines spatial justice as the “fair and equitable distribution in the space of socially valued resources and the opportunities to use them”. Wagner (2011) and Harvey (2012) define spatial justice as spatially produced social justices. Williams (2013: 4) defines spatial justice as “...a set of material and ideological relations that act on space, yet are formed by social relations-in producing justice and injustice”. Thus, there is a thin line between spatial justice and social justice. Spatial justice is not a completely standalone concept; it is closely aligned and often embedded in other forms of justice namely, social, economic and environmental justice (Smith 2013; Soja, 2009; Williams, 2013). Social justice entails, “the fair and compassionate distribution of economic benefits and the basic human rights of all human beings” (United Nations, 2006:7). Harvey (1973:98) defines social justice as “the just distribution of services and opportunities to people”. Economic justice entails affording individuals with rewarding economic activities and opportunities for work (United Nations, 2006:14). Environmental justice, on the other hand, broadly carries overtones of ecology or nature (Williams, 2013). The role and influence of space in producing and even

distribution of (in)justices is, however, inconspicuous during debates in these other forms of justices (Soja, 2010). There is need to interrogate the concept of spatial justice and how it is animated on street spaces. This encourages justice-conscious spatial decisions (justices of spatiality) and spatially conscious justice decisions (spatiality of justice).

Williams (2013:10) explains further that space can represent both the content and context of spatial justice. In this case, space in itself carries or distributes (in)justice (content). The (in)justices are also evidenced through space's ability to meet users' needs and activities (context). Dikec (2001:1785) describes the dialectical relationship between (in)justice and spatiality. Dikec (2001), postulates that (in)justices are embedded in space, dubbed as the spatiality of (in)justice and are created and maintained through space which is (in)justice of spatiality (ibid:1788). From these perspectives, it is clear that there are various processes through which spatial (in)justices are produced and reproduced.

2.2.4 Processes that engender the production of spatial (in)justices

The processes through which spatial (in)justices are produced or reproduced include policies, intervention programmes, social movements, strategies, and plans (Bickford, 2000; Soja, 2010; van Wyk, 2015; Moroni, 2020). In other case studies, the United States of America, Brazil, and South Africa are some of the countries that attempt to address spatial justice through legislation (van Wyk, 2015). For instance, the 2007 Master Plan of New York City stresses on mixed-use and mixed-income developments in all areas of the city to reduce residents' income-based segregation (Fainstein, 2009; van Wyk, 2015). The same master plan promoted the creation of waterfront access in more impoverished neighbourhoods to benefit this social class. However, Fainstein (2009) argues that citizen participation concerning some decisions over activities and services was highly uneven as it favoured private developers more than locals. As a result, there were injustices as the outcomes did not reveal the citizen's aspirations. From this example, it can be deduced that institutions can facilitate spatial injustices. Spatial justice in the urban planning domain is promoted through mixed-income housing developments, improving accessibility for poorer communities to public spaces and improving citizens' participation in decision making.

In South Africa for example, the Spatial Planning and Land Use Management Act 16 of 2013 states that the main objective of the principle of spatial justice is to redress past social and other development imbalances. This Act, however, lacks measurable spatial justice outcomes (Adegeye and Coetzee 2019; Mashiri et al. 2017; Uwayezu and de Vries; 2018). In these legislations, public participation is seen as an important input of spatial justice because it encourages democratic spaces and improves the publics' sense of place (Bentley et al. 1985). For example, the Brazil City Statute of 2001 promotes public participation in the entire urban management process (van Wyk, 2015). India enacted the Street Vendors Protection of Livelihood and Regulation of Street Vending Act nationwide in 2014 (Colin 2018:261). Through this law, Indian cities are integrating vendors into the city planning process by recognising the street vendors' right to participate in the decision-making process and allocating them specific sites for trading in the CBD. One major drawback is that the law overlooks the emergent power relations amongst different street vendors' local committees and the potential conflicts that exist at prime locations in the CBD (ibid). The above examples show that institutional rules and processes play an important role in creating spatial justice. Uwayezu and de Vries (2018:5) postulate that "just rules lead to just processes, which in return lead to just outcomes". This reveals that spatially just street spaces are largely a product of the planning and implementation of spatial development rules.

Elsewhere in the United States of America, there are notable legislative interventions that successfully addressed spatial injustice issues to create spatial justice such as the famous Los Angeles Bus Riders Union (BRU) case (Dikec, 2001; Soja, 2010). Under this case, a coalition of grassroots organisations BRU opposed the Los Angeles Metropolitan Transit Authority (MTA)'s decision to build a new underground rail system. The court cited that the rail system was costly and inaccessible for poorer residences (an injustice of spatiality) (Dikec, 2001:1792). Therefore, the ruling favoured the transit-dependent urban poor who were considered the least advantaged group in this project.

In Zimbabwe, the (in)famous Operation Restore Order- '*Murambatsvina*', a government-initiated programme to restore sanity in the country's' urban landscape through the demolition of illegal structures, is another case of politically (also

institutionally) induced spatial injustice resolved through judiciary intervention. Through pressure from the international community, the Zimbabwe High Court passed a judgement for the operation to be ceased (Tibaijuka, 2005). The court ruled that the operation was a clear violation of citizens' right to shelter or the right to live in the city (DS4Si, nd; Lefebvre, 1996).

Spatial (in)justices are also facilitated through some local-level decision making and political organisation of space. For example, the Corridors of Freedom programme by the City of Johannesburg (COJ) seeks to redress the segregation-based apartheid spatial pattern which is prevalent in South African cities (COJ, 2013). Its strategies include introducing an effective public transportation system linked to city outskirts where most marginalised Black Africans reside, as well as the creation of mixed-use development nodes. Incremental changes were noted in affordable housing and improved access to public services for some communities. However, its success in the long run is yet to be fully understood as it lies in the "sustained political and bureaucratic will" (Harrison et al. 2019: 465). Colonial, post-colonial, and some post-apartheid policies particularly on land redistribution and the practice of gerrymandering for political mileage perpetuate spatial (in)justices (Soja, 2010). For example, the South African apartheid planning, just like the Zimbabwean colonial geography is characterised by polarised geographies with uneven distribution of basic services (Patel, 1988).

Other strategies such as urban regeneration and city or place branding have also proved to be effective in producing spatially just, and new urban spaces (Dirsuweit, 2009:82). A study on urban regeneration projects by Basset (2013) proved that the regenerated sites in Netherlands are spatially just places. Users' perceptions reflected positive outcomes in terms of spaces' usability, experience, and future values. In some cases, urban regeneration evokes negative perceptions when the re-designed places repel users from spending more time socialising (Nowosielski and Nowosielska, 2020:76). These strategies may include lack of seating spaces or deliberately creating accessibility barriers for the public through gating, which translates to injustices (Bickford, 2000; Varna, 2014).

Privatisation of urban space is a practice that often stems from urban regeneration that has changed the meaning of public spaces and furthered the production of unjust spaces. Privatisation reduces the public status of public spaces by restricting access and controlling the activities that can occur in the public space (Bonilla, 2012; Dirsuweit, 2009; Marcuse, 2009). As a result, there is a neglect of the freedom of access and several other rights to the city claims by ordinary inhabitants. Gentrification is another practice that frequently results in injustices (Bickford, 2000). Its tendency to displace low-income earners in a neighbourhood infringes on the low-income earners' right to inhabit a place and their right to livelihoods (Brown and Kristiansen, 2009; Lefebvre, 1996; Soja, 2010). Urbanisation and its associated effects such as urban sprawling and urban core decay, also produce injustices on urban spaces (Smith, 2013).

From the discussions above, three interrelated broad focus areas or dimensions of understanding spatial justice emerge, namely: institutional rules and processes, the space as a producer or distributor of (in)justice, and the disparate rights of space users. These findings are summarised in Table 2-1, which illustrates the key justice focus areas from the case studies. Table 2-1 clearly shows that spatial justice manifests in many different forms in different contexts.

Table 2-1: Emergent broad frameworks for understanding spatial justice

Case study	Institutional rules and processes	Space transformation qualities	Rights of users
The Brazil City Statute of 2001 (van Wyk, 2015)	Public participation in urban management	Infrastructure provision in marginalised settlements	Right to housing and public space for the urban poor
New York City Master Plan of 2007 (Fainstein, 2009; van Wyk; 2015)	Public participation in development projects	Mixed-income housing development Improving accessibility	Access to public space for poorer communities.
Street Vendors Protection of Livelihood and Regulation of Street Vending Act of 2014 (Colin 2018:261)	Participation of street traders in decision-making processes	Designate specific vending sites	Rights to public space (the beachfront) for the poor
South Africa's Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA 16 of 2013)	Public participation in decision-making processes, coordination between government departments	Redress past spatial and other developmental imbalances	The right to work for informal traders
Los Angeles BRU versus Los Angeles MTA case (Dikec. 2001; Soja, 2010)	Inclusive decision making	Accessibility	Right to use and access public services.
Zimbabwe high court ruling against Operation- Murambatsvina/ Restore Order (Tibaijuka, 2005)	Public consultation in decision making	Integration of the informal economy	Right of access, right to inhabit
Residents of Joe Slovo Community, Western Cape versus Thubelisha Homes (van Wyk, 2015)	Stakeholder partnerships	Accessibility and infrastructure service provision	Right to work, right to housing.
Urban regeneration projects by Basset (2013) proved that the regenerated sites in Netherlands	Public participation	Multiple functionalities of public space, Accessibility issues.	Right to access public space
The Corridors of Freedom Project by the City of Johannesburg (COJ, 2013; Harrison et al. 2019)	Multiple-stakeholder partnerships	The effective public transportation system mixed-use developments with high-density accommodation, office, retail and recreation	Citizens right to shelter

Source: Author's construct (2020)

There are also other newer forms of struggle and activism that have spatial (in)justice implications (Harvey, 1973; Purcell, 2013; Soja, 2009). Spatial justice manifests in different dimensions, forms, and in different contexts. Therefore, to understand deeper the notion of spatial justice, one needs to look at it from its multi-dimensionality nature as well as the specific context where justice is being applied. For example, justice in housing does not mean the same as justice on street spaces. The concept of spatial (in)justice can be viewed as a 'wicked problem' (Servillo and Schreurs, 2013; Emuze, 2016). Wicked problems are persistent and ever-evolving (Rittel and Webber, 1973; De Magalhães and Carmona, 2008; Ritchey, 2013). Wicked problems, unlike 'tame problems', are not easily definable. They do not assume universal parameters, but they are context-specific and in most cases, adequately understood by users in that context.

2.3 Classification of streets

Street spaces are an integral element that forms cities' spatial framework (Department of Housing (DOH), 2000; Shrestha, 2011). National Association of City Transport Officials (NACTO) (2013) describes a street as the basic unit of urban space through which people experience a city. They reflect a city's personality and impression (Frank; 2010). Streets are linear three-dimensional spaces enclosed on opposite sides by buildings (Carmona et al. 2003: 146). The Cambridge Advanced Learners Dictionary (2008) defines streets as spaces that enable mobility such as roads in a city, town, or village. Harber and Parker (2018) differentiate a street and a road by stressing that a road is a course that leads to an end or a wide way leading from one place to another, while streets offer local access to buildings. In some cases, streets and roads can be used interchangeably (Alanyali and Demirbaş, 2015; Department of Human Settlements (DHS), 2019). In this study context, streets or roads refer to any path designed to accommodate the movement of various modes of traffic (DHS 2019:4).

Street spaces can be described through many contrasting terms such as, "straight or curved, long or short, wide or narrow, enclosed or open, and formal or informal..." (Shrestha, 2011:109). They are also definable according to their scale in relation to building heights and their connection to other streets, squares, or other public spaces (Whyte, 1980; Shrestha 2011). The basic elements that make up streets in South Africa do not differ from those provided in other cities elsewhere. Streets in South

African towns and cities just like in European settings such as Ireland are defined by road carriageways and sidewalks along them (DOH, 2000; Ireland DOT, 2013; Pune Municipal Corporation, 2016). The carriageway is defined as the road width on which a vehicle has no physical restriction (DOH, 2000; Ireland DOT, 2013). Ideally, vehicles have the right of way and access to the carriageway. The sidewalk is usually divided into three areas, namely a footway, verge, and a strip (Southampton City Council (SCC), 2015; New York City Department of Transport (NYCDOT), 2020). Sidewalks are key connecting points for street users (Loukaitou-Sideris and Ehrenfeucht, 2009). The footway is the main area along which people walk while verges provide a buffer between pedestrians and the vehicle carriageway. Strips are spaces provided directly to the front of a building generally associated with commercial uses such as stalls or outdoor seating (Ireland DOT, 2013. NYCDOT, 2020).

In most cases, the sidewalk features are often inadequately provided for in street spaces found in many cities of developing countries (Shrestha, 2011). As a result, various conflicts and negotiations emerge as street space users interact with street spaces, thus, making street spaces sites of spatial (in)justice. This research, therefore, amplifies sidewalks as the most important public spaces used by non-vehicular street space users.

The South African Roads Infrastructure Policy (DOT, 2014b) provides guidelines on the overall aim and functions of roads or streets, and the layout of streets in South Africa. Street networks make each city unique. For example, Manhattan is well known for its gridiron pattern. Historically, streets radiated from the nucleus of the city, which was usually the central meeting place for various kinds of activities (UN-Habitat, 2013). Even the ancient cities of Mesopotamia, Egypt, and India gave priority to the layout of roads (Shrestha, 2011). Other patterns include warped grid patterns, triangular and haphazard patterns (DOH, 2000). The streets' layout patterns affect the accessibility and legibility of a place (Bentley et al. 1985).

In a study on the proportion of land allocated to streets in different cities, the United Nations Centre for Human Settlements (UNCHS) (2013) reveals that most cities in Europe and North America have 25% of the land allocated to streets in their city cores. In developing countries, less than 15% of the land is allocated to streets in most city

cores. This reflects the huge disparities in the actual distribution of streets in many cities in developing countries. Inadequate distribution of streets is an injustice as this shows inadequate public space provision, which is an infringement on users' rights to public space.

Poor financing strategies and lack of expert capacity are some factors that have been attributed to the inadequate street space provision and the failure of road upgrades in developing countries (Garau, 2014). Provision of adequate street space and an efficient street network are key principles of UN-Habitat's Sustainable Urban Planning Principles of 2014. The principles guide the planning of cities that are economically, physically and socially sustainable (UN-Habitat, 2015).

2.3.1 The hierarchy of street spaces

Streets are grouped by the character of service they provide. The categories are primarily informed by the ability to move traffic and provide vehicular access (DOT, 2002). Loukaitou-Sideris and Ehrenfeucht (2010:461) posit that street planning experts such as planners and engineers understand streets through a form of traffic logic where vehicle movement should be unobstructed. South African road classification system reflects the basic six stages of vehicle trip hierarchy of movement. It begins with primary movement, transition, distribution, collection, access, and termination (DOT, 2002). This movement is enabled by arterial, distributors, and access streets.

Arterial streets, for example, refer to the major routes via which major centres are connected, and they mostly serve the movement function of vehicles. District distributors are the streets that provide access within communities and to arterial streets. Local distributor and access streets link individual access properties/buildings. What can be drawn from the roads classifications is that higher-order roads are more vehicular-oriented, while lower-order roads that include local distributors and access streets accommodate both vehicles and pedestrians. Therefore, the spatial (in)justices on these street spaces are likely to be visualised and experienced differently by street space users.

Table 2-2 outlines various roads or street hierarchies and their main functions in different places and organisations responsible for the management of the spaces, for example, the Ireland, American Association of State Highway and Transportation Officials (AASHTO), South Africa and the Community and Urban Services Support Project (CUSSP).

Table 2-2: The hierarchy of roads

Ireland	AASHTO	South Africa	CUSSP	Main function	Spatial (in)justice implications
Road category	Road category	Road category	Road category	Description	Streets classification is done according to movement function, and it applies the same set of standards regardless of context
Arterial streets	Principal arterials	Freeway	Vehicle only routes	high order arterial, primary/principal movement	
		Expressway			
		Primary Arterial			
Link streets	Minor arterials	District Distributor		district distribution/integration/ collection	
Local streets	Collectors	Local Distributor	Multi - functional roads	local distribution/ integration / collection	
	Streets	Access roads/streets		individual property access via access collectors, loops, cul-de-sacs	

Source: Adopted from; Bentley et-al (1985), South African Roads Access Guidelines (2002), IrelandDOT, 2013).

The description of the main function of the different categories of roads presented above reflects a bias towards the prioritisation of the movement function over other social functions on roads. These various classifications are not necessarily static. Ireland DOT (2013) critiques that classifying streets by hierarchy falls short in that, "... it applies the same set of standards along the entire route regardless of context". On the contrary, as urban roads pass through areas with very different characteristics such as the city or town centres, industrial sites, and residential areas, they assume different design solutions to fit the context. Arguably, a street in the Central Business District (CBD) should provide higher integration levels between users such that even the least advantaged user stands to benefit. My critical focus on this concept is to understand the nature of (in)justices on street spaces in SRTs on higher-order and lower-order streets. Figure 2-1 illustrates a model street and the space required to adequately incorporate pedestrian-friendly infrastructure facilities in Tshwane Municipality of South Africa.

The sidewalk spaces in Figure 2-1 take between 20-24 meters of street width, which is often unavailable on street spaces of SRTs in South Africa. Consequently, due to inadequate space, the local municipalities fail to design improvements and provisions that can enhance spatial justice on street spaces. Sometimes, a street can change from one class to the other through road upgrading. In many cases, local municipalities in developing countries, particularly in SRTs, usually lack the finance to compensate abutting property owners whose stands are sited in the zone earmarked for road expansion resulting in narrow street spaces.

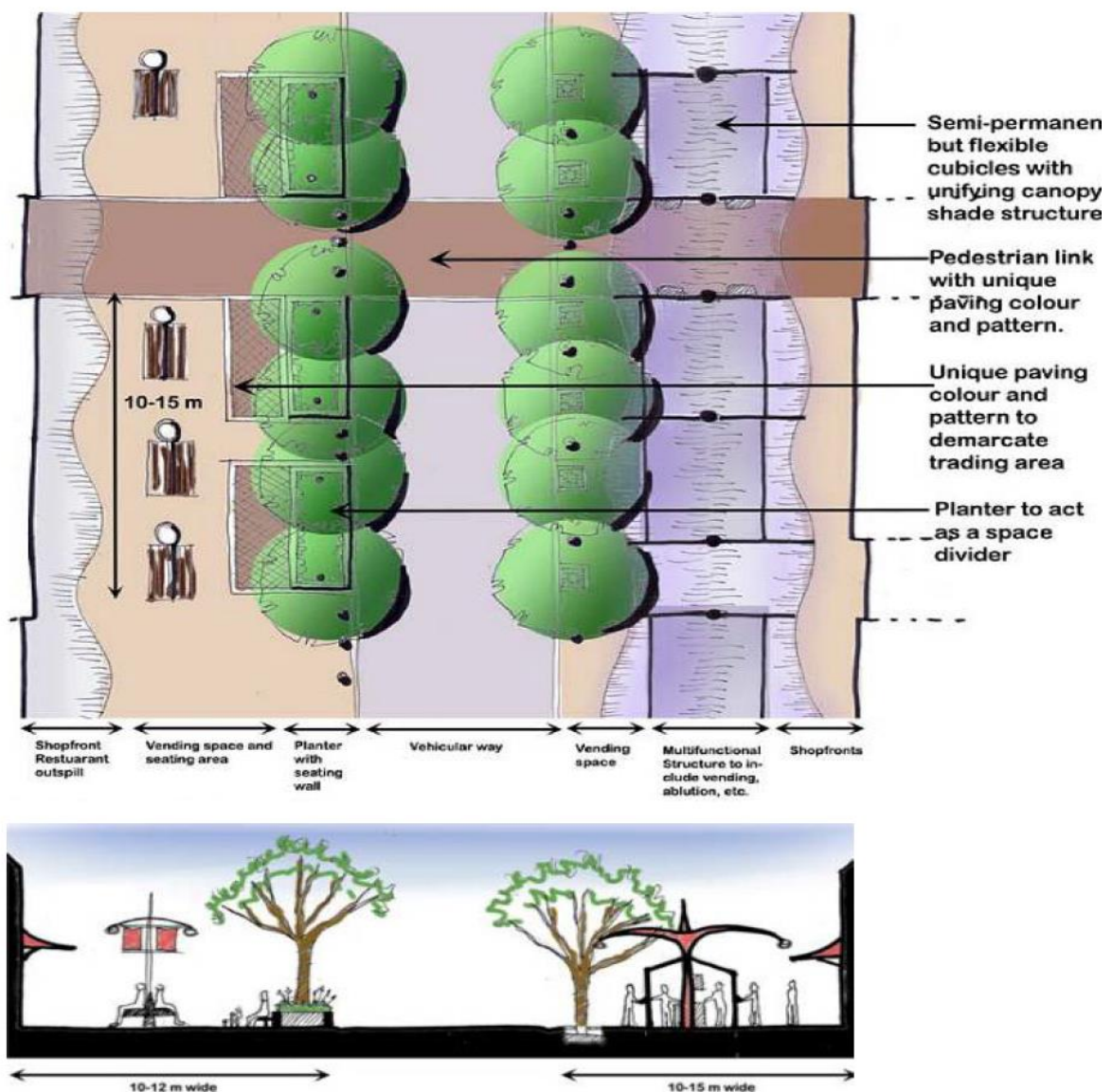


Figure 2-1: Guidelines for the public-private space interface
Source: City of Tshwane (2007:25)

2.4 Multiple functions of street spaces

Street spaces have multiple personalities and are multidimensional spaces (Marshall, 2004: 23). Street spaces are present in both public and private domains (Kott, 2011; Shrestha, 2011). The differential outcomes from these spaces in their private and public domain explain the functions that each of the streets may serve. In the private domain, some street spaces provide limited access for the public (Landman, 2010). Yet, streets are public spaces that should be freely accessed and used by all the people (PPS, 2012). Streets perform various physical, economic, and social functions. While these functions are itemised for this discussion, in reality, these functions are eclectically experienced.

2.4.1 Physical functions of streets

Streets determine the framework for the layout and affordability of basic urban services (UN-Habitat, 2013). The street system is fundamental for urban mobility, policies, and investments in the city (Vaggione, 2012). Street spaces are crucial assets for a city and have important physical and environmental functions (ibid). Streets provide access to buildings and other public spaces. Physical accessibility provides street space users with a choice to enter a street space and use its functions.

Parking is a key physical function of many streets. Streets also act as main conduits for drainage and other utilities such as street lighting. Streets designed for easy maintenance and proper water flow management reduce the risks of water stagnation and the associated threats to public health. A well-designed street space encourages people to choose to travel safely by foot or bicycle (Ireland DOT, 2013). Not only does this bring health benefits to individuals, but it also promotes low carbon emission transportation choices. This reduces outdoor air pollution and improving air quality, and it also makes urban spaces more resilient (UN-Habitat, 2015; Peinhardt, 2018).

2.4.2 Economic related functions of streets

Street spaces are the lifeblood of social and economic exchange (Jones, Boujenko and Marshall, 2007; Kott, 2011; PPS, 2012; Middleton, 2018). Often street spaces provide underestimated benefits to both informal and formal forms of entrepreneurship and businesses. The South African Department of Housing (2000:3) argues that streets facilitate effective operation of local space economies, for example, through

legitimately conducting informal street trading activities. Such activities provide livelihood opportunities for poorer urban dwellers (Garau, 2014). This is also a 'Right to the City' claim by ordinary citizens on the right to work (Meneses-Reyes and Caballero- Juárez, 2014).

Street trading activities, in some cases, enhance a variety of activities and vibrancy. Vibrant street life is where the public can enjoy being in the city and claim their right to appropriation or right to be in the city (Purcell, 2003; Shaftoe, 2008; Harvey, 2009; Madanipour, 2010; Purcell, 2013). Economic values that can be derived from street spaces include increased tourism, higher revenue for street traders, private businesses and property owners.

2.4.3 Social functions of streets

Street spaces can be used to perform several social functions. Socially functional street spaces are inclusive, and they also promote social equity. They facilitate interaction, tolerance, and cultural expression among diverse people, thereby, enhancing the quality of life of street space users (Heng and Chan, 2000; Garau, 2014). Inclusivity on street spaces is perceptible when other vulnerable groups such as the elderly, children, youths, and the differently-abled can use the street (Jacobs, 1961; Jalaladdini and Oktay 2012; UNCHS, 2013). However, Küsel (2018:43) argues that most streets in developing countries like South Africa have a glaring absence of vibrancy and social capital, which makes robust urban communities. Equitable environments can be shared equally by all sections of society (Fainstein, 2009; Gehl, 2010; Moroni, 2020). Street spaces can be destinations in their own right (Jones, Boujenko and Marshall, 2007:16). Such spaces provide users a sense of place by providing local distinctiveness; visual quality, and propensity to encourage social activities.

Streets facilitate many other social functions such as celebrations, political gatherings, recreation/ relaxation, meeting with other people, finding meaning/purpose in the city, and visiting other parts of the city among others (Lynch, 1960; Jacobs, 1961; Whyte, 1980; Shaftoe, 2008; UN-Habitat 2013; Garau, 2014; Hartman and Prytherch, 2015, Smart Growth America and National Complete Streets Coalition, 2017). For example, London's famous Trafalgar Square was pedestrianised, while Vienna closed its central

streets to vehicle traffic (UN-Habitat, 2013:65). Wollongong in Australia promotes a walking culture through its pedestrian-friendly environs (Stratford, Waitt and Harada, 2020).

Regionally, the City of Nairobi, introduced a Place-making Week, since 2016 (Holzwarth, 2018). During Nairobi's Place-making Week, streets in the CBD are shut down to cars and citizens. Municipality representatives are engaged in dialogue about the importance of public space and their maintenance, for example, through painting street crossings. This event affords users to participate in the decision-making through interactions with town planners and city engineers and builds solidarity amongst citizens. Although after a week the streets return to their original function, this shows the municipality some possibilities that exist when users of space are involved in making of streets. In this same spirit, The City of Kigali introduced monthly car-free days to improve pedestrians' experience (Mwaura, 2017).

In South Africa, strides towards improvements of street spaces to become more social spaces are documented for large metropolitan cities such as cities of Cape Town, Johannesburg, Ekurhuleni, and Tshwane (City of Tshwane, 2007; COJ, 2009; Ekurhuleni Municipality, 2017; Open Streets Cape Town, 2018). For example, Open Street Days in Cape Town, present planners and urban designers with an opportunity to understand the users' needs through interactions with pedestrians.

From the examples above, there seems to be a paradigm shift globally amongst planners and urban design practitioners who no longer view street spaces from the traditional lens as mobility channels, but as a dynamic force that should effectively respond to its users' social needs. In practice, however, there is little understanding amongst the same practitioners on distinctive social characteristics of streets as public spaces and more specifically on creating spatially just street spaces (Jones, Boujenko and Marshall, 2007; Jalaladdini and Oktay, 2012; PPS, 2012; Aljabri, 2014; Garau, 2014; NACTO, 2014; UN-Habitat, 2015b; Middleton, 2018). UN-Habitat (2013) asserts that although streets comprise more than 80% of public space in cities, they are often underutilised in their public role in developing countries.

With reference to African cities, Bolay (2015) cites poor road infrastructure provision, maintenance, and privatisation of public space as some of the challenges that affect planners in providing street spaces with more social functions. For example, the capital city of Burkina Faso, Ougadougou, has unpaved streets and very few public spaces promote coherent social activities (ibid: 427). Holzwarth (2018), concerning Nairobi, Kenya's capital city, also laments that “Nairobi is a walking city, but pedestrians are forgotten”. In this same light, Küsel (2018:43) postulates that, “In the South African context, we very seldom develop streets for people”. This results in the manifestation of less just street spaces as the current spaces may limit activities that can be carried out; thus, failing to meet the diverse users' needs. Open Street Cape Town calls for action-based experimental oriented research, focused on planning and designing sociable streets dubbed as “tactical urbanism” (Williams, 2018:161).

2.5 Street typologies, characteristics, and contradistinctions

Although spatial justice on street spaces is considered a fairly new term, as a concept, it is implicit in discussions of various street typologies which include ‘safe’ streets (Jacobs, 1961), ‘good’ streets (Whyte 1984), ‘livable’ streets (Appleyard, Gerson, Lintell, 1981; Lusher, Seaman and Tsay, 2008), ‘convivial’ streets (Shaftoe, 2008), ‘complete’ streets (Smart Growth America and National Complete Streets Coalition, 2010), and ‘shalom’ streets (Hartman and Prytherch, 2015).

Table 2-3 illustrates the typologies of streets and their key characteristics. The key assumption from Table 2-3 is that important variables and indicators that relate more to the tenets of justice can be drawn from the key characteristics of these street typologies. Some characteristics from the street typologies have sharp contradictions. For this reason, the interpretation of spatial justice becomes a complex issue with no straightforward measurements. For example, “the presence of the police in either public or private manifestations signals safety for some and danger for others” (Bickford 2000:363). This shows divergent views held by users on the quality of street safety. Contrary, Anderson (2011) argues that lack of faith in the police is the major reason for users’ greater personal safety responsibility when navigating street spaces. Shaftoe (2008) proposes that municipalities should employ street ambassadors who patrol the street spaces and orient street space users to the city’s culture. This practice

is gaining popularity in Sheffield in the United Kingdom and can be adopted by SRTs in South Africa as an example of a best practice.

Researchers contend that physical barriers are important safety measures that separate motorists and pedestrians, wherein their removal presents a threat to the safety of more vulnerable street space users with disabilities (Imrie 2012; Meetiyyagoda and Munasinghe 2009). Contrary, Bonilla (2012) argues that physical barriers on public spaces such as streets are an infringement on the public's freedom to navigate freely. Another controversial measure of safety involves surveillance camera use (Bivina and Parida, 2019; Ditton, 2000). Some pedestrians perceive closed circuit televisions as enhancing a sense of security, whilst others view it as a cosmetic measure that does not stop criminals from committing a crime (ibid). Weber and Podnar-Žarko (2019) recommend the application of sensors and cameras on streetlights for adequate safety and assistance of municipalities in providing services that match the number of users. Furthermore, they recommend that the right infrastructure should be directed towards activities as a smart city initiative. All these different perspectives on safety reveal the intricacy of identifying indicators for measuring spatial justice.

Table 2-3 : Various street typologies

Street typology	Key design indicators	Other key sources	
Safe streets by Jacobs (1961)	<ul style="list-style-type: none"> • Clear demarcation between what is public space and what is private • Eyes upon the street • Continuous users of the sidewalks • Surveillance mechanisms (police, cameras) 	<ul style="list-style-type: none"> • Barriers • Streetlights • Absence of anti-social behaviour • Traffic calming measures 	Jacobs, 1961; Shaftoe, 2008; Hamilton-Baillie, 2008; Gehl, 2011; Anderson, 2011; Imrie, 2012; PPS, 2014; GDCI, 2014; Middleton, 2018; Bivina and Parida, 2019
Good streets by Whyte (1980)	<ul style="list-style-type: none"> • Allows for social life by providing spaces for sitting and space for vending stalls Adequate space provision for pedestrians' flow • Streets that relate to other existing public spaces • Availability of amenities 	<ul style="list-style-type: none"> • Diversity of activities or functions that can be afforded by the place • Can be occupied by both residents and businesses • A conducive microclimate 	Whyte 1980; Heng and Chan 2000; Harber and Parker 2018; Bivina nd Parida, 2019
Liveable streets by Appleyard (1980)	<ul style="list-style-type: none"> • Safety • Security • Walkable sidewalks • Just and user-friendly spaces 	<ul style="list-style-type: none"> • Public transport • Consumer private oriented lifestyles • Social city infrastructure 	Appleyard, Gerson and Lintell, 1981; Lusher, Seaman and Tsay, 2008; Gehl,2011; Aljabri, 2014; Middleton, 2018; Aman et al. 2019; Stratford, Waitt and Harada, 2020
Great street by Jacob (1995)	<ul style="list-style-type: none"> • Accessibility for all • Physical comfort • Well maintained • Variety of elements 	<ul style="list-style-type: none"> • Memorable • Safety • Easy to find • Provides leisure for its users 	Jacob, 1995; Meetiagoda and Munasinghe, 2009; GDCI, 2014
Convivial streets by Shaftoe (2008)	<ul style="list-style-type: none"> • Flexible street designs, • Cultural expression • Social interaction 	<ul style="list-style-type: none"> • Celebration and public demonstration • Sensual and psychological meaning 	Lynch, 1960; Shaftoe, 2008; GDCI, 2014
Prosperous streets by UN-Habitat (2013)	<ul style="list-style-type: none"> • Infrastructure development • Environmental sustainability • Productivity 	<ul style="list-style-type: none"> • Quality of life • Equity and social inclusion • A balance between man-made systems interface with natural systems 	CSIR, 2005; PPS, 2012; UN-Habitat 2013
Complete streets by Smart Growth America (2005)	<ul style="list-style-type: none"> • Diverse users and activities • Safe and convenient 	<ul style="list-style-type: none"> • Diverse modes of transport; walking, cycling public transport, automobiles 	City of Johannesburg 2013; Desai, 2014; Southampton City Council, 2015; Smart Growth America and National Complete Streets Coalition, 2017
Shalom streets by Hartman and Prytherch (2015)	<ul style="list-style-type: none"> • Hospitable public space • Safe • Any inequalities benefiting the most vulnerable • Can be defined and regulated inclusively by all users 	<ul style="list-style-type: none"> • Fair distribution of mobility rights • Functional and beautiful sidewalks as a key feature 	Hartman and Prytherch, 2015

Source: Author's construct (2020)

Contrasting views are also established in equating the concept of the shared street to spatial justice. For example, the shared streets concept is popularised in the Netherlands, as a calming traffic measure. However, it presents a safety risk for pedestrians, as vehicular users often become impatient in some cases (Imrie, 2012; Middleton, 2018). In some cases, planners attempt to improve pedestrians' safety by designing footbridges. However, a study in Dhaka, Bangladesh, established that 71% of pedestrians did not like to use a foot-over bridge citing challenges of inconvenience and unfriendliness (Pasha et al. 2015). This finding reveals injustices that arise when users are not fully involved in the planning process and the challenging task of coming up with indicators for evaluating spatial justice.

Spatially just street spaces are liveable streets (Middleton, 2018). Liveable streets offer safety, comfort, accessibility, and convenience for their users (Aljabri 2014, Stratford, Waitt and Harada, 2019). The argument that liveable public spaces should complement the modern, consumer private-orientated lifestyles promote privatisation of public spaces. Privatisation of public space may repel other users from accessing them. This contradicts with tenets of spatial justice where public spaces should be freely accessible to the general public.

Another contradistinctive view is on the concept of complete streets. Desai (2014) critiques the complete street concept as having a set of fixed design standards that produce uniformly structured streets that are void of users' anthropogenic needs. Hui et al. (2017) also critique the complete streets concept arguing that they lack consideration of social behaviour patterns, values, and cultural context. Moreover, the complete street design concept favours wide lanes which are sometimes not provided by smaller towns. This may be due to their inherent space limitations from the historical background, the street layout plans and other financial constraints.

From the above discussion, indicators of spatially just street spaces can also be drawn. Indicators that relate strongly to the spatial justice principles are adopted (see section 2.2.1 in this chapter). The assumption is that the presence of these distinct parameters on street spaces produces spatial justice, while the absence of these parameters translates into spatial injustice. However, these indicators themselves are not fixed outcomes, but are always transforming. In some cases, the characteristics

contradict such that if planners provide for them, the resultant street spaces become unjust. In other instances, the characteristics complement each other resulting in spatially just street spaces. Lefebvre (1991) and Madanipour (2010) concur that tensions and complementarities are inevitable and necessary in public spaces.

2.6 Who then are the street space users?

Street spaces are used by multiple users who are definable through social constructs, their mode of travel, and the nature of their activities as they interact on street spaces. Street spaces users are people that utilise streets (whether private or public) for any purpose and at any given moment. The street space users are therefore not homogenous, but diverse (Bickford, 2000; Tight et al. 2004; Cowan, 2011). Some of the social constructs used to define street space users include race, rich/ poor; have a place of residence/ homeless; young/old; male/female, the able-bodied/ differently-abled/ physically disabled (Jacobs, 1961; DOH, 2000; Middleton, 2018; Bivina and Parida, 2019; Osóch and Czaplinska, 2019). These different social constructs also determine the users' differential perceptions of experience and meaning of a particular socio-spatial quality of streets. For example, people of a different race, colour, and gender negotiate public spaces differently (Middleton, 2018:303).

As a case in point, women's perception of safety on street spaces tend to differ from their male counterparts (ibid:303). In some cases, a street user without a disability may easily navigate through a narrow sidewalk without considering it as an injustice. However, a person with a physical ability challenges may experience street spaces differently (Tight et al. 2004). In other instances, age also affects one's perception of spatial justice. As exemplified by Walters and Brown (2004:75), the youthful age group, dubbed the "laptop crowd" are more concerned about active urban lifestyles than the elderly. Therefore, when designing public spaces for the youthful generation, it is essential to consider different space synergies, such as integrating entertainment, culture, and talent on space (Walters and Brown, 2004; Osóch and Czaplinska, 2019). In Limpopo Province of South Africa, the youthful age group of between 15-35years constitute the largest group population, estimated to be 38% (StatsSA, 2018:10). Therefore, through conducting a users' needs assessment, planners and other stakeholders involved in designing street spaces can appropriately provide street spaces that integrate unique needs of different age groups. Meeting users' needs is

not a straightforward process, but rather an iterative continuous learning process (Rezafar and Turk, 2018).

In some cases, street space users are defined in terms of their mode of travel. These include pedestrians, bus-riders, cyclist, transit riders and motorists (Jonasson, 2004; Ireland DOT, 2013). Generally, the types of street users and the overall volume of people on a given street depend on variables such as the time of day, street size, local weather and urban context (NACTO, 2014). In some African countries, the perception of cycling as a mode of transport reflects a lower social status in comparison to motor vehicles. In addition to supportive infrastructure, social status is one of the causes of why cycling is not very popular in African cities (Acheampong, 2016). In most cases, the political will to promote cycling as a travel mode in African towns and cities is lacking (COJ, 2014). Lack of political will was also cited as the cause for the Freedom Ride Project's failure to revive bicycle track by the City of Johannesburg in 2014. In most developing cities, pedestrians' needs are often forgotten in street space designing (Matjomane, 2018; Morgan, 2018). This is visible through the inadequate provision of sidewalks. Pedestrians do not only use streets for walking, but for many other uses or activities that one can do whilst on foot.

The street space activities done whilst one is on foot can be classified as necessary, optional, and social activities (Gehl, 1987; DOH, 2000). The South African Department of Housing (2000: 8) in this same light argues that streets' movement function should not be seen as a separate element, but as an activity that occurs within social space where many other activities occur. Necessary activities comprise needs such as walking, shopping, or meeting a person. In contrast, optional activities are influenced by the availability of the opportunity and time such as playing, sitting, or standing. Social activities are influenced by the presence of other users, such as talking to other people. Street spaces that permit more social and optional activities are considered spatially just compared to those that only facilitates necessary activities. The traditional design of street spaces in most developing countries often limits street space activities to only necessary activities such as walking without taking cognisance of the users' walking experience.

The nature of activities that users engage on street space is another way of categorising various types of users. Examples include those who sell on the street as street traders, trade inside buildings along the street as private business traders, tour the street as tourists, entertain other users as buskers, come to observe street activities as researchers, and many other activities (Blambila and Longo 1977, Gehl, 2011; Jalaladdini and Oktay, 2012; Desai, 2014; Doumpa and Broad, 2016). Other activities that describe street users are begging, sleeping, living as homeless people, street prostitution, and street drinking. Johnsen and Fitzpatrick (2007) describe these latter users as vulnerable. All these types of users experience and perceive the streets differently. The formal processes of producing street spaces negatively affect the vulnerable groups as these are considered illegitimate in most cities; and are designed out (Loukaitou-Sideris and Ehrenfeucht, 2009; Cowan, 2011). Whereas, in some smaller towns in developing countries such as South Africa, the spatial planning laws are silent on planning for vulnerable groups such as the homeless families.

2.6.1 The users' needs on street space

Dikec (2001:1793) argues that understanding spatial justice requires recognising who uses a particular space and what takes place in that space. Consequently, this determines the needs of the various space users. A key argument in this study is that spatial justice is created and maintained when users' different needs are met through street planning, design, and management processes. These processes determine the extent to which street space users' needs are met by creating and maintaining satisfactory socio-spatial qualities, as well as regulating street uses to benefit the least advantaged users such as pedestrians, cyclists and street traders. Meeting the street space users' diverse needs on street spaces translates to diverse 'Right to the City' claims for these people. The expectations and experiences of users in cities from the developed countries differ from developing countries such as South-East Asia, Latin America and Africa (Bivina and Parida, 2019).

Rezafar and Turk (2018: 85) postulate that users are unique beings whose biology in terms of age, gender, personality, and socio-cultural exposition determine their needs on the public space. Madanipour (2010) argues that the contestations over the use of street spaces are inevitable due to the diversity in the nature of users. This means that street space users can enjoy a particular 'Right to the City' claim on a particular street

while others may consider the same space to be unjust (Madanipour, 2010). This reveals the paradoxes embedded in spatial justice, whose meaning is subjective and dependent upon the diversity of the perceptions of street space users.

In addition, the complexity of understanding spatial justice from users' needs also lies in the fact that "... what people say they want when there is no opportunity is often very different from what they actually do when an opportunity presents itself" (Williams, 2018:161). This shows that users' aspirations and their actual experiences in some cases do not tally because aspirations can change over time (Rezafar and Turk, 2018). Williams (2018) further explicates that "... it is very difficult for anyone to reimagine their streets by simply thinking or talking about it..." (ibid: 161). This reveals the difficulties encountered by users trying to re-imagine ideal street spaces. Table 2-4 characterises various street users, their needs, activities on street spaces, and the consequential implications for spatial (in)justice.

Table 2-4 demonstrates the diverse categories of street space users whose complementary needs certainly differ. The needs of street space users in Table 2-4 can be broadly categorised in terms of safety and security, ease of accessibility, identity, comfort, variety of services, security of tenure, and involvement in decision making. These needs cannot be distinctively separated as they are experienced simultaneously by users as individuals or collectives in their interactions with street spaces.

Table 2-4: Street space users' needs and spatial justice implications

Street space users	Activities on street space	Spatial (in)justice implications	Sources
Pedestrians	Movement, sitting, resting, reading, shopping social interactions, doing business, festivities/celebrations, meetings	Street spaces should be responsive to the diverse needs of this least advantaged group by not limiting or restricting the activities conducted. Street spaces should also be accessible to more vulnerable groups such as the aged and differently-abled groups. The width of streets and timings of signals, alignment of crosswalks should all be pedestrian-friendly. Utilities and necessary infrastructure as street resources should be available to facilitate the smooth flow of activities. Space should ensure safety and security for pedestrians. Space for seating and a conducive well-maintained environment is required for resting activities. If all these needs and concerns of the pedestrians can be addressed through planning, design and management, more spatially just street space qualities for pedestrians are reflected on the street spaces, and the pedestrians also enjoy their 'Right to the City'.	Lynch, 1960; Jacobs, 1961; Whyte, 1980; Bentley et al, 1985; Shaftoe, 2008, Heng and Chan, 2000; Carmona et al. 2003; Gehl, 2011; Pooley et al. 2013; Hartman and Prytherch, 2015; Aman et al. 2019 Bivina and Parida, 2019; NYCDOT, 2020
Street traders	Conducting business on the street, provide services that support vibrant, engaging street environments	The needs and concerns of street traders include adequate space allocation at strategic points, maintenance of street spaces, availability of utilities and supporting infrastructure, the security of tenure and safety. Street planning, design and management should also strive to meet the needs of this category of users recognising that they also have the 'Right to the City'.	Jacobs, 1961; Whyte, 1980; Lefebvre, 1991; Shaftoe, 2008; Gehl, 2010, Jalaladdini and Oktay 2012; Menes-Reye and Caballero-Juárez, 2013; UN-Habitat 2013; Garau, 2015; Matjomane, 2018
Shop owners	Doing business, provide services that support vibrant, engaging street environments	Well maintained street spaces, availability of utilities, security and safety on street spaces, less confrontations and conflicts with street traders. An environment which facilitates smooth flow of these activities and needs translates to spatial justice for the shop owners	Kott,2011; SCC, 2015; NYCDOT, 2020
Cyclist	Movement	Clearly demarcated cycle tracks, adequate space for cycling and safe facilities amongst other needs for cyclists also translate to spatial justice on street spaces for cyclists.	Pooley et al. 2013; NACTO, 2014; Hartman and Prytherch, 2015; SCC, 2015, Acheampong, 2016; Delaney, 2016; Pune Municipal Cooperation, 2016; NYCDOT, 2020
Motorist	Movement Parking	Spatial justice for this group is reflected in streets design which facilitates safe and comfortable access movement; adequate parking space and lighting	DOT, 2002; Jones, Marshall and Boujenko, 2008; NACTO, 2014; NYCDOT, 2020
Transit riders	Movement	Streets design to facilitate safe, comfortable access, provide adequate amenities, is considered as spatial justice for these users.	Jones, Marshall and Boujenko, 2008; Ireland DOT, 2013; SCC 2015
Freight operators and service providers	Movement of goods and other critical city services	Allocation of adequate space for loading and offloading, dedicated routes, accommodating for the safety of all other street users equates to spatial justice for this category of users.	Ireland DOT, 2013; NACTO, 2014; SCC 2015

Source: Author's construct (2020)

Translating ‘people’ views into action in street design and management practices is crucial for achieving spatial justice on street spaces. Often, it is very difficult for planners to meet all the dissimilar needs of users. Urban planners and designers are confronted with the dilemma on which needs or whose needs to prioritise. Therefore, there is a need to identify a strategy through which users disparate are prioritised to focus on the determined priority areas (Bivina and Parida, 2019; Pouya, Turkoglu and Arpacioğlu, 2020). Collaboration between urban planning professionals and street space users to establish what works and what does not work to create spatially just street spaces in any given context is also necessary. Karssenberg et al. (2016:11) shed some light that, “We are no longer planning cities - we are reinventing, reusing, and living within them. Our most meaningful, high-impact projects are founded on the principles of co-creation and depend on experimental, bottom-up initiatives, temporary use, user- and place-based strategies, and Do It Yourself (DIY) urbanism”. This shows that the involvement of users is an important imperative in creating spatially just spaces.

2.6.2 Users’ contestations and negotiations on street spaces

Street space users are important urban space producers. Their involvement in the design and management of street spaces reduces spatial (in)justice. Contestations or conflicts and negotiations over space amongst the diverse groups of street space users are inevitable (Loukaitou-Sideris and Ehrenfeucht, 2009). As a result, the social relations that emerge can either be empowering (spatially just) or dominating (spatially unjust). The different types of conflicts that exist on street spaces are shown in Box 2-1.

- | | |
|------|---|
| i. | street space users versus traders |
| ii. | street space users versus private businesses or property owners |
| iii. | street space users versus space, and or street infrastructure |
| iv. | street space users versus vehicles |
| v. | street traders versus shop owners |
| vi. | street traders versus the municipality |
| vii. | street traders versus street traders |

Box 2-1: Types of contestations and struggles on street spaces
Sources: Loukaitou-Sideris and Ehrenfeucht (2009); Matjomane (2018:141)

Some of the emergent conflicts on street spaces result from the regulatory policy frameworks’ neglect of the crucial role played by streets as both movement and economic conduits (Matjomane, 2018:141). For example, in most African cities, streets are often packed with informal activities; however, most local municipalities are less

tolerant or indifferent to street trading (ibid). Studies by Setšabi (2006) and Begari (2017) from Lesotho and Bangladesh respectively, reveal that street traders are commonly labelled a threat to public order and bases of crime and grime. As a result, conflicts between municipalities, street traders and other street users are common occurrences. In negotiating such conflicts, the parties involved take different strategies some which are confrontational, others avoid the conflicts completely, while others try to settle for a win-win situation (Loukaitou-Sideris and Ehrenfeucht, 2009).

Matjomane (2018:141) provides an example of how pedestrians and street traders negotiate for space use along De Villiers Street in Johannesburg South Africa. While pedestrians avoid conflicts caused by street traders occupying sidewalks by simply using the road carriageway instead of sidewalks, street traders on the other hand, negotiate amongst themselves on occupation boundaries and with shop owners for occupying space on their shop front. In exchange, the street traders sell part of the shop owner's ware on the shop front. After trading hours, street traders get space to store away their vending wares in the shops safely. By so doing, a win-win situation is created. Moreover, the informal traders along De Villiers Street have taken it upon themselves to change other users' perception of crime along the street by contributing to cleaning schemes and employing security guards. This is an example of "do-ocracy" defined by Verhoeven, Metze and van de Wijdeven (2014) as small steps taken by some users to create spatial justices on the urban spaces which they live. This is a common phenomenon in many African cities (Matjomane, 2018). My assumption is that if local municipalities can embrace such initiatives by users of street spaces, co-creation of spaces can shape what spatial justice means to users.

2.7 Street space planning and design

Streets planning, design and management are the main channels through which spatial (in)justices are produced and maintained on street spaces. The challenges debasing street spaces in most developing countries call for an improvement from the status quo on how these processes are implemented in urban areas. Streets planning and design are not distinctly separated in this review of literature as no one process can be done without the other. After all, "street design is a multi-disciplinary act of shaping or planning the urban environment" (Madanipour, 1997:22). Some municipalities, however, regard street management as a separate process. For

example, the Ekurhuleni Municipality in South Africa has a separate Urban Management Department (Ekurhuleni Municipality, 2017).

The term 'planning' is defined by the DHS (2019:F.20) as “the practice of making informed decisions regarding the type or level of service to be provided and then choosing the most appropriate layout and structuring options based on a thorough understanding of the context within which the planned development will be implemented”. This definition of planning speaks of making informed decisions and choices about available resources in each context. Therefore, the involvement of users affected by the decision becomes of paramount importance in street space planning. Fainstein (2009:4) argues along the same lines stating that there is a need to “...reframe the discussion about spatial planning so that poorly represented groups benefit”. For example, non-vehicular street space users should benefit more from the uses to street spaces are put. The 'appropriate layout and structuring options' from the planning definition provided refers to street designing (Stepan and Rotaru, 2011). This shows the intricate relationship between street planning and design.

A definition of planning by Keeble (1969) shows the interrelatedness between planning and design. According to Keeble (1969:67), “planning ensures that public interest is served through organising or arrangement [of streets] in relation to buildings and other land-uses in pursuance of a particular scheme or policy”. The organising or arrangement of street spaces is called street designing. Street designing is considered as a primary tool for street planning (Guerrero and Nieves, 2007). Planning is mainly concerned with manipulating the street space to define its character (City of San Diego General Plan, 2008, Stepan and Rotaru, 2011).

Historically, streets were tied to public health and social equity issues. As a result, planning, design, and management imperatives were introduced to address such concerns (Guerrero and Nieves, 2007). The 20th-century street planning model in most cities was largely informed by separating land-uses through zoning, and was also heavily reliant on the motor vehicle as the mode of transport (UN-Habitat, 2013). Furthermore, the traditional design practices such as street markings, signing and signalling make traffic laws and design standards vehicular oriented (Hartman and Prytherch, 2015; Özbayraktar, Pedemir and Mirzaliyeva 2017). However, this

traditional model of street planning and designing falls short in considering streets as public spaces. As a result, street planning and design processes are often accused of lacking the human component, as well as economic activity and vibrancy (Gehl, 2011; Jacobs, 1961; Loukaitou-Sideris and Ehrenfeucht, 2010; Mehta, 2018). For this reason, new theories and approaches to street planning and design such as new urbanism are being advanced to produce public spaces based on design principles which seek to enhance users' experience on street spaces.

The new urbanism agenda seeks to address the design challenges from the traditional car-centric design approach by prioritising pedestrians over the car users; mixed-use developments; and good architectural designs (Carmona et al. 2003; Guerrero, 2007; Robbins, 2013). One major shortcoming of the new urbanism concept is that it focuses more on the physical design aspects and neglects the social aspects (Robbins 2013:366). Such an approach is capable of producing spatial (in)justices. Ultimately, the focus of justice conscious street design is to create “centres for actualising human personality” (Mumford (1961:573).

Street design entails transforming “abstract spaces to humanised places” (Walters and Brown 2004:79). While abstract spaces are poor quality, unfriendly and boring environments, contrastingly, humanised spaces are “people-friendly, vital and viable environments” (Carmona et al. 2003:vii). Rouse (1998)'s study cited in Carmona et al. (2003:13) describes seven urban design clamps that can be defined as the “reasons for failure by urban designers, architects and planners to achieve high standards of urban design”. The design clamps are described in Table 2-5.

Table 2-5: Rouse's seven clamps of urban design

The clamp	Description
Strategic vacuum clamp	Urban design is inadequately backed by national, regional and local policy and political systems.
Reactivity clamp	Lack of a proactive strategic urban design process in the planning system.
Over-regulation clamp	Rigid regulatory processes that stifle innovation and experimentation which is required in urban design.
Clamp of meanness	Lack of investment in urban design.
Clamp of illiteracy	Lack of skills, teamwork, willingness to perform outstandingly as well as to unlearn and relearn urban design.
Small mindedness clamp	Unwillingness to tackle complex tasks and challenges, as well as failure to learn from past mistakes.
Short-termism	Short term planning informed by the political cycle and funding.

Source: Adapted from Carmona et al. (2003:13).

If the urban design clamps are tactically addressed, then spatial justices are likely to be experienced on street space. Contrary, failure to address these clamps results in poorly designed spaces that are spatially unjust.

2.8 Management of street spaces in urban areas

Street space management involves planning and maintaining utilities and infrastructure (NACTO, 2014). Utilities and infrastructure are the basic resources on streets that significantly improve users' quality of life and a town's economic viability (Carmona et al. 2003). Street space management also seeks to redress all the malfunctions that may occur in the use of public and private environments, using a managerial approach (Ekurhuleni Municipality, 2017; Department of Rural Development and Land Reform (DRDLR), 2017). The goal of street management is to address potential threats to urban dwellers' quality of life. These planning functions are enabled through the application of different models on public space management (De Magalhães and Carmona; 2008). Therefore, the way these models are applied can generate either positive or negative outcomes that can consequently produce or reproduce spatial justice.

Three key public space management models that can be used by local planning authorities are the state-centred model, the devolved market-based model, and the user-based models (De Magalhães and Carmona; 2008). The state-centred model is the most popular model used in South Africa by the local municipalities to manage public spaces. With this model, the management of public spaces is the sole responsibility of local municipalities. The main advantages of the state-centred models are that, the relationships between users of public spaces and the municipalities are guided by written down rules. Conversely, the challenge, however, relates to poor coordination amongst various municipal departments due to lack of a common vision (Alam, 2010). As a result, the spaces produced through application of state-centred models reflect more of injustices than justices. Public participation is also a major challenge in most state-centred models (Rowe and Frewer, 2005; Alam, 2010; UN-Habitat, 2015; Karssenberget al. 2016; Peet, Klabbbers and Belderbos, 2016; Williams, Denny and Bristow, 2017). Nevertheless, without participatory street management processes, people who live in cities cannot express their views on the kind of street spaces they want. A set of just outcomes from the management of street spaces are only realised when a mobilised constituency pressurises planners to bring about the changes they want to see (Fainstein, 2009:3).

In the market-based model on public space management, corporate organisations or the private sector are responsible for the management of public spaces while the role of the state is devolved (De Magalhães and Carmona; 2008). There are clear service delivery contracts such as street cleaning or the maintenance of public-private space conditions outlined in the private property development conditions (Alam, 2010; NACTO, 2014; DRDLR, 2017). However, the profit-making motive of corporate organisations often results in privatisation and exclusionary tendencies for particular users thereby creating injustice.

The user-based models on public space management focusses on the delegation of public space management responsibility onto formal user-based organisations or the less formal ad-hoc groups (De Magalhães and Carmona; 2008). Their primary interest is on obtaining more of the use-value of the public space and not motivated by making business profits (Ekurhuleni Municipality, 2017). Reclaiming the use-value of space affords users to enjoy their right to good public space, which is a form of spatial justice.

The main challenge with this model is that more powerful groups may under-represent other marginalised groups as with the case of the Street Traders Associations in India (Colin, 2018). Some groups also lack sustained community action (De Magalhães and Carmona; 2008).

All the three models on public space management have their strengths and weaknesses in terms of coordination, regulation, maintenance, and financing of projects (De Magalhães and Carmona; 2008). Therefore, to ensure the delivery of spatially just public spaces, the ideal public space management model should focus on combining the strengths and reducing the weakness of each model experimentally (Colin: 128).

Management of street spaces can be done at different levels. These levels differ according to municipalities. For example, the Ekurhuleni Metropolitan Municipality in South Africa has five key levels of urban space management. These include maintaining basic infrastructural services (potholes, road-markings, streetlights, and stormwater drains), dealing with informal land-uses, policing, events management, and place branding. The first level is an essential basis for measuring street management performance for local municipalities. It is unlikely that a local municipality can be successful in implementing the higher levels of management such as place branding without having succeeded at the basic levels (Kavaratzis, 2009). For example, without clear road markings and streetlights on street spaces, a town cannot be branded as a 'safe town'. Thus DRDLR (2017) argues that, even if public spaces such as streets are properly provided for and well designed, poor maintenance and management of such spaces becomes a problem rather than a solution. Thus, proper maintenance of basic infrastructure is an essential indicator of spatial justice on the streets.

Views from both developed countries (Karssenberget al. 2016), and developing countries (UCLG, 2015) concur that responsive urban management is a prerequisite in creating just communities in the present age. Regarding street spaces, responsive street management would entail learning, experimentation and cooperation of both local municipalities and their citizens (Karssenberget al. 2016:11). However, smaller

local municipalities are yet to embrace this new paradigm of management of streets. This process can produce and maintain spatial justice to a greater extent.

Creating conditions that generate spatial justice on street spaces requires collaborative efforts in planning, design, and management of public spaces. Contemporary conversations in planning, design, and management of public spaces advance the concepts of place-making, place-keeping, and place-stewardship (Project for Public Spaces (PPS), 2012; Chirisa, 2014; Garau, 2014) as defined in Box 2-2.

Place keeping - entails the maintenance and enhancing the quality of places. It also involves long-term management of places to ensure that the social, environmental and economic quality and benefits can also be enjoyed by future generations (PPS, 2012).

Place-making- a design process that seeks to enable people who live in cities to get more from their surroundings. A collaborative process of shaping the public realm to facilitate use, paying particular attention to the physical, cultural, and social identities that define a place (PPS 2012; Shaftoe, 2008).

Place stewardship - embodies the responsible planning and management of street spaces to benefit oneself and others and collective trusteeship by communities (Chirisa, 2014; Garau 2014).

Box 2-2: Defining new urban management concepts
Source: Garau (2014); PPS (2012); Shaftoe (2008)

The place management concepts in Box 2-2 call for the local actors' involvement in ensuring co-creation of street spaces which reflects shared identity, diversity, enhanced cultural heritage, and social values (Pérez, 2016:280). An example of place-making and stewardship is the idea of parklets practised in cities like San Francisco where private property owners, community members, and the municipality enter into a partnership to transform streets parking into public spaces (NACTO, 2014; Bertolini, 2020). This is a shift from the traditional public space management from being the sole responsibility of local municipalities towards more stakeholder involvement.

2.9 The concept of small rural towns

A clear separation of rural and urban areas remains a complex task among scholars given the fast-changing terrain of both landscapes. Shields (2011: 280) describes Henri Lefebvre's view of the urban as a combination of various elements of "... population, a geographic size, a collection of buildings, a node, a transshipment point and a centre of production". Earlier classification of urban areas based on the urban hierarchy principles was greatly influenced by the central place theory (Toerien and

Marais, 2012). Central place theory views urban settlements as distribution centres which provide services to surrounding areas and whose enterprise developments are determined by the scope and extent of activities in their hinterlands (ibid). The United Nations Statistics Division (2017) classifies urban hierarchy of settlements starting with isolated farmhouses, hamlets, villages, small towns, towns, cities, and conurbations (metropolis and megapolis). In Zimbabwe, for example, the hierarchy of settlements starts with villages, business centres, rural service centres, district service centres, growth points, towns, and cities (Ministry of Local Government, Public Works and National Housing, 2015; Mutizwa-Mangiza, 1991).

South African Cities Network (SACN, 2014) describes the South African cities' hierarchy as starting from rural municipalities, small towns, large towns, secondary cities, and metropolitan areas. The hierarchy of settlements shows the settlement classification according to population size, population density, and the built-up area. However, it is becoming difficult to categorise urban settlements using an exclusively hierarchical approach of mere population figures. This is because population increase is not only experienced in large metropolitan cities, but also in small rural towns (Toerien and Marais, 2012; UN-Habitat, 2015). Currently, the general urbanisation trends point to most future urban population growth being in Africa. It is estimated that by 2030, 75% of the world's nine billion people will be living in cities (UN DESA, 2019). In South Africa, almost 78% of the country's population now resides within cities and towns (StatsSA, 2018). Although SRTs generally have lesser populations in terms of size compared to larger cities, they are not spared from the urbanisation challenges facing cities world-wide. In fact, urbanisation is occurring most rapidly in smaller towns in Africa (Garau, 2014). In my study, a population of less than 100 000 people was considered in defining the small rural towns (see Section 1.9.4 in Chapter 1).

Another limitation of defining a town using its population size is that it does not capture other crucial factors such as the economic relationships between business sectors in that particular town (Toerien and Marais, 2012). Verhoeven, Metze and van de Wijdeven (2016) provide an alternative classification of settlements in South Africa based on the functional role, that is, the economic activities that cities and towns engage in their regional contexts and not by a mere hierarchy.

The dominant historical economic function in SRTs is agriculture. However, the economy of rural spaces has since shifted from an agrarian to a monetised economy where real estate, manufacturing, and internet trading are expanding (Hungwe, 2014; Bolay, 2015). These dynamic changes that are taking place in the rural landscape are diminishing the 'rural' component in SRTs. Artkinson (2008) argues that small and medium-sized towns have different economic fortunes and economic bases, which make it difficult for them to keep an economic momentum comparable to metros. In contrast, some argue that SRTs have immense potential of turning into vibrant economic centres for trade or resources exploitation (Hoogendoorn and Nel 2012; Reynolds and Antrobus 2012; Toerien and Marais 2012). For example, Still Bay in Cape Town is working to eliminate unemployment through development strategies that are tourism-based (Marias and Toerien, 2012). Musina Town, a border town in South Africa, has the potential of becoming a special economic zone as well as a mining town with its copper deposits (Musina SDF, 2015).

Small rural towns have other important function which can address rural poverty and inequalities. These functions can be achieved through enabling SRTs to act as points of service and welfare distribution to the hinterlands, invigorating the growth of rural non-farm activities, stimulating employment through Small Medium and Micro Enterprises (SMMEs), as well as being recipients of other post-productivity forms of investments such as retirement homes, leisure, telecommuting and second homes (Reynolds and Antrobus, 2012). South African Cities Network (2014) emphasises that other measures such as municipal revenue, municipal expenditure, existing infrastructure networks, property tax base, water, electricity, and utility charges define SRTs in South Africa (SACN, 2014).

South African SRTs have unique spatial planning histories. The histories inherently created (in)justices on street spaces due to the legislative framework applied during that era. For example, former homelands are a creation of the apartheid system of exclusion and segregation (Baffi et al. 2018). These were territories set aside for black Africans characterised by a predominantly traditional land tenure systems that largely lacked formal spatial planning guidelines. There was no specific planning instrument to guide the planning, design, and management of the street spaces in homeland towns. On the other hand, the spatial planning for non-homeland towns was guided

by the Physical Planning Act of 1967 (van Wyk and Orange, 2014). As such, the historic spatial planning practices influence the spatial (in)justice dynamics in these towns in some cases to date. As such, there is need to understand SRTs to fully comprehend the (in)justices on their street spaces.

There is generally no agreement as to how SRTs should be consistently defined among governments or researchers (SACN, 2014; Baffi et al. 2018). Under these circumstances, the definition of SRTs is subject to a researcher's context (Artkinson, 2008; Donaldson and Marais, 2012). Small rural towns are therefore conceptualised according to their economic performance, historical legacy, and population size. This is based on their characteristics as towns located in former rural South Africa, and created to provide different communities in their hinterlands with an urban population of less than 100 000 people.

The landscape for SRTs has not remained static, but has gone through some changes (SACN, 2014). Such changes can also be traced in social, environmental, economic, physical, political, and technological terms (Donaldson and Marais, 2012). These changes altered the character of street spaces with differential implications on spatial justice. Therefore, interrogating spatial justice on street spaces of SRTs is critical. One of the key assumptions is that the macro-level spatially just street spaces area a pointer to successful implementation of macro-level spatial justice principles.

2.10 Theoretical underpinnings used to understand street space spatial justice

In this study, the various forms of spatial (in)justice on-street spaces were analysed from the theoretical perspectives of Lefebvre (1968)'s 'Right to the City' theory, Bentley et al. (1985)'s Responsive Design Elements; and Lynch (1960)'s Legible City theory. In addition, the Public Space Management Framework by De Magalhães and Carmona (2008), and the Spatial Planning Outcomes by Mashiri et al. (2017) are not theories per se, but frameworks of analysis critical to understand the meaning of spatial justice from an institutional perspective. Key tenets of these theories and spatial planning outcomes frameworks unravel the meaning of the principles that guide the processes of street planning, design, and management of street spaces. The modes of analysis emphasise the importance of taking a human-centred approach to public space production. I argue that existing spatial (in)justices on street spaces are

strengthened or redressed through policy (as recommended by Mashiri et al. 2017), resulting in responsive street spaces (as recommended by Lynch, 1960 and Bentley et al. 1985) which meets the needs and, thus, the disparate 'Right to the City' claims of diverse users (as recommended by Lefebvre, 1968/1996).

2.10.1 The Legible City by Kevin Lynch (1960)

Kevin Lynch (1960)'s theory of the legible city, commonly known as the image of the city theory, provides an understanding of how a city's physical attributes affect its inhabitants. According to Lynch (1960), the urban environment is an utterly complex entity where the quality of the built form is understandable through five structuring elements. These include paths, edges, districts, nodes, and landmarks. If these elements are legible, the outcome reinforces the meaning of the city, which translates to spatial justice.

The paths refer to streets, sidewalks, trails, and other channels in which people travel while edges are conceptualised as boundaries such as walls, buildings, and shorelines (Lynch, 1960:108). The other element is districts, which Lynch define as relatively large sections of the city distinguished by some identity or character. In contrast, "nodes refer to the focal points, intersections, or loci, whereas; landmarks are readily identifiable objects which serve as external reference points" (ibid:108).

Street spaces as paths are a central structuring element, which facilitates movement, meeting, and the meaning of the urban form. Lynch (1960) stresses the importance of streets as key elements where other structuring elements are related and arranged. Street spaces are indeed an important urban structuring element that enables users to observe the city and understand it as they move along these paths. Therefore, careful consideration should be given in the planning, design, and management of street spaces to ensure that they are more legible to the street users. Legible spaces are considered equitable spaces as they offer users a sense of identity or sense of place (Jalaladdini and Oktay, 2012). Legibility is also a key responsive design element (Bentley et al. 1985). The total orchestration of these units is such that "as we move along the paths of the city, towards the nodes and districts, demarcated by edges of seams and barriers, where we intend to meet for a particular purpose (meaning), the

landmarks along our way orient us on our progress towards our destination,” (M Gerald, personal communication, October 23, 2017).

2.10.2 Responsive design elements by Bentley et al. (1985)

Bentley et al. (1985) propounded the theory of responsive design elements. The scholars argue that the built environment should be responsive places which provide users with an “essentially democratic setting, enriching their opportunities by maximising the degree of choices that people can make over the built environment” (ibid: 9). The main argument is that, spatial justice is attained when street users enjoy the various choices available to them freely without any form of repression. For example, when one can freely choose where to go or how to get there, it means the user is enjoying their ‘Right to the City’, and the street space is spatially just. Responsive designs of street spaces afford street space users with several freedoms (Karssenberget al. 2016). For example, the freedom to transverse and enjoy the city at an eye-level is a right to access and identity. However, not in all cases do the users’ ‘Right to the City’ translate to spatial justice as perceptions often differ and conflict.

Responsive design elements, namely; permeability, legibility, visual appropriateness, personalisation, variety, richness, and robustness are interrelated variables which facilitate spatial justice on street spaces. In order to meaningfully apply these elements in understanding spatial justice on street spaces, focus was given not to a single element, but on flexibly combining the elements. In this same light, Meetiyyagoda and Munasinghe (2009: 3) argue that, “... the proposed qualities are rather abstract, for which the grounds to measure their realisation is left to the planners and designers”. Although each of these elements is described separately, there are clear overlaps among them as they presuppose each other.

Permeability refers to the number of alternative ways to pass through an environment. Permeable streets are assumed to be more accessible. However, permeability does not directly translate into accessibility in some cases because of hindrances such as thresholds and gateways (Varna, 2014). Thresholds refer to those negative space qualities such as obstructions and pavement materials which may affect accessibility. At the same time, gateways and fences are physical barriers that affect where users can or cannot go (ibid). For example, a physical barrier in the form of a sidewalk fence

may narrow the path for wheelchair users thereby affecting their choice on where they can freely go. The effectiveness of street spaces can be measured by the ease of accessibility (DOH, 2000: 3). Accessibility is a crucial feature of all public spaces useful to describe the *public-ness* of street space (Madanipour, 2010; Varna, 2014). In the context of this study, permeable street spaces are more accessible compared to those which are impermeable.

Legibility is defined as the easiness with which people can understand the layout of a place. Legibility affects how people can understand the street space, and the opportunities that it can offer. The place's detailed appearance makes people aware of the different choices available (Shaftoe, 2008). Madanipour (2010) argues that, spaces should have combined meanings and give people identity, as well as use-value. A more legible street space offers a more spatially just street than an illegible street. Shaftoe (2008: 49) defines legibility as knowing where you are and how to get to where you want to be. If street spaces avail these choices for users, then the users can enjoy their 'Right to the City'. Legible spaces are also visually appropriate, attractive, and rich places. These elements are intertwined in that both seek to make street users better understand and enjoy their street environment. For example, a legible street sign can be aesthetically pleasing, and gives clear directions to users. Another example is that of a legible advertisement billboard with visual appropriateness.

Personalisation is another element which relates strongly to legibility. It enables users of a place to find their own identity in a street space. Symbolic and multicultural spaces enhance personalisation. Personalised effect of an environment is felt when space is both legible and visually appropriate. On such street spaces, elements of richness are also evident. Richness as an element that emphasises both visual variety and order. Rich places appeal to all senses. Street spaces which offer visual variety attract people to see and be seen on-street entirely as a street function (Jacobs; 1961). Therefore, visual variety or richness of a place also enhances the imageability or legibility of a place (Lynch, 1960).

Variety as a responsive design element is experienced in environments which provide diverse uses and socio-economic opportunities for users. Streets that offer various

uses also provide a vibrant street life (Agevi, Andersson and Petrella, 2016). This is an important feature that fosters sustainable urban development (Varna, 2014; UN-Habitat, 2015). Therefore, street spaces that offer a range of uses for their users are more spatially just than those with limited uses.

Robustness is another responsive design element. A robust space can be used for many different purposes. It affects the degree to which people can use a given place for different purposes. A robust street meets the new needs, is flexible, and can be used for different purposes such as park-lets, festivities, celebrations, or entertainment (Shaftoe, 2008; Desai, 2014; NACTO, 2014). Robustness thus relates adaptability and variety (Lewis and Schwindeller, 2014). Robust street spaces can provide street users with a wider choice of uses.

2.10.3 The 'Right to the City' by Henri Lefebvre (1968)

Henri Lefebvre (1968)'s 'Right to the City' theory is founded on the moral claim of spatial justice, and the right to public space (Marcuse, 2012:35). The 'Right to the City' of urban dwellers is affected by social production processes (Lefebvre, 1996). As street space users interact on streets, they often experience dissatisfaction with regards to the distribution of spatial qualities and activities on the street (Stratford, Waitt and Harada, 2019). This infringes on the right to "... move in, through, across and between different places" (Middleton, 2018:302). Yet, what defines a citizen is their capacity to move freely (Cresswell, 2009:110).

Some scholars view participation and appropriation as a central matrix of the 'Right to the City' concept (Lefebvre 1991; Dikec 2001; Purcell 2003; Uwayezu and de Vries 2018). These scholars posit that space users should be directly involved in space production decisions, including its management and administration. Participation is defined as the active involvement of all urban dwellers in decision making and implementation strategies, while appropriation includes the right of urbanites to access, occupy, habit, and use the urban space in pursuance of their livelihoods (Uwayezu and de Vries; 2018: 2). These conditions show that street space users also have the right to make known their ideas on space (Lefebvre, 1991:34).

Contrary, street space users have the right to differences. This means that people can live in solidarity even when their needs and uses of street spaces differ (Lefebvre, 1991; Loukaitou-Sideris and Ehrenfeucht, 2009). This right to difference similarly extends to the city managers as key providers of street spaces with different visions and management philosophies that may reflect spatial (in)justice street space outcomes.

In order to understand the Right to the City concept, it is important to reflect on the categorization of users' rights. These users' rights include (i) the right of presence; (ii) right of use and action; (iii) appropriation; (iv) right of modification; and (v) right of disposition (Lynch, 1984:206-207). In the context of street spaces, the right of presence describes users' right to access or to be on the street space. The right to occupy refers to freely use the street to conduct any activities. This right to occupy or work on streets is mostly linked to street trading activities (Meneses-Reyes and Caballero-Juárez, 2013). When street users redesign street spaces to suit their needs, this is called the right to modify (Lynch, 1984). For example, street traders occupy and arrange street space to become more visible to attract customers, thus modifying space or influencing cities' organisations (Collin, 2018:261). Clearly, the 'Right to the City' does not simply mean the right to what is already in the city, but also the right to transform (Harvey, 2009). This is also linked to the right of disposition which gives owners of space the prerogative to share their rights at times through negotiation. For example, what happens between property owners and street traders?

The 'Right to the City', therefore, entails several sets of rights which are redefined on streets through social production processes (Meneses-Reyes and Caballero-Juárez, 2014; Mitchell, 2003). Often, conflicting rights are inevitable. For example, the right to access or walk freely sometimes contradicts with the right to work on the street. This 'Right to the City' is, therefore, a "cry" and a "demand" by street users for spatially just spaces (Lefebvre, 1996:147). In cases where street space production processes are deemed unjust, users claim their right to the street space in numerous ways as confirmed by Williams (2018). Box 2-3 below illustrates reflections from Williams (2018: 161) on conflict that arises from spatial unjust street spaces.

People are smart. They know when they are being 'designed out' of a space, and they often respond by ignoring the rules or defying the intended patterns of behaviour. We see this when drivers park on cycle lanes, when minibus taxi passengers ask to be dropped off in unsafe locations, and when pedestrians don't wait for the signal to cross the street. Their needs are not being met with the design that has been chosen. Sometimes there are clever design elements that force safer behaviour, but in many cases, these simply reduce the value provided by the street and its various related components, because they are barriers rather than enablers.

Box 2-3: 'Right to the City' and conflict on street spaces
Source: Williams (2018:161)

As demonstrated in Box 2-3, street space users often take matters into their own hands and use spaces to suit needs. In some cases, users collaborate to engage in do-ocracy practices to make their claims known (Verhoeven, Metze and van de Wijdeven, 2014). However, with do-ocracy, many political questions arise when reflecting and learning from these practices, for example, who are the doers? why do they act in the manner they do? whom do they serve? These rhetoric questions also reveal the political nature of activities on street spaces, as well as streets as sites for politics.

The 'Right to the City' is also demanded by two distinct categories of urban dwellers. From Marcuse (2012)'s perspective, the first category constitutes people deprived of material and legal right to space including the homeless and beggars directly excluded from the planning system. Whereas, the second group comprises people incorporated into the system but are repressed, and lack opportunities to determine how space is used.

From the above discussion, the 'Right to the City' concept is fluid, complex, and open to many interpretations; and is thus sometimes viewed as a political slogan to assist the urban dispossessed to regain control (Harvey, 2008). As such, Middleton (2018:303) argues for perspectives towards "...everyday micro-politics and practical policy concerns". In this study, the 'Right to the City' of the street space users is understood in solidarity with differences across the various forms of rights which users can claim on space. Table 2-6 summarises the different forms of 'Right to the City' claims applicable to understanding the (in)justices on street spaces.

Table 2-6: Different forms of 'Right to the City' claims

Types of 'Right to the City' claims	Category of spatial justice
Places of social encounter or interaction (Lefebvre, 1996)	spatial claim, spatial link
Right to move in, through, across and between different places (Middleton, 2018)	spatial link
Adequate sidewalk space (Loukaitou-Sideris and Ehrenfeucht, 2010)	spatial claim, spatial link
Right to public space, use-value of streets as public space over exchange value (Lefebvre, 1996; Madanipour, 2010; Bonilla, 2012; Marcuse, 2012)	spatial claim, spatial power [i.e. right to livelihood]
Right to share public space without one group dominating (Colin, 2018)	spatial claim, spatial link, spatial power
Right to participation or involvement in the planning, design and management processes (Lefebvre, 1991; Dikec, 2001; Purcell, 2003; Harvey, 2009; Marcuse, 2012; Merrifield, 2011; Uwayezu and Vries, 2018)	spatial power
Right to appropriation (access, occupy, habit, and use the urban space) (Lynch, 1984; Lefebvre, 1991; Purcell, 2003; Brown and Kristiansen 2009; Harvey, 2012; Uwayezu and de Vries, 2018)	spatial claim, spatial link, spatial power
Right to difference (Lefebvre, 1991; Dikec, 2001)	spatial claim, spatial link, spatial power
Right to pursuance of livelihoods or the right to work, right to tenure security (Meneses-Reyes and Caballero-Juárez, 2014)	spatial claim, spatial power
Right of presence (Lynch, 1984; Lefebvre, 1991; Brown and Kristiansen, 2009)	spatial claim
Right of use and action (Lynch, 1984; Brown and Kristiansen, 2009; Meneses-Reyes and Caballero-Juárez, 2014; Uwayezu and de Vries, 2018)	spatial claim, spatial power
Right of modification, right to transform urban space or do-ocracy (Lynch, 1984; Verhoeven et al. 2014; Colin, 2018)	spatial claim, spatial power
Right to basic services, right to street resources (Brown and Kristiansen, 2009; Adegeye and Coertzee, 2019)	spatial claim, spatial link, spatial power
Right of disposition (Lynch, 1984; Harvey 2012)	spatial claim, spatial power
Right to freedom of choices (Bentley, 1985)	spatial claim, spatial link, spatial power
Right to understand the street, its activities and opportunities that it can offer (Lynch, 1960; Bentley et al. 1985)	spatial claim, spatial power
Right to identity, right to enjoy the street environment, right to celebrations (Bentley et al.1985; Shaftoe, 2008)	spatial claim, spatial power
Right to see and be seen (Jacobs, 1961; Bentley et al. 1985; Gehl, 2011)	spatial claim, spatial link
Distribution of socio-spatial qualities such as safety and security, accessibility and permeability, legibility and variety (DHS, 2019; Stratford, Waitt and Harada, 2020)	spatial claim, spatial link, spatial power

Source: Author's construct (2020)

The rights have been assigned to a specific spatial justice category namely spatial claims (claims to live, work and experience space); spatial links (claims to access and connection); and power (claims for opportunities to thrive and contribute to production processes) (see Section 2.2). There are often no clear lines of separation between the spatial justice categories as one right may refer to more than one form of spatial justice. Moreover, spatial critical thinking and application of the spatial concept have expanded to include other aspects such as spatial governance, spatial economy, and spatial allocation, which can also describe the various forms of spatial justice.

2.10.4 Public Space Management Framework (De Magalhães and Carmona, 2008)

De Magalhães and Carmona (2008) proposed a framework for analysing the management of public spaces. The framework is made up of four interlinked dimensions namely (i) regulation; (ii) maintenance; (iii) financing; and (iv) coordination (see Appendix 13). In the context of the street as a public space, the first dimension of regulation refers to the formal and informal control of uses on street spaces, and the resolution of the conflict which emanate from street users. The regulation process on street spaces is enforcement through various municipality land-use management by-laws. For example, Spatial Planning and Land Use Management Act (SPLUMA) by-laws in South Africa. When such regulations are rigid and lack creativity, they fail to adapt to users' changing development needs thereby resulting in spatial injustice (Carmona et al. 2003).

The second dimension of the Public Space Management Framework pertains to maintenance routines of infrastructure and other public space resources, which include streetlights, bins, stormwater drains, potholes, and road markings (Ekurhuleni Metropolitan Municipality, 2017). Maintenance routines ensure that public spaces are liveable and more just. Inconsistent maintenance routines result in poor quality street spaces which are consequently unjust.

The third dimension entails financial as well as other material and human capital resourcing (De Magalhães and Carmona, 2008). This calls for innovative infrastructure financing strategies and human resources development for efficient implementation of maintenance and regulation of uses on public space in local municipalities (Alam, 2010). The innovations also require place branding and marketing strategies for towns

to achieve a competitive advantage, attract investment, and tourism (Kavaratzis, 2009).

The fourth process is the coordination of the various interventions on managing urban public spaces. Public space management involves multiple stakeholders and government departments. Coordination is a principle of good spatial governance which ensures shared by all stakeholders towards a common vision. Good spatial governance can be summarised as a spatial planning and management decision-making process, which engenders stakeholder participation. As such, coordination emerges as an essential ingredient for good spatial governance (Guerrero, 2007; Chitrakar, Baker and Guaralda, 2017). However, coordination is often a challenge for most municipalities in both the developed and developing countries separate departments offer different services without acknowledging the interconnectedness the policy areas (Chitrakar, Baker and Guaralda, 2017, UN-Habitat, 2018). Under such circumstances, unjust outcomes are likely to manifest on street spaces.

2.10.5 Spatial planning outcomes (Mashiri et al., 2017)

The spatial planning outcomes are a framework developed to interrogate spatial (in)justice from the national level to the local level planning in South Africa (Mashiri, et al. 2017). There is generally a consensus amongst South African scholars (van Wyk and Orange, 2014; Baffi et al. 2018; Adegeye and Coetzee, 2019) and institutions (Government of South Africa, 1996; DOT, 2014), that the apartheid-based planning philosophy which ended in 1994 left a legacy of spatial injustices on the economic space in South Africa both at the micro and macro levels. Before 2013, the country had no legal framework for spatial planning until 2013 when the SPLUMA 16 of 2013 was instituted.

Spatial planning outcomes are broad deliverables which need to be customised to a specific context (Mashiri, et al. 2017). The spatial planning outcomes include (i) redressing spatial and other imbalances through access and use of land; (ii) inclusion of all persons; (iii) access to secure forms of tenure; (iv) land-use management systems that enable all-inclusiveness with provisions that are fair and flexible; (v) foster equitable access to services and resources; and (vi) ensure public participation and empowerment pertaining to policies, legislation and procedures. These spatial

outcomes were drawn from the principle of spatial justice outlined in the SPLUMA 16 of 2013. The study argues that the Spatial Planning Outcomes Models proposed by Mashiri et al. (2017) are too generalised and lack specificity with regards to the management of street spaces. Mashiri et al. (2017) even argue that there is a need for further research to develop contextually relevant measurement indicators for spatial (in)justice in the South African's built environment. However, the Spatial Planning Outcomes Model provides an important departure point in identifying variables and indicators for interrogating street space spatial justice. Table 2-7 (third column) shows the distilled broad outcomes and their key focus issues concerning street space spatial justice. Dadashpoor and Rostami (2011) support the distillation of ideas emanating from theories positing that it helps in developing relevant variables and coming up with specific indicators.

Table 2-7: The adapted outcomes for evaluating street space spatial justice

Spatial justice measurement outcomes	Key issues	Adapted street design and management outcomes
1. Redressed spatial and other imbalances through access to and use of land	Identify current and future significant structuring and restructuring elements of the spatial form of the municipality, including development corridors, activity spines and economic nodes where public and private investment will be prioritised and facilitated	Redressing of street space spatial imbalances, in terms of the following key issues: <ul style="list-style-type: none"> • Financing models • Just socio-spatial qualities • Inclusive design tenets • Use-regulation • Service delivery • Coordination
2. Equitable access to services and resources fostered	Include estimates of the demand for housing units across different socioeconomic categories include estimates of economic activity and employment trends and locations in the municipal area for the next five years	
3. Fair, just, flexible, appropriate, all-inclusiveness land-use management systems	Determine the purpose, desired impact and structure of the land-use management scheme to apply in that municipal area	
4. Inclusion of all persons and areas facilitated	Include a longer-term spatial development vision statement for the municipal area which indicates a desired spatial growth and development pattern for the next 10 to 20 years	Spatial governance in terms of: <ul style="list-style-type: none"> • Stakeholder involvement in street space management. • Clearly defined roles and responsibilities for stakeholders • Spatial justice vision for street spaces • The status of users' membership to any association which is involved in the use of streets • Users' knowledge about the plans of their local municipality concerning streets and • Users' participation in any forums or seminars related to street issues.
5. Access to secure forms of tenure facilitated	Identify the designation of areas in the municipality where incremental upgrading approaches to development and regulation will be applicable.	
6. Public participation and empowerment pertaining to policies, legislation and procedures ensured.	Incorporate the outcomes of substantial public engagement, including direct participation in the process through public meetings, public exhibitions, public debates and discourses in the media and any other forum or mechanisms that promote such direct involvement	

Source: Adapted from Mashiri et al. (2017:162-163)

2.11 What is spatial (in)justice on street spaces?

Drawing from various local and international literature on concepts of spatial (in)justice, street spaces, street space users and, SRTs; and theories of urban space production, this last section attempts to provide a contextual definition of spatial (in)justice on street spaces in SRTs. Spatial (in)justice is animated variously in spatial planning contexts. In this study, spatial justice on street spaces (also referred to as street space spatial (in)justice) is conjectured from three interrelated lenses, namely: content, user perceptions, and institutional processes.

Spatial justice on street spaces is defined as the fair and equitable distribution of socio-spatial qualities on street spaces; enhanced 'Right to the City' claims of the least advantaged users as they interact with street spaces, and the redress of spatial imbalances emanating from street design and management processes. The three main assumptions from this definition are that: street space is a valuable resource subject to the tenets of justice. Secondly, as street space users experience streets, their physical attributes enhance or infringe on their 'Right to the City' claims. Thirdly, justices flow from the processes of street design and management. In this study, the least advantaged group of street space users are the non-vehicular users in the form of pedestrians and street traders. The processes of street design and management focus more on the carriageway which caters for motorised transport needs at the expense of sidewalks where the non-vehicular users engage in various activities leading to spatial injustices.

2.11.1 Key variables and indicators of street space spatial justice

Spatial (in)justice on street spaces is both a visual phenomenon that can be observed on the physical street space, as well as an experiential phenomenon. It can be measured by different variables which focus on both social wellbeing factors (including economic and political factors); and physical or environmental (spatial) factors (thus, the use of the term socio-spatial variables). The variables with scalable indicators that can be evaluated to interrogate street space spatial (in)justice in SRTs were drawn from literature through the process of meta-synthesis. Meta-synthesis is an attempt to qualitatively consolidate and synthesise findings from other related studies through extensive literature review to come up with key variable themes, phrases, ideas, or indicators to measure spatial justice (Adegeye and Coetzee, 2019:381). The five key

variables that were selected include safety and security, permeability and accessibility, legibility, variety or robustness, maintenance, and management. Table 2-8 highlights these variables and their indicators.

Table 2-8: Variables for assessing spatial (in) justice from the street space content

Variable	Indicator	Key Sources
Safety and Security	Safe street crossing, adequate street lighting, absence of anti-social behaviour, presence of security features such as cameras and police, visibility of human activities from the edge of the street, continuous street movement of other street users	Jacobs, 1961; Appleyard, Gerson and Lintell, 1981; Kott, 2011; Road Traffic Management Corporation, 2017; NACTO, 2014; Middleton, 2018; Bivina and Parida, 2019; Stratford, Waitt and Harada, 2020
Permeability and Accessibility	Multiple route layouts, block length, user segregation, ramps (for ease access by the elderly and differently-abled persons), space for smooth pedestrian flow, alignment of crosswalks with pedestrian routes, clear demarcation between what is public space and what is private space on the street/ visible strips, non-interference of parking and sidewalks, street open and barrier-free, width of sidewalks	Bentely. et al. 1985; Department of Housing, 2000; Jones, Marshall and Boujenko, 2008; Cowan, 2011; Shrestha, 2011; Zavestocki and Agyeman, 2015; Stratford, Waitt and Harada, 2020
Legibility	Connectivity to landmarks, design which captures the cultural identities, Wi-Fi, design which captures the land social values, which captures people's sensory experiences, visual cues, attractive seating furniture, attractive lighting features, spectacular natural views	Lynch, 1960; Bentely et al. 1985; Cowan, 2011; Desai, 2014; Varna, 2014; Bivina and Parida, 2019
Variety or Robustness	Variety of uses on the street space, festive activities, variety of uses of buildings along the street, hard and soft edges, function fits form (fit of activities), active building fronts width of sidewalks enough to accommodate bicycle traffic, seating furniture, green infrastructure along the street, design features to reduce temperatures and add calm to the place, space for users circulation between different sections.	Bentely. et al. 1985; Heng and Chan, 2000; Shaftoe, 2008; PPS, 2012; Varna, 2014
Maintenance and Management	Potholes, road markings, stormwater drains, state of buildings, Illegal dumping, amenities, street furniture, security of tenure for street traders, number of designated official street trading sites, space for vending stalls.	Whyte, 1980; Lefebvre, 1991; Purcell, 2003; Fainstein, 2009; NACTO, 2014; Hartman and Prytherch, 2015; DRDLR, 2017; Ekurhuleni Metro Municipality, 2017; Mashiri, et al. 2017; Bivina and Parida, 2019; Moroni, 2020

Source: Author's construct (2020)

2.12 Chapter Summary

This chapter unpacked the key concepts in this study, namely spatial (in)justice, street spaces, street space users, and SRTs. Street spaces are multidimensional spaces present in the domain of public and private spaces that offer social, physical and economic functions. Users of street spaces have diverse needs which often vary because of biology and individual social orientation. As a result, they experience their 'Right to the City' claims differentially. This makes spatial (in)justice a paradoxical phenomenon. The focus of spatial justice should be on attaining justice principles in space in terms of fairness in the application of rules, just distribution of resources, equitably benefiting the least advantaged users and enabling users to make their 'Right to the City' claims. The proceeding chapter provides an overview of the various policies and legislations that influence the spatial planning environment of South Africa at a broader scale, and the profiles of the selected SRTs.

CHAPTER 3 : HISTORICAL BACKGROUND, POLICY AND LEGISLATIVE LANDSCAPE ON SPATIAL JUSTICE IN SOUTH AFRICA

3.1 Introduction

This chapter reviews the existing spatial planning policies and legislative frameworks of relevance to understanding the concept of spatial justice on South African street spaces. The spatial planning environment in South Africa is informed by international, national, and local level policies. After this introductory section, the proceeding section sets the tone for the rationale of a spatial justice agenda in all spatial planning systems by providing a historical background of the South African spatial planning context. The third section discusses the contemporary spatial planning imperatives in South Africa. The fourth section profiles the three Small Rural Towns (SRTs) under study, and the fifth section is the chapter summary.

3.2 Historical background of the South African spatial planning practice

The historical context of spatial planning in South Africa describes both the colonial, apartheid, and the early years of post-apartheid spatial planning background. This historical background reveals that the segregated land-use management and planning throughout South Africa exacerbated spatial injustices, particularly in the rural space economies (Hoogendoorn and Visser, 2016; Mashiri et al. 2017). To date, there is an unequal and incoherent spatial structure which was created from this spatial planning history. This often stifles economic development and perpetuates inequalities and injustices in SRTs (Adegeye and Coetzee, 2019).

3.2.1 The colonial epoch

The emergence of colonialism in South Africa during the 1650s saw a radical shift in urban areas' spatial organisation from the functional yet complex settlement patterns of indigenous black populations to racially segregated settlement patterns (van Wyk and Orange, 2014; Baffi et al. 2018). This marked the formation of spatially unjust African neighbourhoods characterised by incongruous Eurocentric planning practices which did not embrace the African cultural norms, religion, social, and economic

values (Ross, 2008; Strauss, 2017). In most cases, black Africans were displaced from their locations to expand white commercial, industrial, and residential developments (Strauss, 2017:33). This is also illustrative of how law can be used to further the interests of a particular racial group and prioritises the economic value of land over its social value (see Section 2.2.3.1 in Chapter 2).

The mid-nineteenth century in South Africa saw the emergence of the mineral revolution, which led to rapid urbanisation. This saw yet another spatial development trajectory which is best described as haphazard (van Wyk and Orange, 2014). New industrial, commercial, and residential sites were randomly developed adjacent to one another during this period. It resulted in the re-emergence of formal town planning which reinforced separatist development through various legislations (ibid). Legal instruments such as the Native Urban Areas Act of 1923 were enforced to further the segregationist agenda. The Act of 1923 empowered municipalities to reserve quarters for Africans as well as control the population and movement of the Africans through passes. The Development Trust and Land Act 18 of 1936 facilitated a separate, inferior system for land-use management for Black Africans' areas (Baffi et al. 2018). Consequently, more spatial injustices than justices flowed through these legislations.

3.2.2 Apartheid epoch

The establishment of the National Party in 1948 marks the beginning of the apartheid era (1948-1990) in South Africa. During this era, the planning system was only functional in those parts of towns and cities inhabited by the European settlers where development control was enforced, and property rights for the settlers were seriously guarded (van Wyk and Orange, 2014). Legislations such as the Group Areas Act 41 of 1950 and the Physical Planning Act 88 of 1967 controlled the occupation, use, and tenure of land. The control was done according to the new racial land-use zones which disregarded the “equality, dignity, property, housing and cultural rights of its citizens” (ibid:2). Local-level planning was highly centralised by the apartheid government, which limited the authority of local municipalities (Orange, 1998). For example, the 20/25-year master plans during the 1970s were largely unsuccessful because they lacked both statutory and financial backing from the central government (Orange, 2002). At the local town level, the few land rights of labour tenancy for Black Africans were windswept, while at a regional scale, homelands were established as rural

reserves for native Africans (van Wyk and Orange, 2014). In the areas set aside for African settlements, an undeveloped system of division of land took place as these places were regarded as labour reserves (Muller, 1993). Thus, the apartheid system had inherent spatial injustices that were more evident in areas where most Black Africans reside.

3.2.3 Early post-apartheid era

The dawn of a new era in 1994 saw the new democratic government addressing the past historical challenges of complex and controversial spatial planning legislative framework of its predecessor (van Wyk and Orange, 2014). The mantras of equality and redress were at the centre of formulating a new comprehensive spatial planning system. In some places, racially segregated areas had to fall under the same municipality. A typical example is that of Sibasa and Thohoyandou towns in Vhembe District (Orange, 2002). This saw local municipalities having to tackle the challenge of merging the much different spatial legislation carried over from the apartheid era. More often, each piece of legislation had its own different set of procedures and approval mechanisms (Strauss, 2017). This shows that coordinated efforts amongst different departments are essential to realign the policy framework and institutional systems to achieve a common vision. Some key policy documents used to guide spatial planning and land-use management in the country include the Red Book on Guidelines for the Provision of Roads Engineering Services and Amenities in Residential Township Development of 1994; the Development Facilitation Act 67 of 1995; and the Constitution of South Africa Act 108 of 1996 and its accompanying Bill of Rights.

The Red Book on Guidelines for the Provision of Roads Engineering Services and Amenities in Residential Township Development of 1994 is critiqued for being obsolete and inadequate in addressing the new societal changes in an independent South Africa (DOH, 2000; Harrison, 2001). Its provisions merely “produced serviced townships instead of sustainable and vibrant human settlements” that are spatially just spaces (DOH, 2000, Chapter 1:3). The Development Facilitation Act 67 of 1995 is the first transformative spatial planning Act after the apartheid era. The Act sought to correct the historically imbalanced spatial patterns of settlement in South Africa. However, it is often critiqued as a document that paid more focus on land reform and

reconstruction projects. It lacks direction on necessary measures to address spatial justice, such as integrated spatial planning (van Wyk and Orange, 2014).

The Constitution of South Africa Act 108 of 1996 (referred to as The Constitution herein afterwards) provides for constitutional imperatives of cooperative governance, procedural and participatory rights, promotion of social and economic rights, as well as the protection of the environment. These provisions influence the spatial planning policy environment in South Africa. For example, Section 152 of the Constitution mandates local governments to ensure public participation in planning processes. The inclusion of the public in spatial planning decisions results in ownership of outputs, which demonstrates democratic spaces. The Constitution also places municipal roads as exclusive local government competency (metro, district, local). However, the relationship between national, provincial, and local government authorities regarding road management and policymaking is arguably viewed as disjointed (DOT, 2014). Lack of coordination compromises spatial justice and results in disconnected street spaces.

The Bill of Rights is enclosed in Chapter Two of the Constitution. This is deemed a great milestone in the planning history of South Africa (Strauss, 2017). Earlier on in 1948, South Africa was among the eight countries that did not vote for the adoption of the Universal Declaration on Human Rights (UDHR) by the United Nations General Assembly. Equally, in 1983 the South African government remained aloof to the Bill of Rights' inclusion in its 1983 constitution. The Bill of Rights had a pivotal role in both the ratified Constitution of South Africa Act 200 of 1993, and the current Constitution Act 108 of 1996 (van Wyk and Orange, 2014). Among the Bill of Rights principles is the need for all planning and land development actions to be fair and equitable. This entails ensuring sound administrative justice, fair treatment of everyone, and removing the spatial inequities created by apartheid. As echoed by the tenets of the Bill of Rights, the equitable distribution of resources on street spaces and fairness in terms of use are important requirements for spatially just street spaces.

3.3 Contemporary spatial planning imperatives in South Africa

South African spatial planning is done at three tiers, namely the national government, the provincial government, and the district and local municipal levels. Planning, design,

and management functions of street spaces are done in all the three spheres. However, this study focuses on street spaces at the local municipal level. The challenges faced at each tier include lack of departmental cooperation, lengthy and ineffective public participation mechanisms, and imprecise and overlapping roles between tiers (Mashiri et al. 2017). To create just institutions that produce just outcomes, these challenges need to be continuously addressed (Moroni, 2020: 254). De Beer (2016) argues that although national policy documents such as the Constitution and the Spatial Planning and Land Use Management Act (SPLUMA) 16 of 2013 are advancing the spatial justice, sometimes local government systems seem to drag down this agenda.

In terms of administration, local level state apparatuses perpetuate the inherited socio-spatial inequalities on street spaces by prejudicing everyday users of street spaces to support private actors' demands (Baffi et al. 2018). On the other hand, local governments, and local communities through policy reforms and practices advance initiatives which promote spatial justice. Thus, local institutions and communities play an important role in the creation of spatially just communities. Table 3-1 illustrates the hierarchy of planning imperatives which influence spatial planning and spatial justice on street spaces in South Africa. The debates presented in this study focus at local municipality project planning imperatives.

Table 3-1: Contextualizing Street space spatial justice within the different spheres of spatial planning

International imperatives	The national sphere	The provincial sphere	Municipal level
<p>Sustainable Development Goals</p> <p>New Urban Agenda</p> <p>Agenda 2063</p>	<p>Constitution of the Republic of South Africa Act 108 of 1996</p> <p>Municipal Systems Act 32 of 2000</p> <p>Road Infrastructure Policy (2014)</p> <p>Spatial Planning and Land-use Management Act (SPLUMA) 16 of 2013</p> <p>National Development Plan 2030 (NDP): Our future-make it work</p> <p>The National Land Transport Act of 2009</p> <p>Integrated Urban Development Framework (2016)</p> <p>Non-Motorised Transport Facilities Guidelines (2014)</p>	<p>Provincial Integrated Development Plans</p> <p>Provincial Spatial Development Framework</p> <p>Provincial and City-Region Strategy Plans</p>	<p>Integrated Development Plans (IDPs)</p> <p>Land-use Management Schemes</p> <p>Spatial Development Frameworks (SDFs)</p> <p>SPLUMA by-laws</p> <p>Integrated Transport Plans (ITPs)</p> <p>Building by-laws</p> <p>Municipality project-level</p> <p>Municipal guidelines such as the guidelines for designing spatially just street spaces</p> <p>Municipal by-laws</p> <p>Norms and standards (related to streets, water services, sanitation services, etc.)</p>

Source: Adapted from DHS (2019:35)

3.3.1 The influence of international and regional policies on spatial justice in South Africa

The human settlement environment in South Africa has significantly transformed from 1994. Nevertheless, the form and structure of the country's cities and towns in some cases, still resemble the country's apartheid ideology (DOH, 2000; DHS, 2019). Many spatial planning changes at international, regional, and national scales influence the justice outcomes in South African. For example, South Africa, like other member states of the United Nations is framing its development agenda, and political policies based on the 17 Sustainable Development Goals (SDGs) set from 2015 to 2030. Goal number 11 of the SDGs seeks to make cities and human settlements inclusive, safe, resilient, and sustainable. Target 2 of Goal number 11 provides sustainable transport systems for all, and improving the road of safety for all. While target 7 of Goal number 11 seeks to ensure universal access to safe, inclusive, and accessible green and public spaces with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities, and older persons by 2030. Consideration of these imperatives in planning, design, and management of street spaces translates to more spatially just street spaces.

Using the mantra of leaving no-one behind, the New Urban Agenda of 2016 also prioritises SDG 11 (United Nations, 2017). Therefore, the New Urban Agenda challenges spatial planning experts to consider spatial justice tenets in all spheres of planning from large national scale projects such as providing housing for the urban poor, to small local scale projects such as improving street spaces. In this thesis, I argue that in planning, design, and management of spatially just street spaces, disadvantaged street space users' needs and activities should always be considered to ensure spatial justice. Spatial justice aims to ensure that 'no one is left behind' in the processes of producing just street spaces.

Agenda 2063 is another crucial international guideline for spatial planning adopted by the African Union member states in 2016, including South Africa. Agenda 2063 is a socio-economic transformation strategic framework developed by the African Union Commission (DHS, 2019). It envisages African cities which are inclusive and exhibit vibrant cultural and economic activities. Agenda 2063 emphasises the role of cities in producing equitable and just environments.

3.3.2 National-level policies and their influence on spatial justice in South Africa

The key focus of all national land-use and transportation planning frameworks developed in the post-apartheid era is the undoing of the negative effects of the apartheid ideology, which affected both the rural and urban landscape of South Africa. For example, the Municipal Systems Act 32 of 2000 regulates integrated development planning. This Act requires municipalities to undertake developmentally oriented planning to ensure access to essential services to improve communities. It also seeks to achieve the objectives set in Section 152 and 153 of the Constitution. Section 34 of the Act provides for the development of plans, policies and strategies that deliver key targets of municipalities' functions. Municipalities play a crucial role in ensuring that policies influence justice (Fainstein, 2009; Moroni, 2020). Chapter 4 of the Act emphasises the need for community participation, whereby municipalities are mandated to ensure the public involvement from planning to implementation of development programs. Public participation is key to the spatial justice discourse because it facilitates bottom-up strategies in the planning design, and management of public spaces such as streets.

The National Land Transport Act (NLTA) of 2009 which governs all land transport planning in South Africa emphasises integrated transport planning in municipal land development and land-use planning processes. A mutual relationship exists between transport infrastructure and land-use planning, whereby streets as transportation infrastructure attracts land-use development (NLTA, 2009: 5-2). Section 36 of the NLTA of 2009 specifies that all IDPs of municipalities should include the integral component of Integrated Transport Plans (ITPs). The NLTA of 2009 encourages municipalities to optimise cheaper travel modes which include walking. It also stresses the need to provide ways such as footways/sidewalks, or roadways which are safe and providing adequate amenities for each applicable mode of transport. Loukaitou-Sideris and Ehrenfeucht (2010) state that sidewalk planning creates more just and people-oriented cities. In this thesis, I also argue that sidewalks are important public spaces which should be designed and managed in ways that prioritises pedestrians and street traders (see Section 2.6.1 in Chapter 2).

Spatial Planning and Land Use Management Act (SPLUMA) 16 of 2013 is a more comprehensive legislation which seeks to provide integrated spatial planning systems

and inclusive approaches to land development in municipalities (van Wyk and Orange, 2014). In Section 3 of the Act, the second objective seeks to ensure that the system of spatial planning and land-use management promotes social and economic inclusion. The sixth objective relates to the equitable distribution of resources and efficient utilisation of land through spatial development planning and land-use management systems in towns (SPLUMA, 2013:14). Section 4 of SPLUMA 16 of 2013 relates to the need for all spheres of government to prepare Spatial Development Frameworks (SDFs). Section 5 of the Act mandates local municipalities with the responsibility to prepare and review Integrated Development Plans (IDPs), as well as to control and regulate the use of land. On the other hand, SPLUMA 16 of 2013 provides the legal framework for spatial planning principles, namely: spatial justice, spatial sustainability, spatial efficiency, spatial resilience, and spatial governance. This research isolates and focuses mainly on the principle of spatial justice although it is difficult to separate the implication of all the principles in spatial planning practice because they intricately operate in unison. Arguably, these principles should lead to outcomes conducive to the constitutional imperatives of nation-building and socio-economic inclusion.

Section 7 of SPLUMA 16 of 2013 outlines the possible means for attaining the principle of spatial justice which include; redressing past spatial imbalances through improving land access and use, the inclusion of all persons in the development of SDFs, creating flexible conditions for managing previously disadvantaged areas, and exercising discretion when considering applications. Spatial justice indicators are also reflected in SPLUMA 16 of 2013 norms and standards which promote social inclusion, spatial equity, desirable settlement patterns, rural revitalisation, urban regeneration, and sustainable development for all land-use developments. From SPLUMA 16 of 2013, Mashiri et-al., (2017) developed spatial planning outcomes for measuring spatial justice (see Section 2.7.4 in Chapter 2). However, indicators which relate to the built environment and specifically to street spaces are absent.

The Road Infrastructure Policy of 2014 seeks to rectify the historical injustices and imbalances in transport planning by considering the social, economic, and environmental impacts of roads. The transport sector alone cannot contribute to correcting historical imbalances in the provision of road infrastructure. Currently, the

roads and street environments in rural South Africa are characterised by (i) limited government funds to meet the road maintenance costs and road network demand; (ii) increased growth in private vehicles and freight contributing to increased congestion; (iii) limited non-motorised transport facilities; (iv) lack of paved sidewalks or limited areas for sidewalks; (v) conflict between pedestrians and private vehicular movement amongst other challenges (DOT, 2014). The policy stresses consideration of non-motorised transport infrastructure, as well as strategies for improving rural roads infrastructure. In this study, I also argue that designing street spaces that are multi-functional and promote non-motorised transport addresses spatial (in)justices in SRTs.

The Non-Motorised Transport (NMT) Guidelines define a new way of thinking about designing South African streets and roads (DOT, 2014:1). The NMT guidelines underscore the importance of safety, improvement of equity for users, and provision of universally designed infrastructure. The guidelines also emphasise that designing of street spaces should be more people-focused rather than vehicular oriented, through prioritisation of pedestrians (Phayane and Vanderschuren, 2015:68). The guidelines also provide a universal design of infrastructure and services that encourage creating competitive street spaces in big cities and SRTs (DOT, 2014:5). However, these universal guidelines often fail to capture unique and contextual differences in cities and towns, resulting in unjust street spaces. The guidelines provide minimum dimensions of space required by different types of users. For example, the minimum length of sidewalks is set at 1.2metres, while the minimum length of a bicycle lane is set at 1.8metres (DOT, 2014:47). Where cyclists and other NMT users are to be accommodated on the sidewalks, a clear and unobstructed space should be at least 3metres wide (DHS, 019). However, due to the priority given to motorised transport, such provisions are not adequately met, particularly on street spaces of SRTs. For example, cycling lanes are observably not present in most SRTs in South Africa. Over dependency on vehicles, lack of adequate infrastructure and political will, and other socio-economic challenges are cited as barriers to building a culture of NMT in South Africa (Open Streets Cape Town, 2018).

The Integrated Urban Development Framework (2016) outlines the need to restructure urban space for the transformation of human settlements. The framework discusses

nine levers that guide the future growth and management of urban areas. The levers are summarised as (i) integrated urban planning and management; (ii) integrated transport and mobility; (iii) integrated sustainable human settlements; (iv) integrated urban infrastructure; (v) efficient land governance and management; (vi) inclusive economic development; (vii) empowered active communities; (viii) effective urban governance; and (ix) sustainable finances. These key levers are also spatial justice imperatives. This is because the levers emphasise the need for cities and towns that are well planned, stable, safe, and just; where people can walk or use different transport modes to access services and participate in urban life.

The Red Book for Neighbourhood Planning and Design of 2019 supersedes the Red Book on Guidelines for Human Settlements 2000. The guidelines from the Red Book of 2000 seek to redress spatial inequalities on street spaces by outlining spatial principles and performance qualities for sustainable human settlements such as quality of place, which offer choices, flexibility access, and opportunities for users. These qualities concur with responsive design elements such as accessibility, legibility, variety, visual appropriateness, and robustness (Bentley et al. 1985). Chapter 2 of the Red Book of 2019 places importance on thinking spatially about streets as public spaces, and prioritisation of pedestrian needs. It further argues that improving the quality of public spaces positively affects the citizens' life (ibid:2-5). This shows that pedestrians as the least advantaged users are recognised in policy planning. Although the Red Book of 2019 provides guidelines for upgrading informal settlements, it is silent about dealing with informal traders who are common users of street spaces in South African towns (Matjomane, 2018). Chapter 4 of the Red Book of 2019 highlights the importance of participation as a community empowerment tool, where partnerships are created rather than just a tokenism gesture. The common challenges of involvement in decision-making are lack of knowledge of their right to participate and the presence of more powerful groups of stakeholders which may dominate the discussions. In this case, planners should take the lead as facilitators and negotiators who advocate for the development of sound spatial planning outcomes (Fainsten, 2009).

The Red Book of 2019 also provides some universal considerations for designing quality places that relate to spatial justice. These include: (i) integration and

connectivity; (ii) inclusivity; (iii) convenience; (iv) resilience and adaptability; (v) efficiency; (vi) safety and health; (vii) economic opportunities; (viii) aesthetics and character (DHS: F7). The principles seek to redress street spatial inequalities through application of responsive design elements such as inclusivity. This means the least advantaged users are considered. For example, the quality of safety and health is explicit on the importance of creating safe conditions on streets and sidewalks (DHS: F11). On the other hand, the quality of convenience emphasises permeable and accessible street spaces endowed with necessary public amenities for the users on foot (DHS:F9). Furthermore, the new Redbook of 2019 places importance on informal trade's key economic role, and urges local municipalities to integrate this activity into the formal planning system.

3.3.3 Local-level spatial planning frameworks and the spatial justice implications

At the local municipal level, the key legislative instruments necessary for spatial planning and land-use management are the SPLUMA by-laws, Integrated Development Plans (IDPs), and Spatial Development Frameworks (SDFs). While SPLUMA 16 of 2013 is a national-level policy, local municipalities develop SPLUMA by-laws in the same spirit and purpose of redressing spatial imbalances. The SPLUMA by-laws provide guidelines for the development of municipal SDFs, enforcement of land-use schemes, and institutional structures for land-use management. The by-laws coordinate the otherwise fragmented spatial planning instruments. As a result, they promote just process which produce just outcomes.

Integrated Development Plans were first introduced in 1996 as principal strategic instruments for local municipalities designed to assist local authorities to fulfil the objectives of the national Reconstruction and Development Programme (RDP) (Harrison, 2001). The roles of the IDPs are clearly outlined in the Municipalities System Act of 2000. An IDP as a legislative requirement, has a legal status, and supersedes all other plans that guide development at local government level (Makhado Local Municipality IDP, 2018/2019:1). Therefore, IDPs are viewed as a participatory approach to development. The contents of an IDP document include a municipality's vision for the long-term development, an assessment of the current level of development, development priorities, and strategies specified in the SDF. Each IDP also includes an integrated transport plan (ITP) whose objectives should align with the

IDP vision. Often, inappropriate city spatial form is a key hurdle in achieving sustainable transportation systems and pedestrian-friendly street spaces (Harrison et al. 2019). Some scholars such as Madzivandila and Asha (2012) also argue that IDPs are often marred by many challenges, including the difficulty to integrate diverse community needs. However, an IDP remains a tool that can improve the spatial environment for the attainment of spatially just spaces.

The SDFs for local municipalities contain detailed development plans of the municipal area in alignment with the vision and objectives of the IDP. Section 21 of SPLUMA 16 of 2013 summaries that, SDFs should clearly show the roadmap to implementing priority development projects and the funding structures. Often, SDFs of SRTs lack clear public space management strategy (UCLG, 2014). The preparation and review of SDFs should be a participatory process which should include all interested and affected persons (DHS, 2019). Affording citizens, the right to participate in spatial planning decisions facilitates spatially just outcomes.

3.4 Profiles of the selected small rural towns

This section provides profiles of each of the three case study towns, namely Thohoyandou, Musina and Louis Trichardt. The profiling is done in terms of the location, socio-economic, as well as layout, and hierarchy of the streets. The three towns' local municipalities fall under Vhembe District Municipality. Throughout this section and the entire study, I refer to Thohoyandou, Musina and Louis Trichardt towns respectively. This order is informed by the hierarchy of the urban population of each of these towns (see Section 1.9 in Chapter 1).

3.4.1 Profiling Thohoyandou Town

Thohoyandou Town is administered by Thulamela Local Municipality under Vhembe District Municipality. Thulamela Local Municipality is bounded by Collins Chabane Local Municipality to the east, Musina Local Municipality to the northeast, and Makhado Local Municipality to the south-west (see Figure 1-1, in Chapter 1). The R524 route (district distributor road) connects Thohoyandou Town to Louis Trichardt Town which is approximately 82kilometres (km) in the southwestern direction. The national road (N1) connects to the R523 route (district distributor road) that links Thohoyandou and Musina Towns. The distance from Thohoyandou to Musina is

approximately 140km. Figure 3-1 is a sketch map showing the road connectivity of the three SRTs.

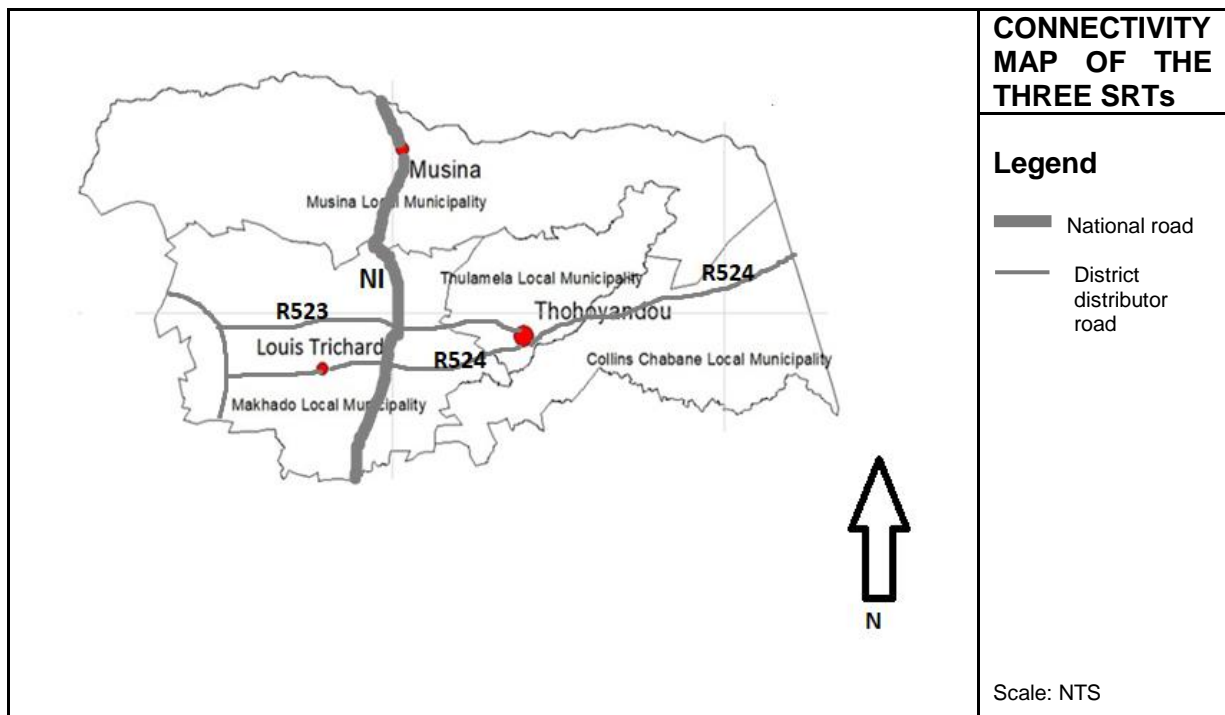


Figure 3-1: Connectivity map of the three small rural towns
Source: Author's construct (2021)

Figure 3-1 shows that the three selected STS are well connected, thus the three SRTs are accessible from one CBD to the other.

Figure 3-2 shows a land-use map for Thohoyandou Town CBD. Thohoyandou Town is surrounded by numerous rural settlements situated on the outskirts of the built-up area. Eighty-five percent of the population of Thulamela Local Municipality resides in rural settlements, and depend on Thohoyandou for higher-order goods and services (StatsSA, 2018). Thohoyandou Town is the development node for Thulamela Local Municipality. This town is a designated provincial growth point, and is considered an economic hub of Vhembe District Municipality (Vhembe District Municipality, IDP 2016/2017). Figure 3-2 reveals that Thohoyandou Town has mixed uses. These include commercial, industrial, and institutional uses.

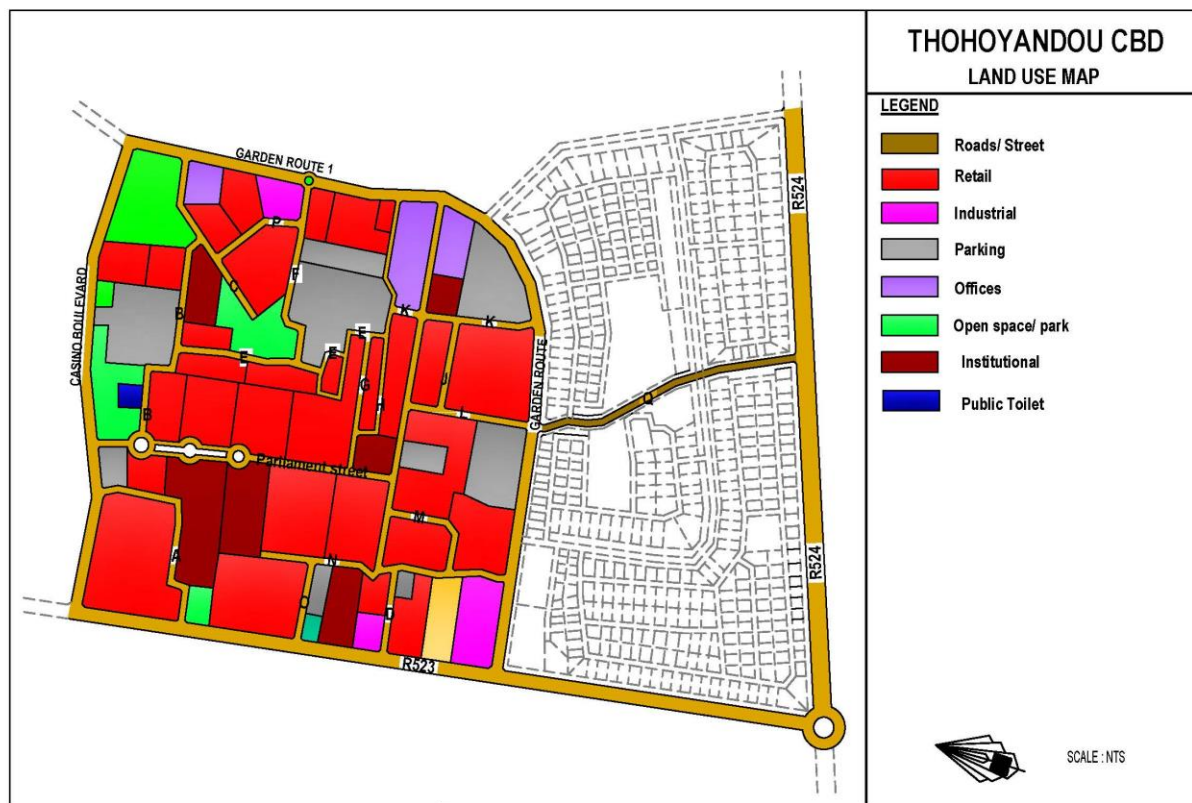


Figure 3-2: Thohoyandou Town CBD land- use map
Source: Author's construct (2020)

The residential suburbs surrounding Thohoyandou Town's CBD limit its expansion prospects as it would mean buying out and compensating residential property owners. The University of Venda is situated 2km from the CBD of Thohoyandou Town. This positions Thohoyandou with prospects and potential for the town's socio-economic growth through the town-gown relationships. Generally, the street spaces in Thohoyandou Town are active during the day. After 7pm, the town is deserted as there are no night-time activities which make the streets more vibrant. Even the temporary vending structures are stored away when the day ends. Improving street spaces in the town's CBD certainly amounts to significant economic benefits to the town, as well as improvement of the quality of life of citizens and visitors.

Figure 3-3 is a land-use map of Thohoyandou Town in relation to the character of some of the street spaces in this town. Street character refers to the general atmosphere, outlook or feel of the street (Carmona et al. 2003). The photographs labelled 1-4 in Figure 3-3 show the exact location of the specific street character

portrayed. Photograph 3-1 shows a fence along a sidewalk. The fence creates accessibility barriers which are a form of injustice (Varna, 2014). Photograph 3-2 shows a boulevard road with no pedestrian facilities. Ideally, boulevard roads should offer a wide range of pedestrian facilities, and cater for multiple modes of transport (Jones, Marshall and Boujenko, 2008). Lack of adequate pedestrian-friendly facilities often results in spatial injustices. Photograph 3-3 portrays the nature of interactions between users and street spaces in Thohoyandou Town. Due to inadequate sidewalks along some street spaces in Thohoyandou Town, users resort to using the road carriageway. This results in pedestrian-vehicular conflict, which is a safety threat to pedestrians (Loukaitou-Sideris and Ehrenfeucht, 2009). Photograph 3-4 shows the town's major landmark which aids in creating a strong mental image or legibility amongst users (Lynch, 1960). Legibility is a form of spatial justice on street spaces (Bentley et al. 1985).

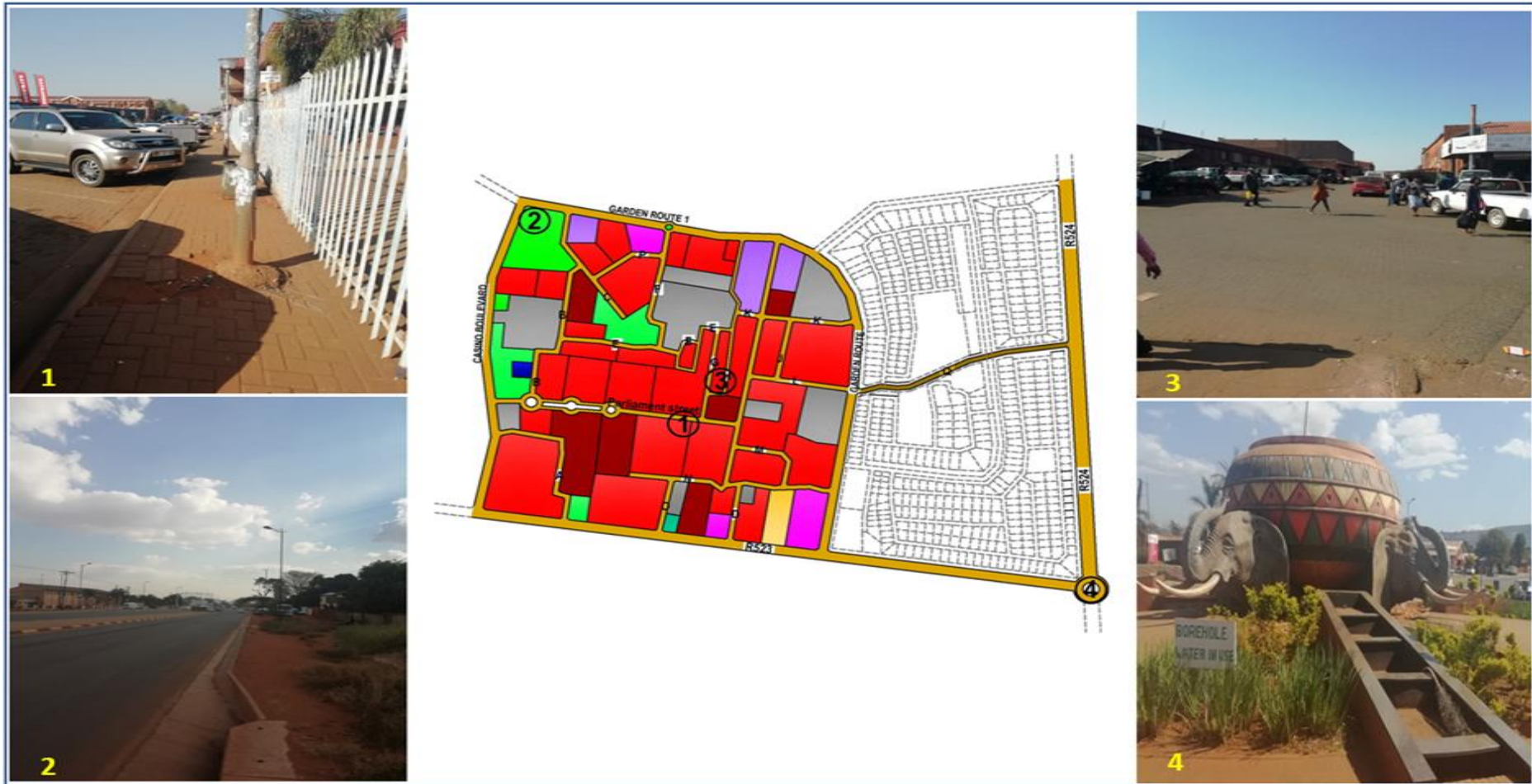


Figure 3-3: The character of some street spaces from Thohoyandou Town
 Photograph 3-1: A fence along a sidewalk (1)
 Photograph 3-2: A boulevard road with no pedestrian facilities (2)
 Photograph 3-3: Users' interaction with street space (3)
 Photograph 3-4: Thohoyandou Town's major landmark (4)
 Source: Author's construct (2020)

Figure 3-4 provides a clearer picture of the hierarchical levels and layout pattern of street spaces in Thohoyandou Town.

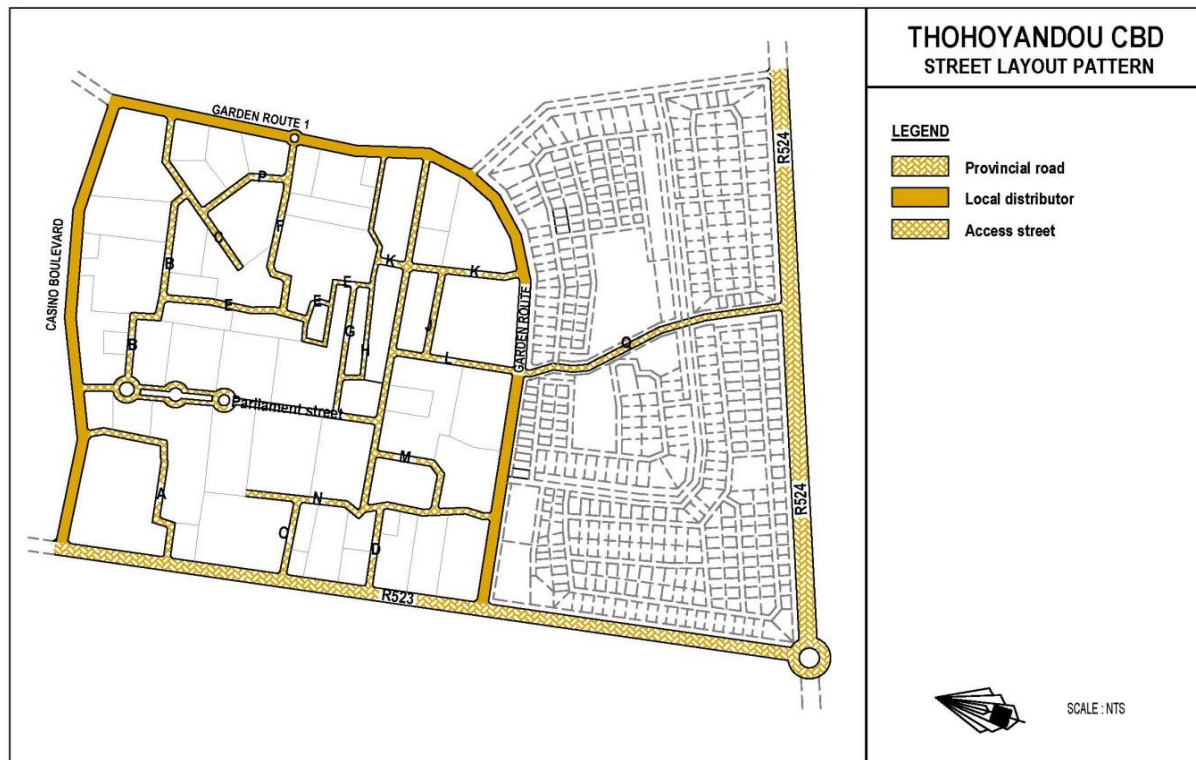


Figure 3-4: Street layout pattern for Thohoyandou CBD
Source: Author's construct (2020).

Figure 3-4 shows that the highest order of streets hierarchy in Thohoyandou Town is constitutive of provincial roads, local distributors, and access streets. The street layout for Thohoyandou shows a warped parallel grid street pattern. This layout has fewer interchanges compared to the traditional gridiron pattern. However, it is not as accessible or permeable as the traditional grid (DOH, 2000). The town's street layout is not monotonous as no two blocks are shaped the same. As a result, wayfinding around this street pattern is often a challenge (DHS, 2019: F29).³

³ Only 5 out of the 22 street spaces in Thohoyandou could be positively identified with street names, the rest of the street were given pseudo names in the form of alphabet letters.

3.4.2 Profiling Musina Town

Musina Town falls under Musina Local Municipality (see Figure 1-1). Musina Local Municipality is located in the north tip of the country bordering Mozambique, Zimbabwe and Botswana. Within South Africa, Musina Local Municipality is bounded by Makhado Local Municipality to the south, Blouberg Local Municipality to the south-west, and Thulamela Local Municipality to the east. The N1 national road connects with R523 which links Musina Town with Thohoyandou Town in the eastern direction. N1 also links Musina Town with Louis Trichardt Town in the southern direction (Vhembe District Municipality, IDP 2016/2017). The distance from Musina Town to Louis Trichardt Town is approximately 100km. Musina Town is supported economically from the mining activities of iron, coal, magnetite, graphite, asbestos, diamonds, and copper mined around the area. Figure 3-5 shows a land-use map for Musina Town CBD.



Figure 3-5: Land- use map for Musina Town CBD
Source: Author's construct (2020)

The CBD of Musina Town is constitutive mostly of retail commercial and institutional land-uses. There are no residential land-uses within the CBD. There are many trading activities in this SRT due to its location as a border town. Promoting spatial justice on the street spaces in this town can afford users their disparate 'Right to the City' claims, and an improved quality of life. Figure 3-6 shows a land-use map of Musina Town in relation to the general character of some street spaces.



Figure 3-6: The character of some street spaces from Musina Town
 Photograph 3-5: A view of the N-1 highway (1)
 Photograph 3-6: Street activities along Klaff Avenue (2)
 Photograph 3-7: Users' interaction with street space (3)
 Photograph 3-8: The town's major landmark (4)
 Source: Author's construct (2020)

The character of the street spaces in Musina Town is portrayed in Photographs 3-5 to 3-8 on Figure 3-6. Photograph 3-5 is a view of the N-1 Highway which passes through the CBD of Musina Town. Photograph 3-6 displays the nature of street users' interactions with the street spaces along Klaff Avenue in Musina Town. This photograph shows that streets spaces are used by both pedestrians and vehicular users. Photograph 3-7 reveals some street trading activities taking place along in Musina Town. This confirms Kott (2011)'s view that street spaces are indeed multi-functional spaces. Photograph 3-8 illustrates a dilapidated landmark found along Turner Avenue in Musina Town. An un-attractive landmark leaves little impression in the minds of its users', thus, it is a form of spatial injustice in terms of design and management of street space (Lynch, 1960; Bentley et al. 1985).

Figure 3-7 displays the street layout pattern and hierarchy of streets in Musina Town.

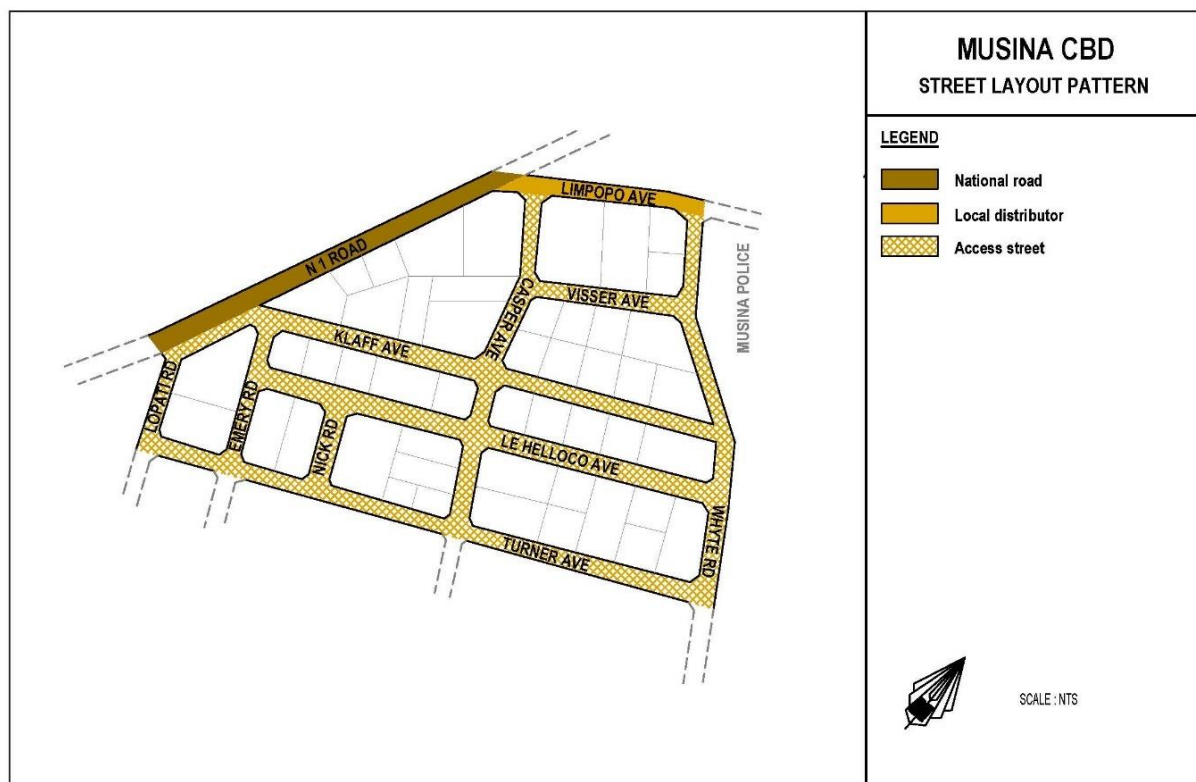


Figure 3-7: Street layout pattern for Musina CBD
Source: Author's construct (2020)

Streets in Musina Town as illustrated in Figure 3-7, follow an irregular triangular grid pattern or layout. This street pattern was adopted from ancient British cities.

3.4.3 Profiling Louis Trichardt Town

Louis Trichardt Town falls under Makhado Local Municipality. It is bounded by Mopani and Capricorn district municipalities. Makhado Local Municipality is bounded by Musina Local Municipality to the north; Thulamela and Collins Chabane local municipalities to the east; Greater Letaba and Molemole local municipalities are to the south; and Blouberg Local Municipality to the west. The national road N1 runs from the Beitbridge Border passing through Musina Town linking with Louis Trichardt Town. The R522 route (district distributor) from Vivo Town passes through Louis Trichardt Town as Songozwi Street.

Louis Trichardt Town is also a designated provincial growth point (Vhembe District Municipality, IDP 2016/2017). The surrounding commercial farms largely support Louis Trichardt Town. The town has a steep terrain stretching from the foot of the Southpansberg mountain range making this SRT a potential vibrant destination for domestic and international tourists.

The CBD of Louis Trichardt Town has mostly retail commercial land-uses. There are no residential land-uses within the CBD. However, a sizable number of residential properties abut the CBD. The street spaces in Louis Trichardt look deserted after 7 pm due to lack of night-time activities critical for a town's vibrancy (Agevi, Andersson and Petrella, 2016). Creating more spatially just street spaces in this town can lead to an improved quality of life of the citizens. Figure 3-8 shows a land-use map for Louis Trichardt CBD.

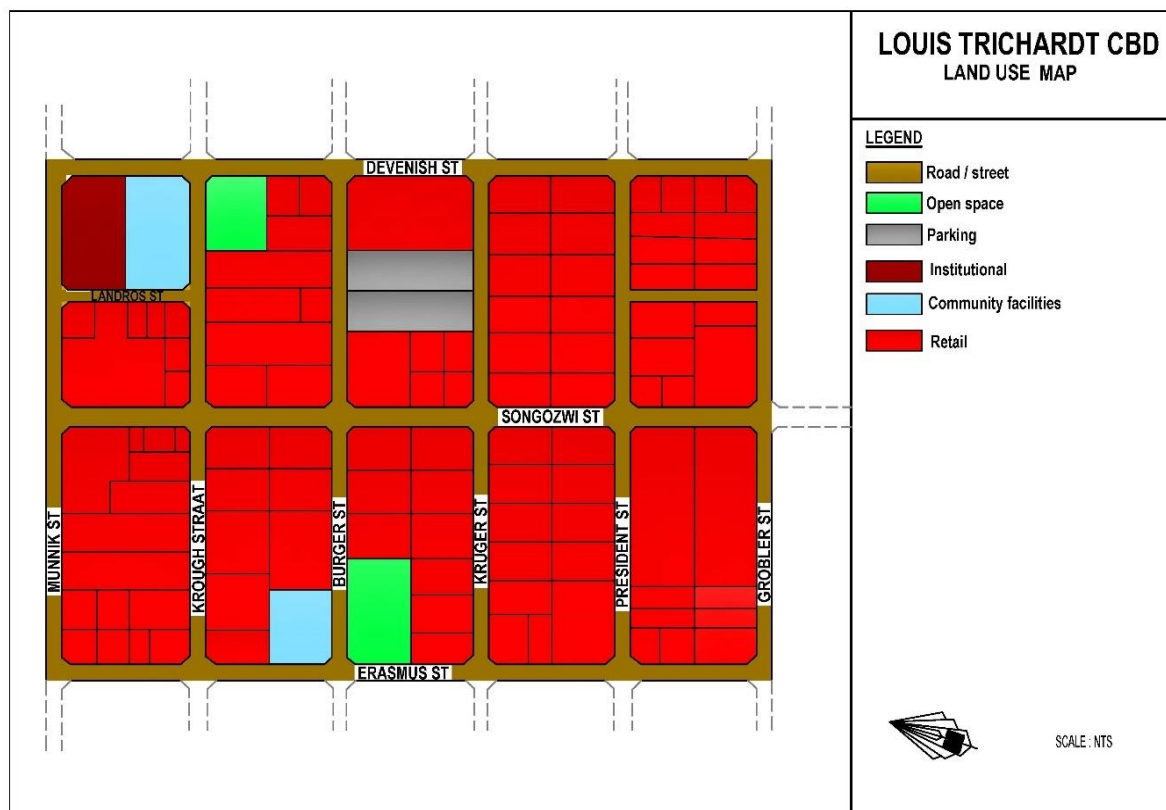


Figure 3-8: Land- use map Louis Trichardt Town CBD
Source: Author's construct (2020)

Figure 3-9 is a land-use map of Louis Trichardt Town depicting the general character of some of the street spaces. Photograph 3-9 shows a Cathedral as a major landmark of Louis Trichardt Town. Photograph 3-10 shows street trading shades along Songozwi Street. The street trading shades displayed in Photograph 3-10 are permanent structures. An integration of the informal economy within the formal planning system is a form of spatial justice (Matjomane, 2018). Photograph 3-11 is a three-dimensional view of Krough Street. The street has buildings with more than 1 floor level, which facilitate mixed- uses, and offer variety for street space users. Photograph 3-12 shows a street that is lacking vibrant pedestrian-friendly facilities and activities. Absence of pedestrian-friendly facilities repels people from using a particular space, and is a form of injustice (Agevi, Andersson and Petrella, 2016).

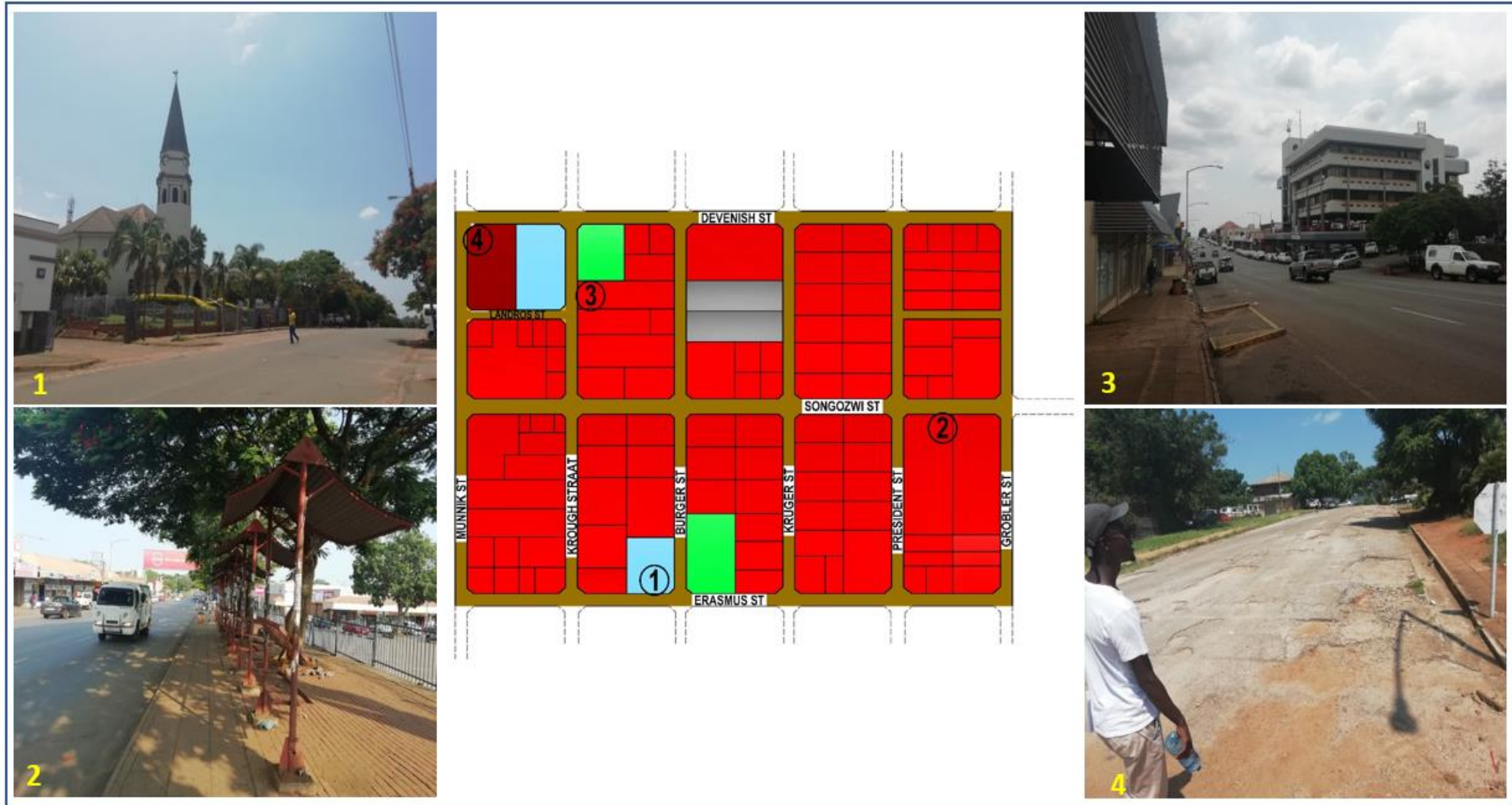


Figure 3-9: The character of some street spaces from Louise Trichardt Town
 Photograph 3-9: A cathedral along Erasmus Street (1)
 Photograph 3-10: Street trading shades along Songozwi Street (2)
 Photograph 3-11: A three-dimensional view of Krough Street (3)
 Photograph 3-12: A street lacking vibrant pedestrian-friendly facilities (4)
 Source: Author's construct (2020)

Louis Trichardt Town's Street pattern follows a traditional grid street pattern, as illustrated in Figure 3-10. A grid layout pattern is permeable, legible, and adaptive. However, a grid layout pattern has more interchanges and encourages speeding of vehicles, making the design unsafe (Congiu et al. 2019; DHS, 2019:F27). A national highway (N1) passes through the edges of Louis Trichardt Town, and has little impact on the activities in the CBD unlike in Musina Town.

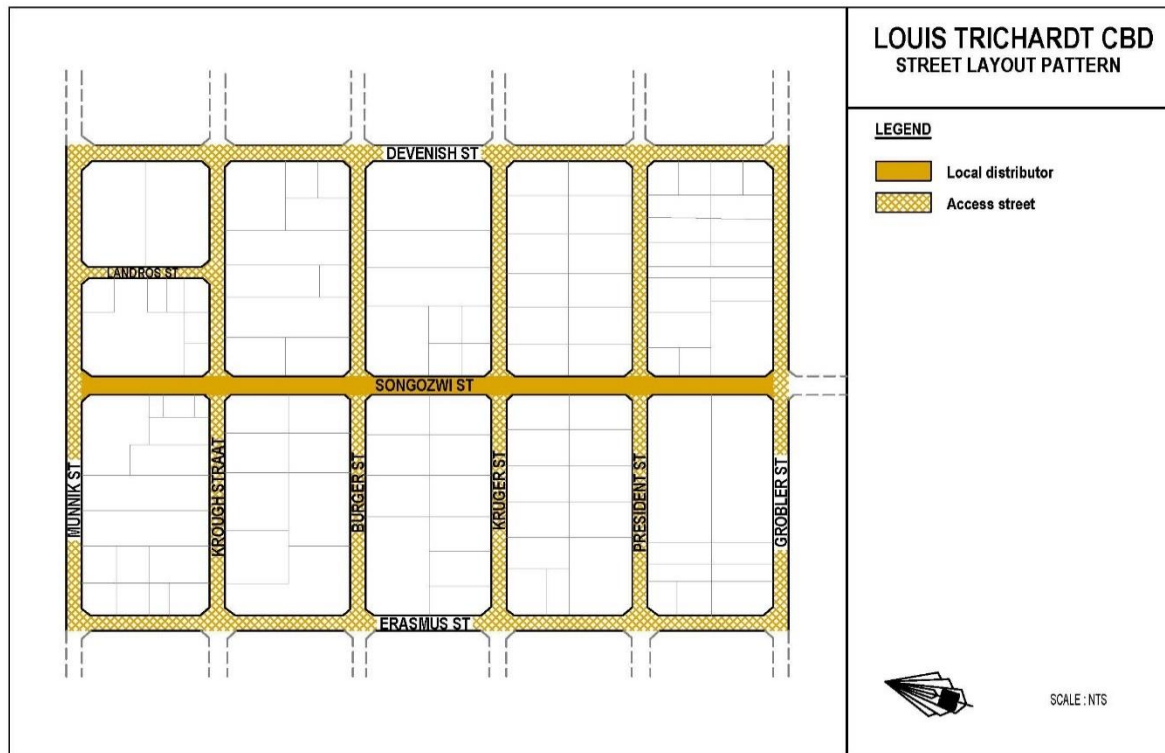


Figure 3-10: Street Layout pattern for Louis Trichardt CBD
Source: Author's construct (2020)

3.4.4 Administrative profiling of the three SRTs

The three SRTs are administered by local municipalities (see Sections 3.4.1, 3.4.2 and 3.4.3). These three local municipalities were established as Category B Municipalities through the Municipal Systems Act 32 of 2000 (see Section 3.3.2 in this Chapter). The Constitution of South Africa gives local municipalities the fiscal and administrative authority to decide their own development course (see Section 3.2.3 in this chapter).

Local municipal councils are responsible for the administration of local municipalities through a ward system. The ward system allows for the establishment of ward

committees to facilitate community participation in local government matters. The respective mayors chair the executive committee meetings for the different local municipalities, while the speakers preside over council meetings. Traditional leaders or their representatives are additional members who sit in municipal councils as ex-officio members representing the traditional governance systems.

Municipalities in the SRTs apply provisions set in the standard policy documents to guide the design and management of street spaces. The various opportunities and constraints that flow from applying these policy guidelines have spatial (in)justice implications on street spaces in SRTs. The maintenance and management of infrastructure functions in SRTs are largely a responsibility of the local municipalities. Each local municipality has an engineering department which carries out regular maintenance of potholes, street lighting, waste disposal, sewer, public toilets, and stormwater drains among other functions. The funding of day-to-day maintenance of streets in the three local municipalities is from their own-source funds in the form of rates, property taxes, and licenses. For capital projects such as construction, municipalities receive national government grants such as the Municipal Infrastructure Grant, Neighbourhood Development Grant, and Equitable Shares. Although each of the SRTs in this study is administered by a different local municipality, all three local municipalities fall under one district municipality - Vhembe.

Vhembe District in Limpopo Province is comprised of four local municipalities namely: Musina, Thulamela, Makhado and Collins Chabane local municipalities. The fourth local municipality of Collins Chabane was established in 2018. Its primary service centre of Malamulele Town was not included in this study because it has only two main distributor roads which pass through the CBD.

The role of the district municipality focuses on capacity building of local municipalities and district-wide planning. According to the Municipal Structures Act of 1998, district municipalities have the responsibility to deliver key services such as water, sanitation, electricity, municipal health services, firefighting, passenger transport, and promotion of tourism. The district municipality oversees the equitable application of spatial development planning and land-use management systems. This promotes strong

regional interconnectedness and close interrelations between people and places called translocality (Brickell and Datta, 2011).

The Vhembe District Municipality is an essential stakeholder in the planning, designing and management of street spaces in the CBDs of SRTs. The role of the district municipality as a stakeholder is important to achieve spatially just outcomes. Therefore, there is a need for active engagement of all stakeholders to encourage a participatory approach to urban planning, design, and management of street spaces.

3.5 Chapter summary

The review of literature on the spatial planning and transport regulatory environment was important to understand the local context of South African street planning, design, and management. From the historical background of spatial planning in South Africa, emerging issues are that spatial injustices were created through racial segregation policies. A separate inferior system for land-use management was applied in areas occupied by Black Africans. This pattern of development cannot be undone in a few decades, although the South African government is making efforts on all fronts to redress these imbalances. During the post-apartheid epoch, the National Government made efforts to redress these historic spatial imbalances through legislations such as the Constitution of South Africa, the National Development Plan and SPLUMA 16 of 2013 amongst an array of other legislations discussed. The landscape of SRTs in South Africa has not been static, but it has also experienced social, economic, physical, political, and technological changes which posed as both opportunities and threats to the creation of spatial justice on street spaces. The next chapter presents the research methodology.

CHAPTER 4 : RESEARCH METHODOLOGY

4.1 Introduction

The purpose of this chapter is to discuss the research methodology, reflecting on spatial (in)justice and street spaces in three Small Rural Towns (SRTs) of Thohoyandou, Musina and Louis Trichardt. A research methodology provides a systemic way of addressing research objectives (Creswell, 2009; Opoku, Ahmed and Akotia, 2016). The research aim, objectives, and the sub-research questions informed the choice of research methods adopted in this study (see Section 1.7 in Chapter 1).

After this introductory section, the second section outlines the philosophical stance adopted by this research. The third section discusses the research design. The fourth section provides a discussion of the research approach. The fifth and sixth sections describes the study population and sampling procedures respectively. The seventh section discusses data collection methods, and data analysis techniques is in the eighth section. The sections that follow are on research limitations, ethical considerations, and a methodological summary of the data collection and analysis procedures.

4.2 The research philosophical stance

My research is premised upon the pragmatism paradigm. Pragmatism entails the practicality of theories, concepts, assumptions, and research findings in a specific context (Morgan, 2014; Saunders, Louis and Thornhill, 2015:143). Since the concept of spatial justice on street spaces has multiple dimensions, pragmatism as a way of thinking engenders understanding of this complex phenomenon through application of diverse theoretical positions and research methods. In pragmatism, both objectivism and subjectivism can be used simultaneously to provide a wider discourse (Ménacère, 2016; Saunders, Louis and Thornhill 2016).

The methodology stages followed in this chapter were guided by the research onion recommended by Saunders, Louis and Thornhill (2016) as illustrated in Figure 4-1.

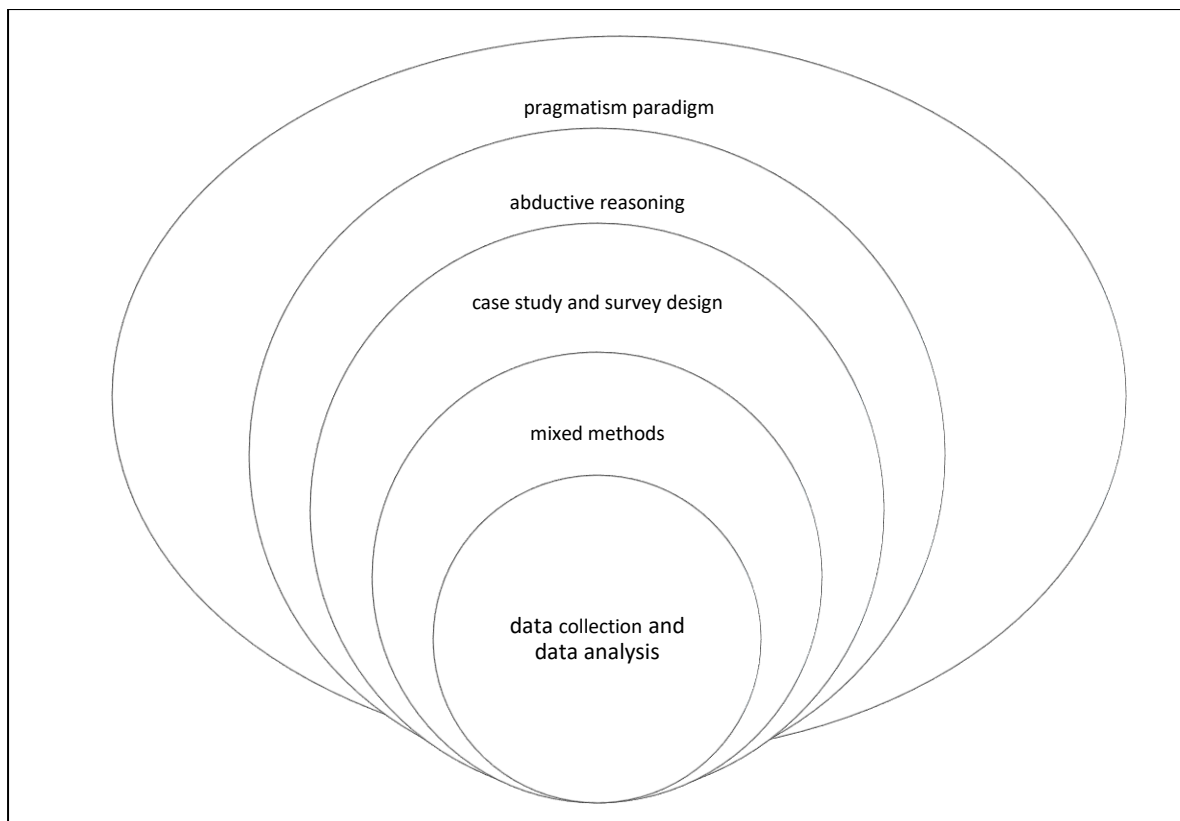


Figure 4-1: Research onion adopted for the study
Source: Adapted from Saunders, Louis and Thornhill (2016:124)

The research onion simplifies the research methodology process. It explains that the pragmatism philosophical stance that is adopted in this study informs the research's abductive reasoning approach. The abductive reasoning approach informs the multiple case study and survey research designs, and the use of mixed methods approach for data collection and analysis.

4.3 The research design

A suitable research design is determined by the kind of research problem which a study seeks to achieve (Meredith, 1998; Dainty, 2008; Flyvberg 2011). A design describes how a researcher plans to answer the research question (Opoku, Ahmed and Akotia, 2016). My research adopted a case study survey design. This design integrates multiple case studies and surveys to unravel the complex dynamics of spatial (in)justice on street spaces of SRTs. The multiple- case studies adopted in this research are an aggregate of three SRTs of Thohoyandou, Musina, and Louis Trichardt in Vhembe District of Limpopo Province in South Africa. Yin (2003:4) defines a case study design "an empirical inquiry that investigates a contemporary

phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”.

My research design can therefore be contextualised as a ‘spatial (in)justice and street space case-study survey design’ because it facilitates the exploration, description, and explanation of phenomena of spatial (in)justice on street spaces. This design was preferred because street spaces are situated in a built environment where many actors and stakeholders (re)shape, (re)construct and (re)produce spaces through social interaction. As such, the design enables generation and discovery of new knowledge useful to engender policy practices that can bridge the gap between the actual and perceived contexts in planning. Due to the different historical backgrounds, geographic differences, and different spatial configuration of street spaces; comparisons were made within and between cases to explain the disparate outcomes of spatial (in)justice emergent on street spaces of the selected cases.

4.4 The research approach

I applied a fully integrated qualitative and quantitative research approach to understand spatial (in)justice on street spaces of SRTs (Saunders, Louis and Thornhill, 2016:170). A qualitative research approach is a process of collecting and analysing non-numerical data (Creswell, 2009). Qualitative research addresses issues that cannot be explained by way of quantification (Opoku, Ahmed and Akotia, 2016: 13). The main advantages of employing the qualitative research approach are that it generates rich and deep data about a particular phenomenon (Yin, 2008; Saunders, Louis and Thornhill, 2016). The qualitative method provided a perceptive and experiential view of its social aspects. Whereas, quantitative research methods involve collection and analysis of numeric data that is mainly used for theory testing and establishment of patterns (Hoxley, 2008; Creswell, 2009). The quantitative method provided statistically measurable accounts of spatial (in)justice.

I integrated both qualitative and quantitative research approaches (Creswell, 2009; Emuze, 2016). The mixed methods approach draws from the strengths of both quantitative and qualitative research methods (Hoxley, 2008). The adoption of a fully integrated mixed methods research approach enabled a deeper understanding of issues on street space spatial (in)justice. The espoused mixed methods approach

offers a logical and practical alternative to understanding and generating insights on the complex phenomena of spatial justice on street spaces that could not be drawn from a single method (Johnson and Onwuegbuzie, 2004; Creswell, 2009; Bhattacharjee, 2012). In this research, representations on spatial (in)justice on street spaces are expressed in both objective and subjective components (Stratford, Waitt and Harada, 2020:135).

4.5 The study population

This study population includes all street spaces in the CBDs of the selected SRTs, non-vehicular street space users in the form of pedestrians and street traders. Street spaces and street space users were the units of analysis.

The population descriptions of the three selected SRTs are based on the South African census record of 2011. The estimated urban population for Thohoyandou Town is 69 453, Musina has 42 678, and Louis Trichardt has 25 360 (StatsSA, 2011). The population was only used as a guide to determine the sample proportion or representation of elements from the three SRTs. This is because overall study population of people on street spaces in the selected SRTs is unknown. The population of street spaces in the CBDs of each town and hierarchy are shown in Table 4-1.

Table 4-1: Street spaces population and hierarchy per town

Town	Hierarchy	Total number of streets
Thohoyandou	Higher-order roads	2
	Local distributor	3
	Local access streets	18
Musina	Higher-order road	1
	Local distributor	1
	Lower order access streets	8
Louis Trichardt	Local distributor	1
	Lower order access streets	9
Total number of streets		43

Source: Author's construct (2019)

The street layout maps from the local municipalities were used to determine the number of street spaces within the CBDs of the three selected SRTs. In Musina and Louis Trichardt towns, the street layouts had clearly marked street names. Whereas,

in Thohoyandou Town, only five streets had street names (see Section 3.4.1 in Chapter 3).

4.6 Sampling methods

Sampling involves selecting several study units from a defined study population (Creswell, 2003). The sampling criterion for each category of elements, including street spaces and street space users was determined by the specific objectives.

4.6.1 Selection of street spaces in three small rural towns

The population of 43 street spaces in the three case study towns' CBDs was selected to characterise spatial (in)justice on street spaces. I selected the whole population of streets in the three case study towns' CBDs (see Table 4-1). One street (the Garden route) in Thohoyandou town (see Figure 3-4 in Chapter 3) had a length of 4km which was too long to make meaningful observation across the whole length, therefore half the length was considered as 1 street space and the other half as another street space. In collecting data from all streets in the CBDs, I chose the cost of breadth over the cost of depth to make generalisations of research findings (Emuze, 2016).

4.6.2 Sampling of street space users

The sampling of street space users was done in multi-stages. The stages taken are as illustrated in Figure 4-2.

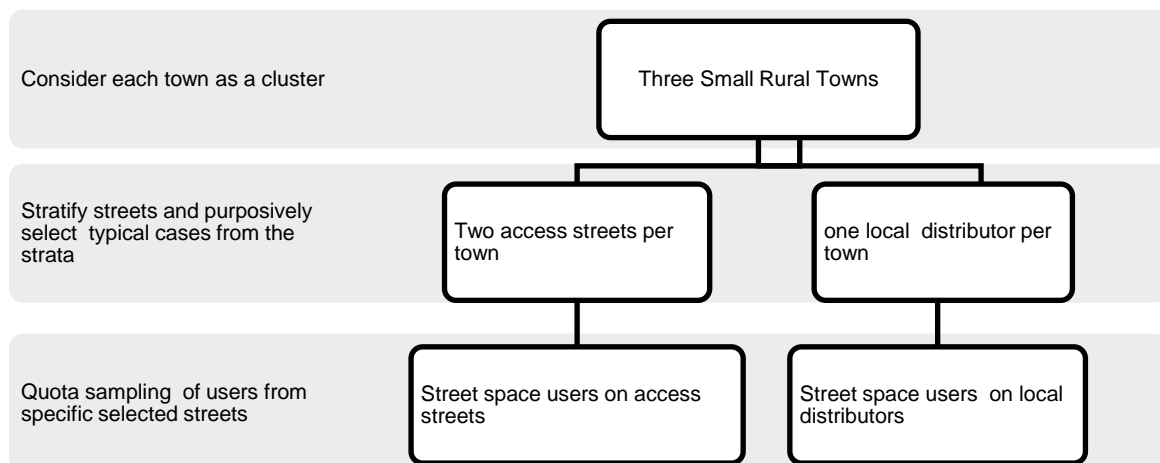


Figure 4-2: Multi-stage selection of street space users
Source: Author's construct (2020)

The first stage was to consider each town as a cluster. In the second stage, from each cluster (town), streets spaces were grouped into strata according to their hierarchy.

Information oriented selection of typical street spaces within each stratum was made (Widdowson, 2011:28). From my observation of street layouts of most SRTs, the local distributor and access streets are the typical street spaces designed for use by both vehicles and pedestrians. Therefore, my main assumption was that sampling street space users from these typical street spaces would sufficiently represent street space users' general perceptions in each of the selected towns. Appendix 15 shows the specific streets where users were selected in each town. The main intent here was to determine the most pragmatic way of sampling street users rather than the street spaces themselves.

To determine the sample size of street users to be surveyed, the researcher employed the sample size calculation formula illustrated in Box 4-1.

$$n = \frac{z^2 \cdot p \cdot q}{e^2}$$

Where:
z=1.96 (the confidence interval),
p= 0.5 (proportion)
q= 0.5 (1-p),
e= 0.05 (level of significance)
n=384.16* 130%= 499.41

Box 4-1: Sampling size calculation
Source: Author's construct (2020)

Researchers recommend using the sample size calculation formula for studies where the total study population cannot be established (Lwanga and Lemeshow, 1991; Naing et al. 2006; Kott, 2011; Fowler, 2012; Lee, 2018). According to Fowler (2012:9), adopting the formula is appropriate when there is no list of individuals in a population. This is because street space users keep changing in number, location, and form. To improve the sampling precision by reducing the possibility of systematically excluding or eliminating some street space users from participating, I oversampled these elements by 30% (Richardson, Ampt and Meyburg, 1995). This was done to gather data from more users bringing the total sample size for street space users to 500. The total population proportion for each town was used to determine the sample size of street space users in each case. Table 4-2 illustrates the number of sampled street space users from each of the CBDs of the SRTs selected to participate in this study.

Table 4-2: Sample size for street space users

Study area	Urban Population	Population proportion	Sample size	The average number of non-vehicular street space users sampled per each street
Thohoyandou	69453	51%	255	85
Musina	42678	31%	155	52
Makhado	25 360	18%	90	30
Total	137 491	100%	500	167

Source: Adapted from StatsSA (2011)

I employed quota sampling as a strategy for recruiting the study sample for street space users. The primary consideration was the fluidal nature of non-vehicular street space users as my sampling units. Non-vehicular street space users are a very dynamic group of individuals that will never assume a permanent state or position. They are likely to change their state unexpectedly as they experience the street spaces. Some scholars concur that pedestrians are the most vexing group to survey because of their changing nature (Richardson, Ampt and Meyburg, 1995; Schaller 2005; Kott, 2011; Delaney, 2016). For example, pedestrians are not only constitutive of those users walking along a street, but also those who engage in other pedestrian activities such as sitting, standing, or just socialising along the street. Vehicular users also assume the state of pedestrians as soon as they park their vehicles.

Application of probability sampling methods was not feasible, although these are strongly recommended when conducting surveys because of their strength in performing parametric statistics and generalisability (Forsyth, Agrawal and Krizek, 2012; Fowler, 2012; Wagner et al. 2012). Doubtlessly, I was convinced that the survey provided comprehensive results that can be used by other scholars, policymakers, as well as other stakeholders involved in street production and urban design. However, I do not claim these findings to be universal truths; rather, they merely embody the perceptions of non-vehicular street users in the CBDs of three selected SRTs. The findings are generalisable to other SRTs experiencing similar circumstances.

Some scholars who conducted intercept surveys on user's perceptions on public spaces argue that the quota sampling technique better represent the various diverse

elements of a population and provide fairly accurate overall estimates in the absence of a clear sampling frame (Delaney, 2016; Flint et al. 2016; Chan, Schwanen and Banister, 2019). Therefore, rather than merely confining the study to random sampling procedures to allow for population generalisability, consideration was made on the nature of contribution derived from the sampled elements to be of greater importance (Richardson, 1995; Neuman, 2011).

The determining factors for the quota sampling were gender and nature of the street activity. The population of females in Vhembe District is estimated to be 53%, while males are 47% (StatsSA, 2018). In this study, an attempt was made that the quota sampling design may replicate the true composition of the district's population. As such my research sample comprised more females (53%) than males. I sought to obtain various responses from the different genders to test whether perceptions of spatial (in)justice had a gendered dimension. I also sought to bring diverse perceptions from street users engaged in diverse street activities. Therefore, I categorised users according to pedestrian activities, and street trading activities at a percentage of 80% and 20% respectively. According to StatsSA (2019), about 20% of the total population in South Africa are employed in the informal sector.

One's frequency of coming into town and their location on the street was another key criterion considered in sample selection. For example, these users had to meet the criteria of coming to town at least once every week. The assumption was that these users were more familiar with street spaces found in the selected SRTs, unlike visitors who may not have noticed the socio-spatial qualities on street spaces that were interrogated.

In terms of location, the targeted users were street side walkers, not necessarily those occupying or using buildings along the street; or those who were driving or in car parks. This selected group was a representative of the most disadvantaged group of street space users. In any case, all users of street spaces assume this status at some point (see Section 2.4 in Chapter 2). Non-vehicular users who cycle also qualified in the criterion of the most disadvantaged street space users. However, during the reconnaissance surveys in all the towns, I did not come across any cyclists, and these were skipped from the selection criteria.

In order to reduce spatial biases of collecting data in one place, each street space was divided into four geographic quadrants. I identified a nodal point in each quadrant. The sampling of street users from different nodal points offered robust sampling opportunities, and ensured sample representativeness (Miller et al. 1997; Flint et-al, 2016). Street spaces are not homogenous, and neither are the street space users (Kott, 2011). These quadrants thus represented my sampling points largely determined more by street activity on the spaces than mere distances measured in meters. This approach defined more contextualised outcomes from prevailing (in)justices as street users experience street spaces.

4.6.3 Purposive sampling of spatial planning experts

According to Johnson and Onwuegbuzie (2004), purposive sampling is accomplished by selecting a sample considered representative of the population, in a non-random manner. Spatial planning experts on street planning, design and management from key planning institutions including Vhembe District Municipality, local municipalities, Urban and Regional Planning Department at the University of Venda were purposively sampled. Table 4-3 shows the distribution of the sampled experts spatial planning experts.

Table 4-3: Sample size for spatial planning professionals

Key institution and department	Number of experts
Vhembe District Municipal	
Department of spatial planning	1
Thulamela Local Municipality	
Planning and development department	1
Community services department	1
Musina Local Municipality	
Town planning department	1
Community services department	1
Makhado Local Municipality	
Planning and development department	1
Community services department	1
University of Venda	
The Department of Urban and Regional Planning	1
Total	8

Source: Author's own construct (2019)

The selection criteria for each planning expert were based on the critical knowledge and experience they hold with regards to opportunities and challenges from planning, design, and management of street spaces in STRs.

4.7 The data collection procedures

Although a wide range of research methods exists, every research must adopt the most appropriate ones to gather relevant data (Bryman, 2008). Data collection in case studies is one of the most significant processes. The richness and depth of what will eventually be known are contingent upon the craft and effectiveness of the data collection methods in uncovering relevant details about the situation (Yin, 2003). Multiple data sources were used to gather data to triangulate qualitative and quantitative evidence from secondary and primary data sources.

4.7.1 Secondary data collection

An extensive literature review was conducted to provide a clear conceptual and theoretical basis for this research. A literature review was done throughout the research. It is through a literature review that a framework of analysis and key measurable variables were drawn. The main literature sources were scholarly publications, and unpublished secondary data. Literature was also accessed online particularly academic research from refereed journals and websites such as SAGE, and Ebscohost. I also accessed textbooks physically from the University library textbooks, refereed journals, government reports. Spatial planning legislative documents reviewed were accessed from the respective municipalities. Such documents include SPLUMA by-laws, IDPs; SDFs as well as the Urban Development and Revitalisation Frameworks (See section 3.3.3 in Chapter 3). Each of the towns had no specific street design guidelines; however, I made use of the Red Book on Guidelines for Human Settlements (2000), Department of Transport's National Non-Motorised Facilities' Guidelines (2015), National Technical Requirements (2016), Neighbourhood Planning and Design (2019).

4.7.2 Primary data collection

Primary data collection was done through extensive fieldwork on street spaces in three selected towns. My fieldwork activities include street space qualities design inventory exercise (street space inventory), direct observations, street-intercept questionnaire

surveys, and in-depth interviews with key experts. Creswell (2003) argues that using multiple methods in data collection provides different lenses to understand research data. I had the privilege of attending a 10-day Urban Resilience Summer School in Copenhagen, Denmark, in September of 2019. Although the summer school was not a planned fieldwork per se; the field trip excursions along streets in Copenhagen provided insightful lessons which I used as benchmarks during data analysis. The sections below elaborate further on each of the techniques which were employed.

4.7.2.1 Reconnaissance and familiarisation with fieldwork tools

To familiarise myself with the physical and conceptual boundaries of my study, I embarked on a study reconnaissance in the three selected rural towns (Thohoyandou, Musina and Louis Trichardt) during the month of December 2018. I strolled the street spaces purposefully like a flaneur (purposeful stroller), with a mission to intentionally observe and engross myself with the form and characteristics of these street spaces. I observed the activities which took place on street spaces. This helped me to positively identify the sampled street spaces and demarcate my study areas' physical boundaries.

4.7.2.2 Direct observation

Direct observations are a useful method, for documenting activities, behaviours, and physical aspects of a site without relying upon people's responses to questions (Patton, 2002:2). Direct observations were used as a method to collect data directly through watching and monitoring activities and people on street spaces. I used a checklist inventory as a research tool to gather data through observations. The inventory checklist enabled the documentation of realities on street spaces, street space users' conflicts and negotiations as they interacted with the street spaces. These observations were diarised and, in some cases, captured through photographs to assist with recalling of the fieldwork experiences. Direct observations and photography are useful when one is trying to understand the connection between individuals and the environment in which they are located (Whyte, 1980; Gehl and Svarre, 2013).

The checklist inventory (street inventory) was therefore a way of collecting data on the physical and social aspects of the street spaces without relying upon people's

responses to questions, but through direct observations (See Appendix 16). I used Geographical Positioning System (GPS) tagged cameras to take photographs of interesting scenes during the street space observations. Distinct moments that I sought to capture include spatial injustice realities.

Application of street space inventories was done on all the 43 street spaces in the selected SRTs for ten consecutive working weekdays in January 2019. The second round of street space inventory exercise was conducted for five consecutive working weekdays in July 2019. This second round was to update my data on the socio-spatial qualities being evaluated before embarking on the final analysis.

A specific set of indicative questions was asked to address key variables of concepts on a five-point Likert scale from very poor to very good. The variables are, (i) safety and security, (ii) accessibility and permeability, (iii) legibility (iv) robustness (v) maintenance and management. These variables explain qualities of street spaces in their objective and subjective attributes. While the objective qualities are related to the street space urban design characteristics, the subjective attributes refer to user's activities, maintenance, management qualities, and aesthetical values.

4.7.2.4 Street - intercept questionnaire surveys

The everyday users of street spaces are agents of change as they better understand the spatial (in)justices they experience on the street (Lefebvre, 1996). Street-intercept questionnaire surveys sought to obtain the perceptions of a wide variety of non-vehicular street space users on the forms of spatial (in)justices they experience on street spaces. Buschmann (2019:858) describes the street intercept survey as a method that allows researchers to collect in-person survey responses from people who are in or passing by the same area at the time of data collection. For example, in public spaces such as street spaces. I wanted to catch users in the act of using streets at a natural point of the congregation rather than having them recall how they perceive street spaces in a different setting (Richardson, 1995:57). Intercept surveys enabled street space users to recall the phenomenon better than if "they were responding from home" as the case with household surveys (Schneider; 2013:42).

I made use of questionnaires as tool for data collection during the street intercept surveys. According to Hoxley (2008) a questionnaire is a research instrument with a set of questions used to conduct surveys. The questionnaires had both open ended and closed questions (Emuze, 2016). Closed questions were meant to generate quantitative data, whereas open ended question enabled collection of narrative in form of qualitative data (see Appendix 17).

I used the help of three research assistants who speak the native Venda language, and with an urban and regional planning background to administer the questionnaire efficiently. I intentionally chose assistants with this background as my study required people who were conversant with the planning language, and could easily translate the questionnaire to vernacular Venda language which is the dominant language in all three towns under study. The research assistants received three-day training before the survey. This was done to ensure that everyone was well conversant with the questions. The questionnaire was administered to a total of 500 adult non-vehicular street users in all towns.

4.7.2.5 Conversations with urban and regional planning experts

Conversations with urban and regional planning experts from five planning institutions assumed the model of the Delphi Technique (see Table 4.6.3 in Chapter 4). A Delphi technique is very useful when one requires input from experts in the study field (Yousuf, 2007). According to Creswell (2003), the Delphi technique entails serious brainstorming with experts. In this study, the experts were identified as spatial planning experts (refer to section 3.4). To facilitate the conversations with the key experts, I used interview schedules administered in at least two rounds (see Appendices 19 and 20). The schedules had a set of open-ended interview questions, which made it possible to seek further clarity and add new questions during interviews. On average, an interview took 1hr 30 minutes. I captured the responses from the interviews through notetaking, and tape recording. The recordings were later replayed during transcription. The experts provided useful explanations on the opportunities and challenges from existing policies and procedures on street planning, design, and management.

4.8 Data analysis

The data collection process generated a lot of qualitative and quantitative data. Comprehensive interrogation of spatial justice from the street content and street space users' perspective entailed use of robust analytical methods to understanding of the street spaces.

4.8.1 Qualitative data analysis

Qualitative data obtained from the open-ended questions on the questionnaire were analysed through thematic analysis (Babbie and Moutton, 2012). I used Nvivo and Atlas ti to analyse qualitative data. Usually, these computer software programmes are relevant for analysing large amounts of qualitative data to establish meanings and relationships on spatial (in)justice of street flowing from selected variables. For example, the users 'Right to the City' claims and opportunities and challenges flowing from the processes of street design and management.

The qualitative data I obtained from the questionnaires comprised mostly of short phrases and a few, longer narrations. I entered these responses onto Nvivo and Atlas ti. The data were analysed through text descriptions. I also applied thematic content analysis as prescribed by Braun and Clarke (2006). Thematic content analysis from narratives is simply "a method for identifying, analysing, and reporting patterns [themes] within data" (ibid:7). This method helped to identify patterns of the meaning of data from open-ended questions on the questionnaires. The advantage of using thematic content analysis is that it provides a more detailed account of the themes identified from the data collected.

I started with immersing and familiarising myself with the content and transcribed the data on the forms of spatial (in)justices. I then engaged in the production of initial codes to organise data into meaningful groups. After this, I searched for themes by sorting the codes. I then collected the main themes and sub-themes related to the research objectives and discussed these. In some cases, these themes were displayed using word clouds. A word cloud is also a form of qualitative data analysis which uses a word cloud application to construe keywords or phrases from street users' comments. Theories adopted in this study (see Section 2.10 in Chapter 2) were used to extract the deeper meaning from data.

4.8.2 Quantitative data analysis

Quantitative data were analysed using Stata 14. This computer software aided entering, saving, editing, data gathered using checklists (Babbie and Moutton, 2012). This software was used for both descriptive and further inferential statistics. Descriptive statistics were mostly in the form of frequency distribution analysis, cross-tabulations analysis, and average variable scores. Further statistical analysis of data was in the form of HCA, Kruskal Wallis equality of populations test (Kruskal Wallis), Wilcoxon rank-sum test and Modified Analytical Hierarchy Process (MAHP). These types of tests are a non-parametric test which do not follow strict data normality assumptions. The tests were deemed appropriate given the nature of my data which was more categorical.

4.8.2.1 The process of clustering the street spaces in the three small rural towns: Hierarchical Cluster Analysis

In the analysis of my first objective, which sought to characterise the attributes of spatial (in)justices from a street space content perspective on street spaces, I employed Hierarchical Cluster Analysis (HCA). HCA is an unsupervised learning technique that is an alternative approach to k-means clustering to identify groups in the dataset. It does not require us to pre-specify the number of clusters to be generated as is required by the k-means approach (Kassambara, 2017). Furthermore, hierarchical clustering has an added advantage over K means clustering. It is easy to interpret, and results are shown in an attractive tree-based representation of the observations, called a dendrogram. It groups a set of objects so that the objects in the same cluster are more similar to each other than to objects in other clusters. The similarity is an amount that reflects the strength of the relationship between two data objects. Clustering is mainly used for exploratory data mining (Hastie, Tibshirani and Friedman, 2009).

In this study, I used a dataset of 43 street spaces from the three small rural towns to identify different streets according to their similarities and differences in spatial qualities. A comparison of many street spaces in this study was important for drawing generalisations and some lessons about spatial justice qualities from a set or a cluster of street spaces.

To fully perform HCA, I adopted five key stages namely (i) data importation, (ii) calculating the (dis)similarity matrix (iii) use eye selection of clusters (iv) internal validation and stability measures of clusters and (v) mapping. The data obtained from the street space design quality inventory was imported and cleaned using Stata version 14. In this study, data was scaled to apply the same measurement scale for the different spatial justice quality indicators which were measuring street spaces in terms of safety, security, accessibility, adaptability, legibility, management and maintenance. The R's scale/standardise function ($\text{Standardize} \leftarrow \text{function}(x)\{(x-\min(x))/(\max(x)-\min(x))\}$) was used in this study.

Due to the categorical nature of my data, non-parametric HCA was performed. The key assumptions which were considered in HCA include: the absence of normality; no density estimations were applicable; the main concern was to find cluster or natural groupings in a dataset (Roberts, 1996; Mohamed et al. 2015; Kassambara, 2017). The study opted for the agglomerative hierarchical clustering (AGNES) method over the divisive clustering method. Under agglomerative clustering, all observations are grouped according to their similarity; whereby initially, each observation is considered as a cluster, and most similar observations are successively merged. This is a bottom-up approach commonly used in HCA, whereas the divisive clustering is a top-down approach (Bryk and Raudenbush, 1982; Hastie et al. 2009, Noiva et al. 2016; Kassambara, 2017). Box 4-2 shows how the agglomerative hierarchical clustering method is defined.

1. Start with N_{ex} –Number of observations (single clusters)
 2. Find nearest clusters
 3. Merge them
 4. If $N_c > 1$ go to 2
- Where
 N_c is the number of clusters
and N_{ex} is the number of observations

Box 4-2: Defining agglomerative hierarchical clustering
Source: Gutierrez-Osuna (2002); Kassambara (2019)

The next stage was to calculate the similarity between observations by partitioning clustering algorithms. The goal was to split the data set into clusters of objects, such that objects in the same cluster are similar as much as possible, and the objects in different clusters are highly distinct. Every algorithm in clustering follows a different set of rules for defining the 'similarity' among data points. The most appropriate clustering algorithm for a particular problem often needs to be chosen experimentally, unless

there is a mathematical reason to prefer one clustering algorithm over another. However, an algorithm might work well on a particular dataset, but fail for a different kind of dataset. To some extent, clustering is a subjective task, and there can be more than one correct clustering algorithm (Kassambara, 2017). The study applied the Ward. D2 method which had the largest computed coefficients for all the variables as depicted in Table 4-4.

Table 4-4: Coefficients from comparison of the distance between each observation

	Methods of computing distances between observations			
	Average distance	Single Linkage	Complete Linkage	Ward D.2
Safety and security	0.865077	0.760165	0.908806	0.939498
Accessibility and permeability	0.822205	0.815605	0.855359	0.879273
Legibility and visual attractiveness	0.869332	0.849781	0.888946	0.912253
Robustness and Adaptability	0.925149	0.921722	0.935088	0.935462
Maintenance and management	0.822859	0.804162	0.865389	0.915717
For all variables combined	0.649151	0.639672	0.692995	0.741681

Source: Author's construct (2020)

The (di)similarity matrix was then calculated using the Euclidean distance method. The numbers of clusters from a dendrogram were selected by eye based on my personal understanding of the towns' street spaces.

The study employed various internal validation measures that include the Hierarchical connectivity, Silhouette coefficient, and the Dunn index to determine the optimal number of clusters and measure the compactness, the connectedness, and the separation of the cluster partitions (see Appendices 28-33). With the connectivity method, the degree of connectedness of the clusters the value should be minimised. Whereas, for the Silhouettes method which measures how closely grouped all the data are in a cluster, the value should be maximised. Dunn's Index calculates the distance of all the points from the mean, and the value should be maximised (Kassambara, 2017). Regardless of the clustering algorithm, the optimal number of clusters was

established to be two for all the variables. However, since HCA is an unsupervised learning technique, as a researcher with a prior background of the street spaces being studied, in some cases more than 2 clusters were selected to comprehensively explain the spatial justice phenomena in the street space clusters of the selected small rural towns. The same conclusion was also reached using stability measures such as the average proportion of non-overlap (APN), average distance (AD), and the average distance between means (ADM) were also applied (see Appendices 28-33).

The last stage was mapping to present my street space clusters clearly. Maps of street space clusters from HCA were drawn using AutoCAD (2020 version). Mapping was also done to show the spatial injustice hotspots of street spaces in the three small rural towns. The collected GPS coordinated points of the injustice hotspots from all the towns of Thohoyandou, Musina and Louis Trichardt were converted in an excel sheet from the degrees, minutes, and seconds. The converted coordinates were exported to comma-separated values (CSV) which are GIS readable format. The software used was ArcMap. In ArcMap, the CSV file was uploaded, and it was converted to shapefile which displays points on the map. Also, in ArcMap, the study area roads were digitised using an online base map of streets as a reference. After digitising roads, the attributes such as the injustices in the towns were given different symbols to easy identifications and to differentiate one attribute from another. The geography coordinate systems used was GCS WGS 1984. The map was then drawn with the legend, direction, and the scale. The result was exported to an image using a resolution of 600dpi. AutoCAD was also used to develop exemplar models of street spaces.

4.8.2.2 Frequency distribution analysis and mean scores

To achieve the second research objective, examining spatial justice from the users' perspectives, I employed both descriptive and inferential statistics. The mean value which is also called the arithmetic average was calculated as the sum of total scores divided by the number of cases, while the frequency distributions measured the absolute number of observations within a given category (Almquist et al. 2014). Both the mean values and frequency analysis were employed in analysis to gain an impression of the mean distribution or frequency distribution of users' perceptions of all the spatial justice attributes. The results were presented in simple custom tables, bar graphs, radar charts and multi-bar charts. Cross-tabulation analysis for the

distribution of phenomena in each town was also done to provide a clearer picture of the means or frequencies of different phenomena at the town level.

4.8.2.3 Modified Analytical Hierarchy Process

This study applied some modification to the Analytical Hierarchy Process (AHP) by Saaty (1990). AHP is a Multi-Criteria Decision Analysis (MCDA) tool that can help decision-makers prioritise the diverse needs of street space users (Saaty, 2008). MCDA methods have the main advantage that they enable decision-makers to prioritise the diverse and sometimes conflicting perceptions of street users (Bivina and Parida, 2019). AHP provides an overall ordering of choices, from the least unjust quality that needs more attention (represented by the least percentage) to the more just quality with a larger percentage. AHP breaks down the wicked problem of spatial justice into different levels of analysis. Whereas the first level is the goal to be achieved, this is spatial justice on street spaces. The second level is the key variables or criteria through which spatial justice is assessed. The third level is the level of indicators or alternatives. Each variable was considered a cluster or class which was assigned a weight based on the total standardised responses on the perceptions of both meaning and satisfaction assigned to the variable. Weights are also assigned to the individual indicators within each variable in relation to the variable (these are the local priorities of alternatives in a cluster). In prioritising the users' satisfaction, more attention was given to variables with the least weight as these were considered to be least satisfactory.

Instead of making pairwise comparisons between two alternative choices as per the original AHP (Saaty, 1990; 2008; Bivinia and Parida, 2019), the study used a matrix of independent alternatives which was considered a more simplified approach. Oğuztimur (2011) argues that generating both the right and left eigenvectors of the pairwise comparison matrix is complex, unlike using a matrix of independent alternatives. Determining the nature of the relationship between the left and right eigenvalues of the reciprocal matrix becomes difficult for a pairwise comparison matrix than for a matrix of independent alternatives. Furthermore, the pairwise matrix is positively correlated with the number of hierarchical levels; hence building APH models becomes more time-consuming and complex. The basic procedure followed for this modified analytical hierarchical process is:

1. Development of the ranking problem to a hierarchical framework with goal, criteria, alternatives.
2. For all criteria and alternatives under each criterion, the simultaneous comparison is formed, and alternative and criteria weights are determined in the form of percentage contribution to the criterion needs.
3. The cluster or alternative with the least percentage contribution is the one that needs the greatest prioritisation.

4.8.2.4 Kruskal Wallis equality of populations rank test

Kruskal-Wallis tests were used to test the first study hypotheses for the second objective (see Section 1.7.4 in Chapter 1). This method is the non-parametric alternative to the one-way Analysis of Variance (ANOVA). While ANOVA tests for mean differences between two or more groups, the Kruskal-Wallis is a rank or distribution-based test used to determine statistically significant differences between two or more groups of categorical independent variables on either an ordinal or a continuous dependent variable (Gibbons, 1993; Fink, 2003). For example, this study's categorical independent variables include town, street hierarchy, age, gender, disability status, educational level, and occupation.

Whilst closely similar to the Mann Whitney U-test, the Kruskal-Wallis test accommodates variables with more than two groups. This makes it more applicable to this study where some categorical variables were more than two groups. Before employing this method, attention was given to ascertain if the data met the assumptions for analysis using the Kruskal Wallis method. The assumptions include dependent variable measured on an ordinal scale; two or more categorical, independent groups; independence of observations and variability of the shape of the distribution scores. Like any other statistical test, the Kruskal Wallis method has the shortfall of an omnibus test statistic which does not show which specific groups of the independent variables are statistically significantly different from each other. It only tells that at least two groups were different (Almquist et al. 2014). Therefore, this method required performing the Dunn test, another post hoc analysis method that makes pairwise comparisons of the groups to see which pairs have a statistically significant difference. In cases where the probability value (p-value) was large, I failed

to reject the null hypothesis. Contrary, where the p-value was small, the null hypothesis was rejected in favour of the alternative.

4.8.2.5 Wilcoxon rank-sum test

Wilcoxon rank-sum test is a nonparametric equivalent of the t-test (Gibbons, 1993b). While the independent t-tests analysis is a parametric method used to assess if the difference in the means for the perceived meaning of one variable as defined in the literature and the actual as it animates on the ground; the Wilcoxon rank compares if the differences in distributions or proportions instead. In this case, the Wilcoxon rank-sum tests were performed to test the second hypothesis for the second objective (see Section 1.7.4 in Chapter 1) In the case where the level test significance value was greater than 0.05, I failed to reject the null hypothesis that there is no difference in the proportions. The main assumption was that if there was a difference between the distributions, it had implications for planning and managing spatially just street spaces since street users' experience on street spaces are different from their expectations.

4.9 Reliability and validity of the study

Before performing further inferential al statistics, data were subjected to validity and reliability tests. Cronbach's alpha was used to test for reliability and internal validity of the research instruments' variables to ensure they were dependable and steady (Cronbach, 1951; Al-shehri, 2012). Internal consistency reliability analysis estimates the internal consistency associated with the scores derived from the scale or composite score. Al-shehri (2012) posits that high values of Cronbach's alpha are desirable and signify the reliability of measures. All the Cronbach alpha value obtained was above 0.66, as illustrated in Table 4-5 below, which shows high-moderate reliability and is acceptable to make further statistical inferences (Shau, 2017).

Table 4-5: Cronbach alpha test

Average interitem covariance:	.0860169
Number of items in the scale:	34
Scale reliability coefficient:	0.6646

Source: Research survey (2019).

To ensure face validity, I sought experts' opinions from the Urban and Regional Planning Department at the University of Venda, as well as the spatial justice cohort

comprising subject experts from University of Venda, Witwatersrand University and the Durban University of Technology. The validity of content in the instruments was ensured by grounding my instruments in an extensive review of the literature on conceptual and key policy analysis.

For construct validity, triangulation of multiple data collection strategies and multiple sources of evidence, as well as use of different investigators in collecting data was imperative. Construct validity was also confirmed through performing Confirmatory Factor Analysis (CFA). Confirmatory Factor Analysis is a type of structural equation modelling whose emphasis is on theory and hypothesis testing (Brown, 2015:1).

In this study, I employed 1 factor CFA to measure the relationship between the latent variables or constructs of spatial justice, namely: safety, accessibility, legibility, variety and maintenance and management. Unlike in EFA, where the factors are not predetermined, I pre-specified all the factors in CFA. The fitness indexes of chi-square p-value, root mean squared error of approximation (RMSEA), and comparative fit index (CFI) were used for assessing the fit of the measurement model (Shau, 2017).

To accept the model, the chi-square p-value ought to be large (so that I fail to reject the null hypothesis), root mean squared error of approximation has to be very small and comparative fit index has to be close to 1. In making the diagnosis of the goodness of fit of the model, adjustments were made for covariance to achieve goodness of fit in some cases. Confirmatory Factor Analysis helped identify variables that have got covariance; however, these variables were not removed from the model because it is common for factors within the same section to be related since they describe one latent factor. Removal of a factor is recommended only when the model is not converging, and by removal of the variable, the model becomes significant (Brown, 2015). The paths diagrams in Appendix 34 depict the cases where adjustment for covariance was made. The results for the CFA are displayed in Table 4-6.

Table 4-6: Model measurement of study constructs through CFA

Model being tested	Index	Value	Model adjustment for covariance required	New index values after modification
Safety	chi-square	14.229	None	
	p > chi2	0.114		
	RMSEA	0		
	CFI	0.847		
Accessibility	chi-square	0.907	None	
	p > chi2	0.635		
	RMSEA	0		
	CFI	1		
Legibility	chi-square	13.252	Yes	7.089
	p > chi2	0.021		0.131
	RMSEA	0.057		0.039
	CFI	0.889		0.958
Variety	chi-square	278.803	Yes	18.298
	p > chi2	0		0.075
	RMSEA	0.161		0.036
	CFI	0.561		0.988
Maintenance and Management	chi-square	17.55	Yes	9.915
	p > chi2	0.041		0.271
	RMSEA	0.044		0.022
	CFI	0.826		0.956
Management of Street Traders	chi-square	36.974	Yes	5.402
	p > chi2	0		0.145
	RMSEA	0.113		0.04
	CFI	0.938		0.995

Source: Research survey (2019)

4.10 Ethical considerations

I began data collection in December of 2018 after obtaining the ethical clearance (see Appendix 4) in November of 2018 from the University. Written permission was sought and received from all the three local municipalities and the Vhembe district municipality (see Appendices 5-12). The principles of ethics employed include, informed consent, confidentiality and avoiding harm to do well. The researcher abided by the University of Venda Research and Innovation Policy' (Chapter 13) principles and the NRF requirements. The findings are pure representations of my view, not those of NRF, or the University of Venda as my primary funding agents.

I realised that my positionality as an insider or outsider came into play (Bourke, 2014). When I clarified that I was a local university student, it made my participants more comfortable and accommodative. At least five users from each town would ask whether I worked for the local municipality or a student. These participants further expressed that if I were a municipal worker, they would not entertain me. Thus, street space users embraced me as an insider when I introduced myself as a local university student. However, in some cases, when the participant preferred to explain further in Venda, the main native language in the three towns, I felt more like an outsider. I assumed multiple positionalities throughout this study. Overall, my position as a Black

African female researcher enabled me to connect well with street users who were all Black African. No rewards were given to participants, and the participants were informed that they were free to withdraw from the survey whenever they wanted.

4.11 Research limitations

In trying to meet my research aim of interrogating spatial justice on street spaces in SRTs, I encountered various challenges. In this section, I reflect upon some of these challenges, which are also the limitations of this study. However, these limitations also created opportunities within this study, and also for areas of further research. The second limitation was in terms of the use of the English language during the questionnaire surveys interviews with users. Although English is the official language of communication in Limpopo Province, Venda is the native language spoken in all the three towns. As a result, when a participant preferred to speak in Venda, I would always engage one of my Research Assistants to help with interpretation. The last challenge was the mobile nature of my participants. This meant that I could not make follow up questions. Therefore, I prioritised interviewer assisted methods except for a few cases when an interviewer insisted on self-enumeration.

4.12 Methodological summary of the data collection and data analysis procedures

A matrix was designed to simplify the linkage between my research objectives, their related key research questions, adopted data collection methods, data analysis methods and outcome of the findings from each method as illustrated in Table 4.7 below. This ensured that the concepts of spatial (in)justice and street spaces were not explored from a single lens, but various lenses from which these research concerns were problematised (Yin, 2003; Baxter and Jack, 2008). This gave a broader and deeper understanding of how and why things happen the way they do on street spaces of SRTs.

Table 4-7: Methodological summary of the data collection and data analysis procedures

Objective	Sub research questions	Data collection methods and tools	Data analysis	Outcomes
1. To characterise spatial justice from the socio-spatial qualities of street spaces in the case study towns.	How are the socio-spatial qualities of street spaces in SRTs distributed on street spaces in SRTs? What are the similarities and differences in the performance of these socio-spatial qualities on the street spaces in SRTs? What forms of spatial (in) justice do these reflect on the street spaces in SRTs? Why are there (in)justices? Where are the spatial (in)justice hotspots on street layouts in these towns?	Street space qualities design inventory, Observation, GPS points collection, Delphi technique	HCA, Thematic analysis GIS mapping	Variable clusters are showing similarities and differences of street spaces in small rural towns. Spatial representation of (in)justice through mapping the forms of (in)justices on street spaces.
2. To analyse spatial (in)justice from non-vehicular street space users' physical perceptions of street spaces qualities.	What is the level of satisfaction of street space users' with the various measures of spatial justice? What implications do the perceptions have on the users' disparate 'Right to the City' claims? Are differences in the perceptions dependent on the town or any social categorisation of users? Is there a significant difference between the perceptions of meaning and actual experiences of a variable?	Questionnaire, Delphi technique, Observation	Descriptive statistics Thematic analysis Wilcoxon rank sum test Kruskal Wallis equality of populations test	Users' perception on the case study street spaces. The level of significance between the perceptions of meaning and actual experiences of a variable?
3. To assess the implications of spatial (in)justice on street spaces flowing from opportunities and challenges of street design and management in the case study towns	What are the criteria by which street spaces are provided in the selected small rural towns? What are the opportunities and challenges of street planning and design as evaluated by policymakers and users? What are the opportunities and challenges of street management as evaluated by policymakers and users?	Delphi technique, Document review, Questionnaire	Descriptive statistics Thematic analysis	Comprehensive knowledge about the street production processes in the SRTs. Opportunities and challenges of the current street planning, design, and management policies, legislations, and procedures in providing spatial justice on spaces determined. Users' perceptions of Views from participants about their perceptions of the provisioning system.
4. To propose an improved framework of guiding principles for analysing spatial (in)justice on street spaces of small rural towns in South Africa, and elsewhere.	What conclusions and lessons can be drawn from the case study streets? How can street space' spatial justice be understood in SRTs? What improvements can be made on street spaces of small rural towns to enhance spatial justice? How can these improvements be evidenced?	Delphi technique, Street space qualities design inventory Questionnaire, Observation, Document review,	Thematic analysis Confirmatory factor analysis	An improved framework for street space spatial (in)justice analysis that is applicable in the SRTs and other South Africa and elsewhere with similar conditions

Source: Author's construct (2020)

4.13 Chapter summary

This chapter presented the overall research process. This study triangulated both qualitative and quantitative methods for data collection and analysis. Triangulation had the advantage of increasing data validity as conclusions are reached through various sources of evidence. The proceeding chapters present the findings and analysis of the empirical work.

CHAPTER 5 : SPATIAL (IN)JUSTICE FROM A STREET SPACE CONTENT PERSPECTIVE

5.1 Introduction

This chapter seeks to address my first research objective which is to characterise the attributes of spatial (in)justice from a street space content perspective in three SRTs. My main assumption is that fair and adequate distribution of spatially just variables or attributes on the street spaces translates to spatial justice, while the opposite translates to spatial injustice. The variables used to explain the spatial (in)justices flowing from the streets in SRTs' central business districts include (i)safety and security, (ii)accessibility and permeability, (iii) legibility (iv) robustness, and (v) maintenance and management. After this introduction, a brief overview of the methodology used to address this objective is given, followed by the third to seventh sections that discuss how each variable manifested on street spaces in each town and compares similarities and differences between street space clusters. The eighth section analyses all the spatial justice attributes on the street space content in the SRTs to get an overall picture of how spatial justice is animated on the SRTs' streets. The ninth section presents maps on spatial injustice hotspots and the tenth section is the chapter summary.

5.2 A methodological overview of the spatial (in)justice from street space content perspective

To meet the first research objective, this chapter only focuses on data gathered through street space design inventory exercises in all 43 street spaces of Thohoyandou, Musina and Louis Trichardt Towns and conversations with eight key experts. The separation of street space content and the street space user's context was done to understand one lens of spatial (in)justice at a time. Figure 5.1 shows the specific focus of this analysis chapter.

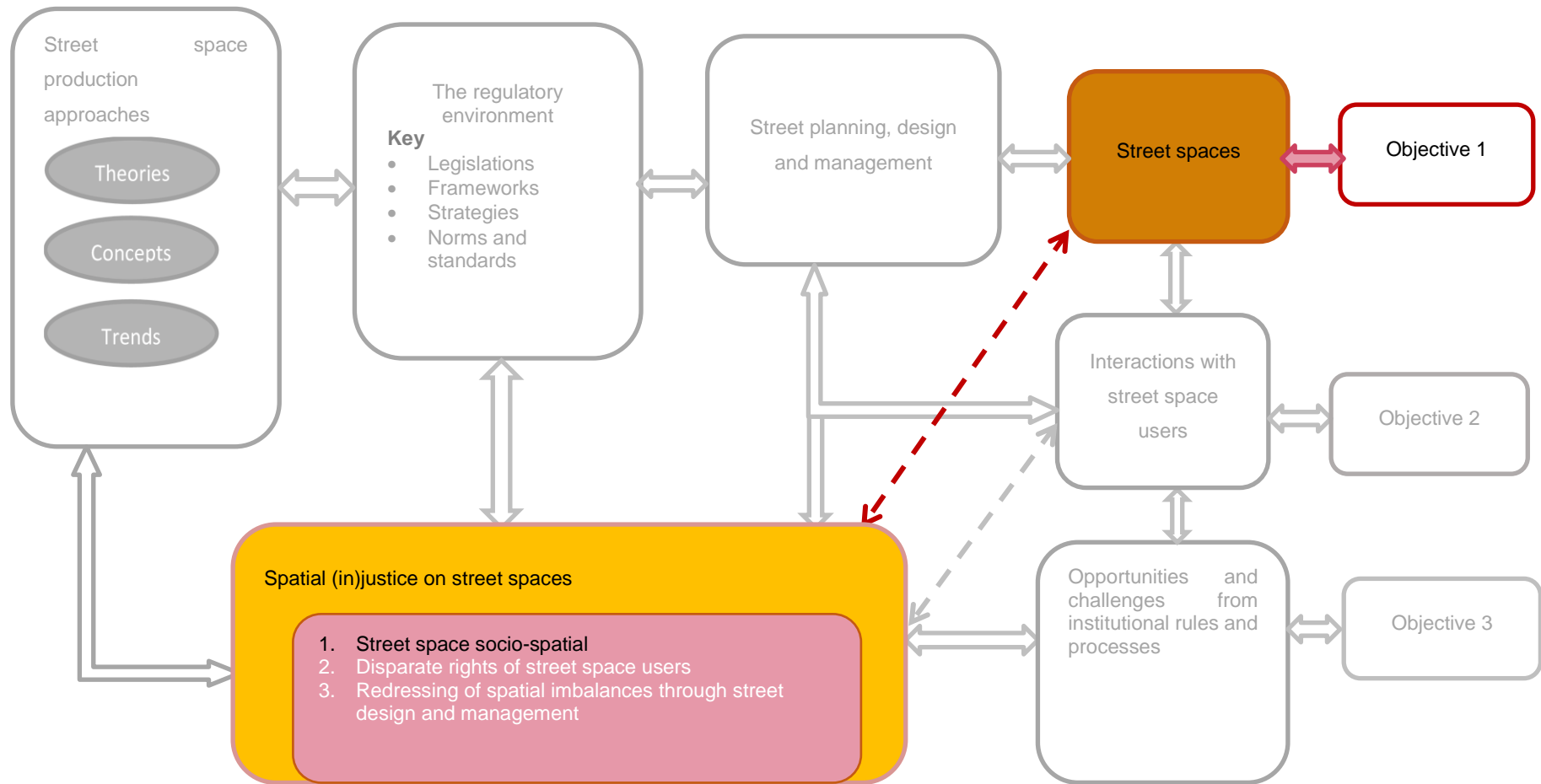


Figure 5-1: Framework for analysis of spatial (in)justice from the street space content dimension
Source: Author's construct (2020)

Views of experts were considered very important in this objective as these are the ones that are directly in charge of the design and management of street spaces in SRTs. These views are also elaborated in-depth in Chapter 7 where exploration is made on spatial (in)justice implications from opportunities and challenges of institutional processes of street design and management. The debates in this chapter also show how the distribution of a spatial quality translates to (in)justice to the end-users who experience these street spaces in the broader framework of the 'Right to the City'. These concerns are expanded further in Chapter 6.

Study findings are organised according to the interrelated five key variables identified in the introduction section. Radar charts (web diagrams) were used to depict how each indicator performed compared to other indicators measuring the same variable. Radar charts are highly recommended when comparing two or more indicators measuring one attribute (Commission for Architecture and the Built Environment (CABE), 2007). After presenting the generalised findings for each town, a comparison of similarities and differences between street spaces in the three SRTs is made through performing Hierarchical Cluster Analysis (HCA). Hierarchical Cluster Analysis determined the number of street clusters that each variable form on the SRTs so that street planning, design and management efforts are channelled toward street spaces with poor cluster performance. The results were interpreted using the standardised mean indicator values in the final cluster centres to determine each cluster's final ranks and the performance score for each cluster.

Maps of the emergent clusters are presented to show how the clusters can be visualised on street spaces in each town. As indicated in Section 3.4.5 of Chapter 3, street spaces in the SRTs have different functional tiers or hierarchy levels; however, HCA does not necessarily entail analysing findings according to these street tiers. The key leading theories in analysing this chapter are the Responsive Design Elements (Bentley et al. 1985) and Legible City (Lynch, 1965). The 'Right to the City' (Lefebvre, 1968) theory, Public Space Management Framework (De Magalhães and Carmona, 2008) and Spatial Planning Outcomes Model (Mashiri et al. 2017) also informed the analysis to a minimum extent.

5.3 Safety and security of street spaces in small rural towns

The key attribute of safety and security of street spaces in small rural towns was measured using indicators of (i) clearly marked street crossings for pedestrians, (ii) adequacy of street lighting, (iii) surveillance cameras, (iv) presence of police, (v) visibility of human activities from the street edge, and (vi) continuous movement of pedestrians. According to Jacobs (1961), street spaces with safety and security qualities characterise successful, just cities. The key findings on how each indicator performed compared to other indicators measuring safety and security using a rank of very poor to very high are discussed below.

5.3.1 Safety and security of street spaces in Thohoyandou Town

For Thohoyandou Town, the indicators which were evaluated reflected different quality performance measures. The qualities of police and surveillance cameras ranked very lowly for all (100%) of streets in Thohoyandou. A lack of these qualities reflects unsafe and insecure streets that translate to spatially unjust spaces. The observed quality of marked street crossings was poor for 52% of the street spaces in Thohoyandou town. Photograph 5-1 shows street injustices embedded in street spaces' safety and security as the crosswalk marks are no longer visible on the streets in Thohoyandou Town.

Photograph 5-1 reveals a pedestrian crossing on an unclearly marked crosswalk, which is an injustice showing lack of prioritisation of pedestrian safety needs. According to Kott (2011), clear crosswalk markings indicate planners' intent to accommodate pedestrians crossing the street, thereby creating a sense of safety amongst pedestrians. On the other hand, unclear crosswalk markings correspond to injustices.



Photograph 5-1: A street space with unclear crosswalks in Thohoyandou Town
Source: Research survey (2019)

Figure 5-2 illustrates the key findings on the quality performance measures for the various safety and security indicators on street spaces in Thohoyandou Town, which are discussed in this section.

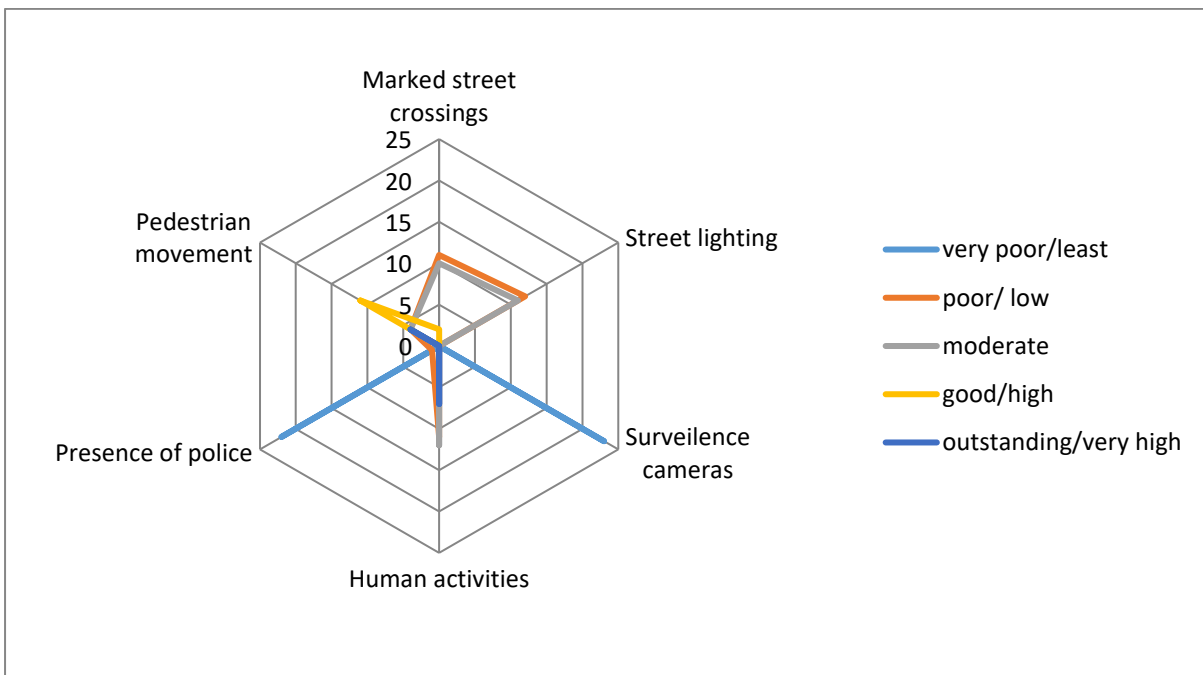


Figure 5-2: Quality of safety and security of street spaces in Thohoyandou CDB
Source: Author's construct (2019)

From Figure 5-2, the quality of performance for the indicators of continuous pedestrian movement and human activities were found to be moderate to outstanding in at least 73% of the street spaces in both cases. This shows that the street spaces are vibrant as such they are spatially just. However, spatial (in)justice is not only observable phenomena, but the views of the street space users are also important. The continuous movement of users on street spaces does not necessarily entail user satisfaction with the quality of safety and security as alluded by Williams (2018). Street lighting was poor in some lower-order streets while in provincial distributors which are higher-order streets (i.e., R523 and R524), it was moderate. This seems to show that municipalities prioritise street lighting maintenance in higher-order streets.

Often the qualities of safety and security are to a larger extent determined by a town's approach to street management. A change in the street management philosophy in the positive direction is also evidenced through the positive performance of safety and security indicators in a town (March et al. 2012, Hartman and Prytherch, 2015; Ekurhuleni municipality, 2017). The qualities of continuous pedestrian movement and human activities were outstanding in some street spaces in Thohoyandou. This town is an administrative town for the Vhembe District Municipality that attracts many street users, thus the continuous movement of pedestrians. Overall, Figure 5-2 shows street spaces in Thohoyandou town feature both justices and injustices.

5.3.2 Safety and security of street spaces in Musina Town

The observed results of safety and security quality of street spaces in Musina Town reveal that indicators of safe street crossings and surveillance cameras were very poor for over 90% of the street spaces. Photograph 5-2 below reveals a street intersection where there are no clearly marked pedestrian crossings.



Photograph 5-2: Crosswalk with no clear markings in Musina Town
Source: Research survey (2019).

From Photograph 5-2, the absence of a marked crossing reflects that more priority is given to vehicular transport than pedestrians. Figure 5-3 illustrates the key findings from Musina Town discussed above.

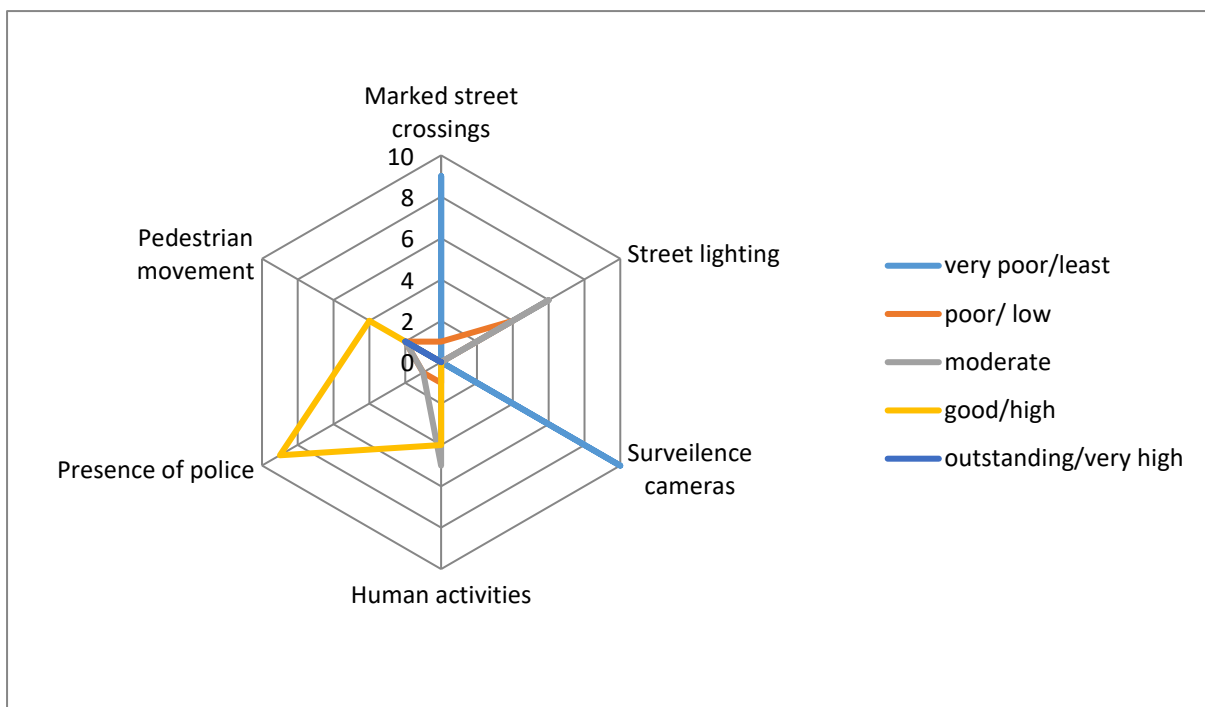


Figure 5-3: Quality of safety and security of street spaces in Musina CBD
Source: Author's construct (2019)

Figure 5-3 shows that both justices and injustices on safety and security indicators are prevalent on street spaces in Musina Town. Although N1 is a national road, it lacked surveillance cameras in the CBD which are considered an important safety mechanism. Nevertheless, the view that surveillance camera's offer security is contradictory amongst researchers and professionals (Fyfe and Bannister, 1998; Parida and Bivina, 2019).

Discussions with municipality officials from all three towns showed a bias against the importance of street cameras in ensuring overall street safety and security as they indicated that cameras are useful for private property shop owners who constantly monitor their property activities. As an alternative, the officials proposed more visibility of police in street spaces and more road markings as important safety measures. This shows the complexity involved in defining what a spatially just street space should entail in terms of safety and security. The visibility of police was high on all streets of Musina Town. This was attributed to national priorities on safety and security in border towns unlike in Thohoyandou and Louis Trichardt Towns.

Although the presence of police is an important indicator of safety and security that reflects spatial justice, Shaftoe (2008) believes that police presence may be intimidating for users, thus an injustice. Shaftoe (2008) proposes that municipalities should employ street ambassadors who patrol the street spaces, welcome and orient street space users as practised in Sheffield (U.K).

The visibility of human activities and the flow of pedestrians was also notably high in Musina Town. This is because Musina is a vibrant border town that attracts daily traders from neighbouring countries such as Zimbabwe and Mozambique (Musina Local Municipality, 2015). This reveals that even foreign nationals can claim the rights to access and use street spaces in this SRT.

5.3.3 Safety and security of street spaces in Louis Trichardt Town

In Louis Trichardt Town, the qualities of surveillance cameras and police presence were very low in 80% of the streets. The outcome for safety and security indicators for the observed streets in Louis Trichardt are presented in summary in Figure 5-4.

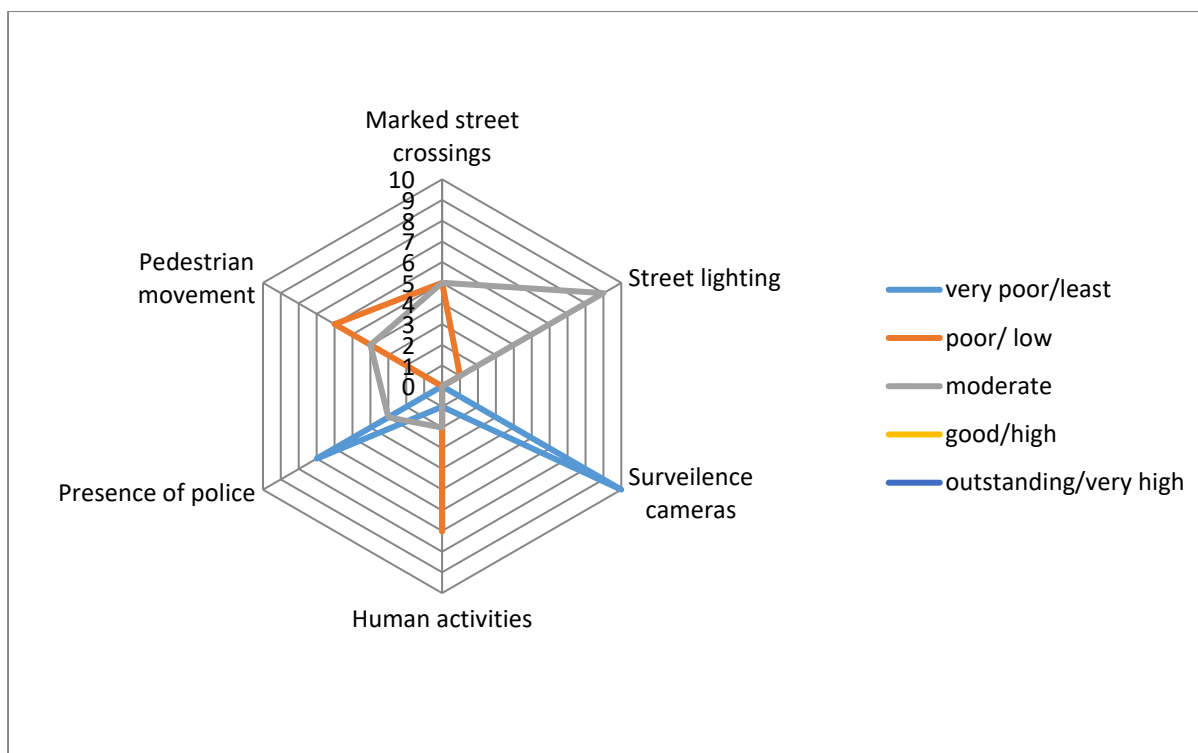


Figure 5-4: Quality of safety and security of street spaces in Louis Trichardt CBD
Source: Research survey (2019).

Figure 5-4 shows that street lighting indicators and clearly marked street crossings were visibly high in 70% of the streets in Louis Trichardt Town for both cases that reflect spatial justice. Pedestrian movement and human activities on street spaces were also observed to be low in Louis Trichardt Town compared to Thohoyandou and Musina Towns. Deliberations with an official from Makhado Local Municipality revealed that the town seemingly lacks the vibrancy capable of attracting human activities because of declining economic activities during the past decade. As a result, major companies relocate to towns such as Thohoyandou and Polokwane. However, the renovation of a new mall (Makhado Crossing) and proposals to establish a sub-campus for the University of South Africa in Louis Trichardt Town is likely to invigorate vibrancy through increased human activities. According to Moffat (2017), the university town concept is a critical driver of improved vibrancy in towns and cities. Photograph 5-3 below illustrates an example of a clearly marked street crossing along Krough Street in Louis Trichardt town.



Photograph 5-3: A clearly marked pedestrian crossway in Louis Trichardt Town
Source: Research survey (2019)

Photograph 5-3 show that the marking of pedestrian crossings is prioritised in this town compared to Thohoyandou and Musina towns. This is also attributable to the responsible local municipalities' street maintenance and management philosophies which result in differential outcomes in terms of spatial justice on safety and security outcomes. While some indicators of safety and security reflected spatial justice for all the three towns, contrastingly, in that same space, some indicators would reflect injustice (Massey, 2005). This shows the complexity of defining clear indicators of spatial justice on street spaces, which proves that spatial justice is a wicked problem that can only be fully tackled if it is understood from its multiple facets where the spaces, users and institutions are considered in defining these spaces.

5.3.4 Hierarchical clustering of safety and security on street spaces in the small rural towns

To understand the different types of clusters that emerge from evaluating the variable of safety and security, HCA was performed on all the 43 street spaces in the three towns. The dendrogram in Figure 5-5 illustrates the street space clusters in the three selected SRTs that were established from evaluating the safety and security variables.

Figure 5-5 displays three clusters that emerged from HCA (also see Appendix 34). The clusters shown in Figure 5-5 can also be visualised in the form of maps. The maps illustrated in the consecutive Figures 5-6, 5-7 and 5-8 show the emergent street space clusters performance in terms of the quality of safety and security in Thohoyandou, Musina and Louis Trichardt Towns, respectively.

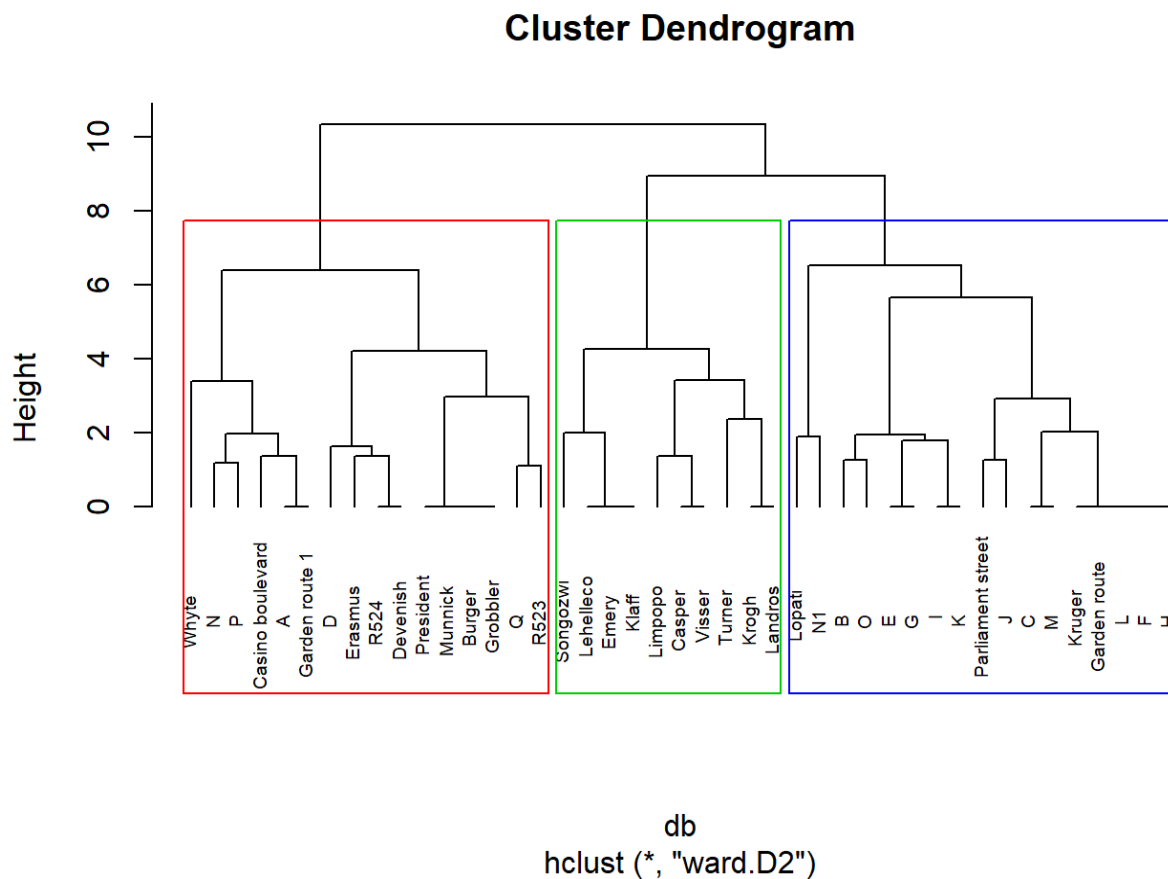


Figure 5-5: Safety and security street space cluster membership
Source: Author's construct (2020)



Figure 5-6: Two safety and security clusters in Thohoyandou Town
Source: Author's construct (2020)

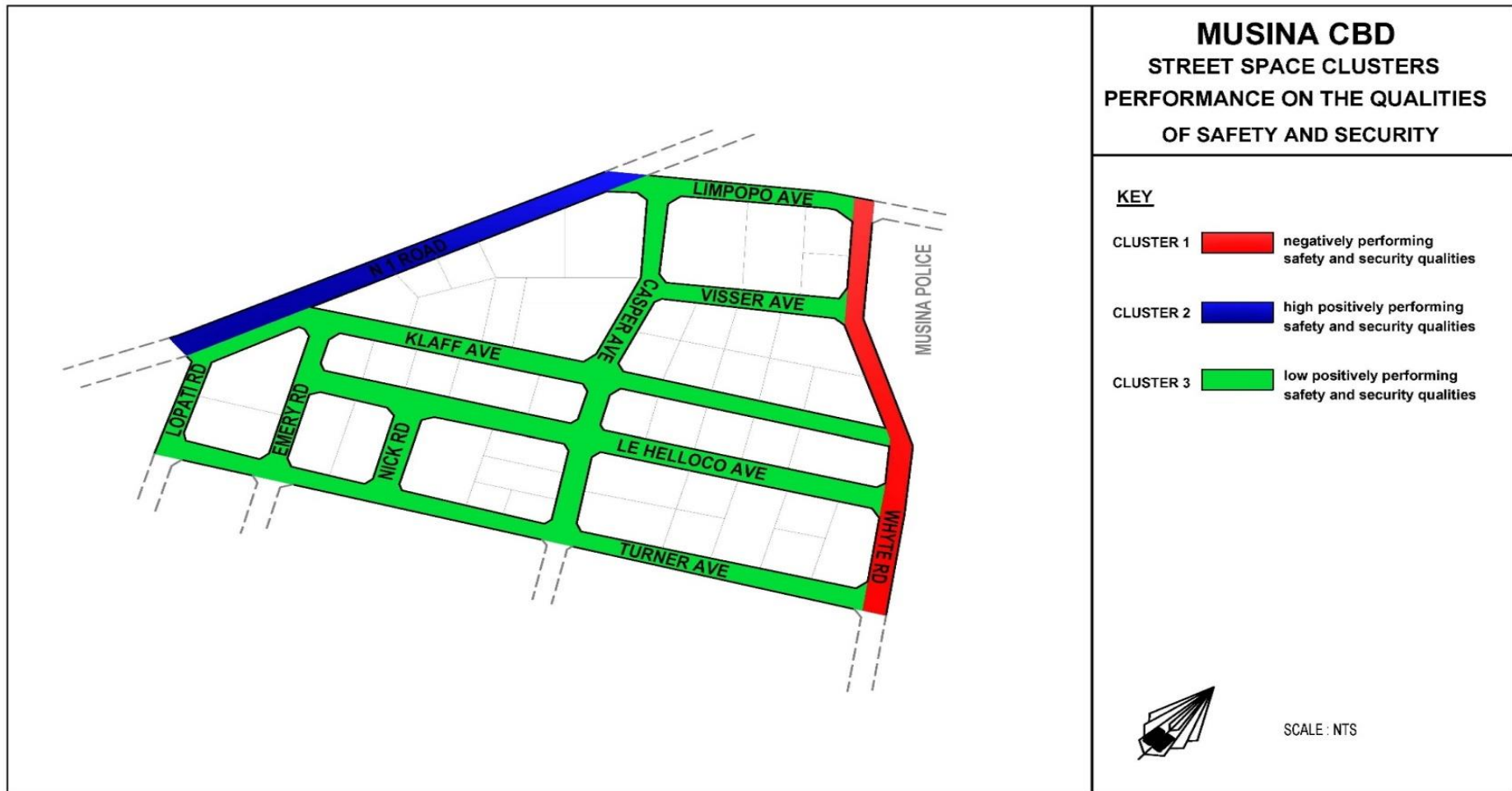


Figure 5-7: Three safety and security clusters in Musina Town
 Source: Author's construct (2020)

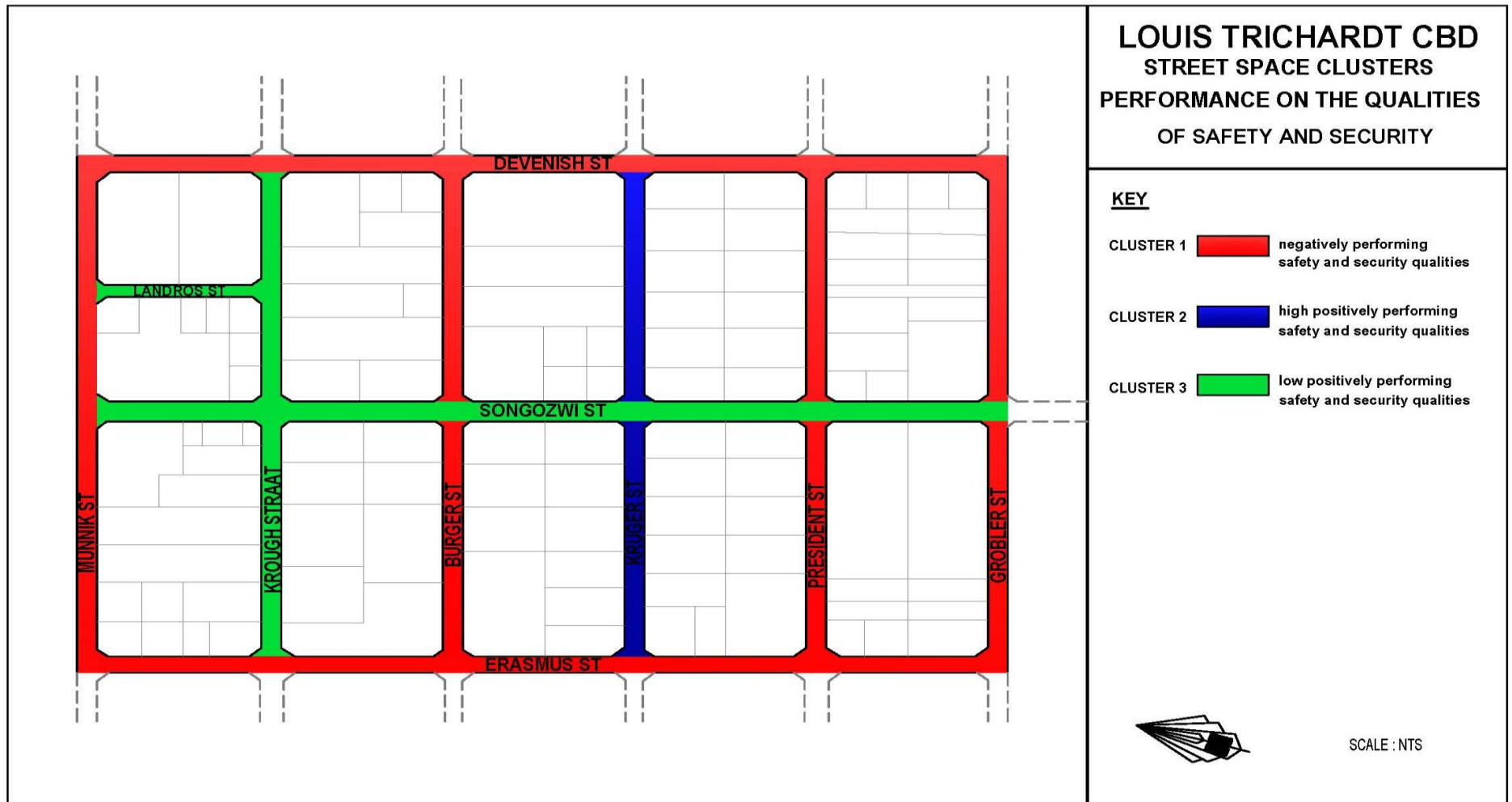


Figure 5-8: Three safety and security clusters in Louis Trichardt Town
 Source: Author's construct (2020)

The study computed standardised mean z-scores for each indicator on each cluster type, to get a clearer understanding of each cluster's performance measurement scores. The results are displayed in Table 5-1 below.

Table 5-1: Street spaces cluster means for safety and security

Variables	Cluster		
	Cluster 1	Cluster 2	Cluster 3
Street crossing	0.506308	0.19061	-1.13413
Street lighting	0.04943	0.103378	-0.09666
Visibility of other human activities	-0.76431	0.696562	0.038734
Presence of police within visibility	-0.53093	-0.40884	1.544518
Continuous movement of pedestrians	-0.98348	0.793398	0.224796
Averages	-0.36437	0.275021	0.115452
Rank	3	1	2

Source: Research survey (2019)

From the ranking of clusters above, Cluster 1 is the negatively performing cluster ($z = -0.3643$). Cluster 1 is comprised of 40% of street spaces from Thohoyandou Town, 10% of the street spaces from Musina Town and 60% of the street spaces from Louis Trichardt Town (See Appendix 32). Cluster 3 has low positive performance ($z = 0.1155$), it is comprised of 60% of the streets from Thohoyandou, 20% from Musina and 10% from Louis Trichardt towns. Cluster 2 has a high positive performance ($z = 0.2750$) and the best performing of the three emergent clusters. Cluster 3 has seventy percent the street spaces from Musina and 30% from Louis Trichardt and no streets from Thohoyandou Town. Cluster 1 is dominated by street spaces from Louis Trichardt Town and is composed of street spaces with clearly marked street crossings with a high score of 0.5063 compared to Cluster 2 which has 0.1906 and Cluster 3 which has got the least score of -1.1341. The indicator of street lighting is positive in this cluster; however, it is lower than Clusters 2 and 3. Negative values characterise

all other indicators in Cluster 1. These qualities translate to street space spatial injustice.

In Cluster 2, the indicators of street lighting, visibility of other human activities and continuous movement have a positive mean score which shows spatial justice, while the presence of police is lacking ($z=-0.40884$). The presence of police is highest in Cluster 3 with a mean score of (1.5445). Street spaces from Thohoyandou Town dominate Cluster 2 and those from Musina Town dominate Cluster 3. Although Cluster 3 has an overall positive mean score ($z=0.1155$), it is lower in comparison to Cluster 2. The indicators of street crossing ($z=-1.13413$) and street lighting ($z= -0.09666$) have negative mean scores in this cluster.

There is a need for improvement of negatively performing qualities of safety and security of street spaces to upscale the justices and reduce the injustices, with particular focus on street spaces in Cluster 1 to make the streets more just in terms of safety and security. The safety and security attribute in Louis Trichardt Town needs more improvement in the visibility of other human activities and police presence than Musina and Thohoyandou Towns. While a street space can perform positively in one indicator of safety, it may negatively affect another indicator. This confirms Erdiaw-Kwasie and Basson (2018) view that no geography is completely even. Therefore, streets should reflect more positively performing indicators of safety and security.

5.4 Permeability and accessibility of street spaces small rural towns

In the context of the study, permeability and accessibility were measured using the indicators of (i) street block sizes, (ii) the presence of ramp suitable for people with walking disabilities at street crossings, (iii) alignment of crosswalks with pedestrian routes, (iv) interference of parking with sidewalks other street uses, (v) ease of access from the street to nearby public transportation termini, (vi) width of sidewalks to accommodate pedestrians, (vii) width of sidewalks to accommodate cycling lane, (viii) the presence of cycling lanes, (ix) street openness or barrier-free, and (x) connectivity of the street with other public spaces. Permeability and accessibility are key variables of spatial justice. Often a permeable street is an easily accessible space. Thus, permeability and accessibility determine the choice of where people can and cannot go. Permeable street spaces are more spatially just in comparison to impermeable

street spaces which infringe on the street users' right of access to the city (Lynch, 1984; Bentley et al. 1985). The following discussions highlight the results obtained from observing the quality of permeability and accessibility of street spaces in the three SRTs that translate to (in)justices.

5.4.1 Permeability and accessibility of street spaces in Thohoyandou Town

All the streets in the central business district (CBD) of Thohoyandou were found to have permeable block lengths of less than 200m (DOH, 2000). In some cases, some block sizes were less than 100m, for example along Parliament Street. Although permeable street spaces are considered accessible spaces, observation of street spaces in Thohoyandou Town shows that permeability does not necessarily entail ease of accessing a place. There are some hindrances to accessibility that were observed along some street in this town. These hindrances are identified by Varna (2014) as thresholds and gateway barriers.

Photograph 5-4 illustrates threshold barrier demonstrated in Thohoyandou Town.



Photograph 5-4: An unpaved sidewalk in Thohoyandou Town
Source: Research survey (2019)

Photograph 5-4 shows an unpaved sidewalk along R524 - a higher-order road (provincial distributor). Although the street adjuncts the largest shopping mall in Thohoyandou Town (Thavhani Mall), it has got unpaved sidewalks that create accessibility barriers even for the pedestrians without any physical disabilities especially during rainy seasons where the clay soils become sticky. Other streets such as Parliament Street, Casino Boulevard in Thohoyandou Town are examples of some streets with threshold barriers to accessibility that affect smoothness and ease of mobility, particularly for wheelchair users. This results in spatial injustice on these streets.

The presence of fences along sidewalks is another barrier to accessibility which was observed along Parliament Street, one of the busiest streets in this town. Photograph 5-5 shows an example of street fences that are found along street spaces in Thohoyandou Town.



Photograph 5-5: Sidewalk fences in Thohoyandou Town
Source: Research Survey (2019)

Photograph 5-5 is an example of gateway barriers described by Varna (2014). The palisade fences make the sidewalk space very narrow. Narrow sidewalks cannot

accommodate a wide range of pedestrian activities such as seating furniture and recreation activities. The narrow sidewalks also cannot accommodate more users at the same time. Instead, they control and channel the direction of users' movement. As a result, the users' right to access the city is infringed upon.

Forty-three percent of the street spaces in Thohoyandou Town had narrow sidewalk widths which were in some cases less than the recommended minimum standard of 1.2 metres as set by the DOT 2016, National Technical Requirements. A Thulamela Local Municipality official revealed that, "*following the urban regeneration programme, the local municipality is trying to improve the overall street space outlook of Thohoyandou Town through widening the street spaces to accommodate vehicular traffic, however, the major challenges are lack of space for further expansion and capital*". The statement shows that funding is a pre-requisite of successful urban revitalisation programs as asserted by Karssenberget al. (2016).

Photograph 5-5 also shows the infiltration of privatisation of public spaces (Bonilla, 2012). Privatisation of public spaces through fencing as illustrated in Photograph 5-5 demonstrates local municipalities' inherent biases towards securitisation needs of private property owners at the expense of the non-vehicular street space users who consider sidewalks as public places to be enjoyed (Ehrenfeucht and Loukaitou-Sideris, 2010).

Figure 5-9 illustrates the key findings from the observations of the quality of permeability and accessibility of street spaces from Thohoyandou Town. Fifteen out of twenty-three of the observed street spaces in Thohoyandou Town had no provision of ramps for easy access for people with physical disabilities, thus reflecting an injustice in terms of accessibility. Crosswalk alignment with other pedestrian routes was poor for 87% of the street spaces, while demarcation of sidewalk spaces was also poor for at least 73% of the streets.

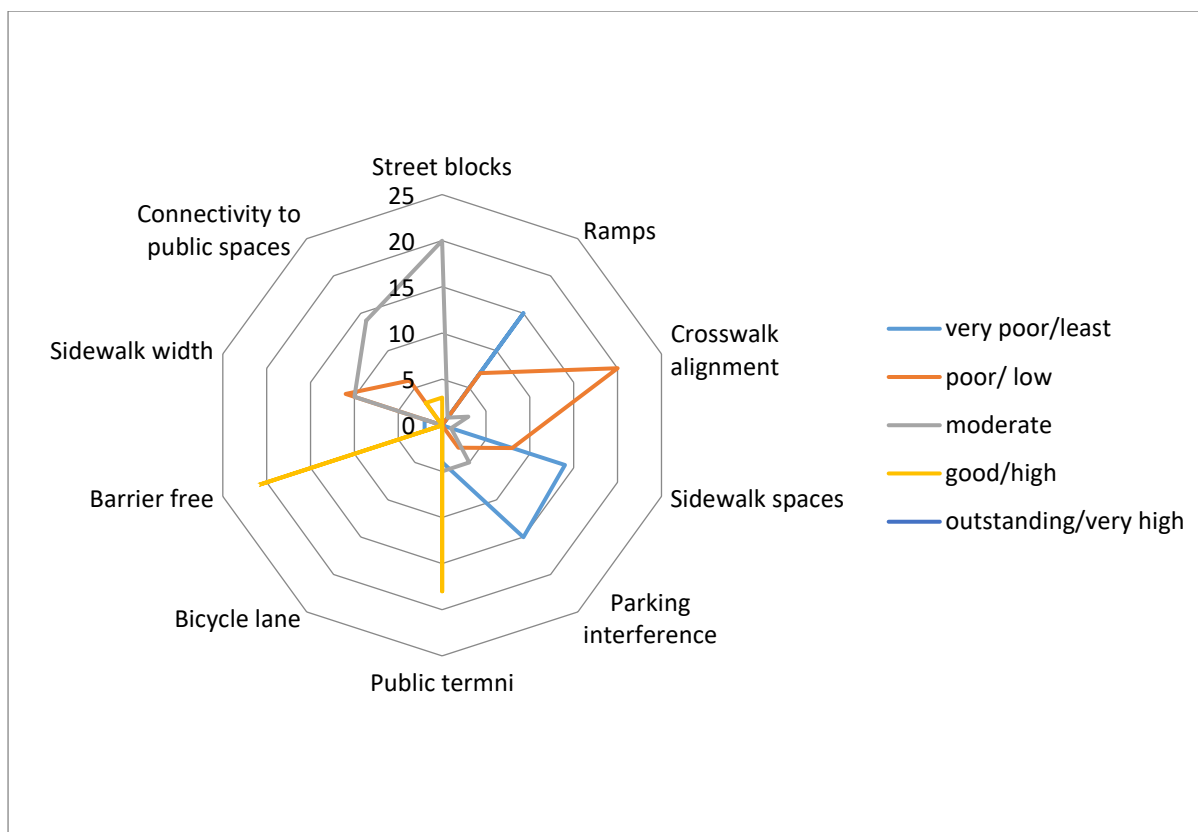


Figure 5-9: Quality of permeability and accessibility of street spaces in Thohoyandou CBD
Source: Author's construct (2020)

From Figure 5-9, the lack of clear distinctions on uses of sidewalk spaces results in interference of other activities which may conflict with accessibility needs of non-vehicular users, resulting in unjust spaces (Bentley et al. 1985). The indicator of non-interference of parking with sidewalks was poor in 65% of the streets. The Thulamela Local Municipality official attributed the parking interference with sidewalks to inadequate parking space in the CBD. Thus, spatial injustices emerge when parking needs interfere with non-vehicular users' accessibility needs.

In some cities such as Southampton (in the United Kingdom) boulevards are designed to cater for different modes of transport including pedestrians, bicycles, buses and private vehicles (Southampton City Council, 2015). This was not the case along Casino Boulevard in Thohoyandou Town, whose design lacks pedestrian walkways and cycling lanes. The indicator of connectivity with other public spaces such as taxi rank, the mall and parks was good for most streets. Connectivity to other public spaces is a form of spatial justice as it links users to other spaces. It offers more user convenience and the right to be in a place (NACTO, 2014).

5.4.2 Permeability and accessibility of street spaces in Musina Town

In Musina Town, the indicator of street blocks as a measure of permeability and accessibility shows that all the street spaces had permeable block lengths of less than 200m except for N1. N1 has a long continuous block length on one side which makes it impermeable. Figure 5-10 shows the key findings on the quality of permeability and accessibility in Musina Town.

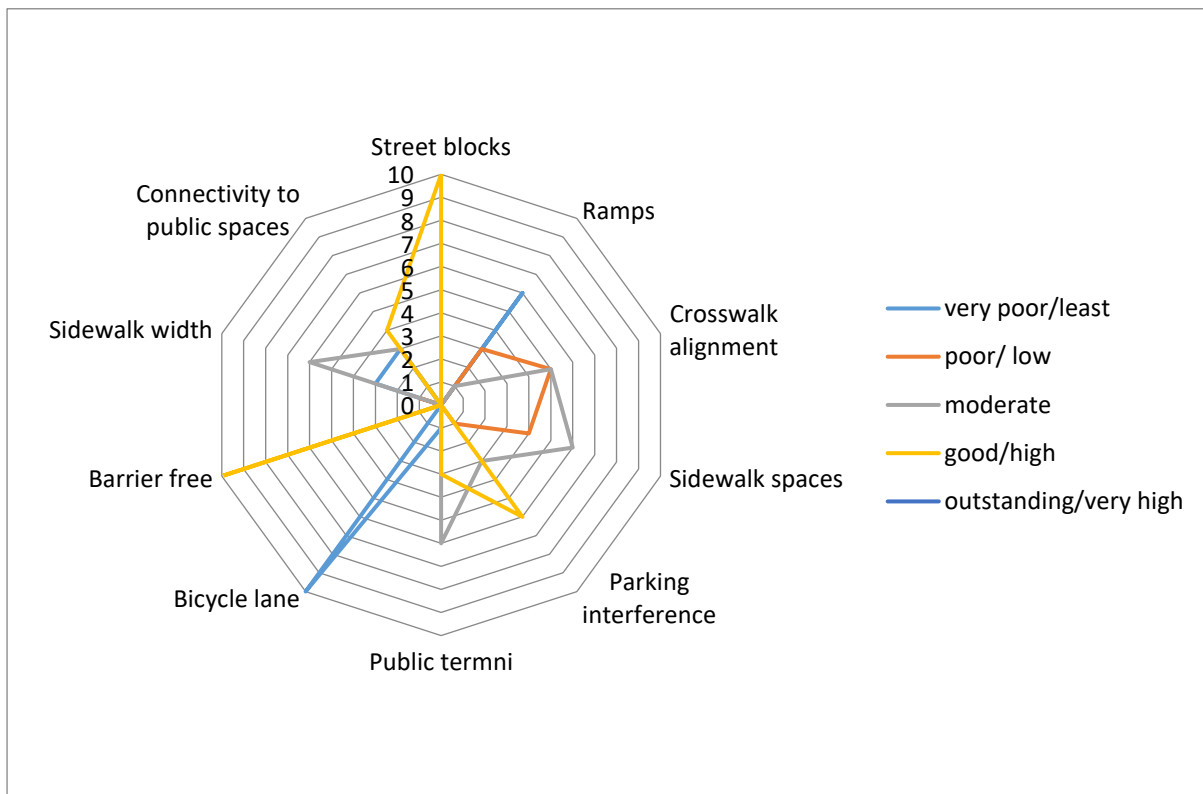


Figure 5-10: Quality of permeability and accessibility of street spaces in Musina CBD
Source: Author's construct (2020)

Figure 5-10, 60% of the streets had no ramps, while the remaining 40% of the street spaces had few ramps. According to Varna (2014), the absence of ramps presents an accessibility challenge for the physically disabled, which is an injustice. While some qualities reflected very poorly on some spaces, in other cases, the qualities were moderate. For at least 50% of the streets, the indicators of parking interference with sidewalks and crosswalk alignment with other routes were very poor. This also signals injustice for pedestrians as parking interference with sidewalks reveals competition for space amongst various street uses. This results in the infringement of accessibility needs of non-vehicular users. The demarcation between public and private space along the sidewalks was poor in 60% of the streets, although there were clear demarcations in the remaining 40%. This means that in the case where private space

is not clearly demarcated; there are more conflicts between private and public uses of space, resulting in spatial injustices, while clear demarcation reflects spatial justice (Shrestha, 2011). Figure 5-9 shows that 90% of the streets could easily access a public transportation terminus, reflecting spatial justice. Fifty percent of streets had sidewalks widths greater than the minimum standard of 1.2m from the DOT, 2016 guidelines. Wide sidewalks demonstrate justice in the sense that they can accommodate more uses. Although half of the sidewalks in Musina town had adequate space for pedestrians, in some cases this space was used by business owners to display their shop ware. The obstructions on space through shop ware displays are a clear violation of spatial justice as it reduces travel time for people as they try to navigate space. This causes inconvenience, and in some cases, delays for meetings (Lynch, 1960; Varna, 2014). Another form of accessibility hindrance observed in Musina Town is the obstruction on sidewalk spaces by overgrown trees. This is illustrated in Photograph 5-6 below.



Photograph 5-6: A tree blocking a sidewalk in Musina town
Source: Research survey (2019)

Photograph 5-6 shows an accessibility injustice as the tree roots cover the sidewalk space. This is a form of spatial injustice as it affects smooth mobility for users.

5.4.3 Permeability and accessibility of street spaces in Louis Trichardt town

In Louis Trichardt Town, all streets have block lengths within the recommended 200m (Department of Housing, 2000). There was no interference of parking with sidewalks in 90% of the streets, which shows that there is less conflict for space between vehicular and non-vehicular users. Ninety percent of the streets had no ramps, while only 10% had ramps, and this is an injustice as it limits the choice of routes for physically disabled users. In some cases, the edges of a sidewalk where a ramp was supposed to be, were damaged. This hinders accessibility and reflects spatial injustice. Photograph 5-7 illustrates a case of a damaged ramp located on a street edge along Songozwi Street.



Photograph 5-7: Accessibility challenge for street space in Louis Trichardt Town
Source: Research survey (2019)

The case of a damaged sidewalk edge in Photograph 5-7 causes obstructions to smooth movement, particularly for wheelchair users. This presents a threshold barrier to accessibility which is an injustice (Varna, 2014).

It was found that crosswalks were in alignment with pedestrian routes along 50% of the street spaces. This reflects spatial justice in that pedestrian needs are considered in the design. Sixty percent of the streets had clear demarcations between public and private spaces along the sidewalks. Notes from the observations reveal that features such as utilities (street lighting and bins) were situated on the verges in most cases marked by street trees. The single public transport terminus was accessible from all street spaces as it was within the recommended walking distance of 1.2kms (DHS, 2019). Figure 5-11 illustrates the major findings from the observations made on street spaces in Louis Trichardt Town.

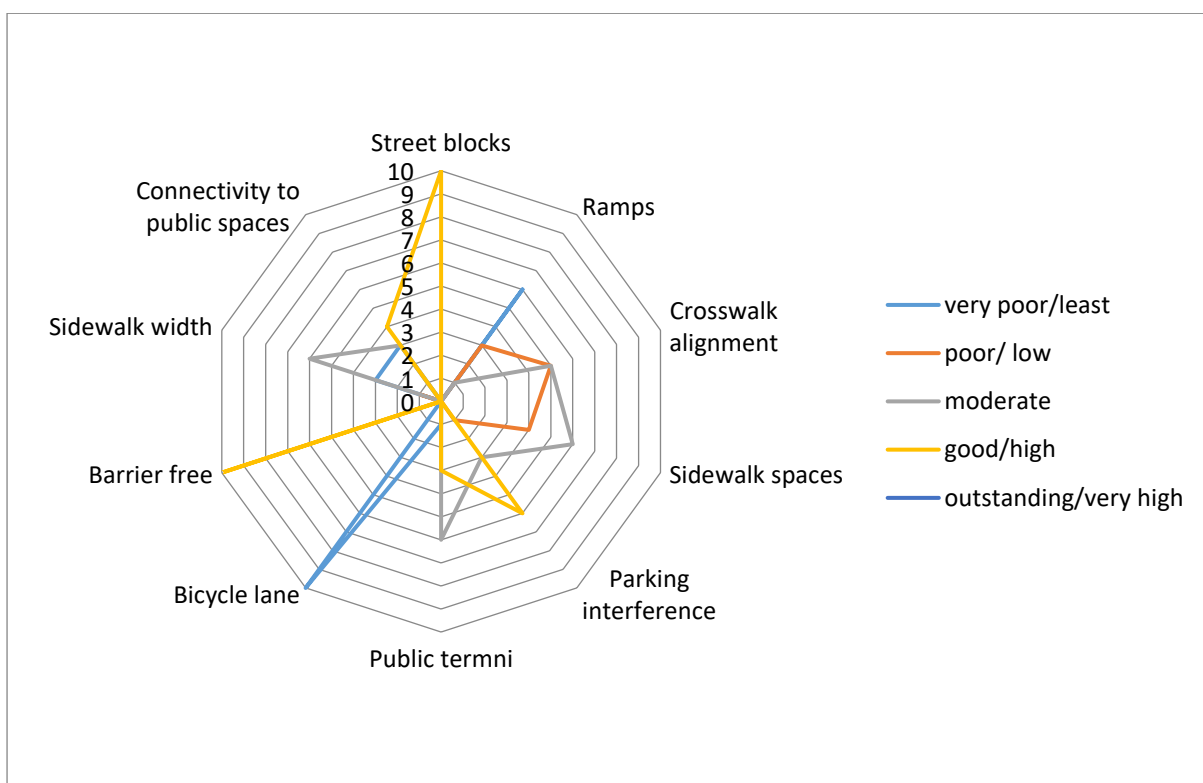


Figure 5-11: Quality of permeability and accessibility of street spaces in Louis Trichardt CBD
Source: Author's construct (2020)

The majority of the street spaces (70%) connect to other major public spaces such as the park, library, municipality offices, taxi rank and police station. Connectivity to other public spaces enhances the quality of accessibility (Varna, 2014). The sidewalks in all the street spaces are designed wide enough for pedestrians (greater than the minimum standard of 1.2m). However, no dedicated bicycle lanes in all the streets were observed.

In summary, findings from the selected three small rural towns demonstrate that spatial injustice could be a colonial construct perpetuated over time. For example, the different historical background of Louis Trichardt being a former white colonial town was guided by the standards from the town planning scheme. However, the former homelands such as Thohoyandou Town were not privy to such standards (van Wyk, 2012; Baffi et al. 2018). The findings from all the towns also demonstrate that spatial (in)justices are inherent in street spaces' design. Figure 5-12 presents an example of a model of accessible street space. The model street space presented in Figure 5-12, reflects an accessible street space, with clearly marked crosswalks aligned to pedestrian routes, wide sidewalks which are also barrier-free and ramps at street crossings and routes for ease mobility of users with walking disabilities.

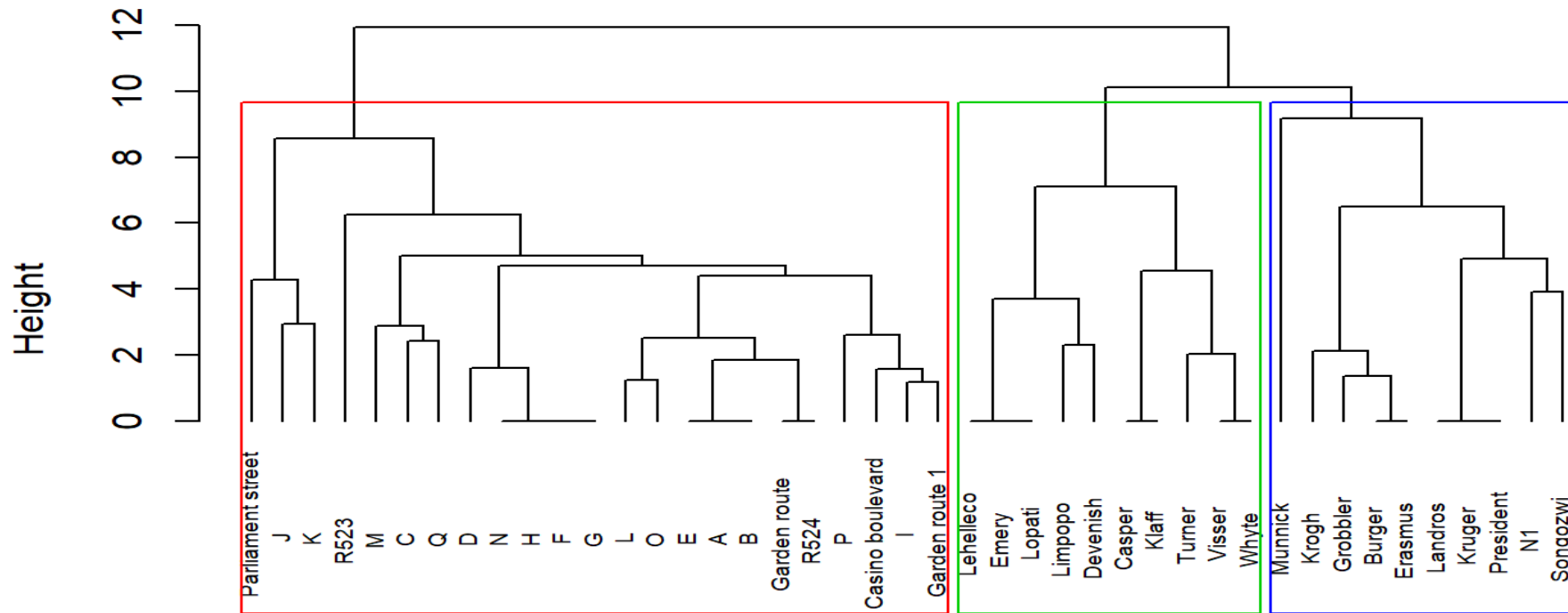


Figure 5-12: An example of a model of an accessible street space
Source: Author's construct (2020)

5.4.4 Clustering of permeability and accessibility of street spaces in the small rural towns

The dendrogram shown in Figure 5-13 below highlights the three main clusters identified from performing HCA on the quality of variable of permeability and accessibility. The clusters portrayed in Figure 5-13 can be categorised per each town and are presented as street space cluster maps as illustrated consecutively in Figures 5-14, 5-15 and 5-16.

Cluster Dendrogram



dc
 hclust (*, "ward.D2")

Figure 5-13: Street space clusters membership for permeability and accessibility
 Source: Author's construct (2020)

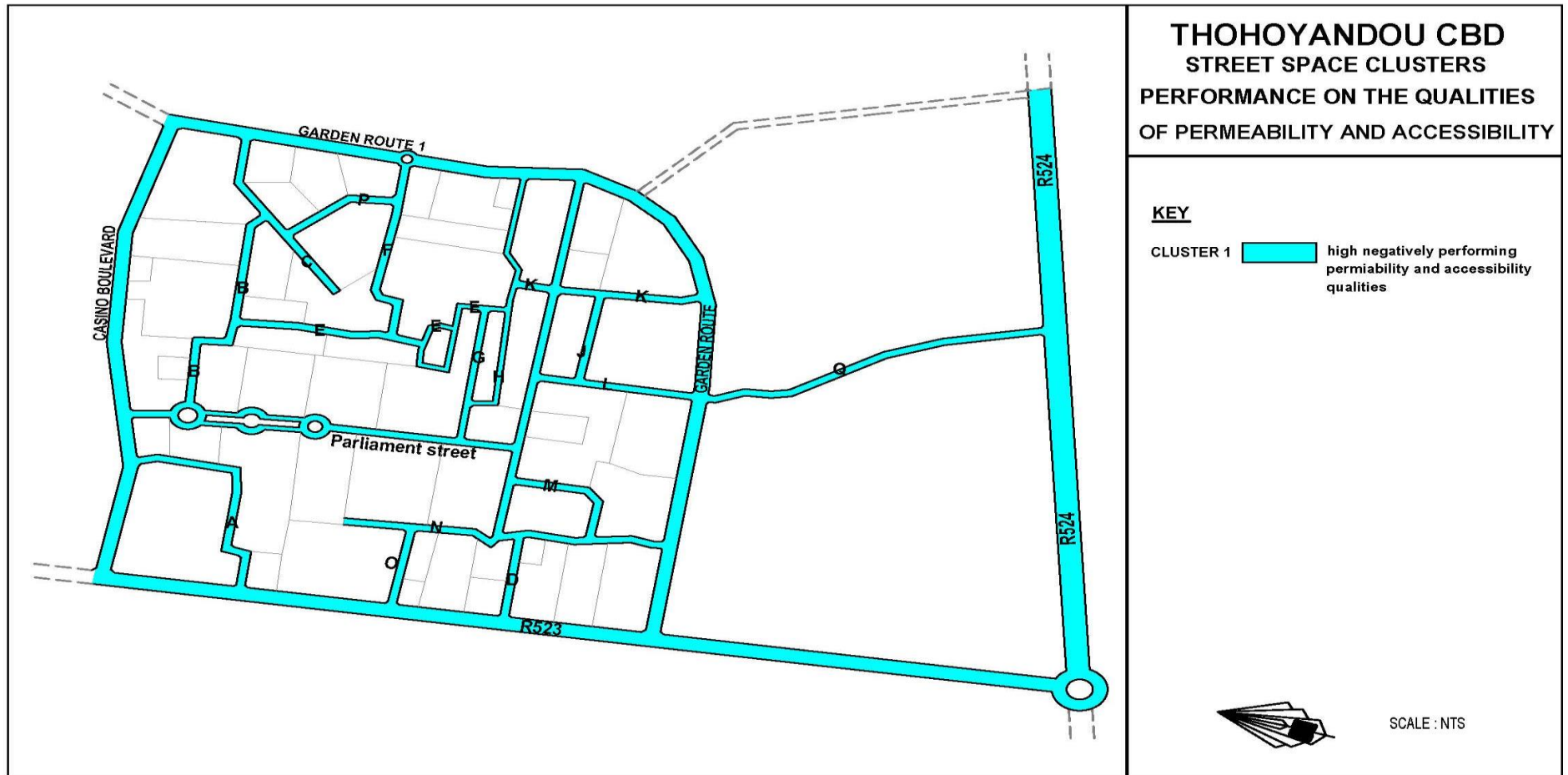


Figure 5-14: Single cluster of permeability accessibility qualities in Thohoyandou CBD
Source: Author's construct (2020)

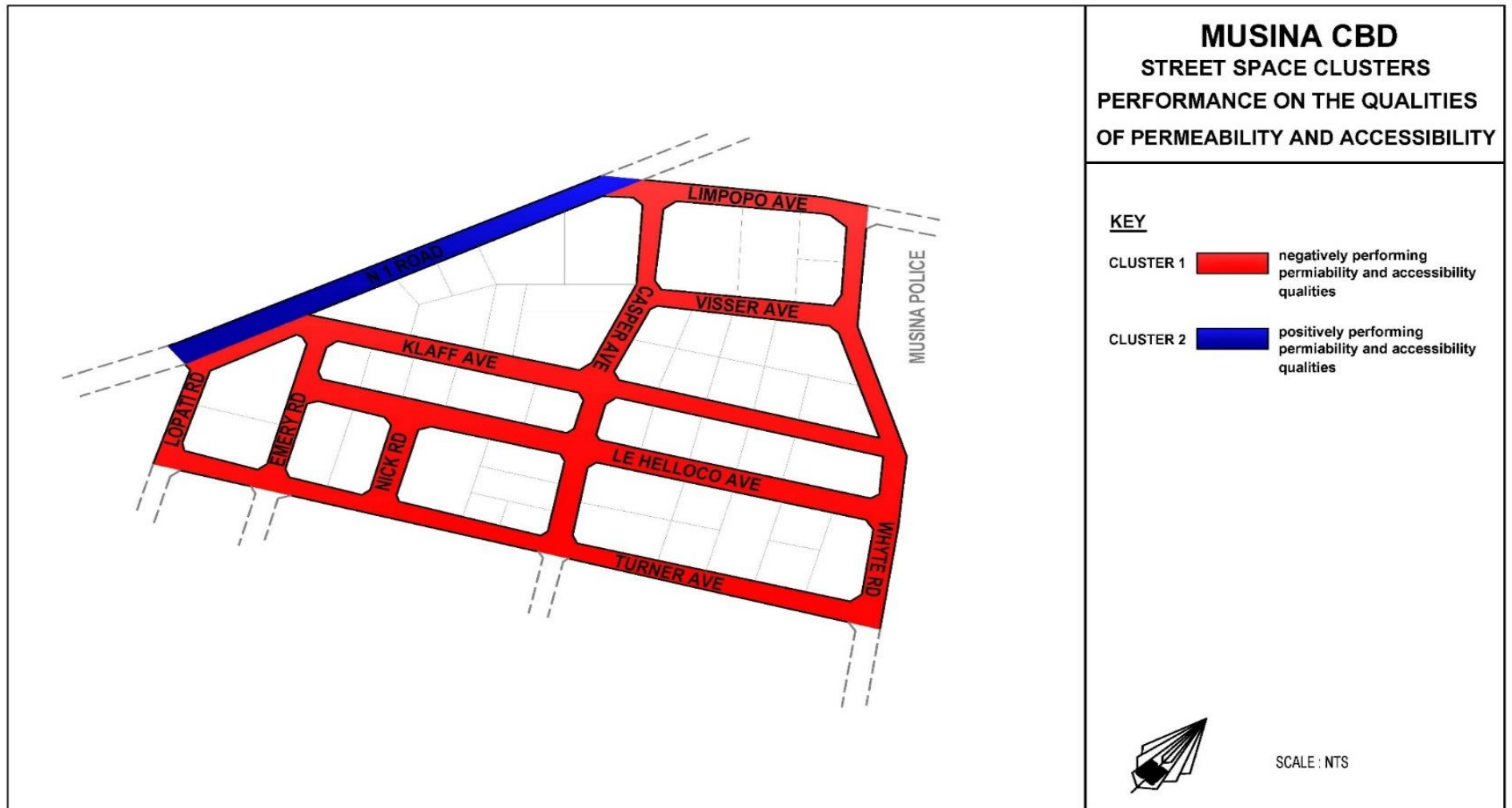


Figure 5-15: Two clusters of permeability and accessibility qualities in Musina CBD
Source: Author's construct (2020)

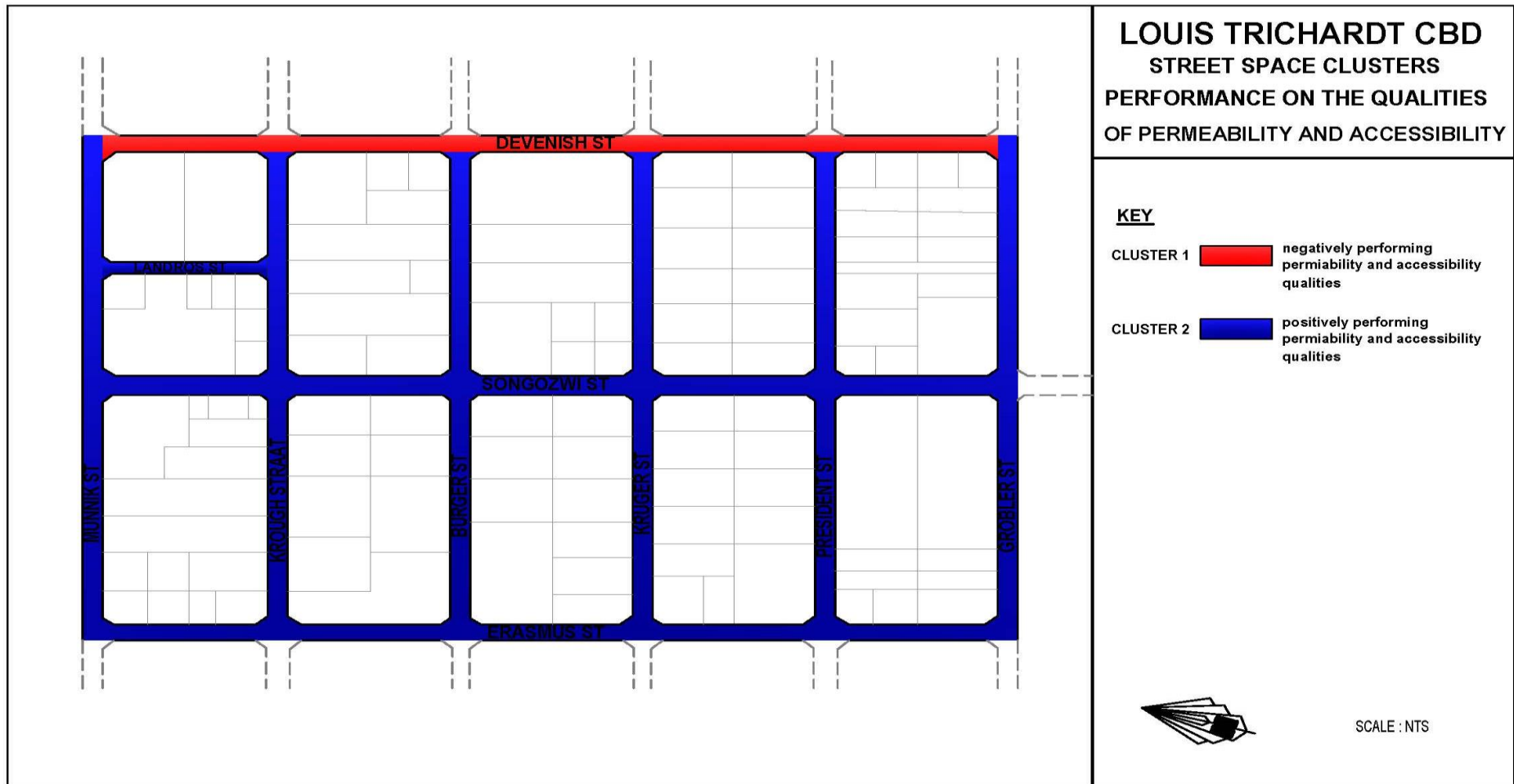


Figure 5-16: Two clusters of permeability and accessibility qualities in Louis Trichardt CBD
 Source: Author's construct (2020).

Further insight into each cluster's specific characteristics was measured by computing the standardised mean z- scores for the variable indicators. The results are shown illustrated in Table 5-2 as follows.

Table 5-2: Street spaces cluster means for permeability and accessibility

Variables	Cluster		
	Cluster 1	Cluster 2	Cluster 3
Ramps	0.275161	-0.1525	-0.48037
Street blocks	0.039321	-0.04522	-0.04522
Crosswalk alignment with pedestrian routes	0.199242	-1.37477	0.916515
Demarcation of sidewalk spaces	-0.48108	0.809049	0.297445
Interference of parking	0.074118	-0.55816	0.387684
Ease of access to a nearby termini	0.152499	0.152499	-0.50325
Barrier-free	-0.75362	0.866663	0.866663
Sidewalks wide enough for pedestrians	-0.68941	0.237991	1.347659
Connectivity with other public spaces/nodes	0.130963	-0.87017	0.568959
Averages	-0.11698	-0.10385	0.372899
Rank	3	2	1

Source: Author's construct (2020)

Cluster 1 is the least performing cluster ($z=-0.11698$) and is constitutive of all street spaces in Thohoyandou Town only, while 90% of the street spaces from Musina Town and 10% of street spaces from Louis Trichardt Town are in Cluster 2 which is also negatively performing but better than Cluster 1 streets. Cluster 3 ranks first, and its indicators are performing better than Cluster 1 and 2. Cluster 3 comprises 90% of street spaces from Louis Trichardt Town and 10% of street spaces in Musina Town. The street spaces in Cluster 1 are characterised by the poor demarcation of sidewalk spaces, barrier-free spaces, and the adequacy of sidewalk width for pedestrians. A lack of these attributes results in impermeable spaces which are spatially unjust.

However, ease of access to public termini ($z=0.1525$) and connectivity with other public spaces ($z=0.131$) are positive in Cluster 1.

Street spaces in Cluster 2 are performing highly in the demarcation of sidewalks and barrier-free spaces. Street spaces in Cluster 3 have attributes that were better in comparison to other clusters in terms of crosswalk alignment with pedestrian routes ($z=0.9165$); barrier-free spaces ($z=0.86667$); wideness of sidewalks for pedestrians ($z=1.3477$); and connectivity with other public spaces/nodes (0.569). Barrier-free spaces are more permeable than those which are not. In terms of ranking, street spaces in Cluster 3 have attributes that are better performing ($z=0.372899$), followed by Cluster 2 ($z = -0.10385$), and lastly Cluster 1 ($z = -0.11698$). Although Cluster 2 seems to perform better than Cluster 1, both clusters are poorly performing in terms of safety and security. This is reflected by the negative z-means score of -0.1170 and -0.1039 , respectively. The street layout pattern of Thohoyandou Town discourages permeability unlike the grid layout pattern found in Louis Trichardt Town. The overall findings show that street spaces in Louis Trichardt Town were more permeable in comparison to Thohoyandou and Musina Towns.

5.5 Legibility of street spaces in small rural towns

Legibility as the third variable of street space spatial justice in the 3 SRTs was assessed using the qualities of (i) connectivity of the street to landmarks and nodes which create activity throughout the street, (ii) availability of street signage, (iii) availability of other wayfinding features, (iv) design which captures the cultural identities of the local community, (v) noise-free street, (vi) visual cues along the street, (vii) attractive street benches, (viii) attractive lighting features, (ix) attractive buildings surroundings free from vandalism, and (x) spectacular natural views. Legible streets are easy to understand, and they create a lasting image in users' minds (Lynch, 1960). Legibility creates a sense of identity which is a 'Right to the City' claim (Lefebvre, 1996). The proceeding discussion highlights the findings obtained in terms of the variable of legibility in the respective towns' street spaces.

5.5.1 Legibility of street spaces in Thohoyandou Town

The bulk of street spaces in Thohoyandou Town measured poorly in street signage indicators, attractive lighting, visual cues, and wayfinding features. These indicators

reflect illegibility, thus spatial injustice. For example, the injustice implications of the absence of street names in most streets and poor wayfinding features affect users' orientation. This infringes their right to place identification (Brown and Kristiansen, 2009). It can be argued that processes like street naming play an essential role in cultural heritage, bio-cultural symbolism, historical, and direction assisting roles thereby, reflecting spatial justices (Neethling 2016; Shackleton, 2018). Thohoyandou Town can, therefore, emerge as a spatially just small rural town if the history of each street can only be preserved and known through street naming.

The results from the measures of legibility and visual attractiveness of street spaces in Thohoyandou Town are summarised in Figure 5-17.

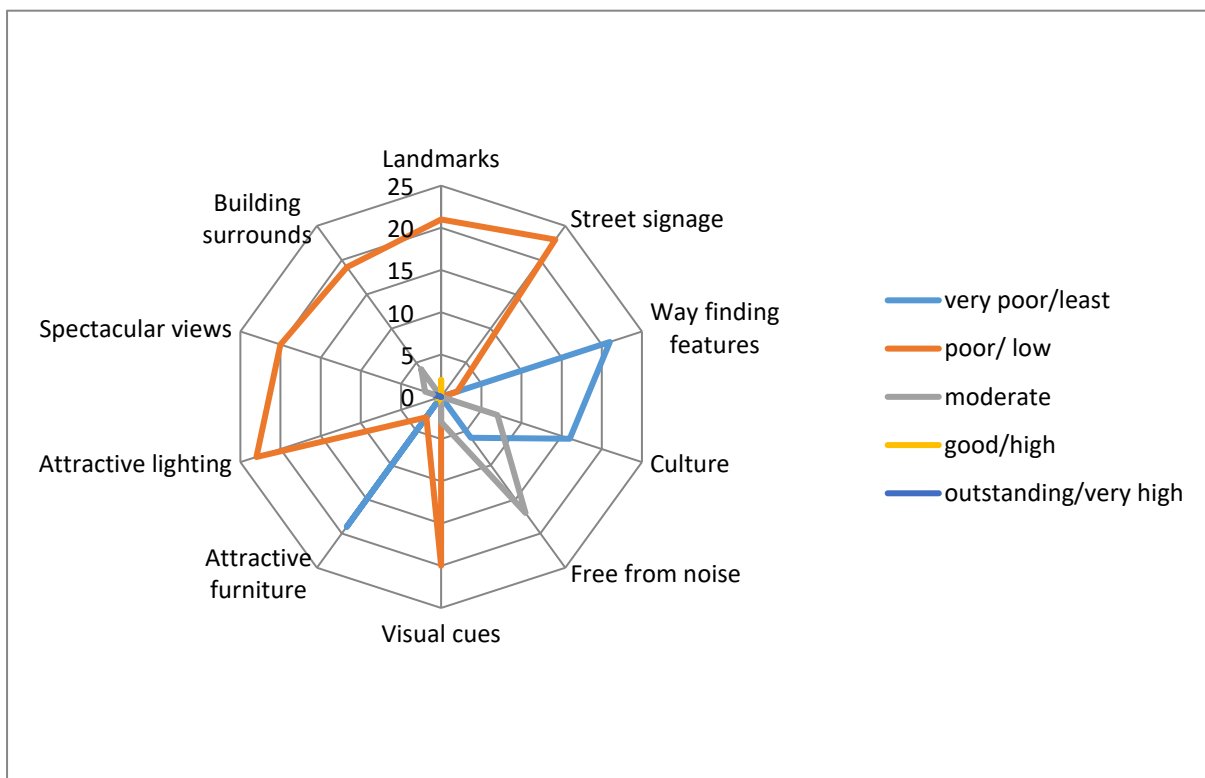


Figure 5-17: Quality of legibility of street spaces in Thohoyandou CBD
Source: Author's construct (2020)

From Figure 5-17, the indicators of connectivity to a landmark feature, design identification with a culture, free from loud noises and buildings free from vandalism were of moderate quality on some of the street spaces. These are the forms of spatial justices.

Cultural identity in design was not observable in the actual building designs but in the vernacular names on malls, such as Venda Plaza, Matidza, Thavani, and Mvusuludzo. Sixty-five percent of the streets were free from loud noises. For 35% of the street spaces, the noises were coming mostly from the loudspeakers that street traders use to lure customers and in some cases from the public taxi ranks. Understanding sounds is an important indicator of legibility (Black Studio, 2018). Sound is important to planners as urban designers because it guides them to understand a place's local culture and can determine appropriate land-uses. For example, the noises by street traders along the streets show that street trading is an important activity in this town. Therefore, planners and designers should consider this important activity in the allocation of land-uses in this SRT. Seating furniture was mostly identified around bus termini shades and along Parliament Street. Informal sitting spaces such as ledges or low walls offer important alternatives to seating (Gehl, 2006).

Photograph 5-8 shows a critical and distinct landmark in Thohoyandou Town that is connected by two provincial roads, namely R523 and R523.



Photograph 5-8: The place defining landmark in Thohoyandou Town
Source: Research survey (2019)

The landmark in Photograph 5-8 identifies with the culture and the naming of the town- Thohoyandou meaning ‘the head of an elephant’. The presence of landmarks gives a sense of a town's distinctiveness, which makes a place legible thus spatially just (Lynch, 1984). Spectacular natural views were also observed along 3 out of 23 of the street spaces in Thohoyandou Town. Photograph 5-9 portrays a street median along Parliament Street covered by spectacular natural views.



Photograph 5-9: Spectacular natural views along Parliament Street, Thohoyandou Town
Source: Research survey (2019)

5.5.2 Legibility of street spaces in Musina Town

The findings from Musina Town show that indicators such as landmarks, spectacular views, attractive seating furniture, attractive lighting, visual cues and wayfinding features were poorly provided for in all the streets. This is an indication that the streets spaces were illegible in these indicators, thus spatially unjust. Figure 5-18 depicts the findings which are discussed in this section.

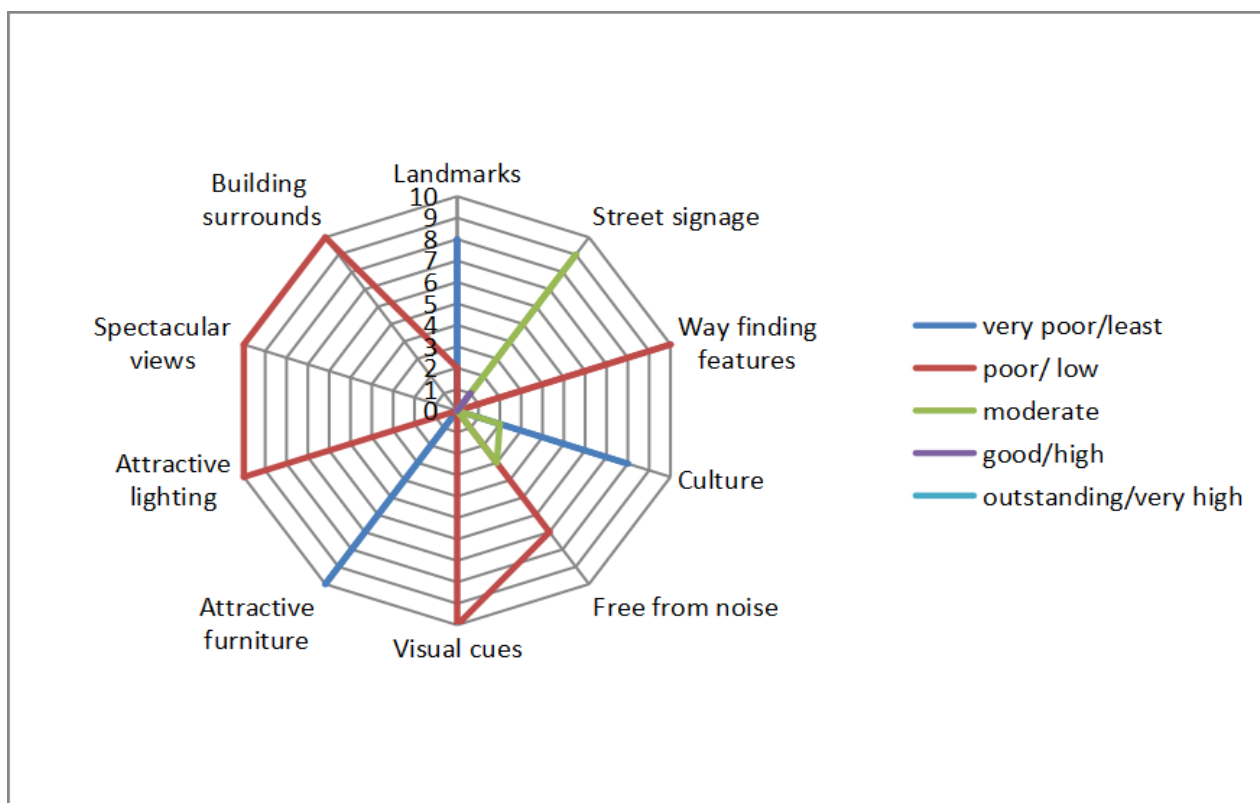


Figure 5-18: Quality of legibility of street spaces in Musina CBD
Source: Author's construct (2020).

Figure 5-18 highlights that 70% of the street spaces are not free from noise. The national road N1 was notably the major source of sounds in this town. The noise came from heavy vehicles that use this road as a major highway and the local taxis and Malaitchas (cross-border goods transporters) commuting to Beitbridge border post daily. A municipal official from Musina Local Municipality indicated that *“the national highway poses a lot of challenges, especially on the issue of noise, pedestrians' safety, and congestion. Perhaps the pressure will ease once the bypass project is accomplished”*. The sound that is produced along N1 is an indicator that there is a need to address the traffic noise, which is currently an injustice.

In addition to the injustice of noise caused by the national road (N1) in Musina Town, the municipality official also bemoaned the challenges of pedestrian safety, and congestion posed. The Musina municipal official also acknowledged that more can be done to improve the legibility and accessibility of the town as he said, *“this town is the face of South Africa; therefore, we need to work collaboratively with other government departments and the private sector on how to make this place more attractive to those visiting South Africa from neighbouring African countries”*. The Musina Local

Municipality official concurs with place-making proponents such as Kavaratzis (2009) and Karssenberg et al. (2016) who argue that collaboration of multiple stakeholders is imperative for successful place design and management. In two streets (Visser and Casper Avenue), indigenous Baobab trees were preserved to reflect local identity as these trees have cultural significance to the Venda people.

5.5.3 Legibility of street spaces in Louis Trichardt Town

Street spaces in Louis Trichardt Town also fell short in some legibility and visual attractiveness indicators such as connectivity, landmarks, attractive furniture, visual cues, cultural identity and other wayfinding features. This reflects some injustices, as illustrated in Figure 5-19 below.

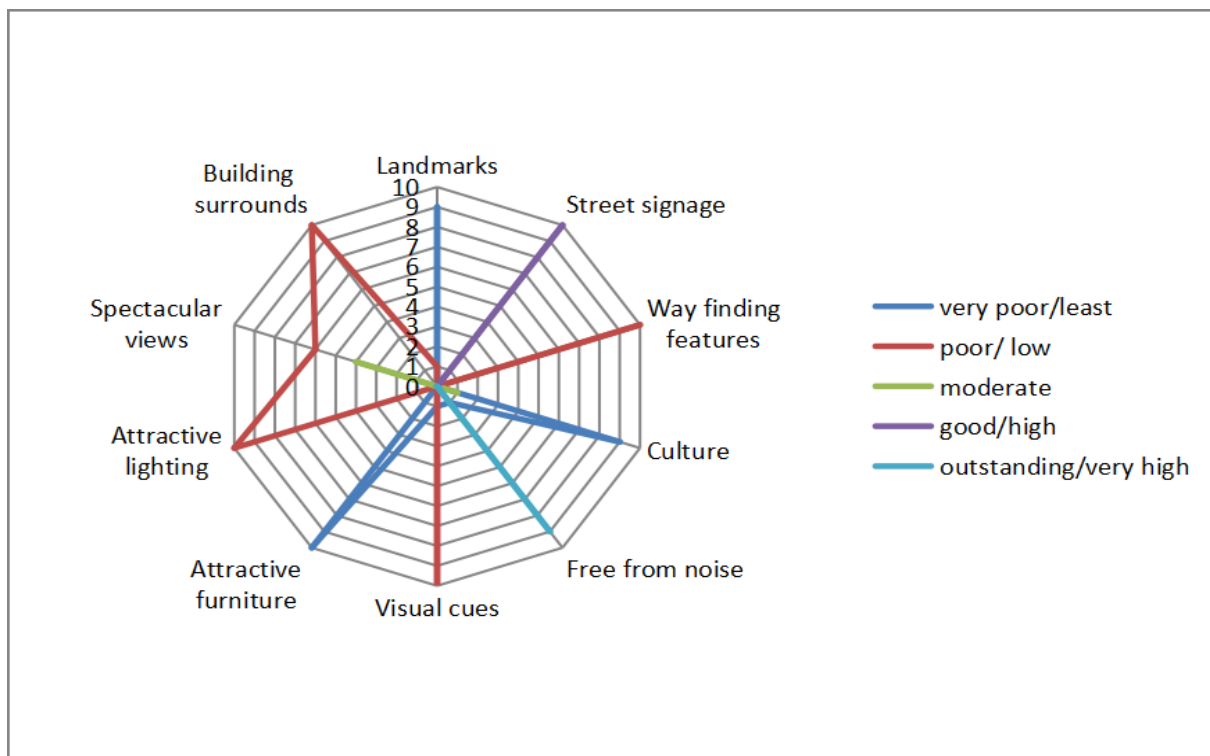


Figure 5-19: Quality of legibility of street spaces in Louis Trichardt CBD
Source: Author's construct (2020)

Figure 5-19 shows that while most of the indicators of legibility reflected poorly. The qualities of street signage and noise-free environment were good on 90% of the street spaces in Louis Trichardt Town. This reflects the dual nature of spatial justice because if space has more positive qualities, it is considered more just (Massey, 2005). Contrary, when space has few of these indicators, it is spatially unjust. The town had very little in its design that relates to the culture of the local Venda community, which constitutes the majority of the population in this town. However, the presence of the

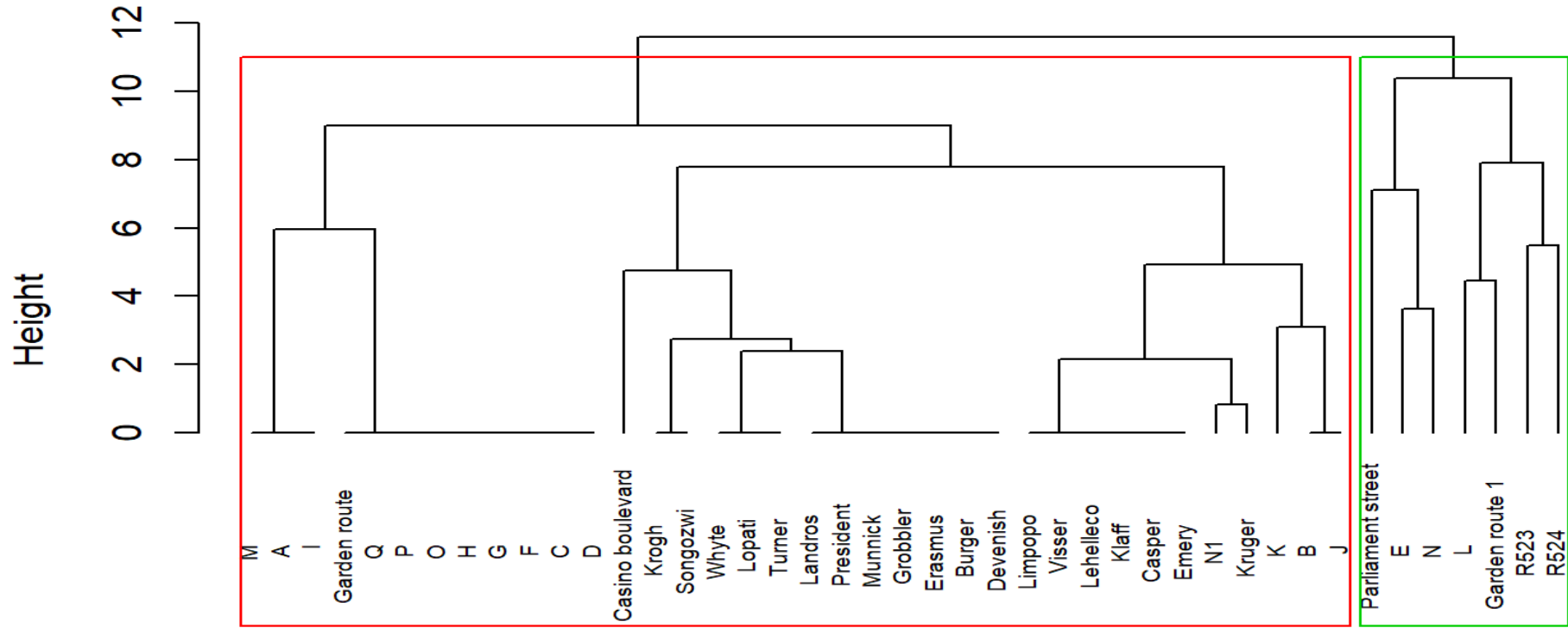
Caravan Park's can be attributed to the culture of the white minority who were historically more dominant in the town. The town also lacks visual cues that speak to the town's history and development. This is an injustice as it leads to poor place identity by the users (Morgan, 2009). The injustices flowed together with justices such as good quality of street signage on all the streets. The justices from street signage lie in the fact that even visitors to the town can easily understand the town. Therefore, they do not have to feel alienated in the town due to a lack of clear orientation (Lefebvre, 1996). These key findings demonstrate that spatial justices and injustices exist simultaneously on street spaces.

The findings from all the towns clearly show that spatial justice is not something that one can clearly define using a single indicator of a variable. As space users make meaning from the spaces and activities critical to producing the very same spaces, justice and injustices flow simultaneously (Lynch 1960; Massey, 2005; Philippopoulos-Mihalopoulos, 2014). Given the unique histories of the three SRTs, visual cues that speak to the culture, history and development of the town which is currently absent from the selected towns' street spaces will enhance the legibility of the street spaces.

5.5.4 Clustering and mapping legibility of street spaces in small rural towns

To make comparisons of similarities and differences on the overall variable of legibility and visual attractiveness between street spaces in the different towns, HCAs were performed. Through HCA, two groups of street space clusters were identified. The dendrogram shown in Figure 5-20 displays how the streets were clustered. The cluster memberships presented in the dendrogram in Figure 5-20 can also be categorised per each town as illustrated in maps in Figures 5-21, Figures 5-22 and 5-23 for Thohoyandou, Musina and Louis Trichardt Towns, respectively.

Cluster Dendrogram



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hclust (*, "ward.D2")
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Figure 5-20: Street space clusters membership for legibility and visual attractiveness
 Source: Author's construct (2020)

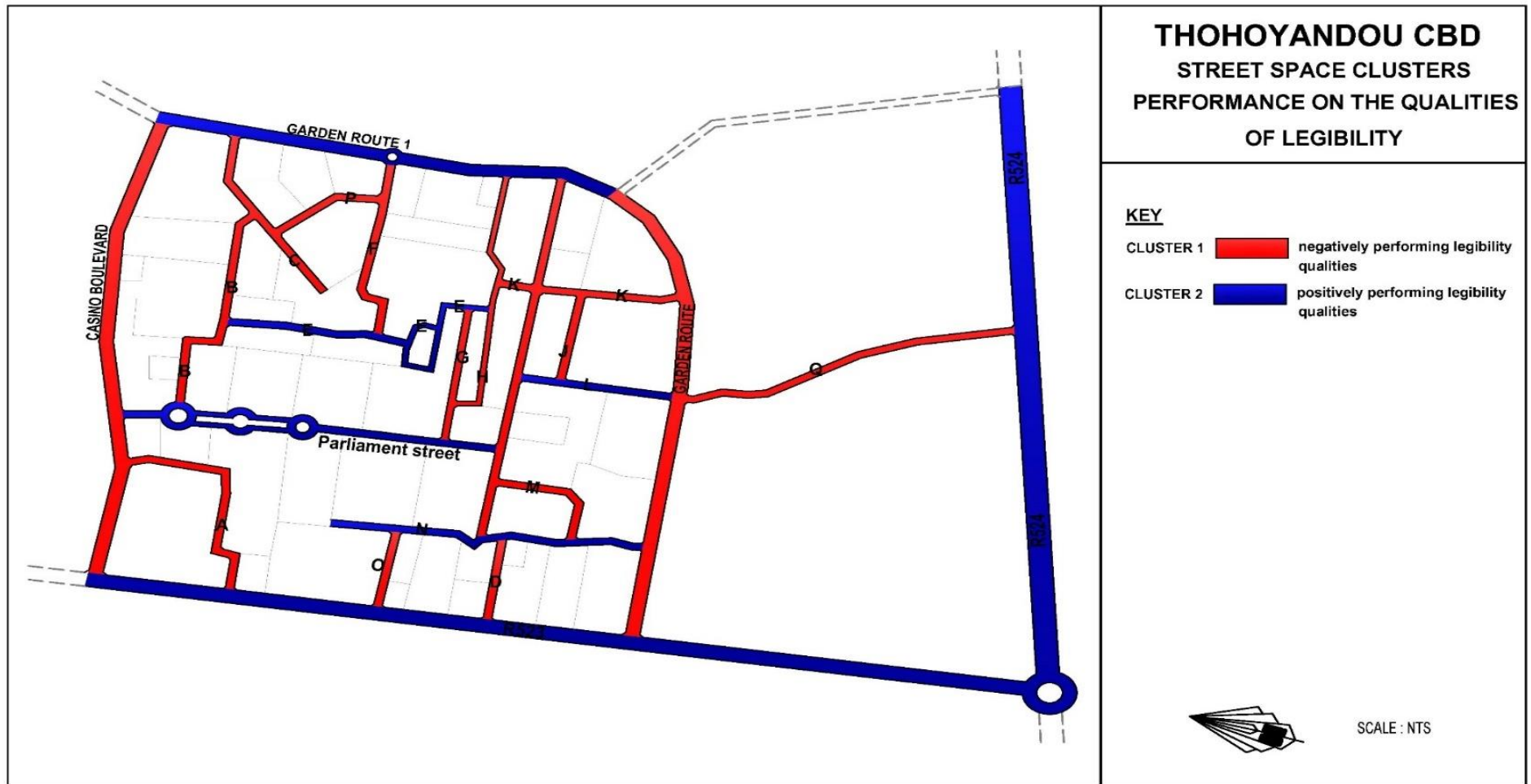


Figure 5-21: Two clusters of legibility qualities in Thohoyandou CBD
 Source: Author's construct (2020)

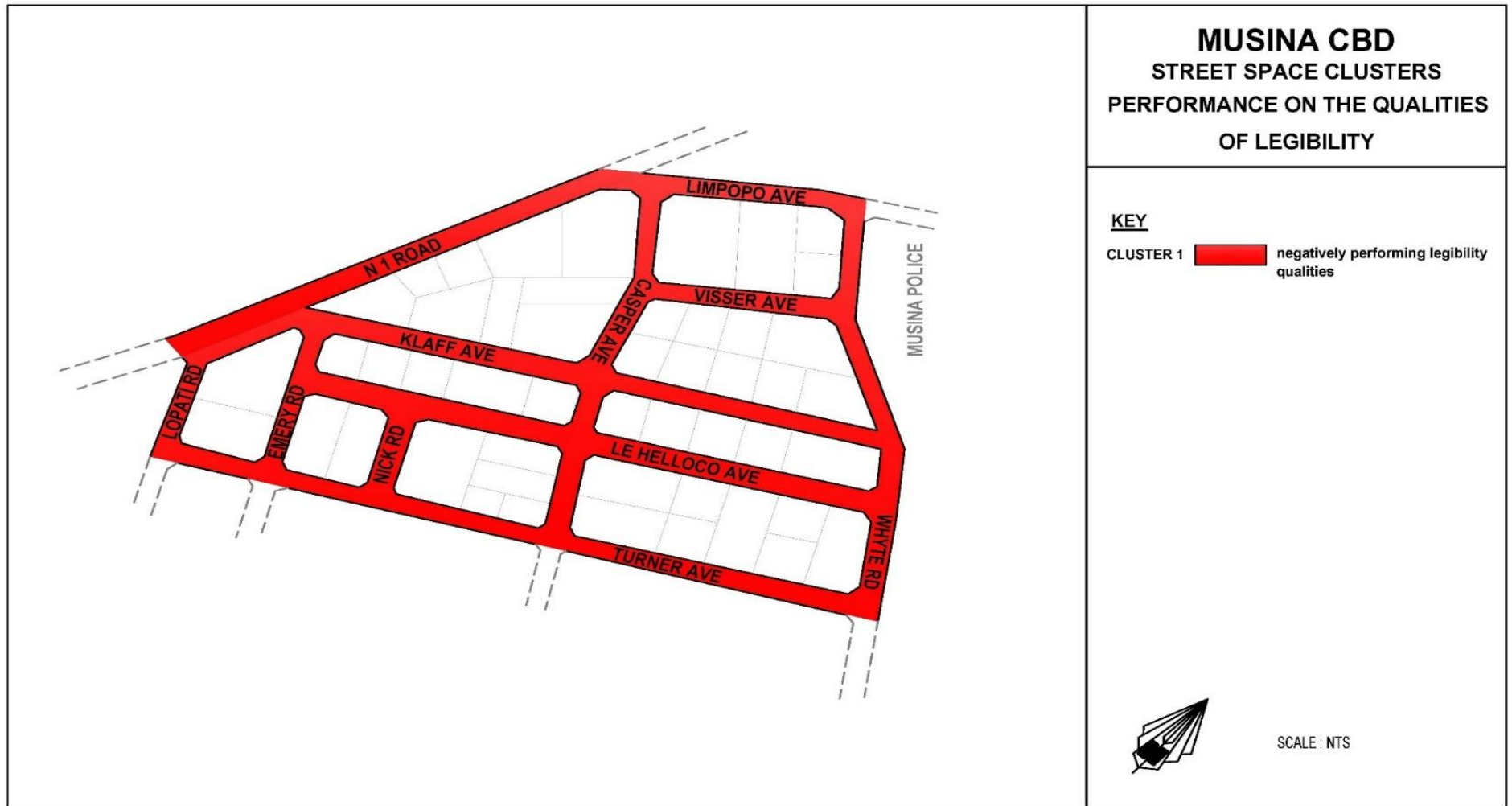


Figure 5-22: A single cluster of legibility qualities in Musina CBD
Source: Author's construct (2020)

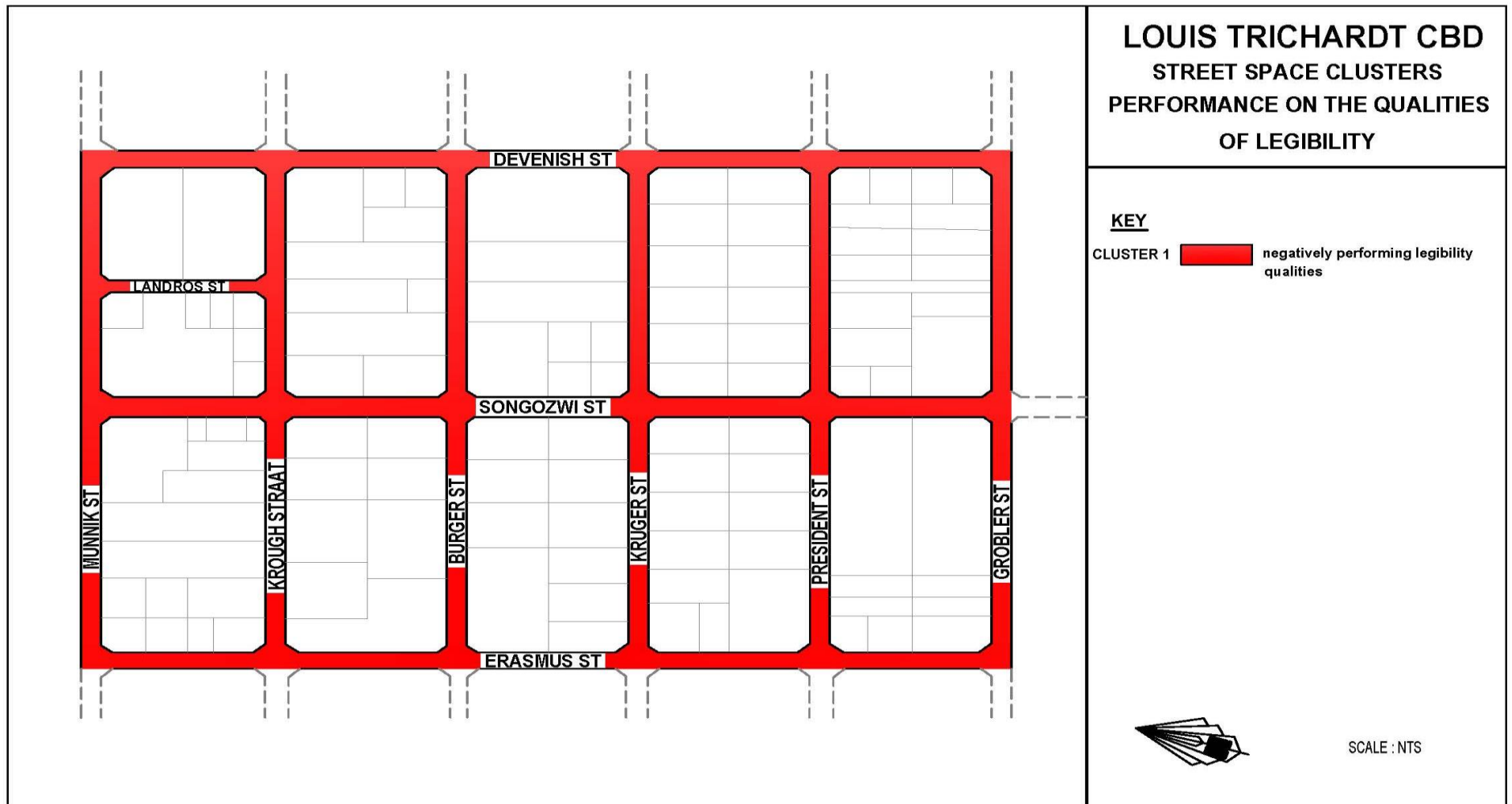


Figure 5-23: A single cluster of legibility qualities in Louis Trichardt CBD
Source: Author's construct (2020)

Measurement of each cluster's characteristics were computed using the standardised mean z-scores for each indicator of legibility, and the results are highlighted in Table 5-3.

Table 5-3: Street spaces cluster means for the variable of legibility

Variable	Cluster	
	Cluster 1	Cluster 2
Connectivity to landmarks	-0.21828	1.122582
Clear street signage	0.164093	-0.84391
Cultural identities in design	-0.13835	0.711512
Free from loud noises	0.07519	-0.38669
Visual cues	-0.27066	1.391956
Attractive seating furniture	-0.22639	1.164283
Spectacular natural views	-0.27066	1.391956
Attractive building surroundings	0	-0.18718
Average	-0.12644	0.545563
Rank	2	1

Source: Author's construct (2020)

Table 5-3 shows that Cluster 1 is negatively performing ($z=-0.12644$) and Cluster 2 is positively performing ($z=0.545563$). Seventy percent (70%) of the street spaces in Thohoyandou Town are in Cluster 1, while all the street spaces in Musina and Louis Trichardt Towns are also found in this cluster. Cluster 2 is constitutive of 30% of street spaces from Thohoyandou Town. Street spaces in Cluster 1 are characterised by negative mean scores for most indicators that make up legibility such as connectivity to landmarks and ($z=-0.21828$) and visual cues ($z=-0.27066$). The attributes of free from loud noises ($z=0.07519$) and clear street signage ($z=0.164093$) were positive in Cluster 1. All the street spaces in Musina and Louis Trichardt towns and the majority (70%) of the street spaces in Thohoyandou are in this cluster.

Cluster 2 is characterised by positive mean scores in indicators such as connectivity to landmarks, cultural identities in design, visual cues, attractive seating furniture and spectacular natural views. Connectivity to landmarks was evident along R523 and R524 in Thohoyandou Town in Cluster 2. Streets spaces in Cluster 2 link to shopping

malls that have traditional Venda names. Street spaces in this cluster are lacking in terms of clear street signage and attractive building surroundings.

The indicators of legibility are to a greater extent lacking on street spaces in the three SRTs. Poor legibility on street spaces infringes the street space users' right to understand what is happening on each street (Lynch, 1960).

5.6 Robustness of street spaces in small rural towns

Another variable of assessing spatial justice on street spaces is robustness. The indicators for measuring robustness include (i) design features showing that the street can be used for other functions such as celebrations or festivities, (ii) variety of activities offered at the shop floor level in buildings adjacent to the street, (iii) fitness of activities compared with the form, (iv) street's flexibility to change in uses and activities, (v) presence of any green infrastructure along the street and (vi) presence of features designed to reduce temperatures. The following discussion reveals the findings of these indicators in the three SRTs.

5.6.1 Robustness of street spaces in Thohoyandou Town

The findings show that the quality of greening of space was moderate to good in 35% of the streets in Thohoyandou Town. For example, Parliament Street has a fountain that is an important heat reduction feature. This makes the street space more adaptable to the effects of climate change (Lewis and Schwindeller, 2014). Green spaces serve other important environmental functions such as regulation of heat and slowing down of runoff water which reflects spatial justice. The majority (65%) of the street spaces in Thohoyandou Town reflect poorly adaptable spaces.

Photograph 5-10 is an illustration of an ideally adaptable street space in Copenhagen City that I experienced during a study tour; compared to a street space median in Thohoyandou Town.



A street space median in Copenhagen, Denmark



A street space median in Thohoyandou, South Africa

Photograph 5-10: Comparison of an adaptable street median and a non- adaptable one
Source: Research survey (2019)

Photograph 5-10 shows the differences between an adaptable and non-adaptable median. To the left of Photograph 5-10 is an adaptable median which is found in Copenhagen City. This contrasts with a typical median along a street space in Thohoyandou Town on the right side. The exemplar adaptable median in Copenhagen City is designed to hold floodwater in the event of a flooding disaster. This space is robust in the sense that when there is no flood event, the space can be used as a park and seating area. Contrastingly, the median in Thohoyandou as depicted in the photograph is a hard surface that does not absorb rainwater thus increases the risks of street flooding. During my tour of streets in Copenhagen when I visited Denmark in 2019, I learnt that planners and all city stakeholders in the City of Copenhagen are improving street spaces to become more adaptable (ability to bounce back) to shocks that can be induced by climate change or rapid urbanisation through integrating nature-based solutions in designing. Photograph 5-11 is another image obtained from Copenhagen which demonstrates an adaptable street space.



Photograph 5-11: Adaptable seating furniture arrangement in a street in Copenhagen, Denmark
Source: Research survey (2019)

Photograph 5-11 shows an exemplar design of placing seating furniture around trees to provide thermal comfort for street space users, as well as reducing the speed of

runoff water. When streets are adaptable and robust, people meet and enjoy space, and this translates to spatial justice. The results from the inventory of the quality of robustness on the street spaces in Thohoyandou discussed above are shown in Figure 5-24.

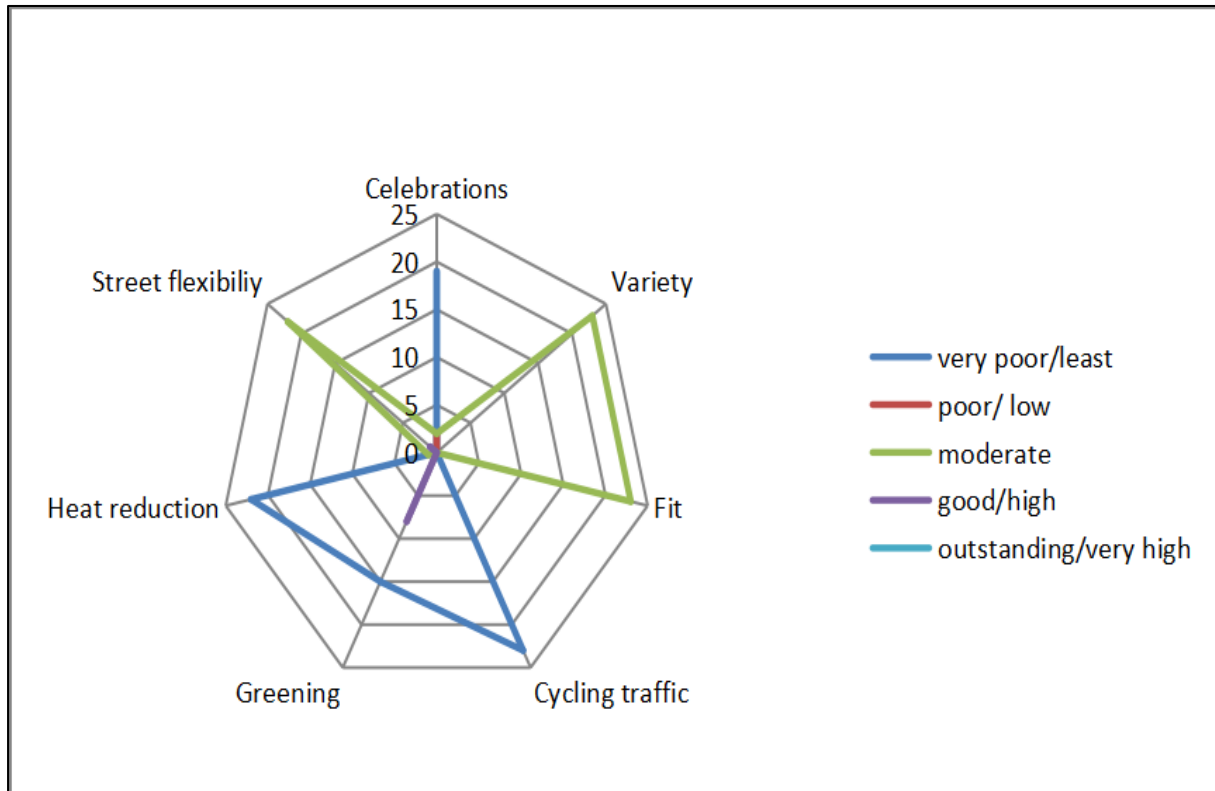


Figure 5-24: Robustness of street spaces in Thohoyandou CBD
Source: Author's construct (2020)

Figure 5-24 shows the indicators of a variety of activities offered at the shop floor level in buildings adjacent to the street. Fitness of activities compared with the form were moderate for all the streets in Thohoyandou Town. This is justice in that street spaces which reflect these indicators of being robust are multi-functional spaces which cater for the needs of various users, thus reflecting spatial justice. No celebration activities were observed in 19 out of the 23 street spaces in Thohoyandou Town. R523, Parliament Street, Street J and L (Figure 3-2 in Chapter 3) in Thohoyandou Town are some street spaces that hosts events in Thohoyandou Town. These events include street marathons, product marketing and street theatre performances. These 4 street spaces can be described as convivial spaces that promote spatial justice (Shaftoe, 2008).

5.6.2 Robustness of street spaces in Musina Town

It was established that green infrastructure was moderately sparsed N1, Turner Street and Whyte Avenue but it was poor in the rest of the street spaces. There were no heat reduction features along street spaces in Musina Town. As far as adaptability to climate change and other urban events are concerned, the street spaces in Musina Town were generally less adaptable. Most of the street spaces were not used to celebrate any special events, although programme campaigns and product marketing campaigns used to take place along N1 in past years. According to the Musina Local Municipality official, no special events were held on street spaces in the town within the past two years from mid-2017 to 2019.

The N1 was different from the rest of the streets whereby various activities such as shopping malls, hardwares, and a gym were identified along the street. Although a variety of activities is an indicator of spatial justice, in the case of N1 the activities were considered not fit to the form as they attracted more people to this road, yet the design of N1 is not pedestrian-friendly. The Musina Local Municipality official explained that “N1 as a higher-order road has diverse retail activities including an old shopping mall which attracts many users and often this creates congestion along this street”. Ireland DOT (2013) argues that urban roads should change character as they pass through different land-uses. Therefore, N1 as a highway passing through the CBD of Musina Town, it should be designed flexibly to adapt to the context of the CBD, Figure 5-25 highlights the quality performance of each indicator on the variable of robustness of street spaces in Musina Town.

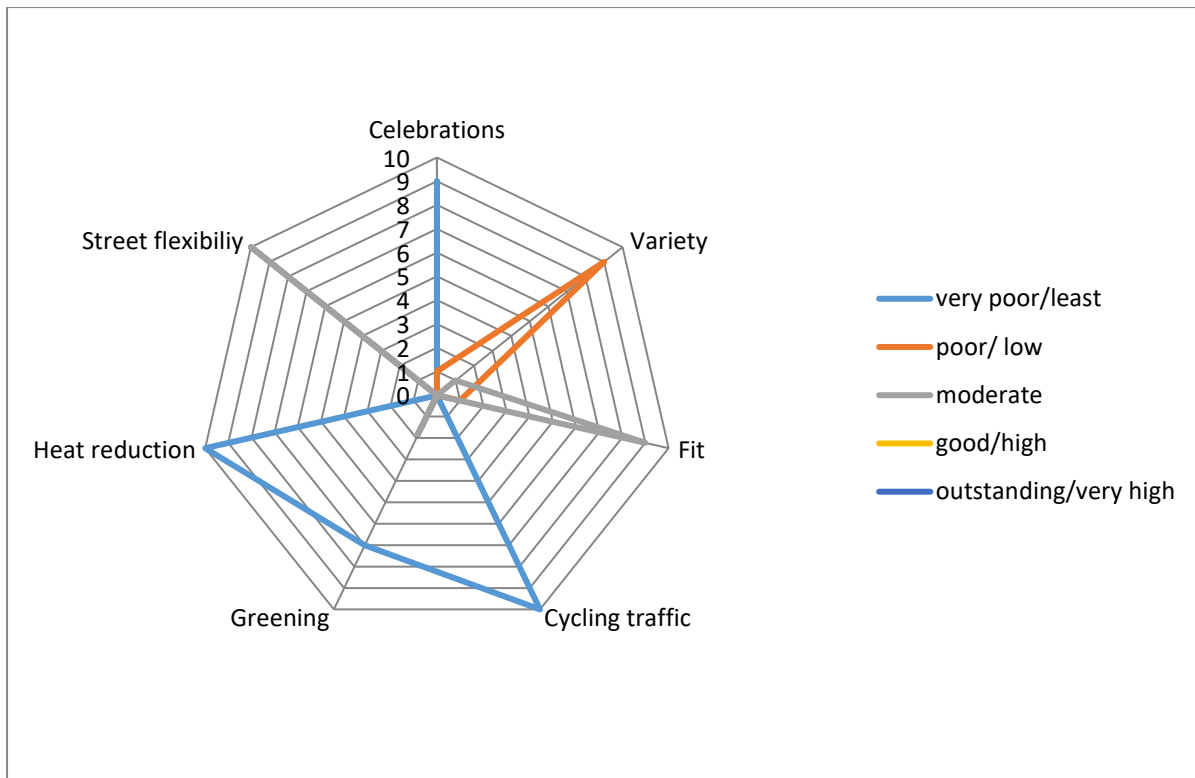


Figure 5-25: Robustness of street spaces in Musina CBD
Source: Author's construct (2020)

Figure 5-25 shows that although some indicators such as street flexibility and fit of use were of moderate qualities. Although all the sidewalks were wide enough for pedestrians, there was no adequate space in all streets to have a cycle lane. The National Technical Requirements for pedestrian crossings recommend a minimum sidewalk width of 3m to accommodate a cycle lane (DOT, 2016). Street spaces in Musina Town were to a greater extent lacking in terms of adaptability and robustness.

5.6.3 Robustness of street spaces in Louis Trichardt Town

Green infrastructure was low to moderate along most of the street spaces in Louis Trichardt Town. However, no other heat reduction features were found along street spaces in Louis Trichardt Town. The absence of these features translates to poorly adaptable street spaces. Although all the sidewalks had widths enough for pedestrian movements (+1.2metres), these were not adequate to have a cycle lane (DOT, 2016). According to the Makhado Municipality official, the idea of a bicycle lane still seems to be a farfetched ideal. The official asserted that *“a needs assessment has to be made before introducing these cycle lanes. Although it is a great idea, it may not be accepted by citizens”*. According to Acheampong (2016), cycling is sometimes negatively perceived in most African cities as some users associate cycling with low social status

thus the need to carry out feasibility studies and community awareness programs to educate local communities about embracing more sustainable forms of transportation.

Figure 5-26 illustrates how each street measure in terms of robustness, where the qualities of variety, greening and fit of use were moderate in at least 50% of the streets.

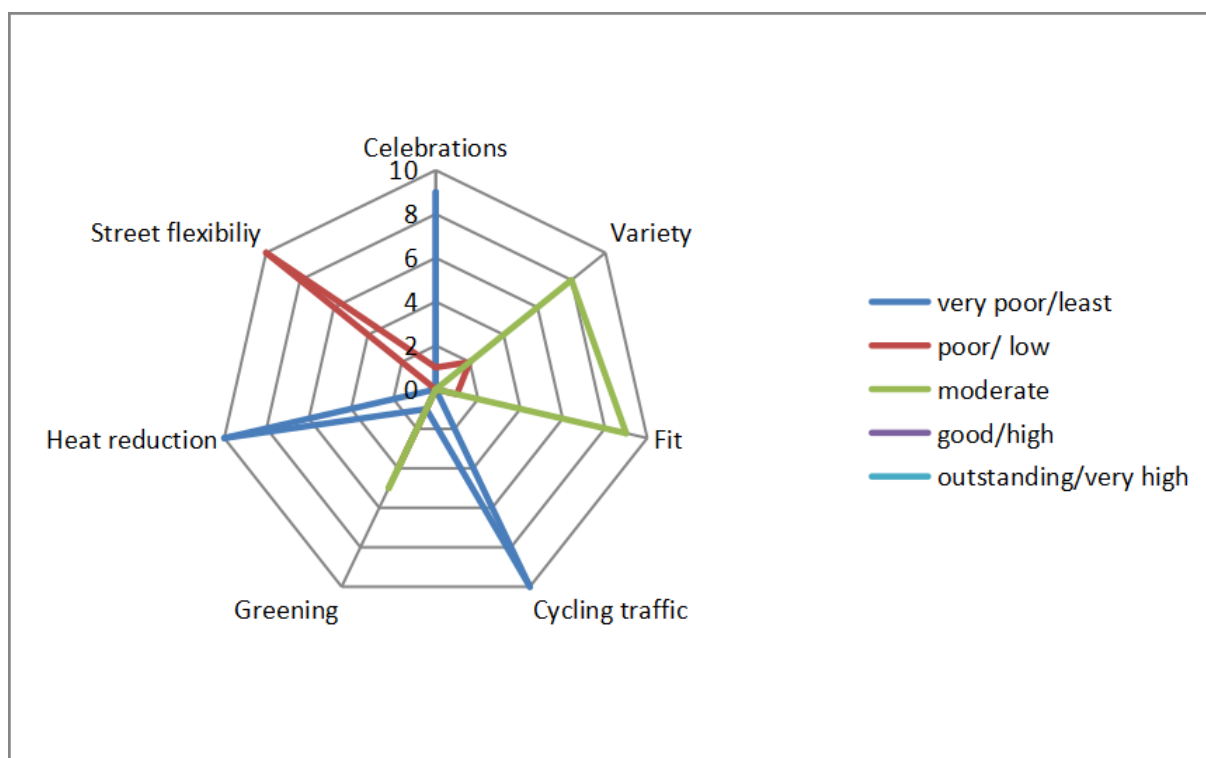


Figure 5-26: Robustness of street spaces in Louis Trichardt CBD
Source: Author's construct (2020)

Figure 5-26 illustrates that 90% of street spaces in Louis Trichardt Town were not used to celebrate any special events. Conversations with Makhado Local Municipality officials revealed that during few occasions, marketing of products by private companies was done along Songozwi Street which improves the vibrancy of the street.

The qualities of street space flexibility to accommodate cycling lane and heat reduction features were consistently very poor in all the towns, although Parliament Street in Thohoyandou Town was outstanding in the feature of heat reduction. Overall, street spaces in SRTs lack in terms of adaptability to climate change and robustness to accommodate multiple functions without resulting in injustices. Figure 5-27 illustrates an example of a robust space that municipalities in SRTs can consider when designing for a robust street.



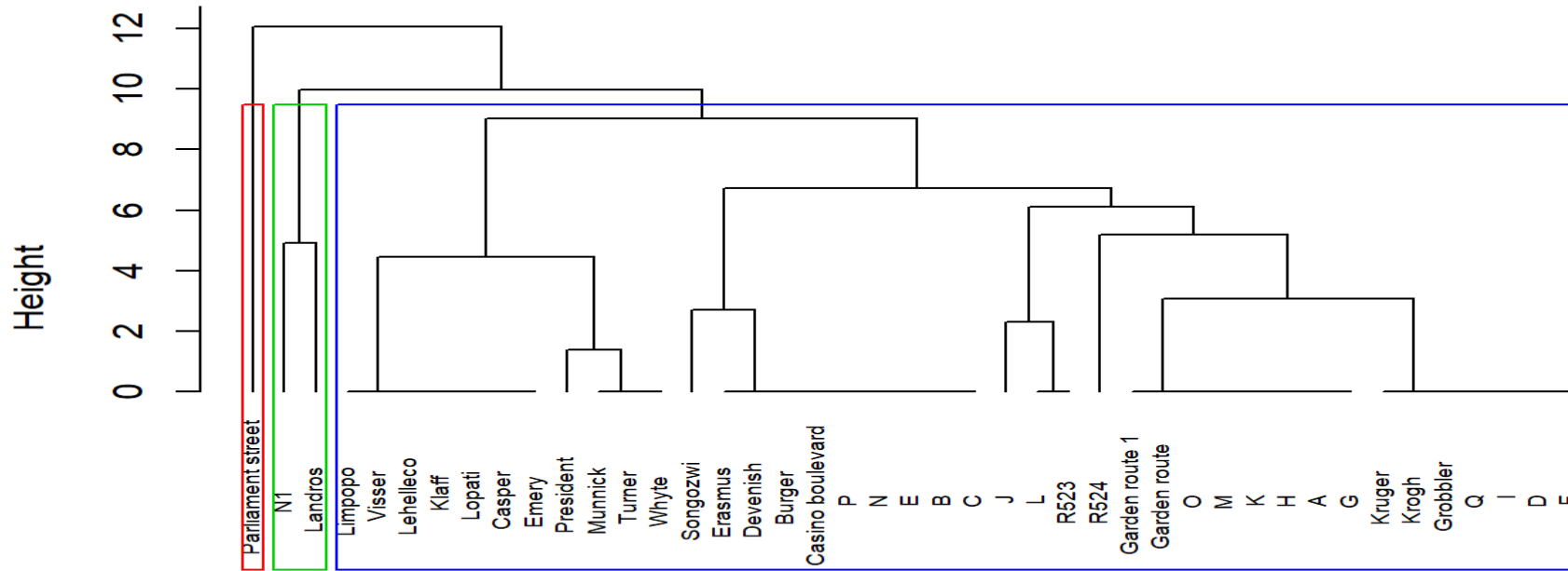
Figure 5-27: An example of a model of an adaptive street
Source: Author's construct (2020)

An example of a model adaptive street presented in Figure 5-27 prioritises green spaces which are more adaptive to flood control, provides seating spaces for users and also offer opportunities for a variety of users such as street traders.

5.6.4 Clustering and mapping robustness on street spaces in small rural towns

To compare the similarities and differences between street spaces in the three SRTs, HCA was performed, and Figure 5-28 displays a dendrogram based on the findings. The dendrogram in Figure 5-26 displays the three main clusters on the quality of robustness of street spaces. The cluster dendrogram in Figure 5-28 can be visualised in the form of maps for each of the three towns as depicted in Figures 5-29, 5-30 and 5-31.

Cluster Dendrogram



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 hclust (*, "ward.D2")

Figure 5-28: Street space clusters membership for the quality robustness
 Source: Author's construct (2020)

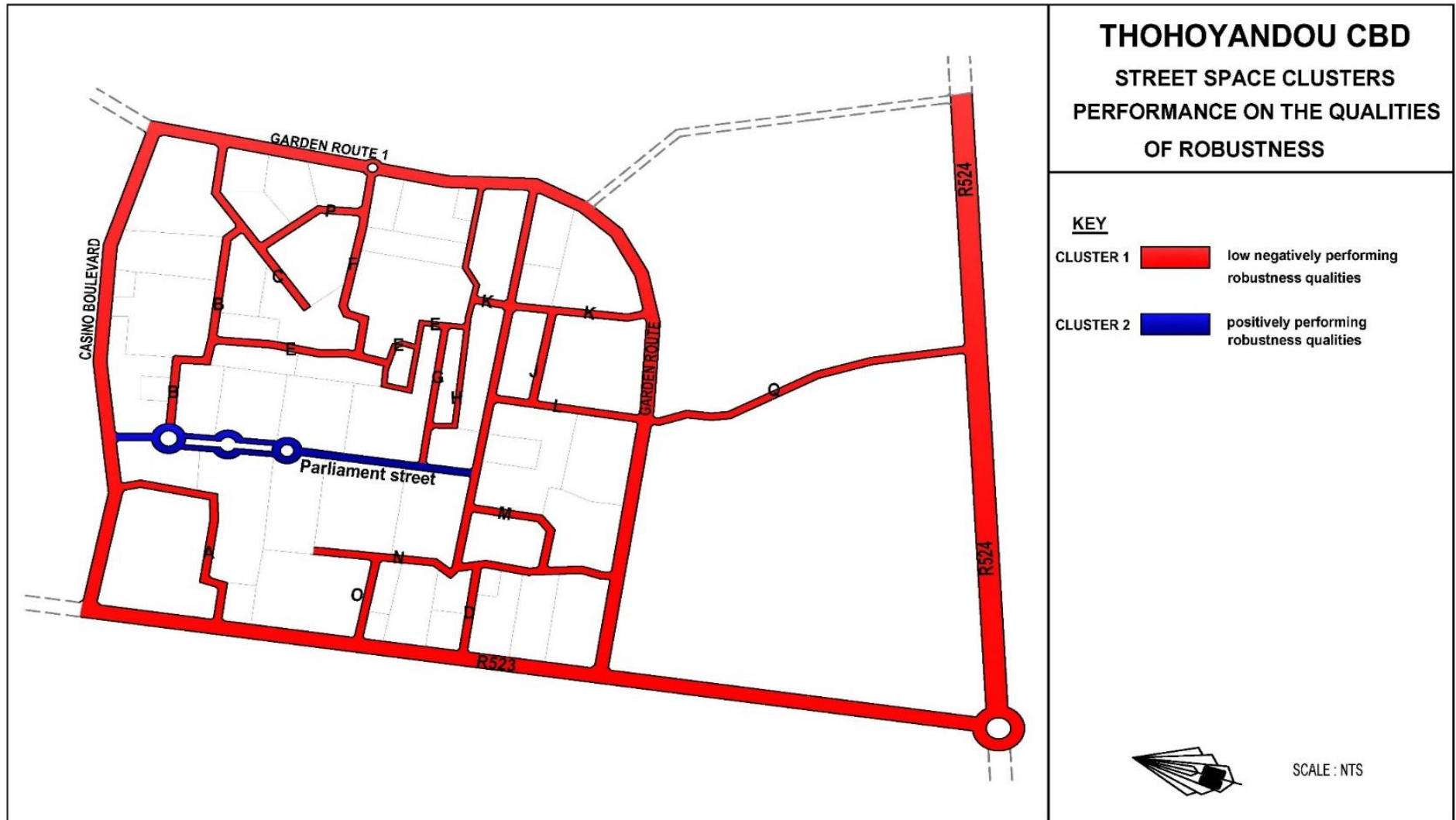


Figure 5-29: Two clusters of robustness qualities in Thohoyandou CBD
Source: Author's construct (2020)

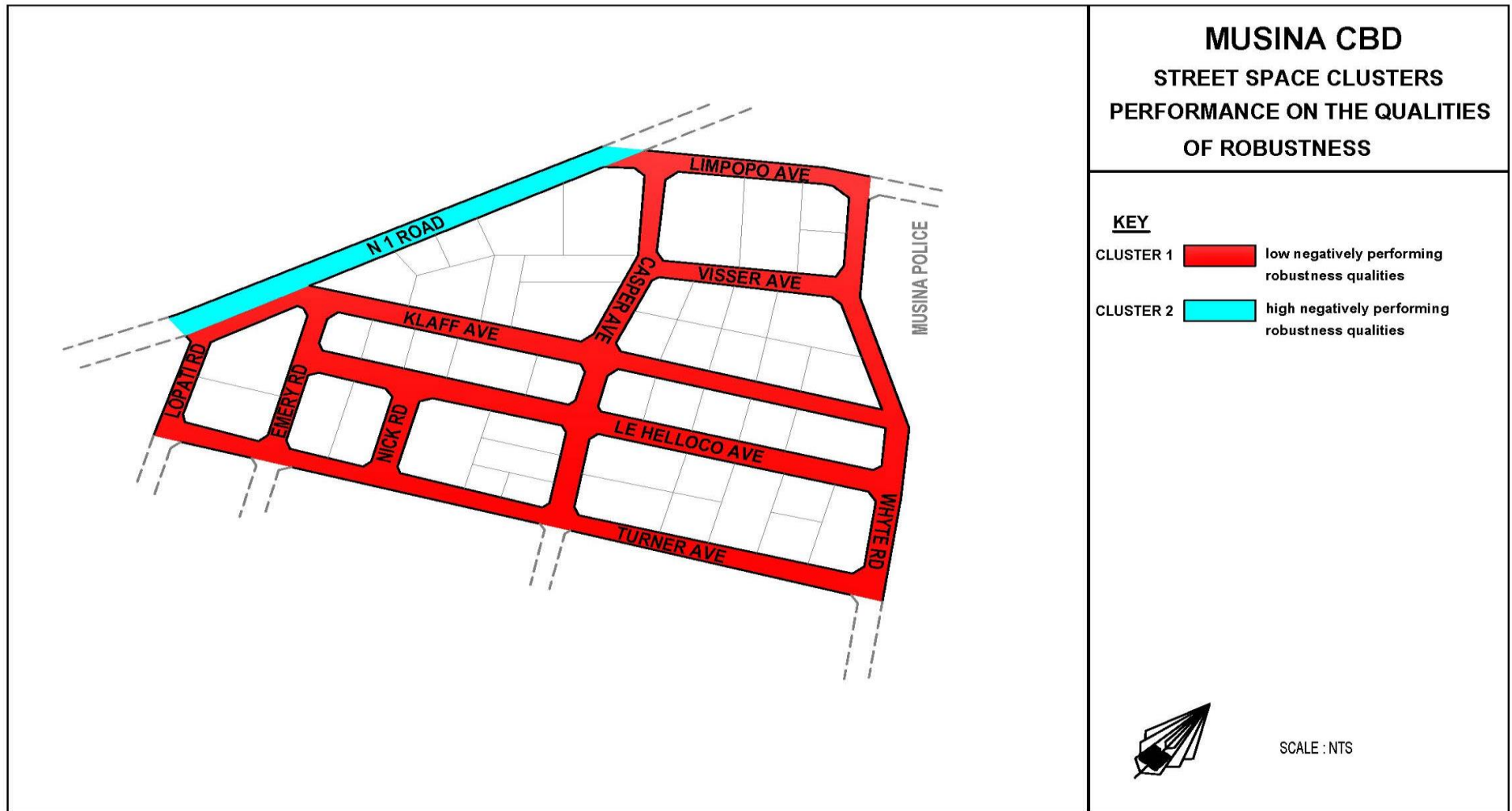


Figure 5-30: Two clusters of robustness qualities in Musina CBD
Source: Author's construct (2020)

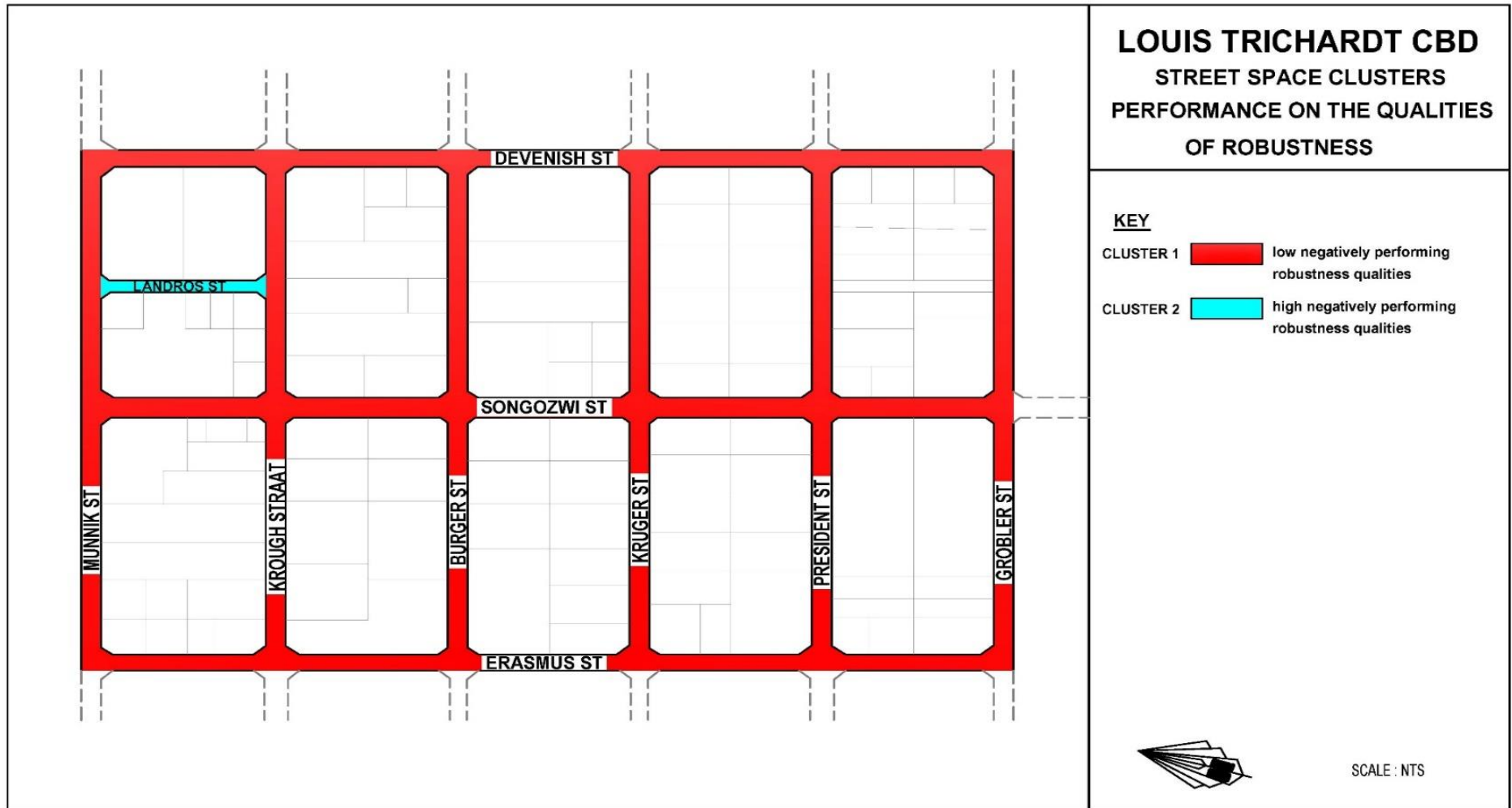


Figure 5-31: Two clusters of robustness qualities in Louis Trichardt CBD
Source: Author's construct (2020)

The results of the standardised mean z-scores that informed the ranking of clusters are shown in Table 5-4.

Table 5-4: Street spaces cluster means for adaptability and robustness

Variables	Cluster		
	Cluster 1	Cluster 2	Cluster 3
Celebrate special events or festivities	-0.12203	3.6259	-0.62756
Variety of activities on adjacent buildings along the street	0.008967	0.614894	-0.48679
Fit of activities with the form	0.21828	0.21828	-4.47474
Green infrastructure	-0.01178	1.28241	-0.40566
Other heat reduction features	-0.1525	6.40494	-0.1525
Street flexibility	-0.00655	3.843599	-1.79077
Averages	-0.01093	2.665004	-1.11382
Rank	2	1	3

Source: Author's construct (2020)

Cluster 1 is second in ranking, with a low negative ($z=-0.01093$) performance of indicators. Cluster 2 with a mean z score of 2.665004 is the better performing in comparison to Clusters 1 and 3. Cluster 3 is the least performing with a mean z score of -1.11382. Ninety-six percent of the street spaces in Thohoyandou Town are in Cluster 1. Ninety percent of street spaces from both Musina and Louis Trichardt Towns are in Cluster 1. Cluster 2 has only 1 street from Thohoyandou Town. Ten percent of the street spaces in both Musina and Louis Trichardt towns are in Cluster 3.

Cluster 1 has positive indicators of variety on adjacent buildings ($z=0.2182$) fit of activities with the form ($z=0.2183$). However, the rest of the indicators had negative scores. Only Parliament Street in Thohoyandou Town is found in Cluster 2. This street space is characterised by better performance for all attributes. For example, the attributes of celebration of special events ($z=3.6259$) and other heat reduction feature

($z = 6.4049$) are commendable in this cluster. Street spaces that promote convivial or celebration activities can also be characterised as spatially just space.

Cluster 3 has only two streets, one from Musina Town (N1), and the other one from Louis Trichardt Town (Landros Street). These street spaces are not in the same tier in terms of the hierarchy of roads because N1 is an arterial road, while Landros Street is an access street. Nevertheless, the street spaces in Cluster 3 are both negatively performing in the indicators such as fit of activities to the form ($z = -4.47474$) and street flexibility ($z = -1.79077$). This shows that (in)justices on street spaces transcend street hierarchical levels. Remarkable to note is that poor performing Clusters 1 and 3 have higher-order roads; as well as all local distributors from all the towns (see section 3.7.4 in Chapter 3). This shows that context-specific design rather than a standard application of street hierarchy design standards improves adaptability and robustness of street spaces. Although some positive qualities were observed, the street spaces in the three SRTs generally be classified as poor in terms of street robustness.

5.7 Maintenance and management of street spaces in small rural towns

The qualities which were measured to assess the maintenance and management of the street spaces include (i) the visibility of potholes along the street, (ii) proper waste disposal, (iii) strategic placement of waste bins, (iv) clearly marked sites for street trading, (v) quality of vending stalls, (vi) quality of storage facilities for vending ware, (vii) maintenance of adjacent building exteriors (free from vandalism), (viii) maintenance of street lighting infrastructure, (ix) maintenance of street benches, (x) availability of public toilets, (xi) quality of paving of sidewalks, and (xii) maintenance of trees and vegetation. I argue that proper maintenance and management of street spaces demonstrates commitment to an improved quality of life for the citizens. Thus, maintenance and management of street spaces ensure the 'Right to the City' which translates to spatial justice; whereas poor maintenance and management translate to spatially unjust spaces.

5.7.1 Maintenance and management of street spaces in Thohoyandou Town

More than 50% of the street spaces had moderate to good scores for the attributes of absence of potholes, waste disposal, and proximity to public toilets, streetlights, and maintenance of the buildings' exteriors. These indicators reflect spatial justice as they

offer users good quality of public space that enables them to linger longer on the space. 59% of the street spaces constitutive of sidewalks were well paved. The rest of the sidewalks (41%) were unpaved. A Thulamela Local Municipality official highlighted that the pavers used during the urban regeneration project in 2013 were outsourced from local communities. This shows an attempt by the municipality to engage in a Public- Public Partnership which is important for community empowerment (PPS, 2012). The findings made from observations of maintenance and management indicators on street spaces in Thohoyandou are presented in Figure 5-32.

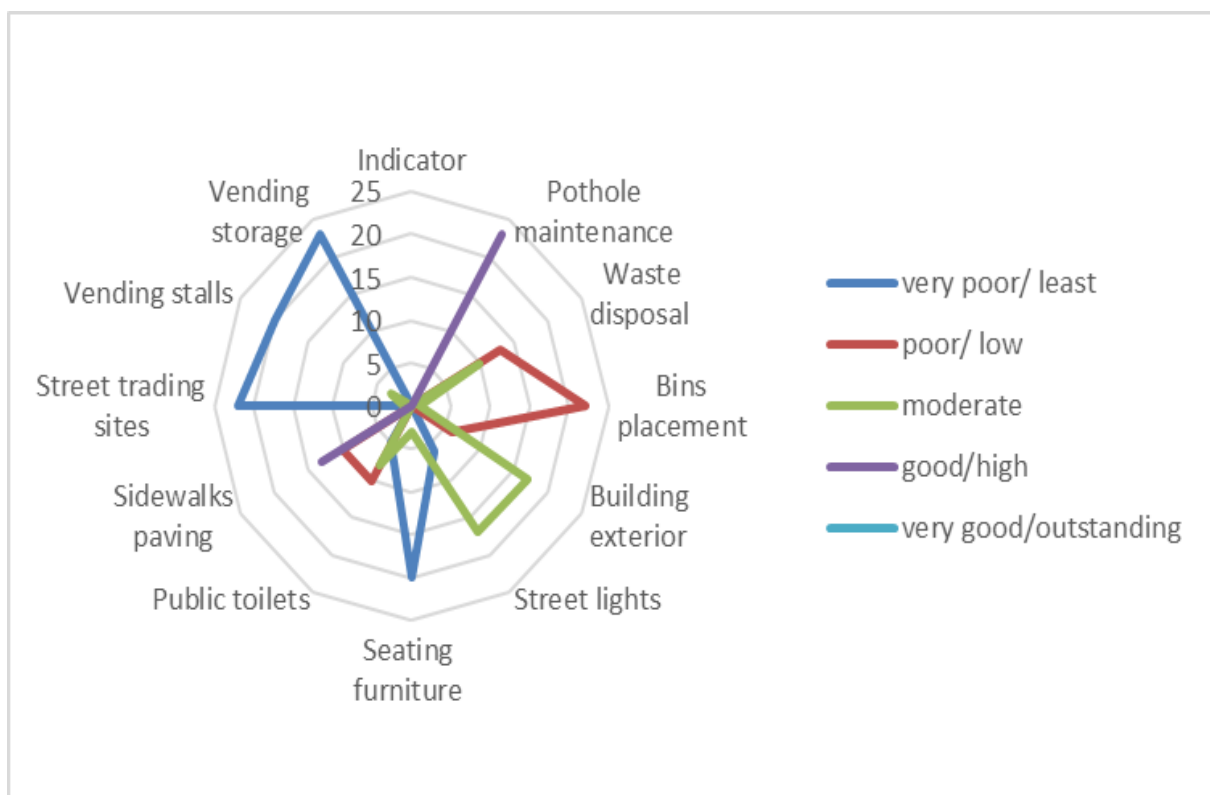


Figure 5-32: Maintenance and management of street spaces in Thohoyandou CBD
Source: Source: Author's construct (2020)

Figure 5-32 portrays that, indicators of streetlights, building exterior and pothole maintenance were moderate to good. This shows justices in terms of improving the use-value of public spaces (Lefebvre, 1991). In all other streets, street trading was taking place on undesignated sites and all the traders used temporary structures except for Parliament Street which had some clearly marked spaces for street trading. The maintenance and management of street trading in terms of clearly marked sites,

quality of vending stalls and storage facilities for vending ware was very poor in Thohoyandou Town.

5.7.2 Maintenance and management of street spaces in Musina Town

Maintenance and management of street spaces in Musina Town had mostly poor attributes except in waste disposal, strategic placement of bins, and well-maintained building exteriors. In responding to the question on the maintenance challenges of street spaces, a Musina Town municipal official indicated that, *“There is a time where just patching of the streets is not adequate. Our roads are now in need of reconstruction. Currently, we are a very small municipality to afford the budget for the roads. At the moment, we are just doing the little we can, for example, the general repairs of streetlights and waste bins collection”*. The excerpt above shows that municipalities in SRTs sometimes struggle to finance large capital projects such as road reconstruction. This calls for innovative infrastructure financing mechanisms as governments are also struggling to finance capital development projects (Alam, 2010; UN-Habitat; 2015). Figure 5-33 illustrates the findings from the discussions on how each indicator performed on the street spaces in Musina Town.

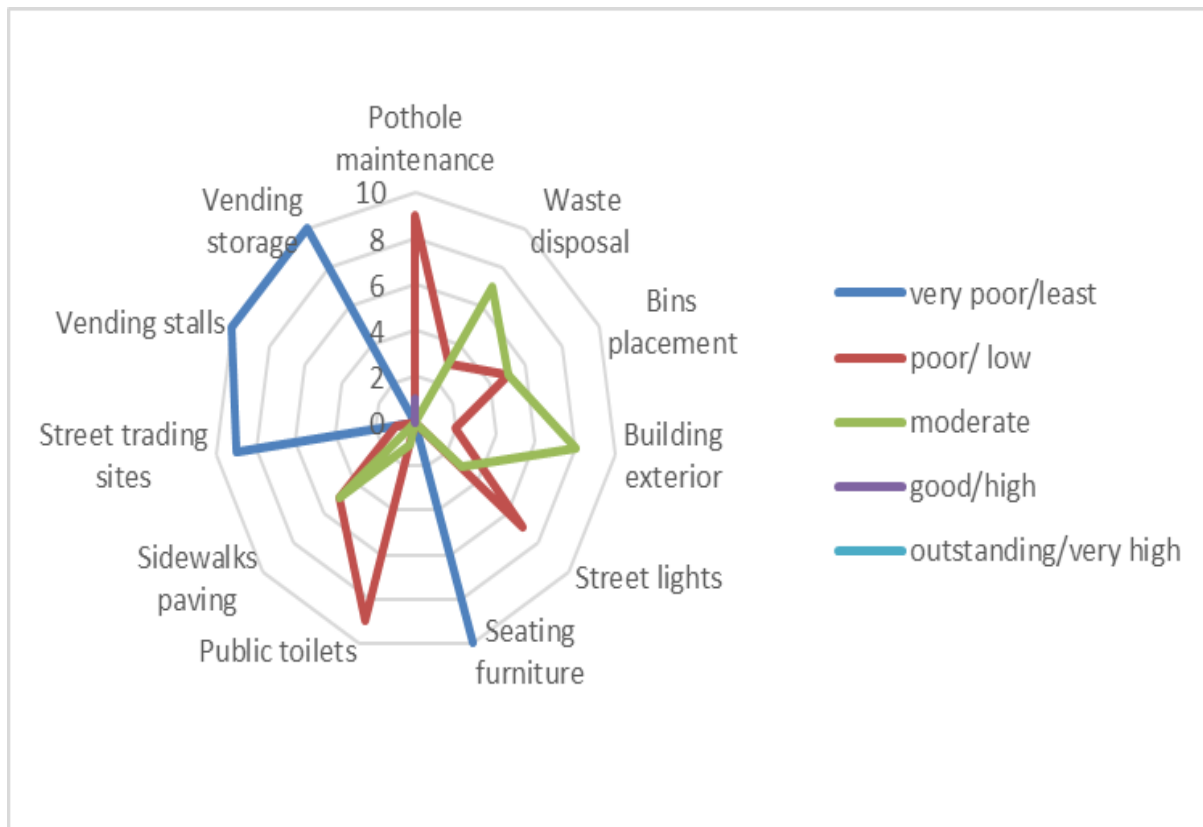


Figure 5-33: Maintenance and management of street spaces in Musina CBD
Source: Source: Author's construct (2020)

Figure 5-33 reflects differences between Musina and Thohoyandou Towns in terms of maintenance and management of street spaces. While pothole maintenance was good in Thohoyandou Town, in Musina the indicator was poor. Zooming in on the National Road, (N1), it was also established that SANRAL was responsible for the replacement of streetlights and patching of potholes, maintenance of sidewalks, crosswalk markings, and signage. This is a positive result of Public-Private Partnerships in the management of public space (PPS, 2012). A few clearly marked vending sites along N1 were metal storage containers provided by the municipality. However, the vending stalls were temporary structures. This shows that street vending is recognised as an important function in this town.

5.7.3 Maintenance and management of street spaces in Louis Trichardt Town

Street spaces in Louis Trichardt Town have moderate to good qualities in most attributes of maintenance and management. Figure 5-34 displays the major findings from the quality performance of Louis Trichardt Town.

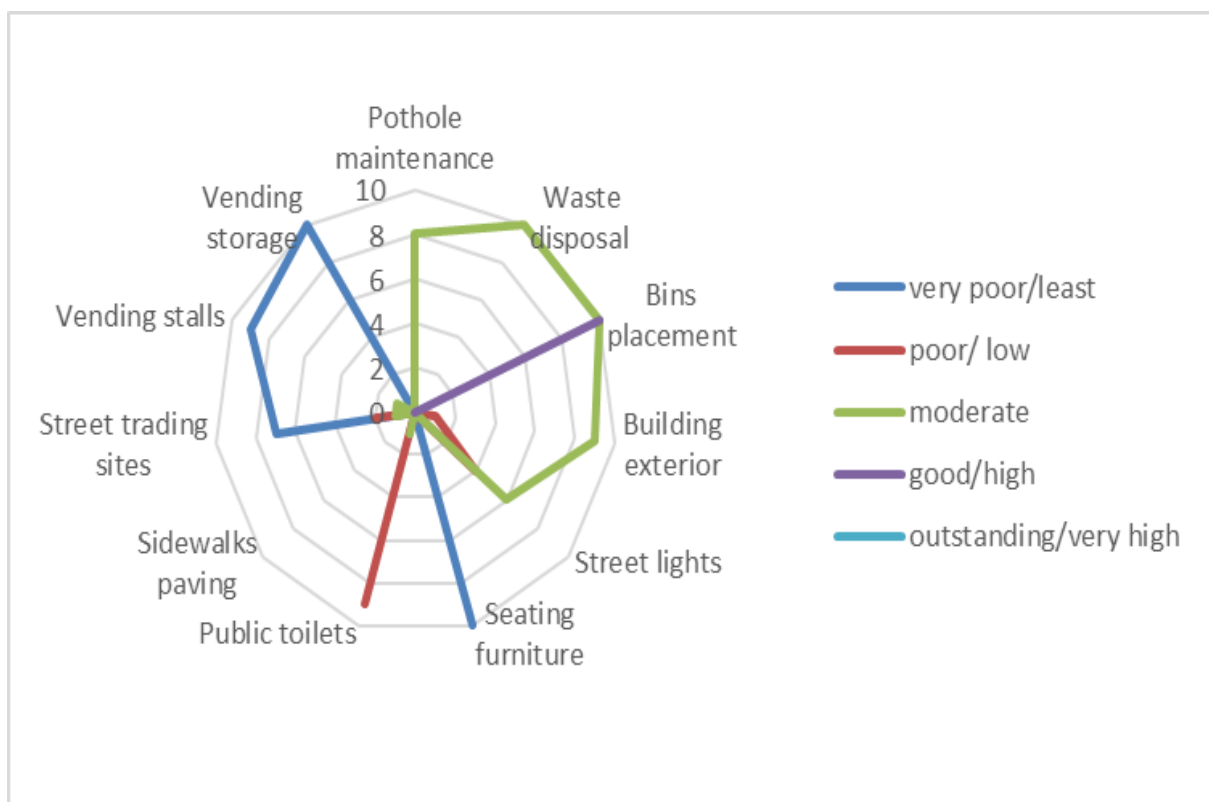


Figure 5-34: Maintenance and management of street spaces in Louis Trichardt CBD
Source: Author's construct (2020)

Figure 5-34 shows moderate to high quality of buildings exteriors, street bins and proper water disposal in 90% of spaces in Louis Trichardt Town. These indicators demonstrate the fair distribution of street space resources, reflecting spatial justice (Williams, 2013). Songozwi Street had some clearly marked sites for street trading, the vending stalls were well maintained, and some of the structures were permanent. However, temporary vending structures were of poor-quality structures and lacked storage spaces for vending ware. These findings reflect both justices and injustices. For example, street trading activities enable the right to livelihoods, yet poor storage space and quality of trading structures signify injustices (Matjomane, 2018). Municipalities in SRTs follow different maintenance and management strategies. The prioritisation of maintenance is to a greater extent, determined by funding.

5.8 Clustering of maintenance and management of street spaces in the small rural towns

A comparison of similarities and differences of street spaces in the three SRTs was done by performing HCA. The dendrogram shown in Figure 5-35 below highlights the three main clusters identified from performing HCA on the quality of maintenance and management. The 3 clusters portrayed in the dendrogram can also be visualised in each town as shown on maps in Figures 5-36, 5-37 and 5-38.

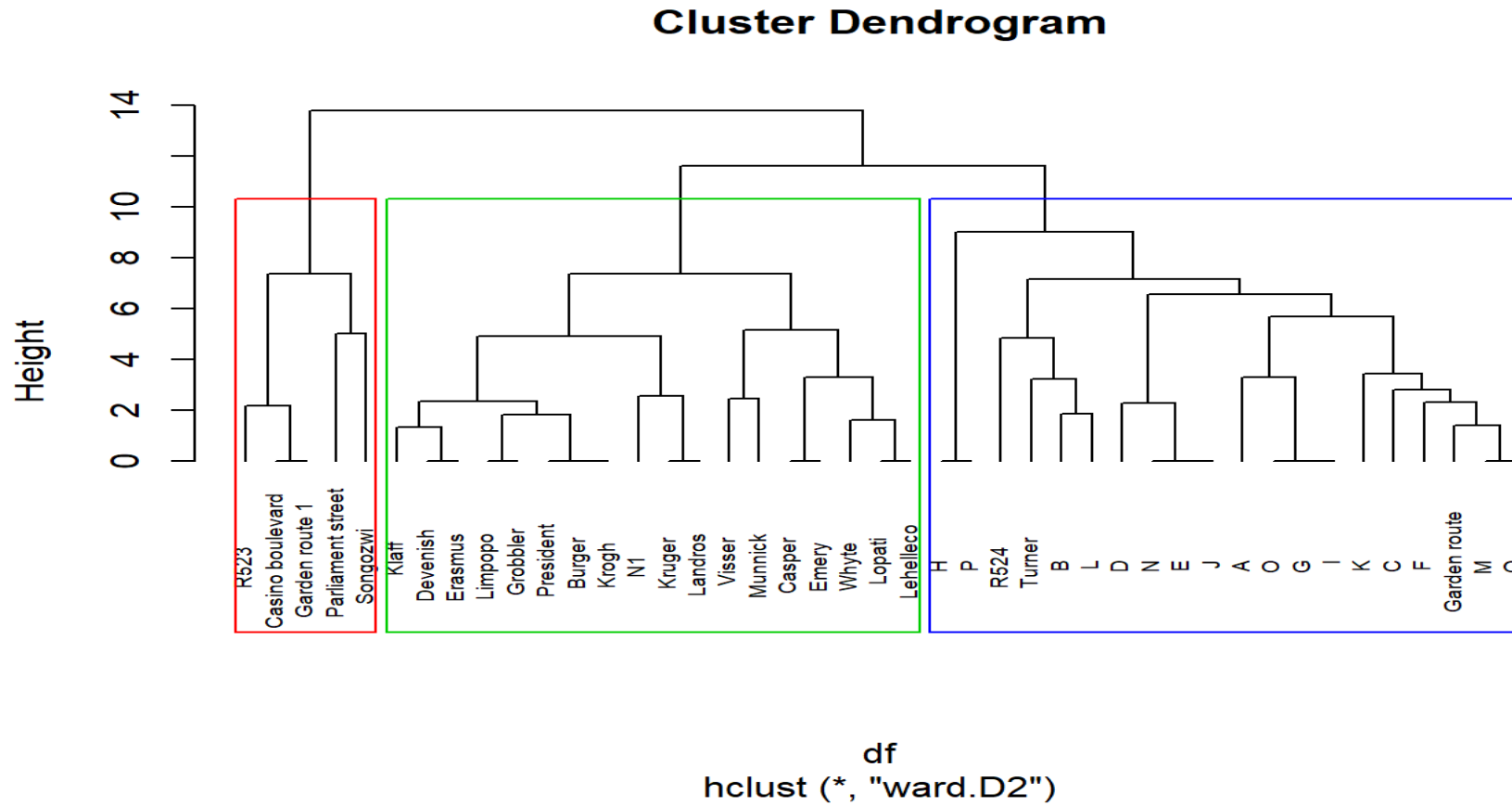


Figure 5-35: Street space clusters membership for legibility in the SRTs
 Source: Author's construct (2020)

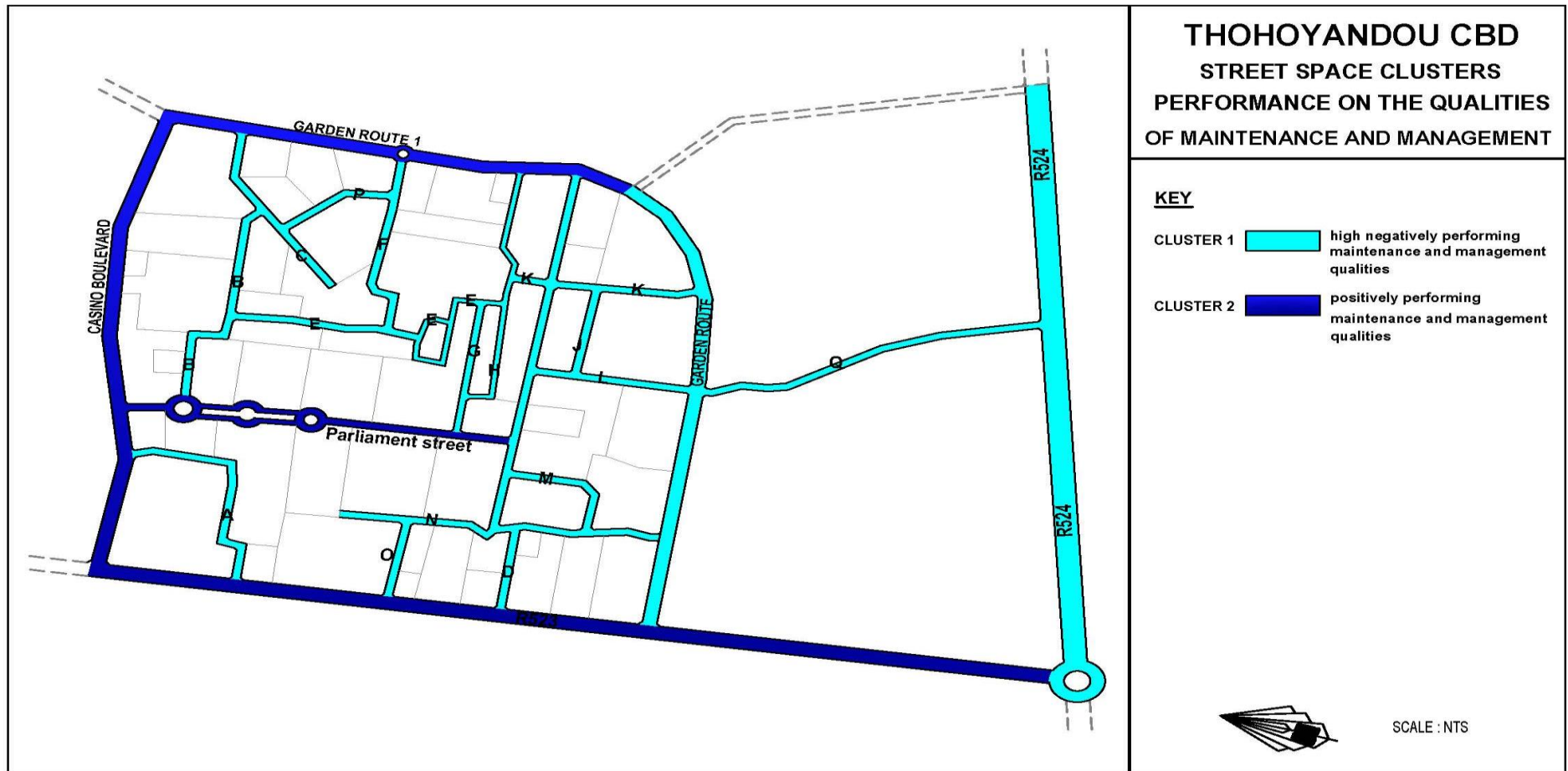


Figure 5-36: Two clusters of maintenance and management qualities in Thohoyandou CBD
 Source: Author's construct (2020)

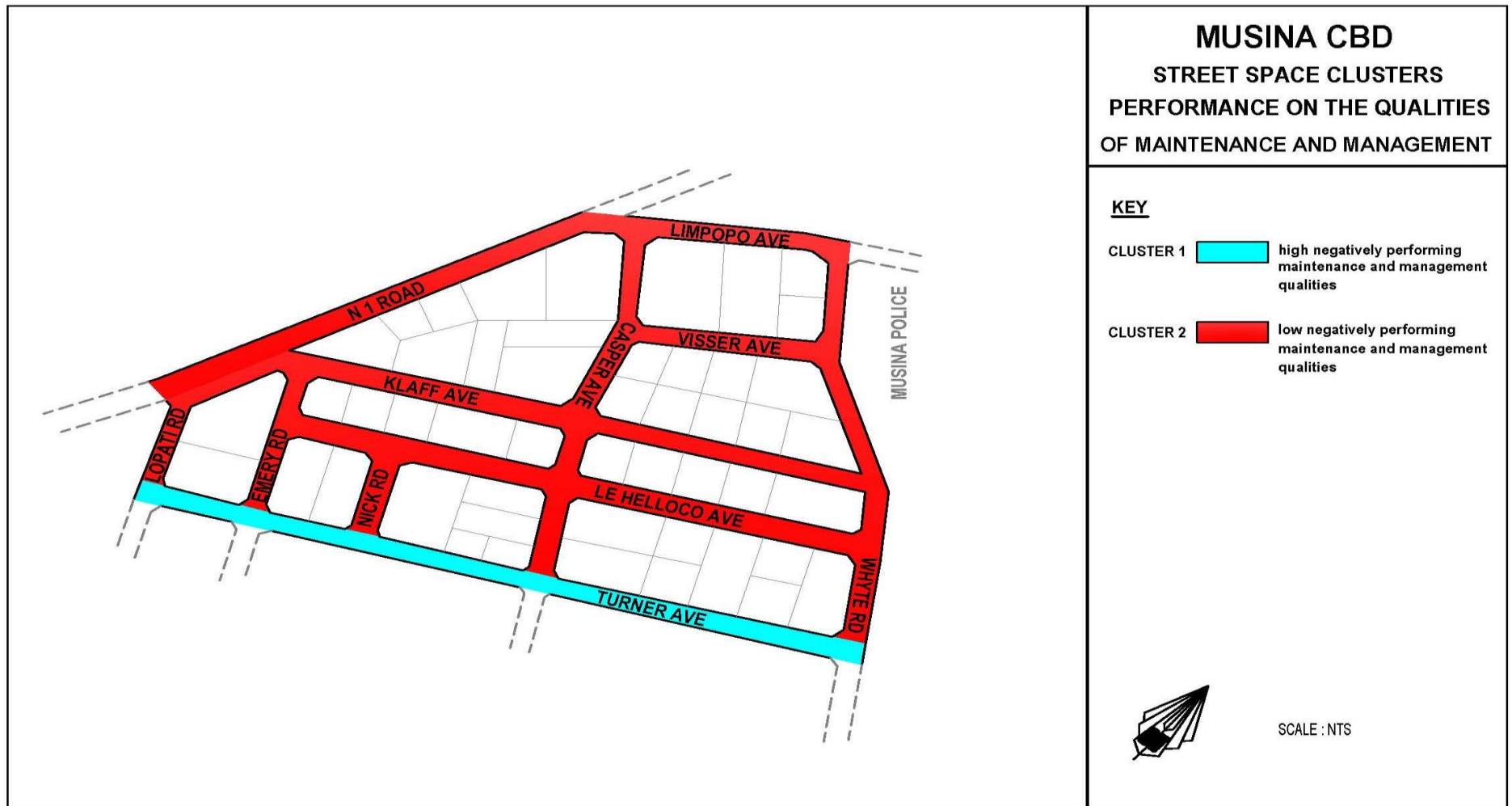


Figure 5-37: Two clusters of maintenance and management qualities in Musina CBD
Source: Author's construct (2020)

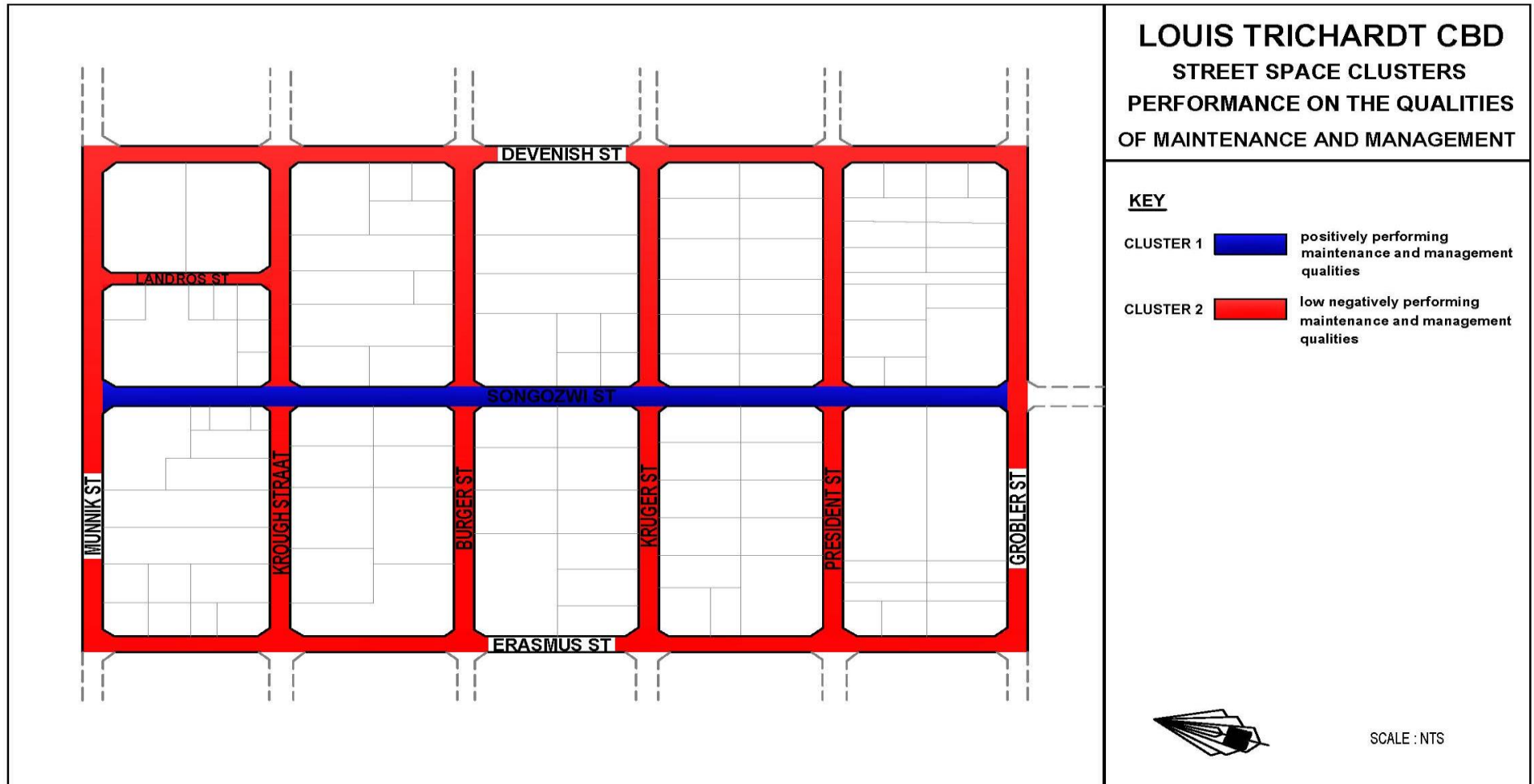


Figure 5-38: Two clusters of maintenance and management qualities in Louis Trichardt CBD
 Source: Author's construct (2020)

A clearer understanding of the how each attribute of maintenance and management performed in each cluster is shown through standardised mean z-scores in Table 5-5.

Table 5-5: Street spaces cluster means for maintenance and management

Variables	Cluster		
	Cluster 1	Cluster 2	Cluster 3
Maintenance of potholes on sidewalks	-0.93284	0.57863	0.694897
Proper waste disposal	-0.42201	0.168802	0.011947
Strategic placement of waste disposal bins	-0.75349	0.096658	0.810365
Adjacent buildings exterior looks well maintained/free from vandalism	0.34181	0.508478	0.238545
Well maintained street lighting features	-0.49159	0.70945	0.349139
Well maintained seating furniture	-0.3585	2.724565	-0.3585
Proximity to public toilets	-0.2365	0.29874	-0.179797
Clearly marked site for street trading	-0.176343	0.74838	0.011947
Quality of vending stalls	-0.33597	1.315098	0.007999
Quality of storage facilities	-0.31651	-0.31651	2.40548
Averages	-0.23851	0.805752	-0.00112
Rank	3	1	2

Source: Author's construct (2020)

In terms of ranking of street space clusters, Cluster 1 is the least performing ($z = -0.23851$), followed by Cluster 3 which ranks second with a low negative performance ($z = -0.0011$). Cluster 2 is the positively performing cluster which is better than Clusters 1 and 3 with positive average mean score of $z = 0.805752$. Cluster 1 has 86% of the total street spaces from Thohoyandou Town, and 10% of the total streets from Musina Town. Cluster 2 has 14% from Thohoyandou Town and 10% of streets from Louis Trichardt Town. Cluster 3 has 90% of street spaces from both Musina and Louis Trichardt towns.

Although most attributes Cluster 1 have negative mean scores in, an outstanding quality in this cluster is building exterior which are free from vandalism (0.34181). This accounts for spatial justice. The maintenance of buildings draws users to a place instead of repelling them (Karssenberget al. 2016; Nowosielski and Nowosielska, 2020).

Cluster 2 comprises a provincial road - R524, a local distributor (Cassino Boulevard), and Garden Route from Thohoyandou Town. In the case of Louis Trichardt Town, Songozwi Street, a local distributor are in Cluster 2. One can assume that the municipalities tend to concentrate more on maintenance and management of higher-order roads that are predominantly for vehicles in comparison to access street spaces for pedestrians (Department of Transport, 2014). The quality of storage facilities for street traders was poor (-0.3166) in Cluster 2 but outstanding in Cluster 3 with a positive mean score of $z=2.40548$. One outstanding indicator was clearly marked sites for street trading whose mean z score is 0.7484. This shows the tolerance of the local municipality towards the informal sector. In fact, street management policies that are more favourable to disadvantaged groups of street users such as street traders are more spatially just since they promote the 'Right to the City' of users.

Cluster 3 is characterised by moderate to poorly maintained street spaces as shown by the negative average mean of (-0.0011). Street spaces in Cluster 3 comprise most street spaces in Musina and Louis Trichardt Towns. This cluster is characterised by poor seating furniture ($z=-0.3585$) and poor proximity to public toilets ($z=-0.179797$). These are the qualities that make street spaces good public spaces and inadequate provision and maintenance of such represents spatial injustices.

Since most street spaces from the three towns fell between negatively performing Clusters 1 and 3, the respective municipalities can start by strengthening the indicators with negative average means such as proximity to public toilets and improving seating furniture and maintain the positive attributes.

5.9 Characterising all the spatial (in)justice attributes on street spaces in the small rural towns

When HCA is performed for all the variables of spatial justice four key clusters emerged. Figure 5-39 is a dendrogram that shows the four which translate to various conditions of spatial (in)justice on street spaces in the three SRTs. For all the three SRTs, The clusters can also be visualises for each town as maps as shown in Figures 5-40, 5-41 and 5-42 respectively.

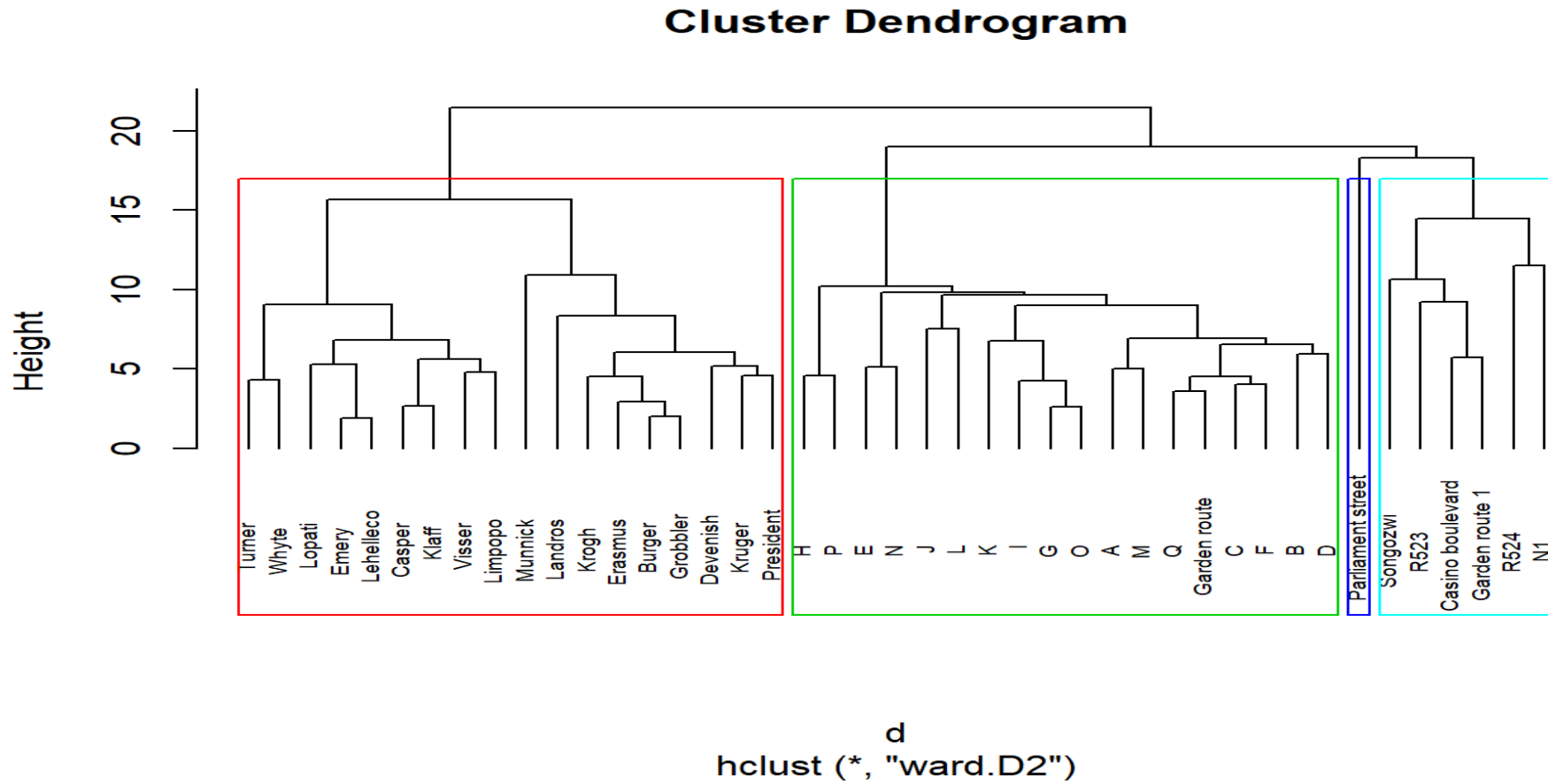


Figure 5-39: Street space clusters for all key variables combined
 Source: Author's construct (2020)



Figure 5-40: Three clusters of the spatial justice qualities combined in Thohoyandou CBD
 Source: Author's construct (2020)



Figure 5-41: Two clusters of spatial justice qualities combined in Musina CBD
 Source: Author's construct (2020)

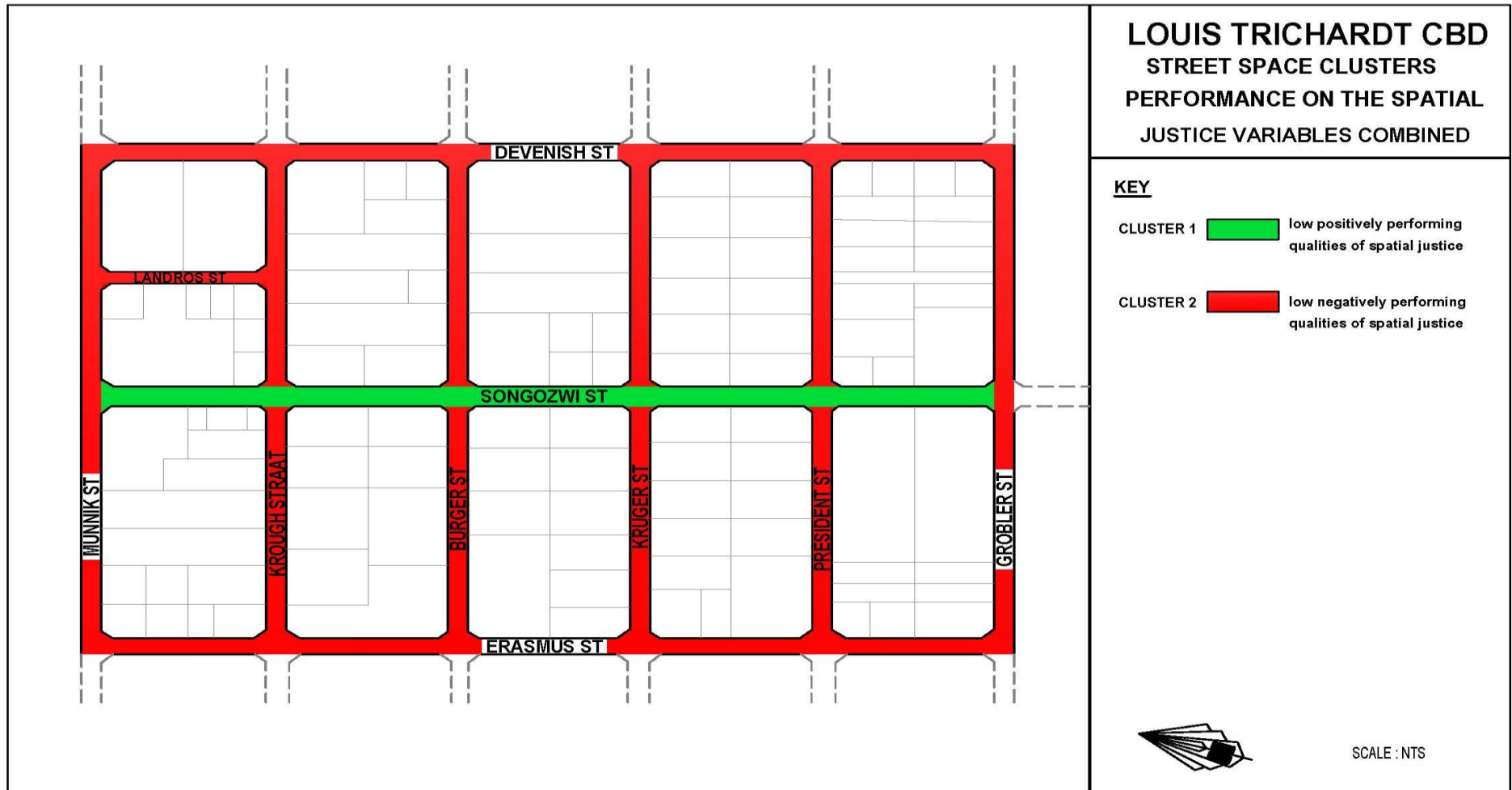


Figure 5-42: Two clusters of the spatial justice qualities combined in Louis Trichardt CBD
 Source: Author's construct (2020)

The standardised mean z-measurement scores for the indicators of each variable in Table 5-6 provide a clearer understanding of the overall performance of all the variables.

Table 5-6: Street spaces cluster means for variables of spatial justice from street space content

Variables	Cluster			
	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Street crossing	0.09001	0	0.540062	-0.27003
Street lighting	-0.28558	0.02929	0.659032	0.239204
Visibility of other human activities	0.276672	1.466361	0.07839	-0.38427
Presence of police within visibility	-0.66929	-0.66929	0.253129	0.622098
Continuous movement of pedestrians	0.071364	1.605687	-0.06812	-0.13786
Street pattern layout	0.211804	3.126221	-0.69895	-0.1525
Street blocks	-0.1827	-0.57551	1.48674	-0.2809
Crosswalk alignment with pedestrian routes	0.084863	1.527525	0.763763	-0.42431
Demarcation of sidewalk spaces	-0.48417	-0.98157	0.297445	0.439557
Interference of parking	0.151224	-1.62223	0.151224	-0.11151
Ease of access to a nearby termini	0.152499	0.152499	0.152499	-0.2118
Barrier-free	-0.51358	-3.27406	-0.51358	0.866663
Sidewalks wide enough for pedestrians	-0.63878	-2.35124	0.114694	0.731177
Connectivity with other public spaces/nodes	0.009297	0.568959	0.568959	-0.23056
Connectivity to landmarks	-0.21828	1.346059	-0.21828	-0.21828
Clear street signage	-0.84391	-0.84391	-0.06352	0.911964
Cultural identities in design	0.456553	2.241262	-0.4358	-0.4358
Free from loud noises	-0.01589	-1.79186	0.393955	-0.01589
Visual cues	-0.05513	-0.27066	1.022486	-0.27066
Attractive seating furniture	-0.29744	4.8186	0.981567	-0.29744
Spectacular natural views	0.16039	3.608775	-0.27066	-0.27066
Attractive building surroundings	0	1.892635	0.679407	0.517644
Celebrate special events or festivities	-0.03874	3.6259	0.62756	-0.37189
Variety of activities on adjacent buildings along the street	0.614894	0.614894	0.614894	-0.85402
Fit of activities with the form	0.21828	0.21828	-0.56389	-0.04244
Green infrastructure	-0.09305	1.28241	-0.03053	0.031988
Other heat reduction features	-0.1525	6.40494	-0.1525	-0.1525
Street flexibility	0.087355	3.843599	-1.16473	0.087355
Maintenance of potholes on sidewalks	0.811164	0.811164	0.617386	-1.06202
Proper waste disposal	-0.20319	-1.40669	-0.09378	0
Strategic placement of waste disposal bins	-0.65903	-0.65903	-0.34416	0.810365
Adjacent buildings exterior looks well maintained/free from vandalism	-0.30132	0.508478	0.508478	0.103579
Well maintained street lighting features	-0.585	0.949658	0.749485	0.282415
Well maintained seating furniture	-0.3585	2.724565	1.696878	-0.3585
Proximity to public toilets	-0.29597	0.29874	0.29874	0.179797
Clearly marked site for street trading	0.217442	-1.11827	-0.50179	0.011947
Quality of vending stalls	-0.33597	3.791705	0.695946	-0.10666
Quality of storage facilities	-0.31651	-0.31651	1.951815	-0.31651
Averages	-0.11227	0.774975	0.353874	-0.03886
Rank	4	1	2	3

Source: Author's construct (2020)

Cluster 1 is the least performing with a negative average mean score of $z=-0.11227$. It has 78% of the street spaces from Thohoyandou Town and no streets from the other towns. The indicators of clear street signage ($z=-0.84391$), narrow sidewalk width for pedestrians ($z=-0.63878$), presence of police within visibility $z=-0.66929$, and barrier-

free spaces ($z=-0.51358$) had the least scores. Some of these shortcomings can be attributed to the town's historic past, for example, the design of the town is not flexible to accommodate wide sidewalks for pedestrians. Other challenges are a result of management decisions that are orientated towards privatisation of public spaces through creation of sidewalk barriers.

Cluster 2 is the better performing of all and has a positive average mean score of $z=0.775$. Cluster 2 comprises only 1 street (Parliament Street) from Thohoyandou Town. The main outstanding positive attribute indicators in this cluster include visibility of human activities, cultural identity, seating furniture (in the form of ledges), and natural views. However, the street also had negative qualities such as lacking in the presence of police, narrow sidewalks of less than 1.2metres.

Cluster 3 is ranked second in terms of the performance of indicators with an average positive score of $z=0.3539$. Cluster 3 has 17% of streets from Thohoyandou Town, and a street each from Musina and Louis Trichardt towns. All the higher-order streets of the three towns are found in this cluster. One can assume that municipalities attend more to spatial justice attributes along major streets than access roads. The outstanding qualities are in form of clearly marked street crossing, presence of police, no parking interference, connectivity to landmarks, good quality of vending stalls and storage facilities. Cluster 4 ranked third in terms of cluster performance, with a negative average mean value of $z=-0.0389$. Cluster 4 had 90% of street spaces from Musina Town and 90%of street spaces from Louis Trichardt Town. The findings show that most street spaces in the 3 SRTs were in the poorly performing clusters namely Cluster 4 and Cluster 1. From a street space content perspective, key variables for spatial justice are poorly reflecting.

Figure 5-43 is an example of a model street space that integrates all the spatial justice variables while placing priority on non-vehicular users.



Figure 5-43: An example of a model street space integrating spatial justice variables
Source: Author's construct (2020)

An example of a model street space in Figure 5-43 integrates various elements of safety and security; accessibility and permeability; maintenance and management; legibility and robustness. In this case, the non-vehicular users can live, move, play and live (Gehl, 2011; Shaftoe, 2008). Jacobs (1961)'s 'eyes on the streets' concept is integrated as seen from the presence of a variety of users on the model street. Whyte (1980)'s 'good streets' concept is also shown from the availing of amenities such as public toilets, the presence of a market for traders, and a conducive microclimate. The model street prioritises non-vehicular users and street traders. The street is wide enough to be used as a shared space with other vehicular modes of transport and can be a waiting area for pedestrians who wish to use public transport. This model can also be critiqued in numerous ways as there is no design concept that can capture all the elements that measure spatial justice. Spatial justice on street spaces should however go beyond physical street design.

5.10 Spatial injustice hotspots in the selected small rural towns

The key variables to characterise spatial justice from a street space content perspective discussed above are made up of both objective and subjective indicators which can be observed and measured on street spaces. In reverse, the variables also animate the different forms of spatial (in)justice on street spaces. However, the manifestations of injustices are always easier to identify and map than the justices (Soja, 2008). Often the injustices represent the qualities we wish to see changed as they create more inequalities, while the justices portray those qualities that we wish to propagate as they represent fairness in the distribution of resources.

The maps in Figures 5-44, 5-45 and 5-46 show the spatial injustice hotspots for street spaces in the three small rural towns. The injustices have been categorised according to each key spatial justice variable

Spatial injustice hotspots for street spaces in Thohoyandou CBD

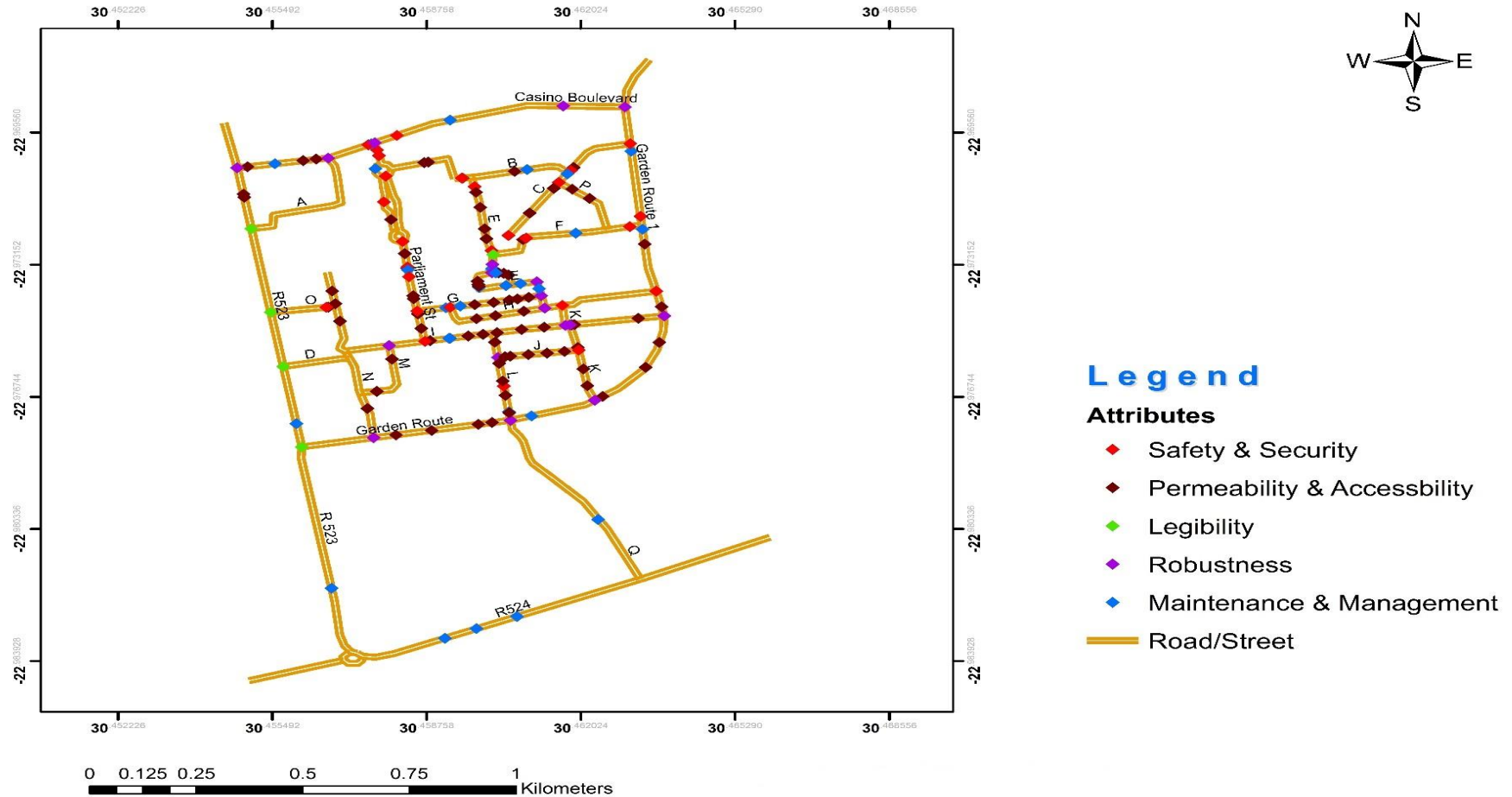


Figure 5-44: Spatial injustice hotspots for street spaces in Thohoyandou CBD
 Source: Author's construct (2020)

Spatial injustice hotspots for streets spaces in Musina CBD

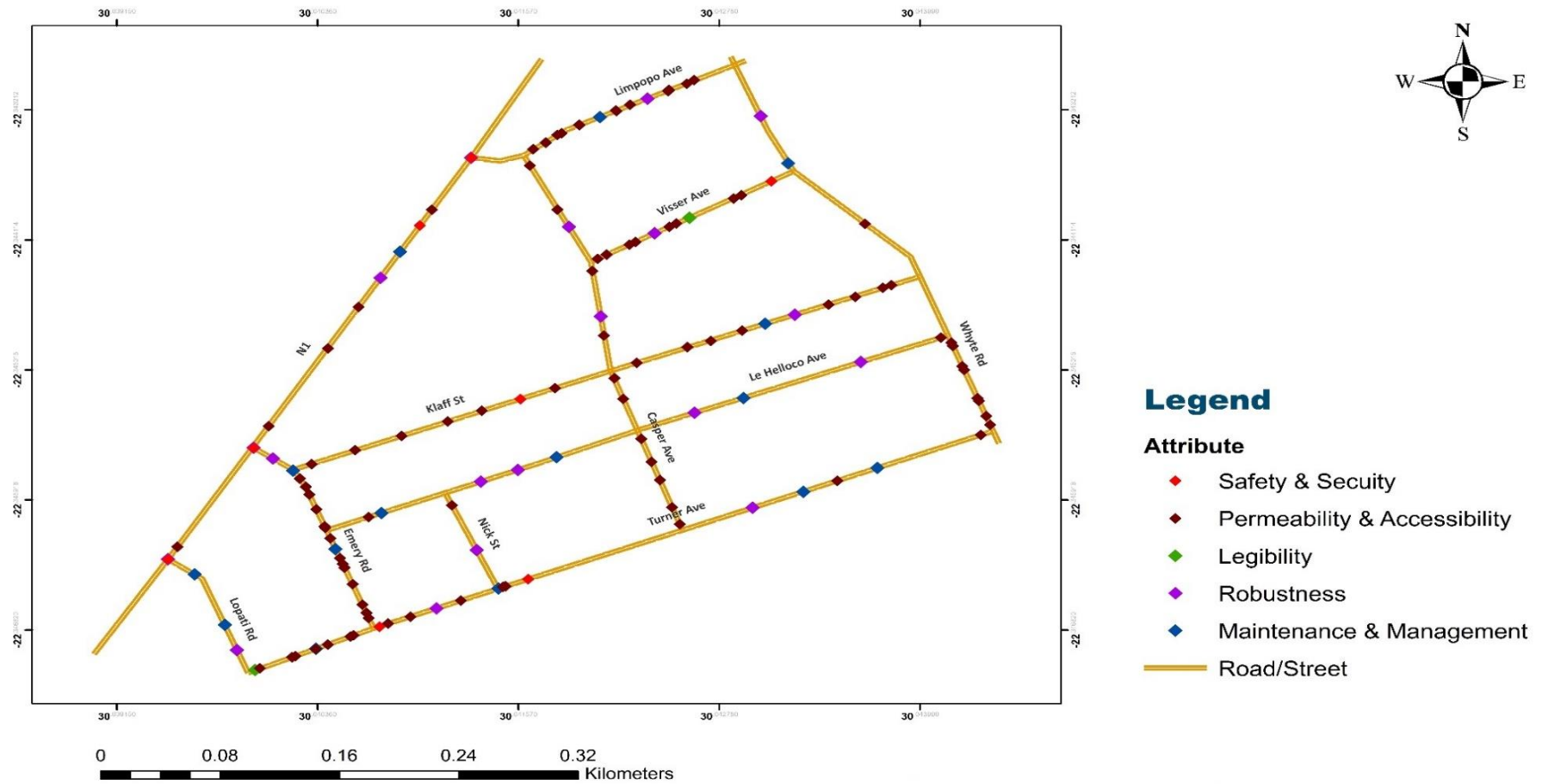


Figure 5-45: Spatial injustice hotspots for street spaces in Musina CBD
 Source: Author's construct (2020)

Spatial injustice hotspots for street spaces in Louis Trichardt CBD

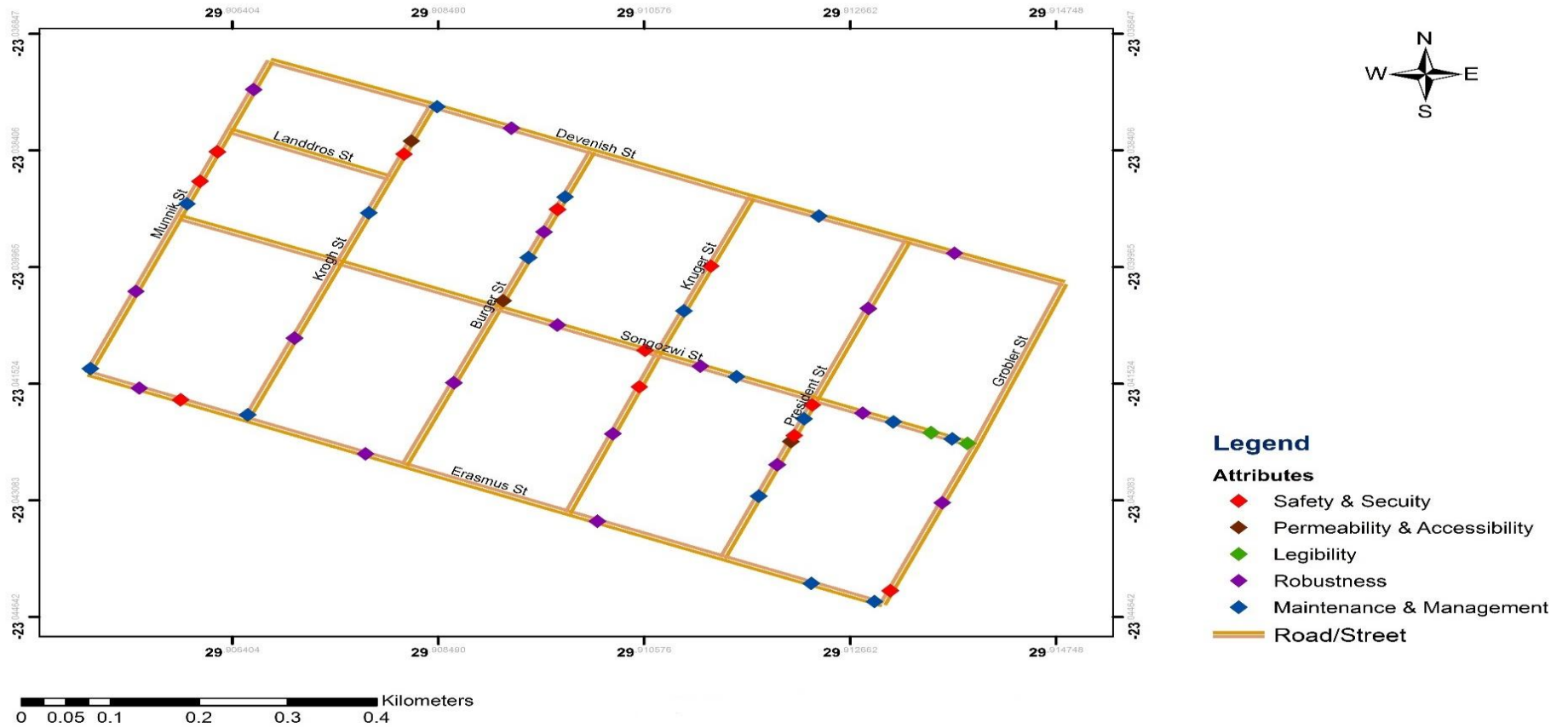


Figure 5-46: Spatial injustice hotspots for street spaces in Louis Trichardt CBD
 Source: Author's construct (2020)

The spatial injustice hotspots in Figures 5-44, 5-45 and 5-46, show red zones where effort should be directed to create more just spaces. For example, in Thohoyandou and Musina towns, permeability and accessibility are featuring quite distinctly on the hotspots map, while safety and security feature distinctly in Louis Trichardt Town. The hotspots however, only show what was observed on the street spaces in SRTs when a street space inventory for all street spaces was carried out during the month of January 2019 and updated in July 2019, some of these parameters have certainly changed. This is because spatial (in)justice is an evolving process.

From these visual representations, one can observe that injustices manifest in all street spaces of SRTs. No single space is completely spatially just as street spaces are not static (Hartman and Prytherch, 2015). The processes of design and management which produce these spaces always reproduce spatially (un)just street spaces. In some cases, the injustices are temporary, for example, the blockage of a sidewalk by vehicles or by street trading ware. These injustices are difficult to map as they are instantaneous activities but affect the quality of street spaces and often infringe the users' 'Right to the City' claims. In other cases, nonetheless, injustices are more long-term damaged sidewalks (for example, photograph 5-7 in this Chapter 5, shows a damaged sidewalk along Songozwi Street in Louis Trichardt Town). Therefore spatial (in)justice on street spaces is indeed a dynamic phenomenon that is fluidal and transitory, and in some instances long term.

5.11 Chapter Summary

This chapter characterised spatial justice from a street space content perspective. The key assumption was that the positive performance of key variables of spatial translates into spatially just street space content. All three towns had an overall poor performance in these key variables. Seven street spaces were identified to be positively performing across all spatial justice attributes while the remaining 36 street spaces were negatively performing. Parliament Street in Thohoyandou stands out as a separate cluster that has more positive qualities because it had some unique features such as ledges for sitting, a water feature for cooling the environment and an amphitheatre for entertainment that improves the overall imageability of the city (Lynch, 1960). The spatial injustice hotspots reveal that no single street space is completely spatially just, the injustices are sometimes temporary, while others are more permanent.

Municipalities in these three towns can start by improving negatively performing attributes while maintaining the positive ones as a starting point towards improving the street space content. However, it is also important to take lessons from other cities that are improving their street spaces to become more spatially just. A holistic approach to understanding spatial justice from the perspectives of the street space user's is discussed in the proceeding chapter - Chapter 6.

CHAPTER 6 : SPATIAL JUSTICE FROM A STREET SPACE USERS' CONTEXT

6.1 Introduction

This chapter seeks to address my second research objective on the analysis of spatial (in)justice from street space users' physical perceptions of street spaces qualities. Understanding the spatial justice phenomena on street spaces is incomplete when the views from the street space users are lacking. The assumption is that spatial (in) justice is experienced by street space users as they meet, make meaning and move on streets. Street users differentially experience safety and security, accessibility, legibility, variety, maintenance and management on street spaces. Their physical perceptions correspondingly affect their disparate 'Right to the City' claims which include:(i) the right to safety, (ii) right to access, (iii) right to identity, (iv) right to opportunities and or livelihoods, and (vi) right to use-value of good public space amongst many other 'Right to the City' claims. Where users' 'Right to the City' claims are met or enhanced, spatial justice is attained. On the other hand, infringement of these claims translates to spatial injustice. I hypothesise that expectations or the meaning of street users' place on a particular spatial justice variable differ from their experience with the same as they interact with street spaces.

Intentionally targeted were non-vehicular street space users (alternatively referred to as street users or users) because this group is often disadvantaged in favour of vehicles in planning, design, and management of streets spaces (see Section 2.6 in Chapter 2). The proceeding second section highlights the methodological overview, followed by the presentation and analysis of my findings. Sections three to seven of this chapter present the effect of users' physical perception on the various "Right to the City" claims of the street space users. The eighth section discusses the first research hypothesis. The ninth section discusses the second research hypothesis. The last section is a chapter summary. Figure 6-1 shows the focal issues on which this analytical chapter is zooming on.

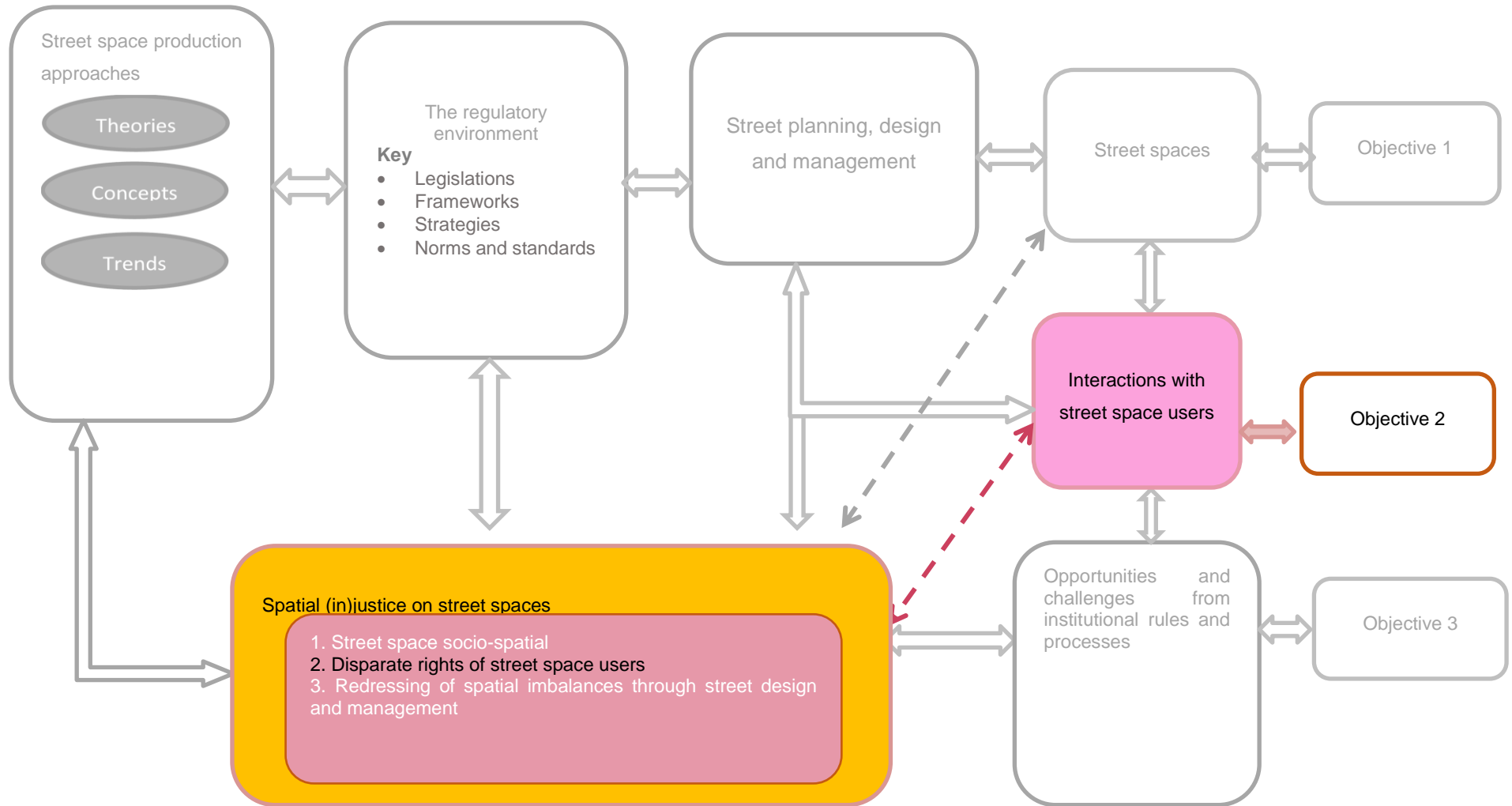


Figure 6-1: A framework for analysing spatial (in)justice from the perspective of users' needs
Source: Author's own construct (2020)

There is a clear connection between users' perceptions of socio-spatial attributes of spatial justice and the 'Right to the City' claims. This is conceptualised diagrammatically as illustrated in Figure 6-2.

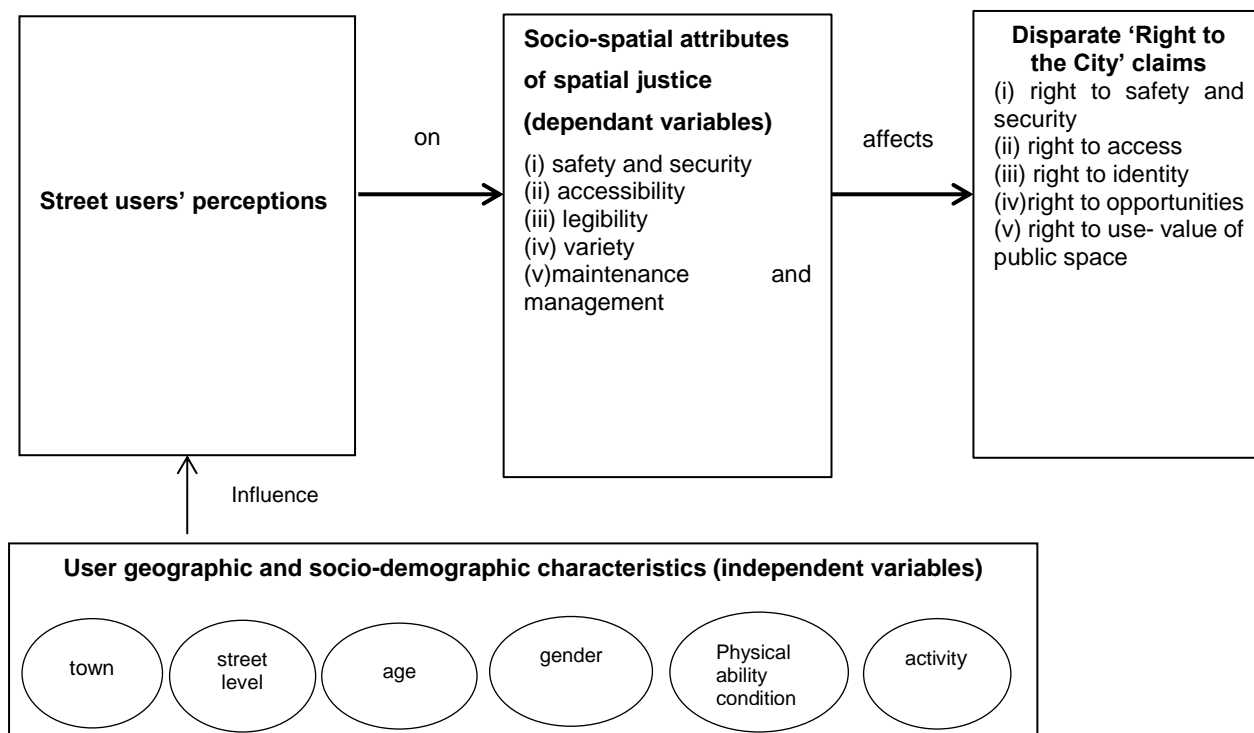


Figure 6-2: Relationship between users' perceptions and 'Right to the City' claims
Source: Author's construct (2020)

Figure 6-2 reveals that users' geographic location and socio-demographic characteristics such as gender or age influences their perceptions about spatial justice variables which affect their disparate 'Right to the City' claims (Mehta, 2007; Rezafar and Turk, 2018). Users' ability to make these 'Rights to the City' claims represents spatial justices while an infringement in making of these claims are the injustices.

6.2 A methodological overview of spatial (in)justice from the context of street space users

To address this objective, I used data that were canvassed through multiple data collection strategies (see Section 4.6 in Chapter 4). Through a street intercept survey, 500 questionnaires were administered to various street space users from Thohoyandou, Musina and Louis Trichardt Towns. In addition, semi-structured interviews with 8 key experts knowledgeable in street space planning, design and

management; and direct observations of street space users' behaviour as they experience space in the SRTs were other key sources of data.

Quantitative tools for data analysis employed include descriptive statistics in the form of custom tables and bar graphs, Kruskal-Wallis equality of populations rank test and Wilcoxon-rank sum tests (see section 4.8.3 in Chapter 4). Qualitative analysis of keywords, phrases and themes were analysed using thematic analysis as recommended by Babbie and Moutton (2012). Total qualitative responses varied by question within the surveys, as not all respondents offered an opinion on each open-ended question. A word cloud application was also used to describe keywords from a text (see Section 4.8.1 in Chapter 4). The study findings seek to address the objective's key research question and hypotheses (see Section 1.7 in Chapter 1). The 'Right to the City' (Lefebvre, 1968); Responsive Design Elements (Bentley et al. 1985); the Legible City (Lynch, 1960); the Public Space Management Framework (De Magalhães and Carmona, 2008); and Spatial Planning Outcomes (Mashiri et al. 2017) were used to extract meaning from the research findings.

6.3 Street users perceptions of street space safety and security

Street space users' perceptions of street safety and security of the street were measured using indicators of (i) presence of police, (ii) presence of other users, (iii) street lighting, (iv) non-anti-social behaviour, (v) presence of cameras, and (vi) roadside fences. My main assumption is that if users are satisfied with these indicators or measures, then users have a claim on their right to be safe on street spaces and the street space is spatially just in terms of street safety and security.

Table 6-1 shows the means and standard deviation (SD) users satisfaction responses on the safety and security measures for the 3 SRTs.

Table 6-1: Users' perceptions of safety and security measures in the small rural towns

Indicator	Thohoyandou		Musina		Louis Trichard		All 3 towns	
	mean	SD	mean	SD	mean	SD	mean	SD
i. Presence of police	2.839	1.384	3.103	1.401	2.711	1.220	2.9	1.367
ii. Presence of other street users	4.290	0.910	4.065	0.924	3.922	0.877	4.15	0.919
iii. street lighting at night	2.541	1.353	2.994	1.365	3.567	1.082	2.87	1.365
iv. Non anti-social behaviour	3.059	1.493	2.252	1.042	2.678	1.207	2.86	1.385
v. Absence of cameras	2.118	1.208	2.329	1.058	2.511	0.951	2.23	1.122
vi. Fences on roadside	2.420	1.428	2.645	1.252	2.556	0.949	2.42	1.245
	Σ 17.27		Σ 17.39		Σ 17.95		Σ 17.43	

Source: Author's construct (2020)

The results in Table 6-1 apply to all discussions on users' safety and security throughout this section. The mean provides an average of satisfaction scores, the mid-point mean represents the expected average score the standard deviation shows how spread out the data is from the mean (Almquist et al. 2014).

6.3.1 Perceptions of safety and security for street space users in Thohoyandou Town

In Thohoyandou Town, the perceptions of street space users on safety and security show that the mean satisfaction level is generally low on all responses. The sum of all the means is 17.27, which is below the mid-point of 18 reveals that users were experiencing more injustices than justices in terms of safety and security. The more satisfactory indicators are the presence of other street users and the absence of anti-social behaviour. This concurs with popular views by Jacobs (1961) that 'eyes on the street' are an important element of safe streets. However, muggers are often uncomfortable with such elements for fear of detection. It was established that most streetlights were not functional in Thohoyandou Town, while security fences are a common feature, especially along Parliament Street. The fences are in form of street palisades meant for the securitisation of shops. Street space users in Thohoyandou Town clearly expressed dissatisfaction with the fences and said, "*They are useless. They restrict movement. They cause discomfort as one cannot walk freely. They are an inconvenience*". These responses reflect the conflicting set of rights that exist in urban space as the interests of private property owners to ensure the safety and security of their property clash with the accessibility needs of street users (Mitchell, 2003; Bonilla, 2012).

Mixed sentiments were obtained regarding the presence of police in Thohoyandou Town. This dissatisfaction was in some cases attributed to their presence or even their absence. Some street space users held a negative perception about the presence of police because of previous unpleasant encounters at the hands of law enforcement officers. On the other hand, some users wished for the presence of police to improve street safety from criminal elements. For example, one street space user opined that, *"Safety is an issue that most of us are concerned about in this town. The lack of visibility of police officers makes us prey to criminals here"*. This is a 'cry and a demand' from one user, which is a 'Right to the City' claim. Other street users also expressed the need for traffic police at pedestrian crossings since most streets in Thohoyandou Town do not have traffic lights. Other users, however, negatively perceive the presence of police. For example, a street user stated that, *"The police around here do not care about our safety. If you see them patrolling, they will be busy looking for shabeen (illegal liquor sellers) operators so that they can at least demand a bribe from them"*. Indeed, in the same space, a thousand stories can be told at once (Massey, 2005; Soja, 2008; Philippopoulos-Mihalopoulos, 2014). Therefore, one's meaning of spatial justice on street spaces about safety and security differs from another. This makes the concept of safety and security as ambiguous and complex as the construct of spatial justice which it seeks to measure.

6.3.2 Perceptions of safety and security for street space users in Musina Town

In Musina Town the mean satisfaction level from the surveyed users is 17.39 which is also below the mid-point of 18, this also reveals that users in the town were experiencing more spatial injustices than justices in terms of safety and security. Similar to the findings from Thohoyandou, the presence of other street users is the most satisfactory safety measure in the town. Contradictions about these perceptions were also revealed. For example, one street user from Musina Town said, *"This town is like Joburg (Johannesburg), there are so many people, and it is quite unsafe. When I come here for shopping, I don't bring my phone and wallet"*. Another street user also said, *"... if robbers come to us right now, don't think any person will help you here, people will just watch you and continue with their business"*. These sentiments show that fears of crime are highly pronounced in this town. This is also evidenced in the low satisfaction with non-antisocial behaviour in the town. The local municipality official ascertained that crime rate was high in the town.

Street space users held divergent views about the presence of police in Musina Town. For example, one migrant street space user stated that *"I always try to avoid seeing the police because they will obviously demand to see my passport"*. This shows that one's circumstances determine how they perceive a measure of spatial justice. Other users were dissatisfied with the presence of police in the town because they lacked confidence in their role of ensuring safety and security in the town. Another user said, *"the police are concerned about traffic offenses where they are likely to get a bribe, not with our safety"*. These are all divergent views that are describing one phenomenon on a street space in Musina Town. This reflects the complexity of assessing perceptions of spatial justice as individual experiences differ.

6.3.3 Perceptions of safety and security for street space users in Louis Trichardt Town

Similar to Thohoyandou and Musina towns, the mean satisfaction level of the surveyed users in Louis Trichardt Town is less than the mid-point mean of 18 as shown in Table 6-1 above. The most satisfactory measure of the presence of other street users was also similar to findings from other towns. The most outstanding dissatisfying conditions were the absence of night-time street lighting (mean = 2.556) and the absence of cameras (mean= 2.511). Streetlights in Louis Trichardt Town as elsewhere in the selected SRTs were not properly maintained to provide night-time street lighting.

General dissatisfaction with the different measures of safety and security is reflected in the three towns. This is shown by a mean score of 17.43 that is less than the mid-point mean score of 18 (see Table 6.1). The differences between these means shows that most of the surveyed users were not enjoying their spatial claim of experiencing safety and security on street spaces in all towns thus reflecting spatial injustice. Dissatisfaction with fences was highlighted more strongly in Thohoyandou while in Musina concerns were more on non-anti-social behaviour. The issues of street lighting and cameras were more prominent in Louis Trichardt Town. The most dissatisfying issues were not peculiar or confined to a single town, but rather common in other towns as well. This shows that users' perceptions sometimes differ with contexts. These findings confirm the complex and varied dynamics of the right to similarities and differences of street space users in SRTs.

6.4 Street users perceptions of street space accessibility in small rural towns

Street space users' perception of accessibility was assessed using the main indicators of (i) wide sidewalks, (ii) non-interference of sidewalks with parking, (iii) availability of cycling lanes, and (iv) barrier-free spaces. The key assumption was that if these indicators are satisfied, the street users' 'Right to the City' claim of freedom of access is met. The right to access or spatial link reveals spatial justice on street spaces. The main findings on users' street space perceptions on streets accessibility for each of the SRTs are displayed in Table 6-2.

Table 6-2: Users' perceptions of satisfaction with accessibility in the small rural towns

Indicator	Thohoyandou		Musina		Louis Trichardt		All 3 towns	
	Mean	SD	mean	SD	mean	SD	mean	SD
i. wide sidewalks	2.604	1.162	3.090	1.276	3.567	1.171	3.080	1.350
ii. non –interference of parking with sidewalks	3.357	1.320	3.013	1.269	3.589	0.959	3.290	1.261
iii. barrier-free space	2.906	1.414	3.503	1.130	3.689	0.990	3.800	1.078
iv. availability of cycling lane	1.020	1.029	2.555	1.112	2.856	0.989	2.630	1.120
	∑9.89		∑12.16		∑13.7		∑12.8	

Source: Author's construct (2020)

6.4.1 Perceptions of accessibility for street space users in Thohoyandou Town

The total mean level of satisfaction for the surveyed users in Thohoyandou Town of 9.89 is lower than the mid-point mean of 12. This shows that users in Thohoyandou Town were experiencing more injustices in terms of streets accessibility in comparison to justices. The issue of cycling lanes had the least level of satisfaction because there are no such lanes in Thohoyandou Town CBD. There is also a general low satisfaction, particularly with the width of sidewalks and barriers on sidewalks. Street spaces in Thohoyandou Town were opened to vehicular access of the CBD after the road expansion through the Thohoyandou Urban Regeneration Project in 2011. Although the project benefited vehicular street space users, non-vehicular users were disadvantaged because the sidewalks were narrowed thus affecting pedestrians ease of mobility and reduced the trading space for street traders.

A street user in Thohoyandou Town said in TshiVenda, *"A thifuni u tshimbila badani nga uri bada ndi thuku nahone dzo dales vathu vanzhi vha a tshimbila nga milenzhe.* [Translated in English] I do not like travelling on foot in the CBD because the sidewalks

are too narrow and overcrowded”. Conversations with a municipal official further revealed that, “*there was no space for further expansion of roads in the CBD. As such, the municipality had to reduce the space for sidewalks to create space for vehicular users*”. This example is a typical case of how street planning and design processes can create or reproduce spatial (in)justice by trying to resolve another form of injustice. This injustice is evidenced through the infringement of users' right to movement on street spaces (Middleton, 2018). It also affects the freedom of choice which street users have in deciding where one can and cannot go (Bentley et al. 1985; Karssenberget al. 2016). Photograph 6.1 below illustrates obstructed sidewalks by shop goods. This represent a form of (in)justice of spatial link which is experienced by users in Thohoyandou Town.



Photograph 6-1: Blocked sidewalks obstructing pedestrian movement in Thohoyandou Town
Source: Research survey (2019)

Photograph 6-1 above clearly shows conflict over the use of space between pedestrians as street space users and shop owners who also use the same spaces for displaying their goods for sale. As a way of negotiating this conflict, pedestrians usually go around the obstructions by opting to use the carriageway meant for vehicles. As such, pedestrians as the least advantaged group of street space users compromise their right to safety. The concern on the provisioning of barriers on sidewalks was therefore strongly raised by street space users in Thohoyandou Town.

This is because while fence barriers act as security measures for private property owners, to the pedestrians, the fences are an accessibility hindrance (Varna, 2014). The fence barriers channel the movement of pedestrians in one particular direction, thereby reducing the right of freedom of movement for pedestrians. Furthermore, the barriers create conflict for space between street users and infrastructure. As an example, the space shared by the street users and utility infrastructure along Parliament Street is less than 1 meter, whereas the standard uninterrupted space for pedestrians is 1.2 m (DOT, 2014). Competition and conflict for access to street space is a form of spatial injustice on the part of users as their mobility needs are infringed. Photograph 6-2 that illustrates the accessibility challenges for non-vehicular users created by the fence barriers in Thohoyandou Town.



Photograph 6-2: Street barriers on sidewalks in Thohoyandou
Source: Research survey (2019)

6.4.2 Perceptions of accessibility for street space users in Musina Town

In Musina Town, a mean of 12.16 was obtained on satisfaction with accessibility measures. This mean is above the mid-point mean of 12 as displayed in Table 6-2. This shows that the sampled users in Musina experienced more justices in terms of street accessibility than injustices. A reflection on the surveyed users' perceptions indicates that most of them were satisfied with the accessibility indicators such as barrier-free sidewalks and wide sidewalk widths except on the issue of cycling lanes

that were not available just like in Thohoyandou Town. It was observed that the common causes of accessibility challenges were blockage of sidewalks by vehicles, vending wares, and shop wares as illustrated in Photograph 6-3.



Photograph 6-3: Accessibility challenges by street space users in Musina
Source: Research survey (2019)

Photograph 6-3 depicts pedestrian–vehicular conflict whereby vehicles (left side) are parked illegally on sidewalks resulting in pedestrians resorting to using the carriageway. Some responses that were put forward also confirm the observations on accessibility challenges. For example, comments from street space users state that “... vendors block our way, no way to pass because of Malaitchas (illegal cross-border transport operators), informal trading activities are too many on streets, it is very difficult for one to pass through, shopping displays block the way”. Since Musina is a border town, illegal cross-border transporters ferrying goods for cross-border traders are significantly popular. Often, these Malaitchas block sidewalks with their truck and trailers, thereby infringing on the street users' right to freedom of access. This, in turn, generates an array of spatial injustices. Discussions with a local municipality official also confirmed the challenge of Malaitchas in this town as he said, “Malaitchas are causing a lot of havoc in this town. This issue should not be a municipality issue alone.

Of course, here and there we impound their vehicles, but they are too many to be handled by our municipal police”. The sentiments from the local municipality official point to the need for a multi-stakeholder approach to confronting this accessibility challenge in Musina Town.

6.4.3 Perceptions of accessibility for street space users in Louis Trichardt Town

In Louis Trichardt, the mean satisfaction with accessibility of 13.7 was obtained from the street space users. This score is the highest in comparison to the other two towns and is above the mid-point mean of 12. This shows that users in Louis Trichardt Town generally experience justice in accessibility more than in other towns. In Louis Trichardt Town, unlike in Thohoyandou and Musina towns, there were fewer street trading activities that commonly block the way for other non-vehicular users.

The municipal official for Makhado Local Municipality also confirmed that they had no challenges with street trading activities in this town. The street layout for Louis Trichardt Town assumes a clear gridiron pattern with wide sidewalks that can accommodate pedestrians (see Section 6.4.3 in Chapter 6). The width of sidewalks in all streets is more than the minimum recommended width of 1.2 m for the physically abled and 1.8 for those living with a physical ability challenges as can be seen in Photograph 6-4.

Photograph 6-4 shows that users in Louis Trichardt enjoy the ease of mobility on sidewalks due to their width sizes. This gives users the right to access, which is a form of spatial justice (Bentley et al. 1985; Middleton, 2018).



Photograph 6-4: Wide sidewalk along a street in Louis Trichardt
Source: Research survey (2019)

In summary, all the three selected small rural towns lack specific cycling lanes, and therefore the users' perceptions of this accessibility measure were mostly dissatisfying to neutral. More dissatisfaction with accessibility as a measure of spatial justice on street spaces was obtained from Thohoyandou Town in comparison to the other two towns. This is attributed to inadequate sidewalk widths following the stance taken by the municipality to be more accommodative of vehicles through the Urban Regeneration Program of 2011. This aligns with arguments by Soja (2010) and van Wyk (2015) who state that processes of producing urban [street] spaces are sometimes responsible for recreating spatial injustices.

In Musina Town, the accessibility challenge was not in the lack of adequate sidewalks per se, but the obstructions of sidewalks by other activities such as street trading and illegal parking. However, in Louis Trichardt Town, the street space users did not raise any major concerns on accessibility. This is because the town was designed with wide sidewalks of more than the recommended minimum width of 1.2m (DOT, 2014). These findings, therefore, show the variability of spatial injustices from activities that inhibit rather than support pedestrian movement on street spaces of SRTs.

Regarding the physically disabled street space users in the three selected town, additional indicators such as (i) presence of ramps, (ii) smooth pavement and (iii) getting assistance from other people who use the streets were considered. In all the towns, there was general satisfaction with getting assistance from other users, while the issues of smooth pavements were problematic mostly in Thohoyandou and Musina towns. The availability of ramps was more satisfactory for the surveyed users in Thohoyandou Town than those in Musina and Louis Trichardt towns. These variations could be attributed to the fact that the streets in Thohoyandou Town were recently improved. Therefore, they were more accommodative of new design principles in comparison to the other two towns where no such improvements were made. This infringes on the users with physical disabilities 'Right to the City' and is a form of spatial injustice.

Photograph 6-5 below illustrates an accessibility challenge on a typical street space in Musina town. A closer look at Photograph 6-5 shows that there is no ramp for ease of mobility at the edges of the sidewalk, which is an accessibility barrier for wheelchair users.



Photograph 6-5: Accessibility challenges for a wheelchair user in Musina Town
Source: Research survey (2019)

6.5 Street users' perceptions of legibility in small rural towns

Legibility perceptions of street space users were assessed using the indicators of (i) relating to one's culture. (ii) familiarity with what features to find from start to end, (iii) well informed about street activities, (iv) memorable landmarks, and (v) clear street directional signs. In my analyses, I argue that more legible street spaces are spatially just than the ones that are illegible because legible street spaces are easily identifiable, and the users are empowered with the knowledge of where they are and how to go where they want. For this reason, users can claim their identity and right to presence (Bentley et al. 1985; Lefebvre, 1992). The findings on surveyed users' perceptions of satisfaction with legibility in the three towns are highlighted in Table 6-3.

Table 6-3: Users' perceptions of satisfaction with legibility in the small rural towns

Indicators	Thohoyandou		Musina		Louis Trichardt		All 3 towns	
	mean	SD	mean	SD	mean	SD	mean	SD
i. I can relate culturally with this street	3.431	1.302	2.916	1.211	2.830	1.104	3.164	1.268
ii. I know what features are found from the start to the end	4.008	1.147	3.684	1.263	3.540	1.123	3.824	1.193
iii. I am well informed about street activities	3.169	1.391	4.065	0.895	3.970	0.841	3.148	1.292
iv. Landmarks in this town are memorable	3.878	1.179	3.123	1.186	3.130	1.182	3.952	1.043
v. The street signs are clear	3.753	1.257	3.303	1.350	4.090	0.729	3.674	1.24
	Σ18.23		Σ17.09		Σ17.56		Σ17.76	

Source: Author's construct (2020)

6.5.1 Perceptions of legibility for street space users in Thohoyandou Town

The mean satisfaction on legibility perception in Thohoyandou Town of 18.23 is higher than the mid-point mean value of 15 (see Table 6-3). This reflects that legibility was generally not perceived to be a problem by street space users. However, the street design inventory by experts shows that the indicators of legibility reflected poorly (see Section 5.5.4 in Chapter 5). This reflects contradictions and controversies in the interpretation of ideal qualities that define spatially just street spaces. Street users' experience of space sometimes differs from how experts as outsiders view how a street space ought to be. For example, one street space user in Thohoyandou describes that, *"there are lots of cultural wares that are sold on the streets that I can identify with my culture in this town"*. Thus, the availability of cultural ware gives the user a sense of identity and enables one to make meaning in their everyday spaces which is a form of justice (Lynch, 1960). This finding is contrary to Bentley et al.

(1985)'s findings that legibility is attainable through street design. Photograph 6-6 shows the cultural wares and artefacts depicting the Venda culture and identity



Photograph 6-6: Cultural ware and traditional foods along Parliament Street in Thohoyandou Town
Source: Research survey (2020)

The cultural ware and traditional displayed in Photograph 6-6 above enhance the legibility of a street. A street space becomes easily memorable spaces to its users and thus depict the right to identity (Lynch, 1960). In Thohoyandou Town, the streets in the CBD are yet to be named. Only 22% of the users indicated dissatisfaction with street directional signs. Users identify streets through major nodes such as shopping malls and historical buildings. Although the local municipality official asserted streets in Thohoyandou Town, do not yet have official names, users identified with a street that connects the Vhembe District Municipality Offices with Government offices, with the pseudo name Parliament Street. This illustrates the right to personalisation which is a justice where street space users can give their own identity to a place.

6.5.2 Perceptions of legibility for street space users in Musina Town

The surveyed users in Musina had a mean satisfaction of 17.1, which is also higher than the midpoint mean score of 15. It also shows that the street space users were generally satisfied with the condition of street legibility thus more spatially just than

unjust in terms of legibility. Dissatisfaction was registered most on issues related to cultural identity. As a border town, street space users are cross-cultural such that it is difficult for one to find a particular symbol that can relate to this diverse group of users. This presents a paradox in that while street space users could not find any cultural identity on street spaces which is an injustice, diversity of users is a form of justice. This is because street spaces are public spaces for all users. For example, in some towns such as Nairobi and Cape Town, open street festivals integrate diversity (Holzwarth 2018; Williams, 2018). Although Musina has got street names, only 32% of the street space users could not positively identify the street names (see Appendix 41). This was coupled with the fact that some street signs were observably damaged. This affects users' imageability of the city, and this translates into a form of spatial injustice (Lynch; 1960).

6.5.3 Perceptions of legibility for street space users in Louis Trichardt Town

The mean satisfaction for the surveyed street users in Louis Trichardt Town is 17.56, which is also more than the mid-point mean of 15. The street space users' dissatisfaction was mainly with the measure of cultural identity. The assumption is that the application of universal design standards in the planning and design of the street does not capture the uniqueness of the local people's culture. Sixty-five percent of the street space users in Louis Trichardt Town could positively identify street names of the streets they were using. From observation, most street names in Louis Trichardt Town are clearly marked and therefore readable even for first-time visitors. This is a form of justice.

In summary, all three selected small rural towns exhibited more satisfaction than dissatisfaction with the measures of legibility. The highest level of satisfaction was obtained in Thohoyandou, then Louis Trichardt and Musina towns. Although in Louis Trichardt Town, all street spaces are named, which is a clear indicator of legibility, other indicators such as cultural identity were also important in defining legibility from users' perspectives. The findings were contrary to what was obtained from experts' street inventories, where legibility indicators were poor in all the towns (see Section 5.5.5 in Chapter 5). Williams (2018) explains that street users normally prioritise what they get from the existing street spaces. As such, some of the legibility considerations which were prioritised by urban planning experts were viewed differently by street

users. For example, while the issue of directional signs is an important consideration in determining a street's legibility, street space users, however, were divergent about this measurement of legibility. Such contrasting views are common when trying to understand a complex phenomenon such as spatial justice which is interpreted differently by different users.

6.6 Street users' perceptions of variety of streets in small rural towns

Interrogation on the street space users' perception of variety was assessed using eight indicators namely (i) opportunities for work, (ii) opportunities for residing or living in the street, (iii) opportunities for playing, (iv) connects to shops, (v) connects to the park, (vi) connects to malls, (vii) connects to the bus terminus, and (viii) connects to the market. I argue that street spaces are multifunctional places that should offer a variety of uses so that its users can claim social, physical, and economic benefits or rights. The assumption is that street spaces that offer variety are more spatially just than street spaces that do not. The satisfaction perceptions of the surveyed users from each town are displayed in Table 6-4 below. Further unpacking of these findings is done in the following sections.

Table 6-4: Users' perceptions of satisfaction with variety in the small rural towns

Indicators	Thohoyandou		Musina		Louis Trichardt		All 3 towns	
	mean	SD	mean	SD	mean	SD	mean	SD
i. work opportunities	3.365	1.462	3.510	1.235	3.644	1.084	3.46	1.334
ii. residing along the street	2.059	0.676	2.161	0.743	1.956	0.702	2.072	0.704
iii. play opportunities	2.957	1.486	3.529	1.271	3.656	1.133	3.26	1.396
iv. shops where I buy from	4.020	1.066	3.826	1.014	3.944	0.916	3.946	1.026
v. connect to the park	3.082	1.484	2.639	1.184	3.678	1.110	3.052	1.377
vi. connects to the mall	3.980	1.228	3.839	1.114	3.767	1.102	3.898	1.172
vii. connects to the bus stop	3.945	1.225	2.974	1.324	3.433	1.237	3.552	1.328
viii. connects to the market	4.016	1.140	4.013	0.912	3.756	1.145	3.968	1.078
	Σ27.42		Σ26.49		Σ27.83		Σ27.21	

Source: Author's construct (2020)

6.6.1 Perceptions of variety for street users in Thohoyandou Town

In Thohoyandou, the satisfaction mean of 27.4 is higher than the mid-point mean of 24. It shows that generally, the users were satisfied with how the indicators of variety were animated on street spaces in the town. From the comments, 36 street users explained, in brief, the variety of uses they appreciated about Thohoyandou Town.

These comments include the availability of hotels (6 street users); proximity to the park (5 street users); many malls to shop from (8 street users), taxi rank (7 street users) and variety of goods found on the street (10 street users). These sentiments show that street space users found street spaces as places where they can get various services such as goods on the street and from shops. The presence of the University of Venda on the bounds of Thohoyandou Town CBD creates opportunities for university-town-gown relationships (see Moffat, 2017). These views demonstrate that a variety of land-uses on streets offer more choice and opportunities, and thus the right to enjoy and get the most out of the street environment for street users (Bentley et al. 1985; Agevi et al. 2016; Doumpa and Broad, 2016).

Street uses that are mostly prioritised by the street space users in Thohoyandou Town include channels of movement to work, meeting, shopping, eating and relaxing (see Appendix 42). These expectations concur with Gehl (2005)'s assertion that great streets should have necessary, social and optional activities. However, from the observations made, street spaces in Thohoyandou Town did not offer conducive conditions for more social activities because of the limited seating spaces in public open spaces. From observations made, street trading activities are more vibrant in Thohoyandou Town in comparison to Musina and Louis Trichardt Towns (see Figure 7-2 in Chapter 7). Locally in South Africa, Government departments such as the Department of Human Settlement (2019) and researchers Harber and Parker (2018) and Matjomane (2018) call for local municipalities in developing countries to integrate street trading activities into the formal economy, to create inclusive street spaces which are spatially just.

6.6.2 Perceptions of variety for street users' in Musina Town

The mean satisfaction about the variable of variety for users in Musina Town of 26.5 is also above the mid-point mean of 24. Dissatisfaction on indicators of residential opportunities, connection to the park and the terminus was raised by the users. Observations made in this town showed that retailing activities were more dominant; there is no residential accommodation in the CBD; there is a single taxi rank for public transport; and no public park. This limits the overall users' experience of opportunities that should be offered in towns and cities. An official from the Vhembe District Municipality stated that *"When this town was established, it was meant to serve the*

small mining community with basic day to day goods. However, there were not expansion plans. It is only after the crisis in Zimbabwe in the 2000s that this town really started to grow and other services like building hardwares started coming in". This narrative shows that because of unplanned growth in Musina Town, there are limited options of various services in its CBD. However, as one moves out of the CBD; a fairly new mall, some hardwares, car sale parks, and Chinese shopping complexes are found. The Municipality's Spatial Development Framework (2015) explicitly spells out the potential of establishing Special Economic Zones in this town because of its important role as the gateway to the rest of Africa.

In addition, necessary and social activities are prioritised by street users in Musina Town (see Appendix 43). However, street spaces did not adequately provide a conducive environment for social activities such as relaxing as there was no seating furniture along streets, thus inherent injustices were present within the street spaces of Musina Town. Street users in Musina Town were precise in prioritising street trade and residential uses as a low priority on street spaces. Conversations with the local municipality official revealed that there is no residential land-use in the CBD, and "the norm in this town is that people come in the morning and at night everyone goes back home". Although residential use was considered a low priority, proponents (Shaftoe, 2008; Gehl and Svarre, 2013) postulate that streets should be places to live, work and play. However, for Musina streets spaces are more mono-functional places of work than for living and playing.

6.6.3 Perceptions of variety for street users in Louis Trichardt Town

The mean satisfaction of users in Louis Trichardt Town on the perception of variety in this town is 27.8. It is more than the mid-point mean of 24. From the observations made, the streets showed a mix of a variety of uses. For example, along the main street (Songozwi Street), one would find office blocks, Caravan Park, banks, eating places, and car service shops. Louis Trichardt Town has a historic background of formal spatial planning where the element of mixing land-use or variety in street planning and design is distinct. This illustrates that street space production processes can either facilitate or hinder spatial justice on street spaces. Prioritised street uses are the same as those for the other two towns (see Appendix 44). Residential use and celebrations had neutral motions showing uncertainty amongst users on whether such

uses were important or not in the CBD. Williams (2018) gives insight that trying to re-imagine ideal street spaces is a challenge especially when the only spaces which users know are the ones, they already use every day.

In summary, the mean satisfaction perception of variety is above the mid-point mean in all the three selected small rural towns of Vhembe District. Louis Trichardt had the highest value (27.8), followed by Thohoyandou (27.4) and Musina (26.5). The level of satisfaction with variety is high in the towns even though street spaces in the case study towns only permit necessary activities on street spaces but are not conducive for social and optional activities. As a result, there is an infringement of street users' right to benefit from opportunities that street spaces can offer, although users expressed satisfaction with most of the measures. Williams (2018:161) states that, "It is very difficult for anyone to reimagine their life or their streets by simply thinking or talking about it when there is no opportunity". Street space users in SRTs find satisfaction and derive meaning from the space that are currently available rather than idealised spaces.

6.7 Street users' perception of maintenance and management of streets in small rural towns

Interrogation on the street space users' perception of maintenance and management was assessed using the indicators of (i) general cleanliness, (ii) replacement of streetlights, (iii) availability of waste bins, (iv) availability of public toilets, (v) maintenance of seating furniture, and (vi) pothole maintenance. The indicators above are the most common performance measures of the basic level of maintenance and management, which were used to describe the meaning of maintenance and management in this study. As street space users interact with street spaces, they experience the outputs from the maintenance and management of street spaces in numerous ways which determine the (un)justness of their interaction with the street spaces. I argue that if users are satisfied with the measures of maintenance and management as they are experienced on street spaces, then there is spatial justice. The findings on users' perceptions of maintenance and management from each of the towns are reflected in Table 6-5 below. Space is only considered to portray justice if the actual mean satisfaction value is greater than the midpoint mean value for each

specific indicator. The meaning behind these mean values is further explicated in the proceeding discussion sections.

Table 6-5: Users' perceptions of maintenance and management in the small rural towns

Indicators	Thohoyandou		Musina		Louis Trichardt		All 3 towns	
	Mean	SD	mean	SD	mean	SD	mean	SD
i. General cleanliness	3.275	1.404	3.103	1.378	3.700	1.116	3.298	1.361
ii. Timeous replacement of streetlights	2.467	1.327	2.832	1.367	3.567	1.152	2.778	1.368
iii. Availability of bins	2.804	1.409	3.303	1.402	3.789	1.117	3.136	1.408
iv. Public toilets availability	2.137	1.286	1.994	1.142	2.400	1.169	2.14	1.228
v. Maintenance of seating furniture	2.114	1.232	1.974	0.993	2.522	1.238	2.144	1.177
vi. Regular pothole maintenance	2.557	1.438	2.600	1.322	3.022	1.245	2.654	1.378
	Σ 15.35		Σ 15.81		Σ 19.0		Σ 16.15	

Source: Research survey (2019)

6.7.1 Perception of maintenance and management in Thohoyandou Town

The mean of users' satisfaction is 15.4, which is below the mid-point mean of 18. This shows that there is general dissatisfaction with the measures of maintenance and management amongst the surveyed users in Thohoyandou Town. The satisfactory measure was only in terms of the general cleanliness of the town. Some of the common comments which users gave in expressing dissatisfaction with some maintenance and management are illustrated in Figure 6-4. These comments by street users reflect the injustices street users experience on street spaces in terms of lack of access to basic services such as public toilets and street bins. It is a demonstration that the users' right to participation and the right to basic services are being interfered with. The Municipality official also confirmed some of these findings during the interview. The Official indicated that *"the major challenges the municipality face in the management of street spaces are issues of illegal hawkers (traders), illegal dumping of waste in the street and stormwater systems"*. However, the official also clarified the importance of making users pay a small fee of R2 to use public toilets as a measure to regulate use. If people pay for using toilets, this contributes to buying toilet paper and detergents, as well as salaries for the cleaners.

There is a gap between how the municipality views the delivery of the basic service of public toilets and how street users expect the service to be delivered. This also shows the controversy of the meaning of public space, where the germane question is how public is a public space (Madanipour, 2010). Indeed, a lack of these basic resources on street spaces is an infringement on the users' rights to access basic services

(Brown and Kristiansen, 2009; UCLG, 2015). When users cannot access basic services, many other rights to the city claims are affected, for example, the use-value of public space, right to street resources, right to appropriation, right to modification, right to difference, right to safety and security.

6.7.2 Perception of maintenance and management in Musina Town

In Musina Town, the mean satisfaction of measures of maintenance and management is 15.81. It is also below the mid-point value of 18. This also shows that generally, the surveyed users were dissatisfied with the maintenance and management measures. General cleanliness and waste bins were indicated to be more satisfactory measures. Photograph 6-7 and 6-8 shows the state of some street spaces found in Musina Town.



Photograph 6-7: A street with potholes in Musina Town

Photograph 6-8: Street bins along N1 in Musina Town

Source: Research survey (2019)

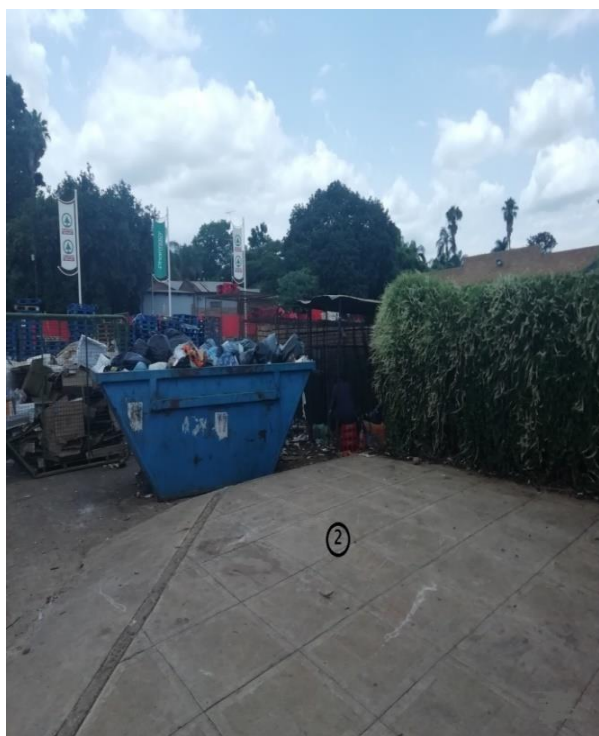
Photographs 6-7 (1) and 6-8 (2) reveal the dual nature of spatial (in)justice, whereby space reflects both justices and injustices at the same time. Photograph 6-7 is a street with potholes which is an injustice; however, it looks clean, which is justice. Photograph 6-8 another street lined with street bins which is another justice. Various comments from street space users in Musina Town, as illustrated in Figure 6-4 reveals the dissatisfactory issues in the maintenance and management conditions on the street spaces. One interesting comment that said, “roads in Beitbridge town (in Zimbabwe) are better than the roads found in Musina”, shows the relativity of

experiences of spatial justice as described by Pirie (1983). Whereas spatial justice on street spaces is also defined by the fair and equitable distribution of street resources, often the poor availability of such resources leads to dissatisfaction by users. As a result, there is interference with the street users' right to street resources which are a basic need as well as the right to use the street space to carry out other social and optional activities which require a conducive environment (Gehl, 2005; Brown and Kristiansen, 2009).

6.7.3 Perception of maintenance and management in Louis Trichardt Town

The mean score of maintenance and management perception for users is 19. It is higher than the midpoint mean of 18. Dissatisfaction with issues of public toilets and maintenance of seating furniture was raised by users in Louis Trichardt Town. The street users expressed their dissatisfaction with the issues highlighted in the word cloud in Figure 6-3 (see Word Cloud). The use-value of public space in Louis Trichardt Town is depleted by the unavailability of public taps in the town which resulted in street users buying water. Arguably, when a public space loses its use-value and gives it an exchange value, it translates to spatial injustice, and it interferes with street users' 'Right to the City' (Lefebvre, 1996). All these concerns raised by street users in Louis Trichardt Town are considered as the forms of spatial injustices being experienced by street space users in terms of infringed 'Right to the City' claims on the right to participate and the right to public space.

Generally, the surveyed users in Louis Trichardt Town were satisfied with the condition of maintenance and management in street spaces. Photographs 6-9 and 6-10 show good maintenance of street spaces in Louis Trichardt Town.



Photograph 6-9: Street bins along a street in Louis Trichardt Town

Photograph 6-10: An example of proper waste disposal

Source: Research survey (2019)

Photographs 6-9 (1) shows street bins strategically placed and neatly aligned along a street in Louis Trichardt Town. Photograph 6-10 (1) shows proper waste disposal taking place along a street in the town. These positive issues are some of the reasons that the sampled street users are mostly satisfied with the maintenance of street spaces in Louis Trichardt.

In summary, street users in Louis Trichardt are more satisfied with the maintenance and management of street spaces in comparison to other towns. This shows that users in other towns experienced injustices in terms of maintenance and management more than users in Louis Trichardt Town. However, these user perceptions on maintenance and management of streets differ from the experts' observations which reveal that maintenance and management indicators for both Musina, and Louis Trichardt Towns were low and negatively performing for 90% of the streets, and 86% of the street spaces in Thohoyandou Town were high negatively performing on the same indicators. Thus, the interpretation of a justice quality differs between experts and users. In order to define spatial justice, both the views of the users' and experts should be considered. The differences in perceptions between towns generally reflect the differences in management approaches and priorities in each town.

Word clouds were developed to show keywords or phrases which users frequently highlighted in their general comments (the size of the word reflects the frequency of mention of that word) as shown in Figure 6-3 below. From the word cloud, it was established that most forms of injustices are related to issues of maintenance and management. The word clouds in Figure 6-3 shows that in comparison to Louis Trichardt Town, users from Thohoyandou and Musina Towns experienced seemingly more forms of injustices. The common injustices in all the towns were issues of public toilets, participation in decision making, vending space, streetlights, sewer problems. Unique to Thohoyandou are issues of inadequate bins and poor street signs and narrow sidewalks. Unique to Musina were injustices of crime, potholes and loud noises. In Louis Trichardt, the challenge of water, street benches and ramps were more dominant. The similarities and differences in the forms of spatial injustices experienced by users confirm that no geography is the same and that spatial (in)justices are perceived differently by users in different places (Pirie 1983).

6.8 Testing of hypotheses on users' satisfaction perceptions of spatial justice attributes

Hypotheses tests were performed to find out claims that at least one group of users (defined by various social-demographic characteristics) has statistically significant difference in the distribution of satisfaction scores of a spatial justice attribute. The tests were performed using Kruskal-Wallis equality of populations rank-sum (see Section 4.8.2.4 in Chapter 4).

Table 6.6 below displays the test results for each variable, respectively. The first column shows the independent categorical variables (Var) (such as a town, street level, gender, physical ability condition, age and street activity) that were being tested. The second column shows the groups being compared in each category. The proceeding columns show the probability value (p-value), which is the evidence against the null hypothesis and the significant emergent differences (SD) at a 95% confidence level. The test is found to be significant, a narration of the distribution is provided, for example, on the disability category under the accessibility variable, where it says yes < no. It means that surveyed users with a physical ability challenge have fewer satisfaction scores on accessibility than surveyed users without any challenges. As a result, users with a physical ability challenges experience more injustice with accessibility than surveyed users without a physical ability challenges.

From Table 6-6, for all the independent categories that were tested under safety and security, we fail to reject the null hypothesis in favour of the alternative hypothesis. This shows that there were no statistically significant differences in the distribution of satisfaction scores between all categorical variables at a 95% confidence level. It means that safety and security are not perceived differently despite the users' location (in terms of towns and street level), age, gender, physical ability condition and street activity. Both males and females had the same demand for the claim for the right to safety and security. Contrastingly literature views by Bivina and Parida (2019) and Osóch and Czaplinska (2019) state that perception of safety and security sometimes differs with gender and age.

Table 6-6: Statistically significant difference in users' perceptions of spatial justice variables

Key: Var (Independent categorical variables), SD (significant difference at 95% confidence level), Thoho (Thohoyandou)												
		Safety and security		Accessibility		Legibility		Variety		Maintenance management		
Var	Groups being compared	p-value	SD	p-value	SD	P-value	SD	P-value	SD	P-value	SD	
Towns	Thohoyandou Musina Louis- Trichardt	0.179	None	0.003	Musina>Thoho Louis Trichardt> Thoho	0.002	Musina<Thoho, Louis Trichardt< Thoho	0.032	Thoho< Louis Trichardt Musina< Louis Trichardt	0.001	Thoho< Louis Trichardt Musina< Louis Trichardt	
Street level	local distributor access street	0.147	None	0.254	None	0.006	Access<local distributor	0.5302	none	0.7492	None	
Gender	Male Female	0.579	None	0.76	None	0.76	None	0.9945	none	0.031	yes<no	
Physical ability condition	yes, no	0.469	None	0.035	yes<no	0.0254	yes<no	0.9171	none	0.9171	none	
Age	18-29years, 30-39years, 40-49years 50-59years, 60-69years	0.496	None	0.742	None	0.001	18-29years<30- 39years, 40-49years, 60-69years, +70years	0.432	none	0.0432	18-29years <30-39yrs, 40-49yrs, 50-59yrs	
Street activity	pedestrians street traders	0.950	None	0.02	pedestrians < street traders	0.11	None	0.5957	none	0.016	Pedestrian> street trader	

Source: Author's construct (2020)

The findings from Table 6-6 reveal that there are limited design options in terms of what the street spaces provide in terms of safety and security in the context of the case study small rural towns. This affects all street users the same, despite one's sex. Thus, confirming the assertion that users also have the right to similarities and the right to differences (Lefebvre, 1996).

The hypotheses tests showed that the users' satisfaction perceptions on accessibility significantly differed between towns. For example, users from both Musina and Louis Trichardt Towns had a higher distribution of satisfaction scores than users from Thohoyandou at a 95% confidence level. Therefore, in terms of the right to access freely, the sampled street users in Thohoyandou had fewer claims to this right in comparison to users from the other towns. The test shows that users with a physical ability challenges have a lower satisfaction score distribution than users without a physical ability challenges. Certainly, these two categories of users have differential accessibility needs (Bivina and Parida, 2019; DHS, 2019).

There are some considerations that able-bodied users can easily forgo are major safety concerns for people living with disabilities. For example, barriers that separate the carriageway from sidewalks provide safety for people with physical disabilities, although this is highly contested by Bonilla (2012) and Imrie (2012) who states that street barriers such as fences and bollards are forms of privatising public spaces. The test results also show that pedestrians have lesser satisfaction scores than street traders. This can be explained by the conflict for space that exists between street traders and pedestrians where pedestrians end up using the carriageway for ease of mobility although this is a threat to their safety (Ehrenfeucht and Loukaitou-Sideris, 2010).

The tests established that the distribution of satisfaction scores on legibility for Thohoyandou Town is higher than for both Musina and Louis Trichardt towns at a 95% confidence level. The users of access roads have lower satisfaction scores than those of local distributors. From the observations made, it is presumable that clear street signage and landmarks are likely to be along higher order roads than access streets. The physically disabled users surveyed had significantly lower satisfaction scores than those with a physical ability challenges. It can be deduced that since street users with

physical disabilities found the street spaces not easily accessible, consequently it would also be difficult to easily understand the street spaces or to identify with the street personally. Therefore, street users with a physical ability challenges had an infringed right to their own identity on street space, which is claimed through legible street spaces. Legibility perception also significantly differs with age. For example, those in the age range of 30-39 and 40-49 had a higher distribution of satisfaction scores than the younger age group of 18-29 years. These findings confirm the findings by Walters and Brown (2004) that a place's legibility is dependent on the age of its users. The demands of the youthful generation are more robust and require different space synergies which are not currently evident on street spaces in small rural towns. For example, the availability of free Wi-Fi makes spaces more vibrant and attracts the youthful generation. However, this facility was not available in the case study towns at the time of the surveys.

The tests also established that the distribution scores of satisfactions with variety between street users from both Thohoyandou and Musina towns are significantly less than those from Louis Trichardt Town at a 95% confidence level. This, however, contradicts the revelations from both the district municipal official and the Makhado Local Municipality official who pointed out that the town is lacking in economic vibrancy in comparison to the other two towns (see Section 6.6 in Chapter 6). It reflects differences between justice perceptions of users who experience the space and professionals who provide the spaces (Lefebvre, 1996).

In terms of satisfaction with maintenance and management, the distribution of scores for users from Louis Trichardt Town is significantly higher than street users from both Thohoyandou and Musina towns at a 95% confidence level. The level of street users' satisfaction with maintenance and management was dependent on the town. Although the municipalities in the three SRTs can share ideas on maintenance and management, ultimately the onus is upon each local municipality to implement what works in its context.

The differences in maintenance and management philosophies by the respective municipalities result in differential perceptions by users. The youthful age of 18-29 years has a distribution of scores on satisfaction with maintenance and management,

which are significantly less than the older age groups of 30-39 years, 40-49 years and 50-59 years. This can be attributed to the fact youths (18-29 years old) who are dubbed by Walters and Brown (2004) as the laptop generation may have unique needs such as smarter ways of maintenance and management of street spaces in comparison to older age groups. Pedestrians had a significantly higher distribution of satisfaction scores on maintenance and management than street traders.

Findings from the sampled street traders (see section 7.4.1 in Chapter 7) reveal that street users lack confidence in local municipalities because of failure to deliver on promises (also see Alam, 2010). As such, the street traders may perceive the maintenance and management of street spaces differently from pedestrians. Matjomane (2018), further explains that street traders occupy street spaces on a more permanent basis than pedestrians. As such, they are likely to observe and interact with the street spaces more often than pedestrians.

It can be seen from these findings that users' perceptions about a variable in some cases differ per category while in other cases there are no differences. This shows the contradictory nature of the concept of spatial justice. Thus, spatial justice can be variably felt. However, it remains an abstraction visible in town planning concepts such as safety and security, accessibility, legibility, variety, maintenance, and management. Spatial justice remains important for decision-makers to understand the specific needs of different types of street users in coming up with strategies of achieving ideal just street spaces.

6.9 Gap analysis between street users' perceptions of satisfaction and meaning placed on a specific variable

This section discusses the second research hypothesis, which states that there is a statistically significant difference between the meaning given by users on a particular variable and their satisfaction with the same variable as they use streets spaces. Wilcoxon rank-sum tests were performed, and the findings are presented in Table 6-7 below.

Table 6-7: Distributions comparisons between experience of a variable and perceived meaning

Distributions compared	z-statistic	p-value	Interpretation
Satisfaction with street safety The perceived meaning of street safety	5.0380	0.0000	Reject the null hypothesis in favour of the alternative for all the distributions compared
Satisfaction with accessibility The perceived meaning of accessibility	5.7440	0.0000	
Satisfaction with experience of legibility The perceived meaning of legibility	2.2320	0.0256	
Satisfaction with experience of variety The perceived meaning of variety	2.5590	0.0105	
Satisfaction with experience of maintenance and management The perceived meaning of maintenance and management	17.7370	0.0000	

Source: Author's construct (2020)

The findings in Table 6-7 above show the hypotheses tested. There were statistically significant differences between the distribution of scores of satisfaction and those placed on meaning. The findings confirm the claim that users' experience of a particular variable on street spaces differs from the expectations based on their interpretation of the meaning of the variables. As a result, there is a theory-practice gap because many injustices are animated on street spaces. These include (i) failure of streets as public spaces to meet the right of safety and security of street space users, (ii) interference on the right of ease of access by users due to lack of space, (iii) interference of the right of street users to better understand and enjoy more of their street environment, (iv) lack of spatial claims be able to live, work or experience street spaces as multifunctional spaces that offer variety of uses and (v) infringed rights to basic services which is an injustice to the spatial claims, links and power. However, these injustices are relative (Soja, 2010). While some users are experiencing injustices, other users are concurrently enjoying their 'Right to the City' claims. For example, the conflict between street traders and pedestrians where street trading wares take up sidewalk space. As a result, pedestrians risk their rights to safety and accessibility while street traders enjoy their right to livelihoods.

6.10 Chapter Summary

From this chapter, the diverse, conflicting, and sometimes corresponding expectations and experiences on street spaces also reflect the diversity of street users and their right to difference. Interactions of street space users with street spaces revealed the spatial justice paradox whereby an attempt to find common ground in defining variables revealed both connecting and divergent views. For example, users experienced the presence of police as a safety and security variable differently. The contentious issues such as unavailability of public toilets, poor maintenance of streetlights, and absence of street benches represent the different forms of injustices found in the SRTs and resultant infringed 'Right to the City' claims experienced by street users in the different towns. The hypothesis that at least one group of users (defined by various social-demographic characteristics) has a statistically significant difference in the distribution of satisfaction scores of a spatial justice attribute was refuted on the variable of safety and confirmed for the rest of the variables. It was also confirmed that statistically significant differences exist between street users' expectations or meaning of a particular variable and the level of satisfaction with the variable as it manifests in reality. This theory-reality gap proves the existence of spatial injustices in terms of spatial claims, links and power. Street spaces always remain spaces of familiarity and intrigue, differences and uniformities, contestations, and negotiations, however at every turn a win-win compromise between the different users is what spatially just street spaces entail (Hoogduyn, 2014). Both street users and local municipalities are important stakeholders who have a central role in ensuring that street spaces reflect spatial justice. A deeper interrogation on the implications of spatial justice from the institutional processes of street planning, design and management is the third lens used in this study to interrogate spatial justice. This will be discussed in Chapter 7.

CHAPTER 7 : OPPORTUNITIES AND CONSTRAINTS FROM STREET DESIGN AND MANAGEMENT IN SMALL RURAL TOWNS: IMPLICATIONS FOR SPATIAL (IN)JUSTICE

7.1 Introduction

This chapter examines the implications of spatial justice flowing from opportunities and constraints of street design and management processes in Small Rural Towns (SRTs). This is an important third lens for understanding the complexities that characterise discourses on spatial (in)justice on street spaces. My main argument in this chapter echoes the same sentiments brought forward by Fainstein (2009:4) that, “spatially just outcomes are a product of institutional policies and processes that are themselves just”. Opportunities and constraints are examined from a holistic perspective of the interwoven interaction ‘between’ local municipalities (Thulamela, Musina and Makhado Local Municipalities) in the three case study SRTs as key institutions that produce and manage street spaces; street space users as direct and indirect producers of spatial (in)justice on street spaces; and the street spaces as the media of interaction. The proceeding section outlines the chapters’ methodological overview. The third section is an analysis of opportunities and challenges flowing from street planning and design. Debates on the spatial justice implications of these opportunities and challenges are also deliberated in the third section. The fourth section provides a chapter summary. Figure 7-1 shows the key focus area of this analysis chapter.

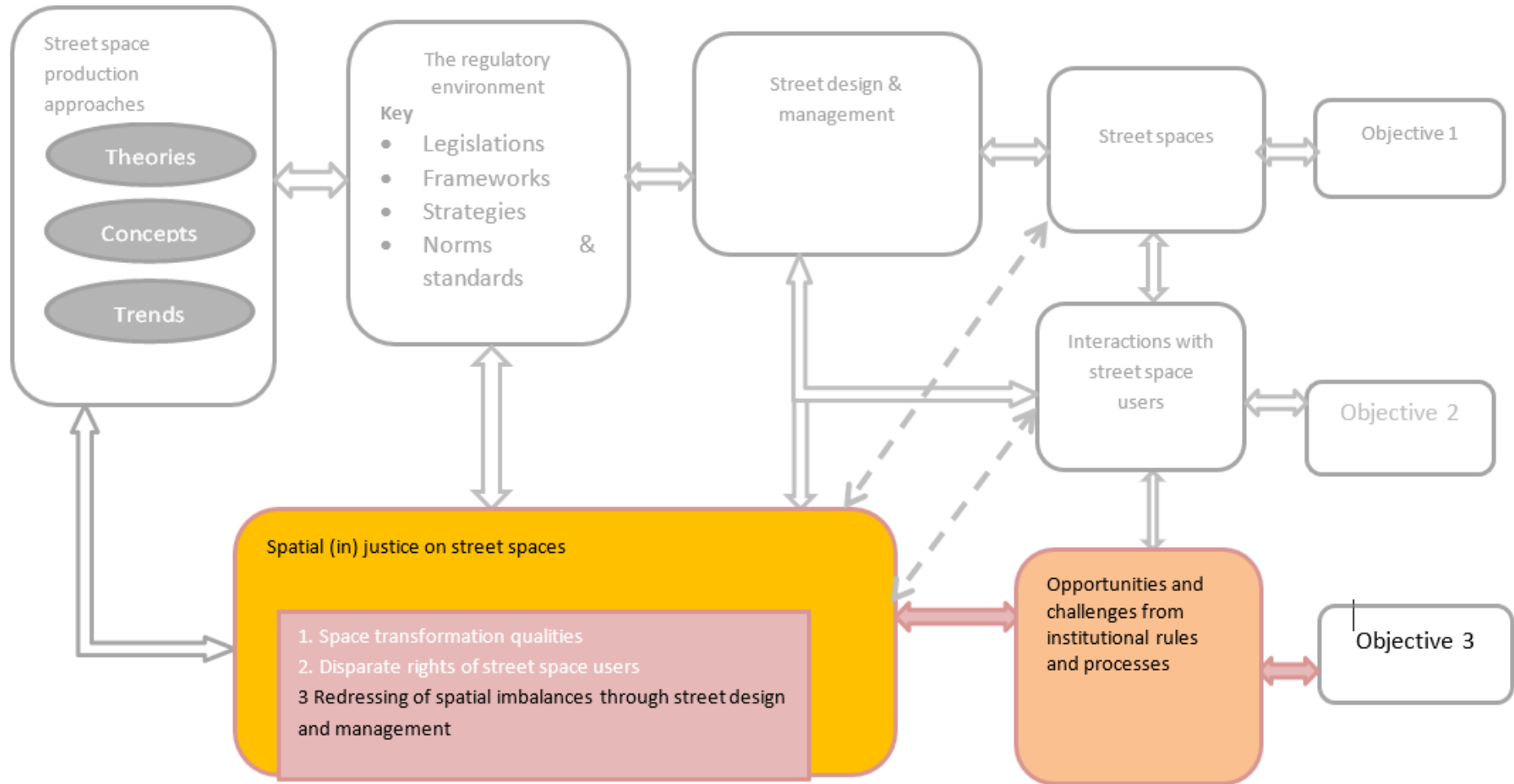


Figure 7-1: A framework for the analysis of spatial (in)justice from street (re)production processes
Source: Author's construct (2020)

7.2 A methodological overview of analysing spatial (in)justice from opportunities and constraints of institutional street space (re)production processes

To interrogate the emerging debates on spatial (in)justices flowing from design and management opportunities and challenges, a mixed method approach that is more qualitative than quantitative was employed. Data were obtained from in-depth interviews (with 8 key experts from the three local municipalities, the Vhembe District Municipality, and academics from the Department of Urban and Regional Planning at the University of Venda; observations on street spaces using the street space design inventory and 500 questionnaires administered to street space users on streets spaces of the small rural towns. Thematic analysis was the dominant method for data analysis, with descriptive quantitative data supporting the qualitative data. The key themes used in this analysis were distilled from theories of the Public Space Management Framework by De Magalhães, and Carmona (2008) and the Spatial Planning Outcomes Model by Mashiri et al. (2017) (see Sections 2.10.4 and 2.10.5 in Chapter 2). To identify a set of norms that can apply broadly to the case studies of the SRTs being interrogated, the research findings are treated as a single unit, where there are context-specific differences, these are isolated in the discussions. This is because the municipalities in these towns are administered under one district municipality, Vhembe; and usurps guidelines on managing street spaces from common policies and structures and contextualises these into by-laws.

7.3 Opportunities and challenges flowing from street design and management in small rural towns

Street design and management are the key processes by which street spaces are produced. The processes consequently produce spatial (in)justices on street spaces. This section analyses the opportunities and constraints flowing from street design and management and their consequent spatial justice implications.

7.3.1 Street design and management opportunities

This study defines opportunities as strengths that municipalities can maximise to produce and maintain spatial justice. The study found the following opportunities:

7.3.1.1 Uniformity in design

This opportunity emerges from the application of universal design guidelines standards, which are informed by instruments, such as, Non-motorised Transport Facilities Guidelines (2014); the Integrated Urban Development Framework (2016) and the Red Book (2019) (see Section 3.4 in Chapter 3). Uniformity ensures that the content of street spaces in SRTs does not differ from those in medium-sized cities and metropolitans. Observations from the streets in all the towns show that street spaces in SRTs use signs and symbols as per the national design guidelines and the streets are constitutive of a carriageway and sidewalks, which are the basic spaces found on a street. A municipal official from Musina Local Municipality asserted *that “the application of Universal Design Guidelines helps ensure that our small towns are competitive as our roads do not lack in some qualities and thus do not appear different from those in larger towns”*. This is an advantage for visitors from other cities elsewhere in the country as they can easily relate to the markings, signs and symbols on street spaces in SRTs.

The application of universal standards, therefore, has got both justices and injustice implications. On the positive side, the application of universal standards enhances the imageability or user identity on street spaces (Lynch, 1960). On the other hand, while municipalities in the SRTs try to confine themselves to ensuring adherence to universal guidelines and uniformity in the design of street spaces, this comes at the expense of local needs in terms of street content and context. Such variations can generate spatial injustices through failure to capture the uniqueness of different places (Desai, 2014).

Although it is partly true that the application of universal design guidelines ensures the standardisation of spaces, their main constraint is that uniformity leads to less vibrant, spatially just spaces (Shaftoe, 2008; Desai, 2014). The lack of local municipality specific design guidelines reveals that SRTs’ municipalities still uphold the traditional functional views held over street spaces as containers for other activities (Soja, 2009) and as mere movement passages not as public spaces which in their right are producers of (in)justice thus more injustices are reproduced from the application of universal design standards.

7.3.1.2 Increased collaboration between municipalities

Compliance with by-laws such as the Spatial Planning and Land Use Management (SPLUMA) by-law in SRTs provide an opportunity for increased collaboration between municipalities. The SPLUMA 16 of 2013 is instituted at local levels through SPLUMA by-laws⁴ to redress spatial imbalances at the local level and foster spatially just societies. Municipal officials in all the three SRTs highlighted that they exchange information on municipal projects and share strategies for efficient service delivery in compliance with the provisions of SPLUMA by-laws.

Furthermore, in pursuance of the SPLUMA by-laws agenda for redressing spatial imbalances, there is increased connectivity between towns through the expansion of provincial road networks across the district and local access roads in residential neighbourhoods within specific towns. As a result of an improved road network due to enhanced collaboration between municipalities, the spatial justice implication is that users can access different service centres without any accessibility limitations. For example, 23% of street space users surveyed in Thohoyandou Town resided elsewhere in Vhembe District Municipality while obtaining services in Thohoyandou Town. Whereas, in Musina Town, such users comprised 16% and 19% in Louis Trichardt Town (see Appendix 23). This demonstrates that at a broader district level, improved connectivity provides users with the right to access and connect with other spaces. This is a form of spatial justice described by Basset (2013) as a spatial link.

7.3.1.3 Flexibility in the use of regulations

As the study found out that municipalities in the SRTs are more flexible in the enforcement of regulations such as the Street Trading By-laws. The regulation of street trading activities in all municipalities is done through street trading by-laws. The existence of such by-laws reveals the responsiveness and adaptability of municipalities to changing socio-economic dynamics within the urban landscape (DHS, 2019). In Thulamela Local Municipality, street traders can make arrangements with shop owners to trade on their storefronts. The respective municipality can issue a trading licence based on those arrangements. This shows that the local

⁴ While at the national level there is the Act - SPLUMA 16 of 2013, at local level there are SPLUMA by-laws

municipalities are accommodative to street trading. In Musina Town, the municipal official stated that, “*Although many traders are operating on undesignated sites, as the municipality we deliberately try to be tolerant by avoiding unleashing the municipal police as often as we should. Intervention by municipal police is only made when it is observed that the trading activities are becoming more harmful to other users*”. Though the assertion given by the municipality official reveals some form of flexibility in the enforcement of regulatory measures, it is seemingly a superficial measure. This is because ‘the level when street trading becomes harmful’ is a highly contestable issue. The municipal official from Makhado Local Municipality highlighted that the municipality did not face any major challenges regarding illegal street trading activities. From observations, street traders in Louis Trichardt appeared to be fewer than from the other two towns (see Figure 7-2).

Despite having street trading by-laws with predominantly similar conditions, each municipality faces contextual differences on street trading related operations. The differences in the increased number of street trading are attributable to the economic status of the towns. For example, Thohoyandou Town being an administrative and economic hub in Vhembe District attracts more street trading activities. Musina Town as a border town also attracts users even from neighbouring countries. Thus, street traders were more vibrant in the towns of Thohoyandou and Musina in comparison to Louis Trichardt Town as a result of socio-economic pull factors. It was established that the number of street traders was the highest in Thohoyandou Town (approximately 1700), followed by Musina Town (approximately 750), and Louis Trichardt Town (approximately 300) street traders. These approximations were given by the local municipal officials who indicated that these rough estimates were likely to be more but fluctuate as street traders are a very fluidal group of street space users with some of them not licensed. Figure 7-2 shows the various locations of street trading sites in each town. In Figure 7-2, the blue dots show the various sites where street traders conduct their activities in the different towns and thus reveal the streets where street trading activities dominate in the towns (however, these findings neither represent a specific number of traders nor the nature of the activities).

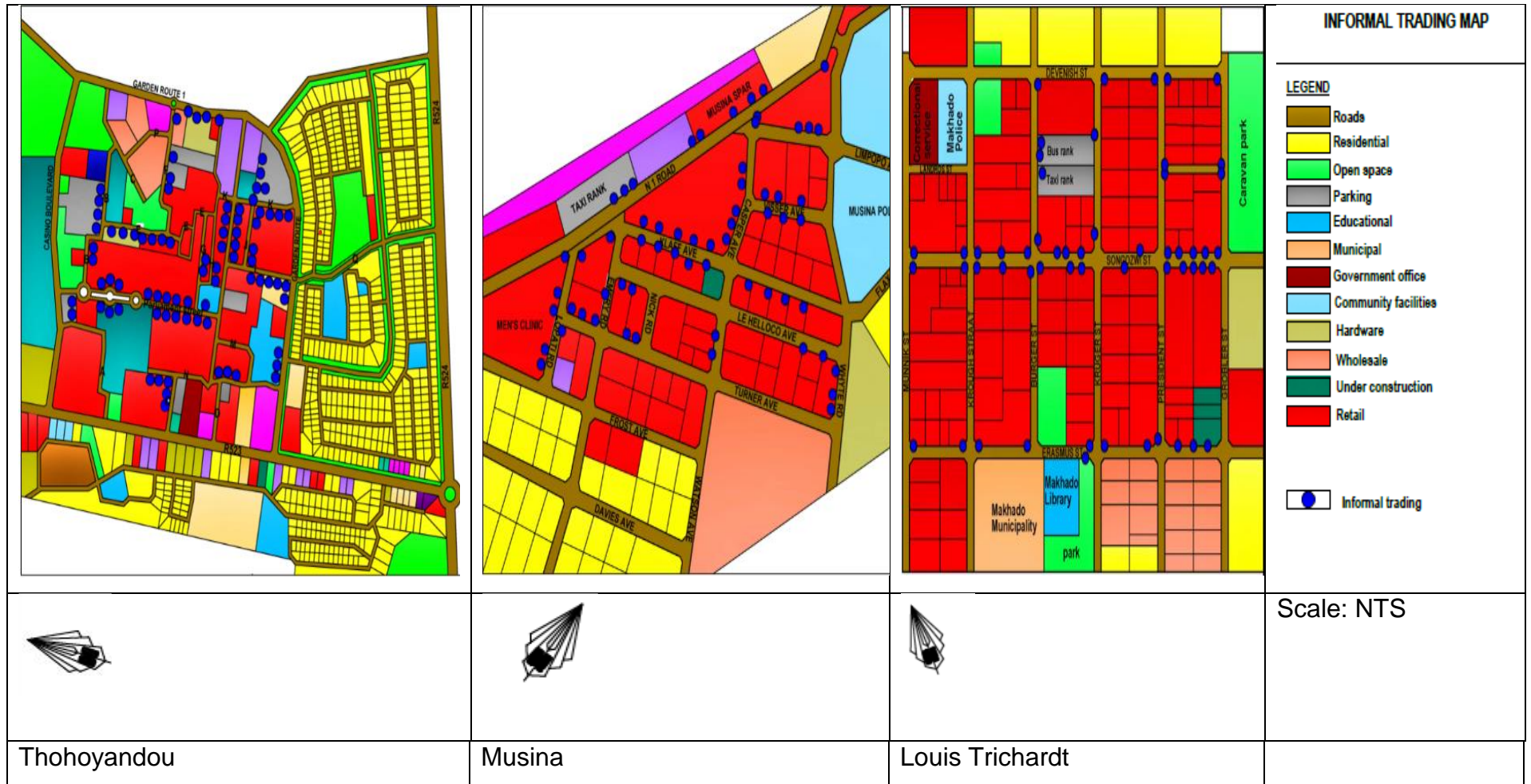


Figure 7-2: Street trading sites in the three SRT
 Source: Authors' construct (2020)

The various transactions that take place between street traders and shop owners and between the traders show that both formal and informal ways of regulating street spaces exist concurrently in SRTs. Photograph 7-1 illustrates the emergent informal regulatory practices on street spaces through informal trading in Musina Town.



Photograph 7-1: Informal Street use-regulation
Source: Research survey (2019)

Owners of private properties also regulate the use of space through securitisation measures such as erecting fences around their premises (see Photograph 6-2 in Chapter 6).

7.3.1.4 Clear accountability structures

In all three towns, each local municipality has a specific department (Department of Engineering) responsible for carrying out regular maintenance functions on street spaces. Thus, the local municipalities are fulfilling their mandate of performing maintenance functions as provided in the Municipal Systems Act 32 of 2000. There is a clear separation between the roles of local municipalities as service providers, and street space users as the recipients of the service (De Magalhães and Carmona, 2008). This makes accountability

processes fairly transparent as street space users can demand services from local municipalities, unlike the case where public space is privately maintained. Transparency in governance is an indicator of spatial justice. In some cases, however, the reality reveals that the local municipalities in SRTs are not fully accountable to their constituencies (see Section 7.3.2.9 in this chapter).

7.3.2 Street design and management constraints

Constraints faced in street design and management are threats to justice and they require more attention. Failure to address these threats usually translates to unjust spatial outcomes or spatial injustices. In some instances, however, unjust processes may not necessarily result in unjust outcomes (Uwayezu and de Vries, 2018). The constraints that characterised street spaces of the selected SRTs are discussed in subsequent sections.

7.3.2.1 Inadequate space

A major constraint that local municipalities faced in the application of design standards concern inadequacy of space. In the selected SRTs, the widest streets of 25m are only found in Louis Trichardt. In Musina Town, the street widths are 15m to 20m on average, whereas, in Thohoyandou Town the streets are 12m to 15m wide on average. The average widths of street spaces in the three small rural towns are not flexible to redesigning and modifications that can accommodate pedestrian-friendly infrastructure, vehicular parking, and accessibility needs. These are the socio-spatial qualities that account for positively performing street spaces.

An urban design expert from the University of Venda stated that “...*the standard sidewalk widths which can accommodate both walking and cycling of at least three meters cannot apply to Thohoyandou and most small rural towns*”. These same sentiments were also raised during conversations with the official from Musina Local Municipality who stated that, “*The kinds of street spaces that we would want to see in the CBD are more of roads rather than the current narrow streets. The reason being it is very difficult for a town to grow with narrow streets. With a larger road reserve, you can accommodate ease pedestrian movement, street furniture and provide for site parking as opposed to our*

current situation". These sentiments were also confirmed by mere observation of street layout maps from the local municipalities, showing that Thohoyandou Town has the narrowest street spaces, followed by Musina Town. In contrast, Louis Trichardt Town has much wider street spaces that largely lack in terms of pedestrian-friendly infrastructure. The differences in space challenges in the SRTs could be attributed to the towns' historic background (see section 3.2 in Chapter 3). Thohoyandou Town has some narrower streets because it was initially designed as a pedestrian town with no streets for vehicular traffic in town (Thulamela Local Municipality, 2014).

A Thulamela Local Municipality official stated that "*... the users' profiles and needs in Thohoyandou Town have since changed over time; hence there is need to accommodate vehicular users on the streets without jeopardising non-vehicular users*". Thus, street design should be adaptive to changing socio-economic profiles of a place. On the other hand, Musina Town was planned as a border town, seemingly without any plans for further expansion. This is the reason why the N1- a Freeway (highest in the street hierarchy) transverses through the centre of the CBD of Musina Town without changing its function resulting in safety, access, and pollution-related challenges. Louis Trichardt Town was planned as the northern tip gateway town to the rest of the African countries (Makhadho Local Municipality, 2010).

In contrast, in Louis Trichardt, the same highway-N1 passes through the edges of the town without disturbing the town's form. There is a general inclination by municipality officials in the SRTs towards the view that spatial justice is attainable when there is adequate space which is considered to be more flexible than narrower street spaces. However, injustices are also experienced even in bigger streets and towns such as Johannesburg (Matjomane, 2018). This reflects that spatial justice is beyond the size or design of the street space itself. However, it also includes the extent to which the streets' users are satisfied or comfortable in these spaces. Therefore, in the context of SRTs where space is seemingly inadequate, political will and users' involvement in deciding what works best for them are important imperatives for spatial justice.

There are some contradictions embedded within the various policy documents that are used by local municipalities that are also space related. The Vhembe District Municipality official indicated that, *“Although legislation such as the IUDF provides for integrated land-use planning, some conflicting principles are embedded within the principles. For example, while sustainability tenets require that we reduce street and stand sizes for compact developments, reducing these sizes means we may not be able to accommodate other things which can make our streets more integrated”*. As a result of conflicting perspectives in policy, local municipalities end up satisficing. This means that the municipalities check the applicable content within the different legislations and provide for functional streets within the given space constraints. Satisfaction is described by Fainstein (2009:2) as being cognisant of plurality in ways of knowing and truth. Planners and urban designers should, therefore, apply what works in their given street space settings.

7.3.2.2 Lack of prioritisation of non-vehicular users

Although the national and policies and guidelines such as the Non-Motorised Transport (NMTs) Facility Guidelines and Integrated Transport Plans redefine the transport user hierarchy to prioritise pedestrians ahead of other modes of transport. The non-prioritisation of non-motorised transport is an apparent challenge in all the SRTs as car-oriented patterns are still dominant in their street spaces. Generalised findings illustrated in Figure 7-3 from the sampled users in all the three towns reflect more negative (50%) than positive (38%) perceptions on the walkability of street spaces in the 3 SRTs.

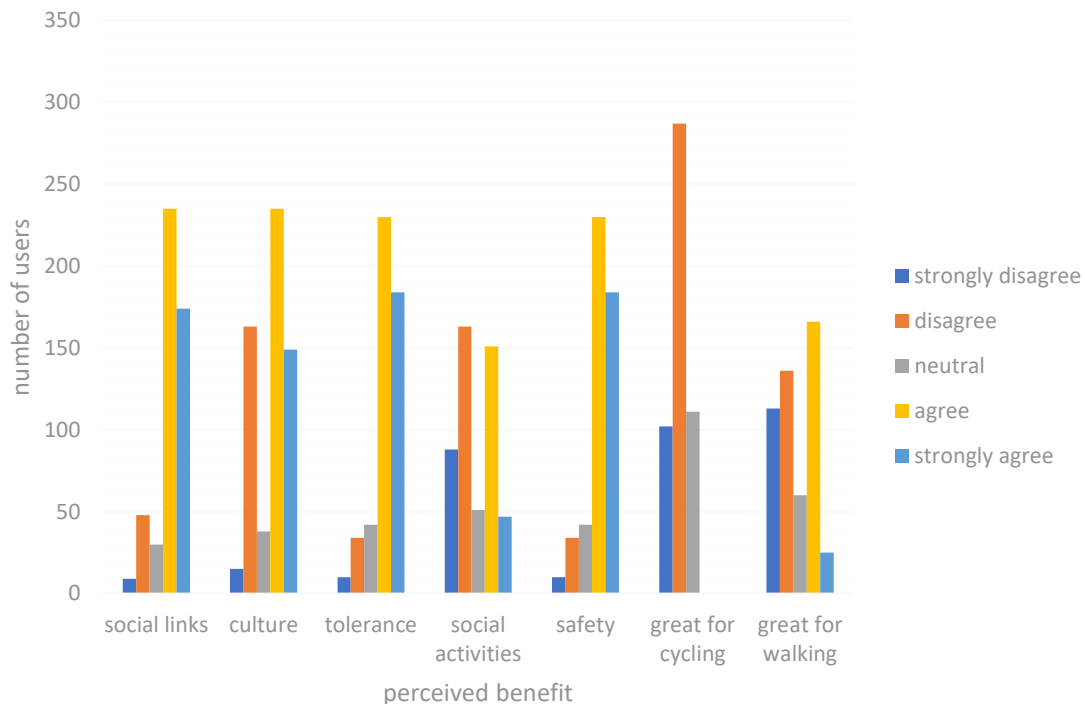


Figure 7-3: Users' benefits derived from using street spaces in the SRTs
Source: Author's construct (2020)

Figure 7-3 shows that 50% of the sampled users disagree that streets in the SRTs are great for walking, and 38% agreed that streets were great for walking, while 12% were neutral. The perceived benefits obtained on street spaces, as depicted in Figure 7-3 demonstrate the paradoxical nature of spatial justice and the 'Right to the City'. This is evidenced by the fact that in one space there exist multiple perceptions which complement and contradict at the same (Lefebvre, 1996; Massey, 2005). While users may enjoy the benefit of safety offered by street spaces, some street users' right to mobility is infringed on the same space.

There are contextual differences on the walkability challenges in the case study towns. For Thohoyandou Town, the challenge of walkability can be attributed mainly to narrow sidewalks. For Musina Town, the challenges of blocked sidewalks due to unregulated street trading activities and illegal parking of cross-border loading vehicles (Malaitchas) were prominent. In Louis Trichardt Town the challenge of lack of supportive pedestrian infrastructure was prominent. This reveals that walkability is constrained on street spaces of SRTs. While space availability is important as it eases mobility for non-vehicular

users, supportive pedestrian infrastructure enhances the non-vehicular users' walking experience. The challenges of poor walkability and bike-ability experienced in the SRTs affect the liveability of a place and, consequently, infringe on the rights to access, use and enjoyment of public space (Jacobs 1961, Gehl, 2011; PPS, 2012; GDCI, 2014).

During conversations with municipalities' officials, the challenge associated with NMTs is examined further. An official from Thulamela Local Municipality stated that *"... one of the problems we face is how to encourage more of walking than driving in our CBDs"*. In Musina, the official said, *"We are having a challenge of inadequate research on the needs of non-motorised transport users. Implementing best practices without conducting our local researches may result in worse off consequences. For example, the NMT talk about cycling, but here we need to find out people's perceptions about cycling"*. In Makhado Local Municipality, the municipal official explained that, *"Such initiatives of NMTs, pedestrianisation and the like require political champions to run with the cause. As far as I know, there has not been much talk about such programs in this town within the political echelons. Otherwise, if the ideas are just coming from us as technocrats, we are not likely to win"*.

Although an official from Thulamela Local Municipality highlights that there seems to be an unwillingness by users to walk in Thohoyandou Town, from the field observations and the responses obtained from the sampled users, the challenge emanates more from lack of adequate sidewalks. As a result, some users resort to driving than walking. The sentiments given by the Musina municipal official reveals that for any NMT initiatives to be successful, they should be backed by research as users' needs vary in a different context. Agevi, Andersson and Petrella (2016) similarly argue for the use of research-based evidence. In most cases what works as NMT strategies in the context of developed countries may not apply in the context of developing countries (Bivina, and Parida, 2019). It can also be established from the sentiments raised by the Makhado municipal official that political will is vital in championing street design related projects, inversely lack of political results in NMT projects

implementation failure. Local municipalities have different policy interpretations as informed by their different realities.

All three local municipalities currently use the Integrated Transport Plan (ITP) for Vhembe District Municipality although these should be included in the Integrated Development Plans. This shows that there is a challenge in terms of the implementation of policy for integrating various modes of transport (Dewar, 2017). The officials were not very familiar with the contents of the ITP and how it is currently being implemented in the district. A Vhembe District official shed some light that the ITPs aim is to achieve sustainable transportation systems that are pedestrian-friendly. The district municipal official further stated that "*our current challenge in implementing the ITP is the lack of skilled transport planning experts and supporting infrastructure to initiate sustainable, fundable projects*". These findings reveal that ITPs appear to be one of those tick-box policies that get to be shelved once done. This is because no one seems to understand what is in the policy and how to evaluate the policy.

7.3.2.3. Lack of measurable spatial justice parameters

SPLUMA by-laws are still lacking in terms of converting the objective of redressing spatial injustices in different spatial planning contexts. The Vhembe District Municipal official revealed that at the micro-level of the street scale, there are no specific strategies, measurable indicators or outcomes used to evaluate the performance of municipalities in meeting the vision of redressing imbalances. Unclear measurable street space spatial justice indicators from SPLUMA and other by-laws that regulate the use of street spaces often negatively affect street spaces' spatial justice outcomes. This is primarily because of a lack of clear expectations on what municipalities must do to achieve a spatial justice vision. Resultantly, street spaces in SRTs become more ambiguous spaces whose justices are often not intentional but rather accidental.

7.3.2.4 Street trading related constraints

The issue of resistance to the payment of licence fees by informal traders is an example of a street trading regulatory constraint that was established, in the SRTs. The licences are worth around R650 per annum in Thohoyandou, R600 in Musina and R650 in Louis Trichardt towns. However, this is often an unwelcome intervention amongst some street traders. One group of street traders indicated that the municipalities are not doing enough to pay for the trading licences. Another group found it unfair to pay for a trading licence; whilst some were operating on undesignated sites for free. Contrary, the other group of traders responded that they could not afford the annual fee. Yet, another category of traders felt that it was simply their right to trade for free on streets as they are public spaces. This shows that street spaces are indeed sites of contestations (Lefebvre, 1996) as users have different perceptions on how uses should be regulated.

The challenge of users refusing to pay for municipality services dates back to the apartheid era, where residents in Black African settlement refused to pay rates as an anti-apartheid protest were (Baffi et al. 2018). These protests were claims by citizens of their right to being in the city. However, the continuation of these boycotts in the post-apartheid South Africa particularly after the institutionalisation of SPLUMA 16 of 2013 seemingly reflects the popular mindset amongst citizens whose governments once followed a socialist economic path that it is the responsibility of the government to provide free services to its citizens. The issue of licensing street traders also presents a spatial justice paradox as the system is exclusive of new traders and those users who cannot afford the annual license fee. Licencing presents a controlled form of justice for the licenced traders who are allocated a designated operating space. In most cases, the designated spaces are far from the targeted clientele base of street traders who resort to trading on undesignated sites. This reflects a space contestation that animates Soja (1996)'s third space where users redesign spaces that work for them, however, in contradiction to the institutions' regulations.

A municipal official from Musina Town reflects on the complexity and multifaceted nature of street trading activities, by explaining that:

The situation here like in many African communities is that one may just wake up and makes a decision that I'm suffering let me go out and sell. They go out, find space and start selling. They don't start with the municipality they start with the street. Find their own spaces there they even fight each other until they settle and so on. By the time we go out there to say you cannot operate here that is when they will come to us to say but I am jobless give me something to do, provide me with space. We then tell them to go and trade in a certain place, then they will tell us, but I cannot go there my customers are here kind of a thing. It is a question of them provoking the municipality. We need to regulate street trading activities in undesignated areas so that the traders can be managed properly in terms of how they sell and the cleanliness of the area where they trade. At the moment they litter all over the place and they don't clean. One of the key things is they might not have the necessary facilities to sell from so we can assist them if they are regulated. They also do not have bathrooms in areas that they are at the moment and we cannot have public toilets all over as this will create a nuisance in the town, and it affects the visual attractiveness of the town.

Box 7-1: Musina municipal official perspectives on street trading regulation
Source: Author's construct (2020)

The comments in Box 7-1 highlight the illegal manner in which street traders occupy space from the municipalities' perspective, yet to the traders this is considered as a right to occupy or appropriate and modify street space. Similar concerns were also noted by Chirisa (2014) and Hungwe (2014) in Harare where the city managers are constantly struggling to regulate illegal traders in the CBD, hence, they end up employing forceful tactics.

Street traders may take matters into their own hands by trading illegally on spaces designated for other uses along streets due to municipalities' failure to meet the high demand for trading space. Resultantly, conflicts over how space is used and who gets to use it emerge. Survey findings reveal that 66% of the street traders from Thohoyandou Town, 71% in Musina Town, and 54% in Louis Trichardt Town were dissatisfied with the support they are receiving from municipalities in terms of responding to improvements of the operating environment and conducive operating space (see Appendix 51). These challenges are also the forms of spatial injustices that street traders experience on street spaces in the SRTs. Understanding the contestations for space by street traders' helps planners to delineate problems of spatial justice and stimulate thinking of new innovative approaches to co-create spaces with street

traders as important stakeholders. This contradiction reveals that the 'Right to the City' claims depend on the users' purpose for being in the street.

The view stated above by the Musina Local Municipality official also reveals that the street trading activities in some cases have got public health implications which may pose a health threat for other street users. Observations of street trading activities in Musina Town also confirms that some of the activities pose a public health hazard as depicted in Photograph 7-2. Photograph 7-2 is an exemplar of the street trading activities taking place in the presence of a burst sewer.



Photograph 7-2: Street trading activities posing a public health hazard in Musina

Photograph 7-2 reveals that spatial (in)justices certainly differ depending on the space needs of different users. While this is a public health hazard to other users who buy the fresh market products, to the traders, it reflects a right to livelihoods as well as a right to occupy street space in the city.

Another challenge to the regulation of street trading activities is the issue of subletting trading space by other traders which is more common in

Thohoyandou Town. During interactions with street traders in Thohoyandou Town, it was established that some traders are 'space barons'. These are usually members who claim to own different trading spaces and sublet vending space to other street traders at a fee. It is alleged that these members are associated with strong political connections. Subletting of spaces shows that some street traders have more privilege than others which is an injustice. These findings are synonymous with the street traders' experiences in India where more powerful groups dominate space, and less powerful groups are always disadvantaged (Collins, 2018). The muteness of the law in dealing with some challenges that reproduce spatial injustices such as subletting of spaces is an injustice in itself as it maintains the status quo of injustice.

7.3.2.5 Lag in embracing smart technologies

Municipalities in SRTs are lagging in terms of embracing smart technologies that can aid the regulation, as well as for the efficient management of street spaces. It was established that the respective municipalities have no electronic databases for existing street traders and the actual number of street trading requests made. Without adopting smart technologies that can reflect real-time street trading issues, municipalities in the SRTs can fail to adjust to the needs and demands of the dynamic street trading environment. Initiatives such as smart street bins, smart public toilets and smart street furniture are absent in SRTs.

There is a high risk of fire outbreaks on street spaces in SRTs due to street canteens that are popular in providing food catering services along the street spaces, particularly in Thohoyandou and Musina towns. All three local municipalities depend on Vhembe District Municipality for fire services. No municipality has its own Fire Management Plan or smart fire detection warning systems.

7.3.2.6 Constraint in the state-centred approach to the maintenance of street spaces

The challenge with the state-centred model of maintenance of street spaces, dominant in the SRTs, results in municipalities failing to articulate and actualise users' different aspirations since their involvement is limited (Fainsten, 2009). Both the private sector and the general public are not involved in the execution of maintenance in all the SRTs only except for the N1 highway where the movement subcontract SANRAL to carry out regular maintenance functions. Municipality officials indicated a lack of expertise in developing contracts that attract Public-Private Partnerships.

In addition, local private businesses' lack of cooperation in engaging the municipality in maintenance partnerships is apparent in all towns. In Musina and Makhado local municipalities, a single case from each town was reported whereby, the business owners opened blocked stormwater drains because they were flooding their business premises. Undoubtedly, private property owners are more profit-driven. For this reason, if municipalities in SRTs wish to enter into effective public-private partnerships on street space maintenance, there is a need to enter into contractual relationships which compromise private and public interests without disadvantaging the general public. In the UK for example, such innovative strategies are in the form of incentives for businesses that are actively involved in street space maintenance (De Magalhães and Carmona, 2008). In this way, municipalities will ease the financial burden they would otherwise incur in being a sole provider of the street space maintenance function.

Lack of involvement of users and different stakeholders in street maintenance leads to disconnection by the various stakeholders from the produced spaces. Thus, this increases various contestations over the use of space. In other places, particularly in developed countries, the general public is involved in public space maintenance. For instance, San Francisco in the US employs the parklets initiative (NACTO, 2014). This is where users manage small parks, the size of parking space for a car or smaller along shopfronts. This also builds a sense of stewardship amongst citizens where users have an opportunity to

contribute to place and keeping thus animating spatial power which is a form of spatial justice.

Other challenges identified in the maintenance of street spaces are related to the lack of human and financial capital. The municipalities in SRTs lack skilled manpower to carry out specialised maintenance of infrastructure for service provision including sewer and stormwater drains maintenance and traffic light maintenance. Other public space management models such as the market-centred and user-centred circumvent the skills shortages through outsourcing skills from experts and volunteering from local citizens, respectively (De Magalhães and Carmona, 2008). Users expressed more dissatisfaction with the maintenance of street spaces in SRTs users' comments (see Section 6.8 in Chapter 6). For example, in responding to the changes that they want to see in the town, a street user in Thohoyandou Town stated that *"The municipality just needs to find people who can fix sewer burst problems in this town. They are just a nuisance"*. Overall, the absence of private-public partnerships and other community-based management models strain the local municipalities' financial and human resources in SRTs. This jeopardises the quality of service delivery on street spaces, whereas poor service delivery reduces the use-value of streets as public spaces.

7.3.2.7 Poor projection of population growth

Rapid population increase is also a challenge in the maintenance of street spaces in the SRTs. For example, when most of the towns were planned in the 1900s, the populations were very low in comparison to the present where it is projected that the urban population in Sub-Saharan Africa will increase by almost 70% in 2050 with small towns being the main absorbers of such (UN DESA, 2019). Population growth in Vhembe District Municipality increased by 0.8% since 2011 (StatsSA, 2018). However, meeting the demands of the burgeoning population (such as increased demand for multifunctional public spaces) in the context of limited resources is a challenge for the SRT municipalities. The poor projection of population growth is costing street users, particularly in Thohoyandou and Musina Towns injustices related to safety and accessibility. Consequently, this is an infringement on the user's rights to safety

and access. On the other hand, population increase encourages local municipalities to explore more innovative alternatives to street design and maintenance, such as smart street bins (Weber and Podnar-Žarko, 2019).

7.3.2.8 Inadequate funding for street design and management projects

The major challenge facing local municipalities in SRTs and elsewhere in the world is that the national government is struggling to fund local municipalities sustainably (Alam, 2010). Photograph 7-3 illustrates a typical street that requires resurfacing in Musina Town.



Photograph 7-3: Example of street spaces that require resurfacing in Musina Town
Source: Research survey (2019)

Photograph 7-3 reveals various forms of injustices that emerge as a result of lack of resurfacing of street spaces. For example the rough gravel surface presents an accessibility challenge for wheelchair users.

Own-source funds for Thulamela and Musina Local Municipalities are inadequate to cover the costs involved in street design and management. This

challenge of inadequate funding presents an opportunity for local municipalities to explore other innovative infrastructure financing strategies (UN-Habitat, 2015). Comparatively, Makhado Local Municipality's revenue is boosted from the farming industry, which is around the area. Although this revenue does not adequately cover all projects in the town, it is flexible to meet most of the day-to-day maintenance mandates of the municipality.

7.3.2.9 Poor governance

In all three municipalities, different departments are involved in one aspect of street space administration. All municipalities lack Public Space Management Policy or a Maintenance and Management Policy to give strategic direction on street maintenance and management. Local municipalities are not the sole actors in the regulation of street spaces. They are just governance actors amongst other multiple players with different interests. Nevertheless, the current challenges in the three SRTs is that the roles of different stakeholders involved in street maintenance and management are abstract and assumed than written down. As a result, injustices in the form of privatisation of spaces and dominance of informal trading activities on street spaces are emergent in the SRTs. These injustices affect the publicness of public space (Varna, 2014). Thus, public space management policies should state the roles and responsibilities of the varied players to reduce conflicts that arise when roles are not clearly outlined.

Another challenge that emerged from the findings is poor coordination amongst the various municipality departments. This is due to the application of multiple fragmented by-laws and the fact that various departments are involved in a particular function on street spaces in SRTs. Thus, coordination challenges amongst departments exist because each department has a different mandate on street spaces. The lack of coordinated efforts towards achieving one common purpose also results in ambiguous spaces which reflect different levels in socio-spatial qualities of spatial justice. Seemingly, progressive metropolitan municipalities such as Ekurhuleni Municipality in South Africa created a Department of Urban Management, which coordinates all activities to engage in public space management (Ekurhuleni Municipality, 2017). Such a

department can develop specific public space management projects that can attract funding for land development loans and fund public space management projects unlike when departments act as separate units (UN DESA, 2012).

Street space users participate in street governance through their actions from interaction with street spaces and indirectly through their participation⁵ or involvement in decision making. The interrogation was made on the extent of street users' participation in terms of (i) the status of their membership to any association which is involved in the use of streets; (ii) knowledge about the plans of their local municipality concerning streets; and (iii) their participation in any forums or seminars related to street issues. It was established that less than 10% of users in all towns agreed to have participated in any of the three stated scenarios, as displayed in Figure 7-4 below.

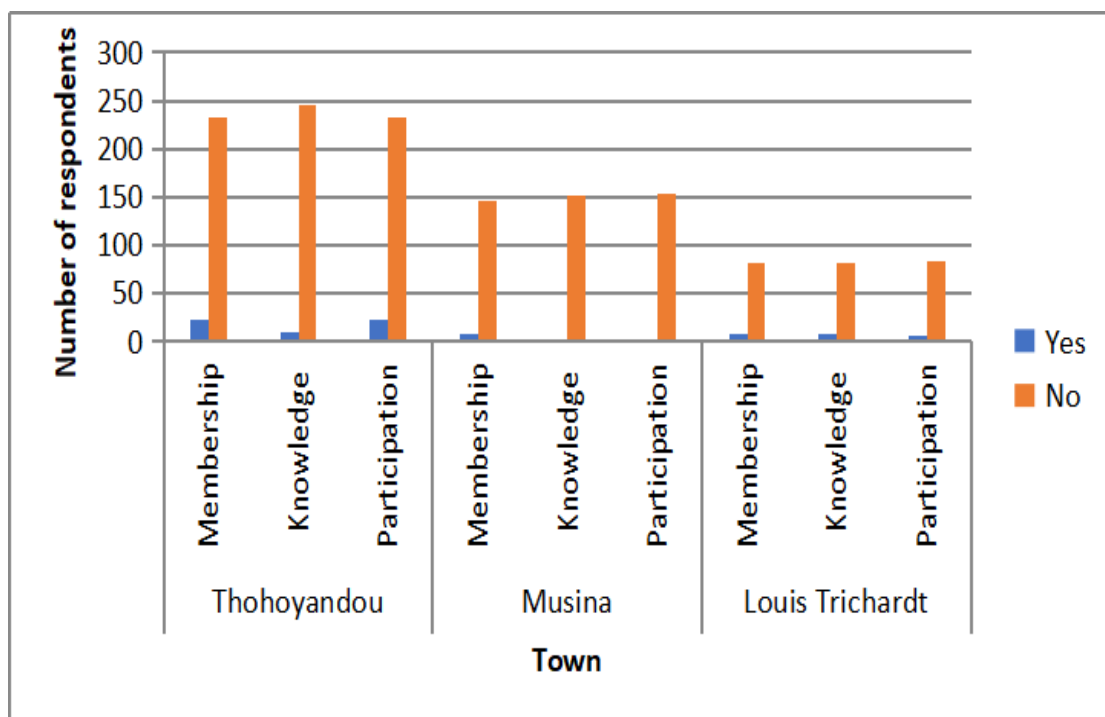


Figure 7-4: Street space users' participation in decision making
Source: Author's construct (2020)

⁵Participation involves much more than consultation or information-sharing sessions. Participation, as opposed to consultation, allows for the active involvement of communities and key stakeholders in the decision-making process ...” (DHS.2019 E.1:47)

Figure 7-4 reveals that in all the towns sampled users who are not participating in decision making are more than those who are participating. Further comments from the street users such as; “*I not interested in politics or I am not a politician*” reveal that some street users equated being a member of an association that deals with street space issues to politics (see Appendix 60 and Appendix 61). This shows that users are not exercising their right to participate since their aspirations and needs on street spaces are not fully represented (Basset, 2013). Officials from all municipalities confirmed the presence of Hawkers’ Associations whose participation was described as passive. While associations can represent their constituencies in making various demands about their ‘Right to the City’ claims to experience spatial justice, planners can only pursue and actualise a justice vision on street spaces effectively when it is users’ needs-driven and informed by the involvement of users in decision making (Fainstein, 2009), therefore inadequate stakeholder participation results in undemocratic spaces where users may fail to identify with (Bentley et al. 1985).

Municipality officials pointed out that municipalities communicate their plans using various forms of media such as the radio, local noticeboards and community representatives who are supposed to give feedback to their constituencies. It emerges that municipalities lack the exploration of other platforms, such as the use of smart applications for general communicate and responses to users’ requests to improve the feedback process. This also weakens the citizen’s right to participate in the creation of spaces they want.

7.4 Chapter summary

Municipalities in small rural towns are confronted with various opportunities and constraints regarding design standard and guidelines, street use-regulation, maintenance, financing and governance. Although these opportunities and constraints are generalised, in some cases each municipality has its specific contextual challenges that hinder the animation of spatially just street spaces. The opportunities presented are the strengths that municipalities can maximise to produce and maintain spatial justice. The challenges, on the other hand, are the negative conditions that require more attention to enhance spatial justice

on street spaces. However, it is not always the case that opportunities translate to justices, while constraints translate to injustices. The proceeding chapter (Chapter 8) unveils the proposed improved integrated framework for analysing street space spatial (in)justice in SRTs.

CHAPTER 8 : A PROPOSED INTEGRATED FRAMEWORK FOR ANALYSING SPATIAL (IN)JUSTICE ON STREET SPACES IN SMALL RURAL TOWNS

8.1 Introduction

This chapter discusses the proposed integrated framework for analysing spatial (in)justice on street spaces in Small Rural Town (SRTs) in South Africa. The framework can be adopted by SRTs elsewhere experiencing similar conditions. After this introduction, the proceeding section outlines the basis for this proposed framework. The third section discusses the key elements of the framework, while the fourth section presents the proposed framework, describes how municipalities can use the framework, as well as deliberates on the limitations of the framework as well as how the framework was tested in this study. The last section is the chapter summary.

8.2 The basis for the proposed improved integrated framework for analysing street space spatial (in)justice

The complexity of the concept of spatial (in)justice stems from the fact it is a context-specific concept. In van Wyk (2015:14) terms, “spatial justice reflects the history, culture, traditions, politics and values of a particular society”. The three main reasons for developing an improved integrated framework for street space spatial justice analysis (also referred to as the Framework) are because the framework has to be context-specific, and there is currently none for SRTs. Secondly, there are no quantifiable or scalable indicators for measuring street space spatial (in)justice as confirmed by several researchers (Basset, 2013; Mashiri, et al. 2017; Moulaert, Schreurs and Van Dyck, 2011; Uwayezu and de Vries; 2018). The study argues that the existing frameworks such as the Spatial Planning Outcomes Models proposed by Mashiri et al. (2017) are too generalised and lack specificity to street spaces. Nevertheless, the Spatial Planning Outcomes Model provides an important departure point in identifying variables and indicators for interrogating street space spatial (in)justice (see Section 2.7.4 in Chapter 2). The third reason for proposing this framework is

because the concept of street space spatial (in)justice is not adequately defined for it to be properly analysed.

8.3 The key elements of the proposed improved integrated framework for analysing street space spatial (in)justice

While spatial (in)justice remains an abstraction in spatial planning debates, findings from this study set a paradigm shift from the analysis of street space spatial justice that is largely informed by a narrow street content. It includes users' needs or expectations and the institutional context. The proposed improved integrated framework for street space spatial (in)justice analysis is informed by three interrelated key elements or exploration lenses, namely street content, users' needs and institutional context. The key elements were extracted from the definition of street space spatial justice (see Section 2.10.5 in Chapter 2), which is an early product of this research and also a theoretical contribution. Figure 8-1 depicts the interrelatedness of the three key elements of The Framework.

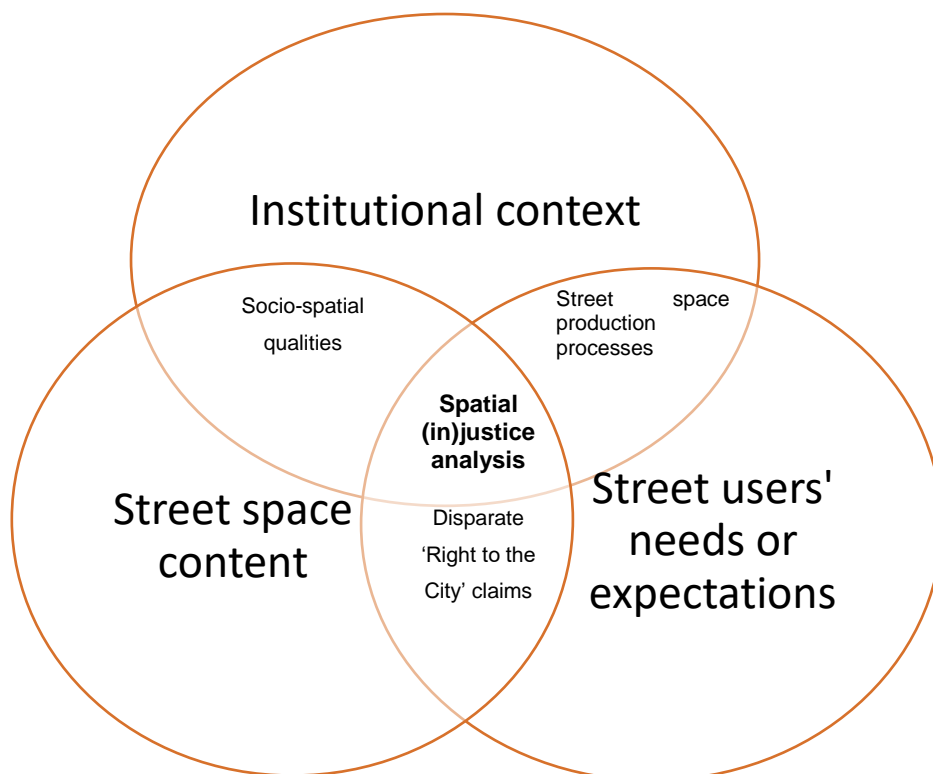


Figure 8-1: The three key elements of the Framework
Source: Authors' construct (2020)

In this thesis, my main argument is that spatial justice is a fluidal and multifaceted problem. Consequently, it should be understood from multiple lenses, as depicted in Figure 8-1. There is a possibility to obtain a richer analysis of spatial (in)justice if the three key pillars for exploration of the spatial (in)justice phenomenon are employed. For example, if a municipality of a SRT wishes to redress (in)justices of safety and security, it is important to understand the needs or expectations of the users concerning street safety and security through conducting users' needs prioritisation exercise.

Users' needs assessment should be followed by an analysis of the current condition of the street spaces by all critical stakeholders. This is followed by co-vision formulation by critical stakeholders. After the analysis of the status quo on street spaces and the vision setting, the stakeholders should negotiate and agree on improved design and management strategies, taking into consideration the capacities of the financial and human resources of the institutions. In this way, the street content users' needs; institutional contextual limitations; and capabilities are considered in redressing spatial injustices. Hence spatial justices are likely to obtain on street spaces.

8.3.1 An exploration lens useful to understand street space content

The variables which explain spatial (in)justice on street spaces were identified from meta-synthesis of various local and international literature which link the complex concepts of spatial justice, street spaces, street space users, SRTs, and theories of urban public space production. The key assumption in identifying and selecting the suitable variables from the various literature was that: a variable should have social and place qualities which promote more of the justice principles of fairness; equity or benefiting the least advantaged; just distribution of resources and enhancement of users 'Right to the City' claims (see Section 2.10.3 in Chapter 2).

Theories of urban space design and management which include (Lynch (1960)'s Legible City theory, Lefebvre (1968)'s 'Right to the City' theory and Bentley et al. (1985)'s responsive design elements were used in this study. Mashiri et al. (2017)'s South Africa's Spatial Planning Outcomes Model and De

Magalhães and Carmona (2009)'s Public Space Management Framework. These theories and frameworks are more human-centred and responsive to user's needs. The theories also informed the construction of key themes and variables that were adopted for analysing spatial (in)justice from the street space context (see Figure 8-3 in this Chapter).

8.3.2 An exploration lens useful to understand the street space users' needs

In this study, I argue that users' perception of a particular street space quality affects 'Right to the City' claims (see Figure 6-2 in Chapter 6). If a user is satisfied with a particular quality, their needs on street space are met. Consequently, the user's 'Right to the City' claim is enhanced. Dissatisfaction with a certain quality, on the other hand, translates to infringed users' 'Right to the City' claims. The study tested users' satisfaction with the spatial justice variables through modifying the Analytical Hierarchical Process (AHP) (2019; Pouya, Saaty, 1990; Saaty 2008; Bivina and Parida, 2019; Turkoglu and Arpacioğlu, 2020).

The modified AHP produced a users' needs prioritisation tool, which is illustrated in Figure 8-2. I argue that a just street space is characterised by its ability to meet users' various needs. The developed users' needs prioritisation tool in Figure 8-2 ranks the users' responses to satisfaction with a socio-spatial quality. The most dissatisfactory quality (represented by the least percentage value) is considered to be the least just or most unjust quality which needs more attention. The most satisfactory quality (with a larger percentage value) is considered to be more just. This tool provides an overall ordering of expectations, choices, or preferences by users. It is an important tool for decision-makers. It helps them to identify and prioritise strategies that are more responsive to users' needs, thus resulting in more just outcomes than unjust ones.



Figure 8-2: Users needs prioritisation tool
Source: Author's construct (2020)

The findings in Figure 8.2 only reflect what was obtained in the 3 case study towns. It reveals that the most lacking attributes in meeting users' needs in the 3 SRTs are maintenance and management (17%) and safety and security (18%). These are the issues that require immediate strategic corrective action. The most satisfactory attribute is legibility (23%). This quality should be least prioritised and the focus should be on addressing pressing injustices. However, when resources are sufficient, attention should also be given to specific indicators with low satisfaction values for each specific variable, for example under the variable of legibility; the relation to culture, landmarks and clear road signs needs to be addressed first.

In some cases, contradictions emerge between users' perceptions and the opinion of experts. For example, with regards to the quality of legibility, while it measured poor performance from the experts' opinion, on the other hand, users' experiences with the variable reveal greater satisfaction. Users' perception may differ from experts because users in most cases give perceptions of the space that they see and experience and not from literature-based ideals. On the other hand, experts' perceptions are based on universal design and management standards (Williams, 2018). When such contradictions emerge in applying this tool, there is a need for planners to act as negotiators and mediators to find common ground with users' (Fainsten, 2009).

8.3.2 An exploration lens useful to understand the institutional context

Street space spatial (in)justices also flow from various opportunities and constraints in the institutional street design and management processes. The key variables for assessing the spatial (in)justices from the street design and management processes were adopted from De Magalhães and Carmona (2008)'s Management of Public Space Framework and the Spatial Planning Outcomes Model by Mashiri et al. (2017). De Magalhães and Carmona (2008) identify; use of regulation, maintenance routine, investment and coordination as the four interlinked dimensions for public space management (see Appendix 12). These key dimensions are also applicable to street design and management since streets are the most important public spaces. The variables and indicators for spatial justice from street design and management processes

were also drawn from the Spatial Planning Outcomes Model by Mashiri et al. (2017) - a local South African spatial justice model. These variables (see Figure 8-3 below) were identified as key to analysing spatial (in)justice from opportunities and constraints flowing from street processes of design and management.

8.4 The proposed improved integrated framework for analysing street space spatial (in)justice

The Framework in Figure 8-3 provides a criterion constitutive of key variables and specific indicators for each exploration lens critical to measuring spatial (in)justice. The Framework presents multiple- lenses, thus, it is more integrative. It facilitates better exploration of the spatial (in)justice phenomena as it plays out on street spaces in SRTs from different dimensions. The key assumptions for the framework to work include political will; specification of stakeholders' roles and responsibilities (i.e., the least-advantaged users' role as active participants and not passive co-creators of space should be clear); willingness by all stakeholders to learn and unlearn; and a sustainable model of funding for municipal projects. Other key stakeholders include Street-Hawkers Associations, general community members, the local business community, Non- Governmental Organisations, Ward Councillors and representatives from the local and district municipality.

The Framework in Figure 8-3 reveals that analysing street space spatial justice is not linear or a clear-cut process, but rather an iterative process where back-casting and forecasting domineers. Popper (1972) in Carmona et al. (2003:55) provides important insights in understanding the nature and exploration of wicked problems (such as spatial (in)justice) by emphasising that:

We start . . . with a problem, a difficulty . . . Whatever it may be when we first encounter the problem we cannot, obviously, know much about it. At best, we have only a vague idea what our problem really consists of. How, then, can we produce an adequate solution? Obviously, we cannot. We must first get better acquainted with the problem. But how? My answer is very simple: by producing an inadequate solution and by criticising it. Only in this way can we come to understand the problem. For to understand a problem means to understand its difficulties; and to understand its difficulties means to understand why it is not easily soluble - why the more obvious solutions do not work. We must therefore produce these more obvious solutions; and we must criticise them, in order to find out why they do not work. In this way, we become acquainted with the problem, and may proceed from bad solutions to better ones - provided always that we have the creative ability to produce new guesses, and more guesses. This is what is meant by 'working on a [wicked] problem.

Box 8-1: The rationale for a framework of analysing wicked problems
Source: Carmona et al. (2003:55)

The assertion in Box 8-1 reveals that a framework for analysing wicked challenges is not an end in itself, but it forms a foundation through which a complex problem is simplified, and solutions are refined through an iterative process. Street space spatial (in)justice remains a fluidal phenomenon, that does not remain constant, but changes with context and is dependent upon users. Therefore, it is important to continuously review the variables and indicators in the framework to ensure that spatial justice tenets are met.

Street space spatial (in)justice

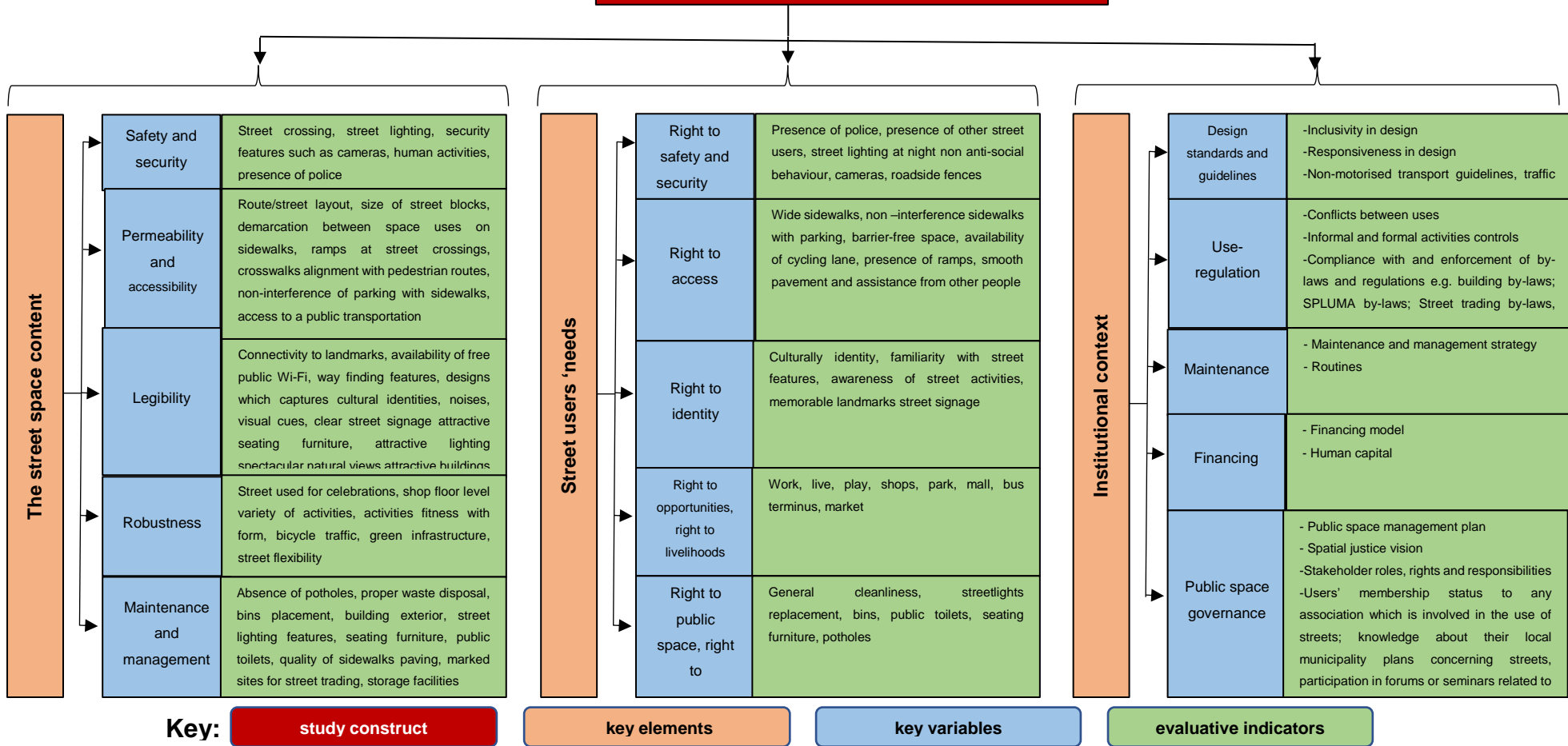


Figure 8-2: Improved Integrated Framework for street space spatial (in)justice analysis

8.4.1 Testing of the framework

This framework was tested throughout this study from problematising the study to the analysis of all the study objectives (see Section 1.7.2 in Chapter 1). The street space design inventory checklist was the tool used for observing the quality of the spatial justice variables on the street space content. The performance of the street qualities was tested through HCA (see section 4.9 in Chapter 4). The street space design checklist is also an important methodological contribution of this study. It is simple, yet robust enough to capture many aspects on street spaces without sophisticated technology, which may require specialised professionals and can also be used on a low-cost budget. The users' needs prioritisation tool was used to test the sampled users' needs in the case study towns (thus the percentages in Figure 8-2 only represent the findings from this specific study). However, the same tool is useful for other municipalities in SRTs. Without a users' needs prioritisation, the scarce resources are not appropriately channelled towards the right solutions, thereby creating more unjust outcomes. The suitability of the variables for assessing users' needs was confirmed through confirmatory factor analysis (see Section 4.6.2.4). The variables for the institutional context were tested with the key experts from the three local municipalities, Vhembe District Municipality, and the Urban and Regional Planning Department at the University of Venda.

8.5 Chapter summary

This chapter sought to present an improved Framework of analysis of street space spatial (in)justice in SRTs. The proposed framework is more versatile because it infuses ideas from the key legislation, policies, existing models and strategies, local or international approaches, mechanisms, concepts, current trends, and other applicable context settings. The process of merging multiple perspectives in analysing a problem is acclaimed in the South African Red Book on the Neighbourhood Planning and Design Guide (2019) as very important for designing a versatile framework. The framework also builds on lessons from the strengths and shortcomings of other existing local models. The proposed framework can be adopted by other researchers who wish to replicate this study on street spaces in other SRTs elsewhere. It is also relevant to policymakers who may wish to understand more about how to resolve complex challenges such as street space spatial (in)justices. The following chapter provides the conclusion of the thesis.

CHAPTER 9 : SPATIAL JUSTICE ON STREET SPACES OF SMALL RURAL TOWNS: A SUMMARY AND CONCLUSION

9.1 Introduction

This thesis sought to interrogate spatial (in)justices flowing from street spaces of three selected small rural towns of Vhembe District in Limpopo Province of South Africa. These towns are Thohoyandou, Musina and Louis Trichardt. Street spaces of Small Rural Towns (SRTs) in South Africa are characterised by spatial (in)justices as the urban space is produced and reproduced every day through planning, design and management imperatives. In some cases, the spatial (in)justices are also inherited from the towns' historical past and geographical location. These are perpetuated unwillingly over time to date. The purpose of this chapter is to conclude the study findings.

Small rural towns in this study are defined as category two regional service centres which serve predominantly rural communities: having a population of less than 100000 urban inhabitants. They have different historic legacies, whereby some were established under Town Planning Ordinances (Number 27 of 1949 and Number 15 of 1986) as the case of Musina and Louis Trichardt towns, while others were established under Bantu Homelands Citizenship Act (1970) in the case of Thohoyandou Town. As noted by Hoogendoorn (2016) and Mashiri (2017), empirical research on the South African rural space economy is glaringly scarce, yet injustices characterise these spaces. Therefore, interrogating spatial (in)justice on street spaces in SRTs towns is crucial in advancing the science of place-making, street design and management.

Given the corpus of evidence that this study garnered and sifted through, spatial justice on street spaces is the fair and equitable distribution of socio-spatial qualities. It also involves the fair consideration of the needs of the least advantaged group of users as they interact with the street spaces. The concept of spatial justice also extends to institutional rules and processes adopted to redress spatial imbalances by creating conducive environments that engender the least advantaged category of street space users in decision-making. The absence of such imperatives animates spatial injustice evidenced in various forms such as (i) when the socio-spatial qualities

are not positively reflected on street spaces thus diminishing the use-value of street space and (ii) when users through their interaction with street spaces are dissatisfied with these socio-spatial qualities thereby infringing on their different 'Right to the City' claims. Spatial injustices also stem from the challenges from institutional processes and practice of street design and management.

The least advantaged group of street space users considered in this study are pedestrians and street traders. Reflecting on the contextual definition of spatial (in)justices on street spaces that this study provides, three critical lenses were used to analyse spatial justice, which include the street space content, the users' needs or expectations and the institutional context. I argue that it is not possible to understand spatial (in)justice from only a single lens. For this reason, a practical methodology is critical in the formulation of a definition of spatial justice on street spaces as an element that presupposes spatial injustice in the absence of street space content, users' needs or expectations, and unviable institutional contexts.

After this introduction, the second section provides a recap of the research methodology. The third section summarises the research findings drawing from the themes generated by the research objectives (see Section 1.7.2 in Chapter 1). The fourth section discusses the recommendations with regards to improvements that can be made to street planning, design and management and their policy implications. The fifth section puts forth areas for future research, and the last section is the conclusion to the study. Figure 9-1 illustrates the organisation of the thesis and the interface between broad concepts, trends and theories that informed the construction of measurable indicators to evaluate spatial (in)justice on street spaces in SRTs.

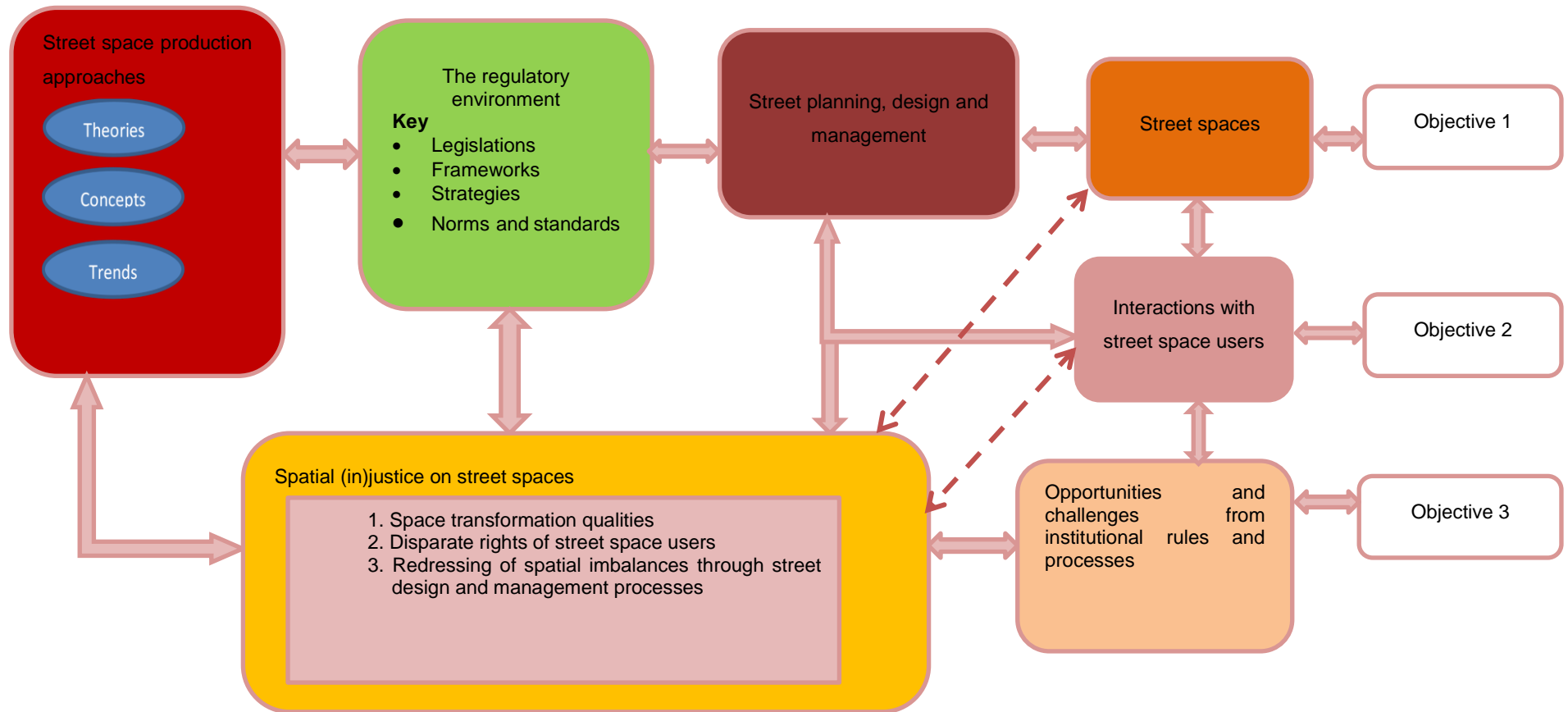


Figure 9-1: Framework for the thesis organisation
Source: Authors' construct (2020)

9.2 Revisit of the spatial justice and street spaces survey approach

The spatial justice and street spaces survey approach was adopted as the overall approach to understanding spatial (in)justice on street spaces of SRTs of Vhembe District in Limpopo Province of South Africa. To address the research objectives and the research question (see Sections 1.4 and 1.5 in Chapter 1), I employed a multiple case study research design complemented by the survey research strategy. This was done to understand holistically, the breadth and depth of the spatial (in)justice phenomena in the three selected SRTs of Thohoyandou, Musina and Louis Trichardt. I adopted a mixed-method approach that draws from both quantitative and qualitative research methodologies. This approach is located within the pragmatist paradigm that focuses much on the practicalities of realities on the ground, and the logic behind various experiences in their concrete form.

A street space design inventory of 43 street spaces; an intercept questionnaire survey that targeted 500 street space users; and in-depth interviews with 8 key experts were the key data collection methods. Findings from these case studies engendered a deeper understanding of perceptions, paradoxes, contestations, and negotiations that shroud spatial (in)justice on street spaces. The theories adopted to extract meaning from the findings include the Legible City theory by Lynch (1960), 'Right to the City' theory by Lefebvre (1968); Responsive Design Elements by Bentley et al. (1985), Public Space Management Framework by De Magalhães and Carmona (2008) and Spatial Planning Outcomes by Mashiri et al. (2017). Data analysis was aided through the application of descriptive statistics such as custom tables for means and frequencies, HCA, Kruskal–Wallis tests, Wilcoxon Rank Sum test, Modified Analytical Hierarchy Process, thematic analysis and word cloud. From the findings, an improved integrated framework for analysing street space spatial justice is proposed.

9.3 Summary of findings on spatial (in)justice on street spaces of selected small rural towns in Limpopo Province of South Africa

The research findings are packaged according to the themes emanating from the research objectives as guided by the framework shown in Figure 8-3 in Chapter 8.

9.3.1 Characterising spatial (in)justice from the socio-spatial qualities of street spaces in the case study towns

The street space content exploration lens assessed the fair distribution and quality performance of five key variables⁶ (also see in Section 2.8.1 in Chapter 2. Among the key variables of spatial justice, some indicators of a particular variable (such as safety and security) were positively reflected, while others in the same were negatively reflected. For example, a street can have positive performance in the quality of clearly marked street crossings for pedestrians as a measure of street safety and security but perform negatively on the indicator of the adequacy of street lighting. Where a quality reflects positively, then it should be promoted and supported through municipal street space design and management processes since it translates to spatial justice.

Injustices, on the other hand, are evidenced through the poor-quality performance of the same indicator. This shows that there is no single space that is completely free of spatial injustices. Arguably a street space can be intentionally designed and managed to reflect more just than the unjust attributes. Generally, the findings reveal that more injustices are obtained from the street content of SRTs than justices in terms of the overall distribution of the performance of the street space social-spatial qualities. To a greater extent, this is caused by several constraints faced by local municipalities in SRTs in applying design standards, land-use-regulation, maintenance, financing and general governance issues. This shows that street spaces in the SRTs are less responsive environments that offer less imageability or legibility (Lynch, 1960; Bentley et al. 1985).

It emerged that local municipalities in SRTs seemingly prioritise the maintenance of higher-order street streets (in terms of the road hierarchy). This is because all the higher-order streets from the selected towns had better performing socio-spatial qualities in comparison to lower-order streets. This reflects the satisficing measures adopted by the local municipalities to cope with inadequate financial resources. Common forms of injustice included lack of seating furniture, inadequate public toilets, and unclear demarcation of sidewalk spaces. These injustices hindered users' claim

⁶ These variables include (i) safety and security, (ii) accessibility and permeability, (ii) legibility (iv) robustness and (v) maintenance and management on street spaces.

to enjoying social and optional street space activities. This is mainly because of the lack of a clear public space management strategy that targets users' needs. Gehl (2011) concurs that good streets provide their users not only with necessary activities but should also facilitate more social and optional activities. These are lessons for Musina and Louis Trichardt towns and other SRTs to adopt in street designing.

Although spatial (in)justice is both a visualised and experiential phenomenon, the injustices in spatial qualities are easier to identify and map, than the justices which often depend on individual perceptions. The spatial (in)justice hotspot maps (see Figures 5-47, 5-48 and 5-49 in Chapter 5) show that it is possible to identify where the hotspots are clustered through mapping injustices so that municipalities can prioritise interventions. Some injustices (i.e. narrow sidewalks widths, absence of seating furniture and inadequate public toilet provisions) require medium to long-term planning and large capital investments.

On the other hand, injustices such as unclear road markings, blockage of sidewalks by vehicles and street trading related issues are more short-term and require less funding. This shows the necessary differential interventions needed to transform street spaces into just spaces. Short-term municipal interventions are likely to generate quick wins that provide a reprieve from street injustices while street space users await long term interventions. A combination of short term (1-2years), medium-term (3 -5 years), and long-term (more than 5 years) interventions requires in-depth consideration for continual experience of street justice on street spaces. This because street spaces are never stagnant but are rather punctuated by a myriad of activities and experiences in the process of becoming or being made. Local municipalities as key street space providers in SRTs need to be swifter and less bureaucratic in responding to temporal challenges in the design and management of street spaces.

9.3.2 Spatial (in)justice from the users' needs and perspective

The least advantaged street users considered in this study are pedestrians and street traders. These users are often not prioritised in the conventional street planning and design and management practices that are evidenced in SRTs. Findings from the users' perspective confirm that users' experiences and understanding of a spatial (in)justice attribute are very diverse and often contradict. This is a reflection that users

of street spaces have the right to differences (Lefebvre, 1996). The 'Right to the City' is a concept which evolved from the first world, however as it diffused to the third world, it is seemingly a concept that is being used by different groups to demand disparate rights. On street spaces, users can claim different rights such as the right to safety, security, access, identity, diverse opportunities, livelihoods, public space and appropriation, among many other rights. Thus, questions such as whose 'Right to the City', and which 'Right to the City' remain paradoxical. Although from literature, spatial justice is analogous to the 'Right to the City'; in reality, these concepts remain elusive. The expression of one does not necessarily translate to the other in some cases. For example, street traders' right to work infringes the right to ease of sidewalk mobility for pedestrians. Resultantly, street spaces with conflicting (in)justices from users' perspectives are ambiguous spaces. Moreover, spatial justice on street spaces and the 'Right to the City' is only animated through one's purpose for using streets. For example, one can only be satisfied with street lighting if they want to use them at night, but the SRTs in the study close down after 7 pm. Therefore, spatial justice perceptions of satisfaction are largely experiential and intent driven.

Spatial justice and the 'Right the City' become more complex when the socio-demographic backgrounds of users are factored in. It was proved from the study that for four variables namely accessibility, legibility variety and maintenance; users perception differed significantly with at least one category of (i) a town, (ii) street level, (iii) gender, (iv) age, (v) physical ability condition and (vi) street activity. Thus, the hypothesis that users' experiences of spatial justice attributes differ based on one's socio-demographic profile is accepted. The context-specific differences between towns can be ascribed to factors such as (i) the existent right to difference amongst the users, (ii) the varying public space management philosophies employed by different municipalities and (iii) in some cases the historic difference in the layout patterns of street spaces is also a contributing factor. Users' also encounter similar spatial (in)justice experiences despite ones' socio-demographic status. For example, in the case of safety and security, there were no statistically significant differences between all these categories (see Section 6.8 in Chapter 6). These similarities in experiences amongst the different user categories can be attributed to limited tactical design options available on street spaces in SRTs. Thus, users in the SRTs do have the right to similarities as well. These findings reveal that spatial (in)justice is indeed a

complex experiential phenomenon whereby, many different stories can be told at once. Some users' expectations on a particular street quality were not being met, thus, infringing on the disparate 'Right to the City' claims of these users which is spatial injustice. On the other hand, some users had their expectations on the same quality being met, which is spatial justice.

The hypothesis that there is a statistically significant difference between the meaning users place on a particular variable and their satisfaction with the same variable is also accepted in this study. This reveals that there is no simple way of defining spatial justice. Street users are key street space producers in SRTs as their activities modify and redefine the use of space in these urban centres. However, the involvement of street space users in the design and management of street spaces as key space producers is to a greater extent lacking in the SRTs. Instead, street space users are viewed more as mere recipients or consumers of produced street spaces. As a result, various contestations over the use of space exists amongst the different categories of users of street spaces; and also, between the users and other various stakeholders involved in the use and regulation of street spaces.

9.3.3 The implications of spatial justice from opportunities and constraints flowing from street design and management in small rural towns

The study established that the local municipalities in SRTs are not the sole actors in the regulation of street spaces but are simply governance actors amongst other multiple players with different interests. The findings reveal that the state-centred public space management model is dominant in the management of street spaces in the SRTs. This approach to designing and management of street spaces gives sole responsibility to local municipalities. Other players are relegated to be mere space consumers and not key regulators and producers of space. The negotiations that take place between informal traders and private property owners reflects an important role of other players in the regulation of space. It also reflects the controversies that are apparent in the disparate 'Right to the City' claims amongst various users. For example, while street trading enables the right to livelihoods or the right to work in the city, inversely the activity emerges as an infringement of the right to access for other pedestrians who may want to experience the same street space and thus becomes an injustice. This implies that the nature of street space (in)justices depends on the needs

and expectations of the street space users at an individual level and as collectives. Thus, spatial (in)justices on street spaces are often marred with controversies and contestations.

The opportunities which flow from the processes of street design and management translate to spatial justice in the form of improved street space social-spatial qualities, enriched 'Right to the City' claims for diverse street space users and just processes. On the other hand, the challenges translate to spatial injustices in the form of non-responsive street spaces and infringed 'Right to the City' claims for users. Thus, unjust street design and management processes reproduce injustices. This shows that spatial (in)justice in SRTs is bounded and is controlled by local municipalities that determine the design and management principles of the street spaces. In this case, local municipalities can only deliver what is workable within their context, given the existing street layout patterns, political will, and availability of human capital and financial resources, amongst other conditions. Local municipalities often offer packaged spatial justices through guided policy procedures and regulations that apply blanket standards, unresponsive to the local context or users' expectations and needs.

Street spaces in SRTs, thus animate both planned justices and accidental injustices. This is because the landscape of SRTs does not remain static, but experience changes which include: (i) increased demand for public space by local communities, (ii) more freedom of access to public spaces in this age contrary to the oppressive apartheid era, (iii) a shift from the narrow historic concept of SRTs as merely service centres for rural communities to key destinations with own place identity (iv) changes in livelihood patterns from dominantly agrarian to a more monetised society where more people frequently use street spaces and (v) drastic population changes; climate change; global health challenges and pandemics. These changes certainly require a deeper introspection of the concept and character of spatial (in)justice on street spaces and ultimately calls for responsive and adaptive street design and management processes.

9.4 Recommendations

This section provides key recommendations useful to local municipalities as key space providers in SRTs, as well as other key stakeholders who are involved in street space production. These recommendations are ‘smartised’ in line with contemporary smart and inclusive cities imperatives. They are also applicable for consideration by local municipalities of SRTs experiencing similar spatial planning backgrounds elsewhere in South Africa, as well as other developing countries with similar contexts.

9.4.1 Development of a Smart Public Space Maintenance and Management Policy

It is key for local municipalities to develop a smart Public Space Maintenance and Management Policy and introduce a specific department that coordinates all activities in this domain. This will ensure common vision sharing and improve coordination amongst departments. This plan should clearly explain the terms of the street users’ or general publics’ involvement from project planning, design, budgeting, monitoring, evaluation, and implementation. This creates an increased sense of identity and more community ownership on streets spaces. The initiative will ensure the co-creation or co-keeping and stewardship of spaces by street space users, who are the local actors involved in the process of creating and maintaining public spaces. This can be done through smart localised and branded initiatives such as ‘name a street’ and ‘adopt a street’ approaches whereby interested individuals and investors emerge as volunteer caretakers of street spaces for the advancement of their business or cultural profiles. Through such initiative or local programmes, disparate users’ rights could be realised, including the rights to participation, modification, access, and appropriation with regards to urban street spaces.

9.4.1.1 *Key conditions for the locally branded initiatives*

In order for the locally branded initiatives to succeed, local municipalities should work closely with the local communities through, for example, the Integrated Development Plans. Such an initiative will enable the local municipalities to be responsive not only to the ever-changing contexts of street spaces in SRTs but also to the emergent global emergencies such as health issues related to the novel COVID19 pandemic. For example, in light of the novel COVID19, individuals, investors or businesses that adopted or named street spaces can redesign and put in place management measures that allow social distancing, and avail smart taps for street space users to

wash their hands, and hand sanitiser stations. Clearly, a functional smart Public Space Maintenance and Management Policy prioritises the least-advantaged street space users. However, it requires local municipalities to work with the local stakeholders to create a sustainable model to fund the maintenance and management of street spaces to engender spatial justice.

9.4.2 Adoption of smart technologies

Local municipalities of SRTs should focus on adopting the use of smart technologies such as smart-public toilets, seating furniture, streetlights, and water metering. For example, municipalities need to explore energy-efficient mechanisms such as solar or wind-powered smart street lighting with sensors and cameras for pedestrian counts and activity tracking. This can assist in providing services that match the number of users and direct the right infrastructure for street activities. Adoption of smart technologies as above improves the nature of digital data analytics which is currently uneven in SRTs. Digital data analytics can be used to inform relevant actors in street design and management on (in)justices in the quality and distribution of resources on street spaces in real-time. Thus, it facilitates the simulation of timely and appropriate solutions to the identified injustices. To fast track the adoption of smart technologies, there is a need for the creation of sustainable partnership models between municipalities and the private sector (Public-Private Partnerships) and also between municipalities and local communities (Public-Public Partnerships). for tapping from the strengths of both models.

9.4.3 Diversifying finance generation mechanisms

Local municipalities in SRTs need to be more innovative in funding public space management projects which facilitate the spatial justice agenda. The local municipalities must shift their focus from relying on government grants to other resource mobilisation mechanisms. Such mechanisms include creating smart pragmatic partnerships between the local business community, community members and Non-Governmental Organisations (Agevi, Andersson and Petrella, 2016; De Magalhães and Carmona, 2008; Peet et al. 2016). For such partnerships to be strengthened, local municipalities can offer incentives for private businesses actively involved in the maintenance of public space. Tapping from indigenous resources and

application of indigenous knowledge-based solutions is crucial when engaging the general public.

9.5 Areas for further research

To broaden our understanding of spatial (in)justice on street spaces, several areas are worth exploring in the future through research in urban and regional planning or allied disciplines. These include but certainly not limited to:

- Expand the investigations of spatial (in)justice to other public spaces such as markets, squares, and parks.
- Explore further on the issues that pedestrians raised such as the contested meaning of public space, for example, the perceptions of paying for the use of public toilets.
- Explore further the relationship of emergent issues such as global pandemics (i.e., diseases (COVID19), climate change, or privatisation of public space and spatial justice.

9.6 Conclusion

The study established that spatial (in)justice on street spaces of SRTs is a multidimensional concept whose meaning becomes vague as one tries to understand it from the micro-scale. However, this concept can be understood better by reflecting on the proposed improved integrated framework for street space spatial justice analysis (see Section 8-4 in Chapter 8). This helps to thoroughly interrogate and understand the (in)justices for responsive intervention by local municipalities or any service providers in SRTs. The framework highlights three key lenses of spatial justice analysis, namely street space content; users' needs or expectations; and the institutional context. The street space justices in the SRTs are the positive performing variables that facilitate other social and optional activities for users, whereas the injustices emerge as the negative elements. The diverse 'Right to the City' claims for users in all variables reflects that users of street spaces in SRTs experience rights to similarities and differences. Adoption of Public Space Maintenance and Management Policy, smart technologies as well as pragmatic partnerships are key recommendations towards producing more spatially just street spaces in the SRTs. A thorough reflection and introspection of an iterative justice-conscious agenda on street

design and management which is informed by the application of the proposed improved integrated framework for street space spatial justice analysis will produce and reproduce an in-depth understanding of the dynamics of spatial justice than injustice on street spaces in the SRTs. Indeed, street spaces in SRTs remain as spaces of familiarity and intrigue, differences and uniformities, contestations and negotiations. Therefore, street spaces of SRTs require responsive spatial justice creation interventions whose focus springs from within and outside the streets, to enable the least advantaged categories of street space users to enjoy their 'Right to the City' claims.

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APPENDICES

Appendix 1: Turnit in report

SPATIAL (IN)JUSTICE AND STREET SPACES OF SELECTED SMALL RURAL TOWNS IN VHEMBE DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA

ORIGINALITY REPORT

7%	6%	3%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.dhs.redbook.gov.za Internet Source	<1%
2	www.hrpub.org Internet Source	<1%
3	www.tandfonline.com Internet Source	<1%
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7	www.ros.hw.ac.uk Internet Source	<1%
8	hdl.handle.net Internet Source	<1%

Appendix 2: Language Editor's report



13 February 2021

To whom it may concern

REF: Language and technical editing report

This letter serves to confirm that I have conducted language and technical editing of Wendy Tsoriyo' Doctoral thesis titled **SPATIAL (IN)JUSTICE AND STREET SPACES OF SELECTED SMALL RURAL TOWNS IN VHEMBE DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA.**

For any enquiry do not hesitate to contact the undersigned on trishmakaure01@gmail.com or 0827965256

Best Regards



Makaure, Patricia (*Linguist*)

Rise above it.

Specialising in:

- Research,
- Data Science, Machine Learning and Artificial Intelligence,
- Report Writing, Technical and Content Editing,
- Proofreading

33 Zedre Place, Landskap Ave, Glen Marais, Kempton Park, 1619.
Cell nr 0827965256 or 0716129133
Email: trishmakaure01@gmail.com

Appendix 3: University Higher Degrees Committee Proposal decision

UNIVERSITY OF VENDA

OFFICE OF THE DEPUTY VICE-CHANCELLOR: ACADEMIC

TO : MR/MS W TSORIYO
SCHOOL OF ENVIRONMENTAL SCIENCES

FROM: SENIOR PROF L.B KHOZA
ACTING DEPUTY VICE-CHANCELLOR: ACADEMIC

DATE : 17 OCTOBER 2018

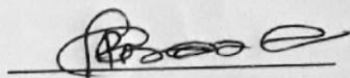
DECISIONS TAKEN BY UHDC OF 1ST OCTOBER 2018

Application for approval of Thesis research proposal in Environmental Science:
W. Tsoriyo (17023706)

Topic: "Spatial justice and street space of selected small rural towns in Vhembe District of Limpopo Province in South Africa."

Promoter	UNIVEN	Dr. E. Ingwani
Co-Promoters	UNIVEN	Dr. J. Chakwizira
	UNIVEN	Prof. P. Bikam

UHDC approved Thesis proposal



SENIOR PROF L.B KHOZA
ACTING DEPUTY VICE-CHANCELLOR: ACADEMIC

Appendix 4: Research ethics clearance letter

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:

Mrs WW Tsoriyo

Student No:

17023706

PROJECT TITLE: Spatial justice and street spaces of selected small rural towns in Vhembe District of Limpopo Province in South Africa.

PROJECT NO: **SES/18/URP/04/1511**

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Dr E Ingwani	University of Venda	Promoter
Dr J Chakwizira	University of Venda	Co - Promoter
Prof P Bikam	University of Venda	Co - Promoter
Mrs WW Tsoriyo	University of Venda	Investigator – Student

ISSUED BY:

UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE

Date Considered: November 2018

Decision by Ethical Clearance Committee Granted

Signature of Chairperson of the Committee:

Name of the Chairperson of the Committee: Senior Prof. **G.E. Ekosse**



University of Venda

PRIVATE BAG X5050, THOHYANDOU, 0950, LIMPOPO PROVINCE, SOUTH AFRICA
TELEPHONE (015) 962 8504/8313 FAX (015) 962 9060

"A quality driven financially sustainable, rural-based Comprehensive University"

<p>UNIVERSITY OF VENDA DIRECTOR RESEARCH AND INNOVATION 2018 -11- 20</p>
<p>Private Bag X5050 Thohoyandou 0950</p>

Appendix 5: Research support letter to Thulamela Local Municipality



University of Venda

School of Environmental Sciences

Department of Urban and Regional Planning

University Road, Thohoyandou, Limpopo
Private Bag X5050, Thohoyandou, 0950
Limpopo, South Africa

+27 15 962 8585

+27 15 962 8597

james.chakwizira@univen.ac.za

azwidowi.mashangu@univen.ac.za

The Municipal Manager

Thulamela Local Municipality
Thohoyandou Civic Centre
Old Agriven Building
Thohoyandou
0950

18/10/2018

Dear Sir / Madam

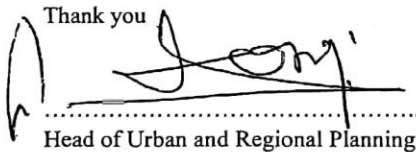
Ref: Request for permission to conduct an academic study in Thulamela Local Municipal Area

With reference to the above mentioned subject, I the undersigned hereby write to request permission for Mrs Wendy Tsoriyo, student number 17023706, to conduct her PhD research within your municipality. Her research topic is entitled: "Spatial justice and street spaces of selected small rural towns in Vhembe District of Limpopo Province in South Africa."

We also request that may you kindly authorise the student's research to enable her to obtain relevant data/documentation from the relevant sections of Thulamela Local Municipality.

Your assistance in this regard will be very much appreciated.


Thank you



Head of Urban and Regional Planning

+27 76 387 7814
+27 73 519 1522

Appendix 6: Research support letter to Musina Local Municipality

Rep. serve d EDP.

 31/10/18

HR Manager



University of Venda
 School of Environmental Sciences

Department of Urban and Regional Planning
 University Road, Thohoyandou, Limpopo
 Private Bag X5050, Thohoyandou, 0950 Limpopo, South Africa
 ☎ +27 15 962 8585
 ☎ +27 15 962 8597
 @ james.chakwizira@univen.ac.za
 @ azwidowi.mashangu@univen.ac.za

The Municipal Manager
 Musina Local Municipality
 Private Bag X611
 Musina
 0900

18/10/2018

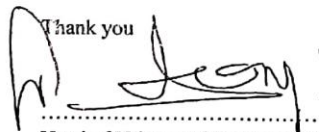
Dear Sir / Madam

Ref: Request for permission to conduct an academic study in Musina Local Municipality Area

With reference to the above mentioned subject, I the undersigned hereby write to request permission for Mrs Wendy Tsoriyo, student number 17023706, to conduct her PhD research within your municipality. Her research topic is entitled: "Spatial justice and street spaces of selected small rural towns in Vhembe District of Limpopo Province in South Africa."

We also request that may you kindly authorise the student's research to enable her to obtain relevant data/documentation from the relevant sections of Musina Local Municipality.

Your assistance in this regard will be very much appreciated.

Thank you

 Head of Urban and Regional Planning

078 962 7212
 079 638 6548

MUSINA LOCAL MUNICIPALITY
 MUNICIPAL MANAGER
 29-10-2018
RECEIVED

Appendix 7: Research Support Letter to Makhado Local Municipality



University of Venda

School of Environmental Sciences

Department of Urban and Regional Planning

University Road, Thohoyandou, Limpopo
Private Bag X5050, Thohoyandou, 0950
Limpopo, South Africa
☎ +27 15 962 8585
☎ +27 15 962 8597
✉ james.chakwizira@univen.ac.za
✉ azwidowl.mashangu@univen.ac.za

The Municipal Manager
Makhado Municipality
Private Bag X2596
Louis Tritchardt
Limpopo
0920

18/10/2018

Dear Sir / Madam

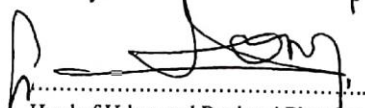
Ref: Request for permission to conduct an academic study in Makhadho Local Municipality Area

With reference to the above mentioned subject, I the undersigned hereby write to request permission for Mrs Wendy Tsoriyo, student number 17023706, to conduct her PhD research within your municipality. Her research topic is entitled: "Spatial justice and street spaces of selected small rural towns in Vhembe District of Limpopo Province in South Africa."

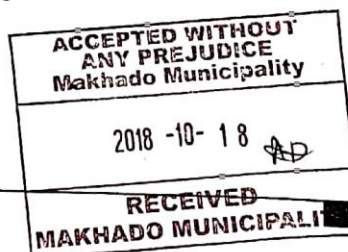
We also request that may you kindly authorise the student's research to enable her to obtain relevant data/documentation from the relevant sections of Makhadho Local Municipality.

Your assistance in this regard will be very much appreciated.

Thank you

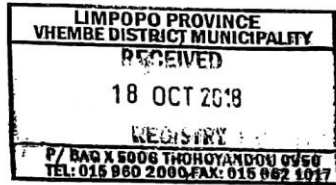


Head of Urban and Regional Planning



079 638 6548
078 962 7212

Appendix 8: Research Support Letter to Vhembe District Municipality



University of Venda
School of Environmental Sciences

Department of Urban and
Regional Planning
University Road, Thohoyandou, Limpopo
Private Bag X5050, Thohoyandou, 0950
Limpopo, South Africa
☎ +27 15 962 8585
☎ +27 15 962 8597
✉ james.chakwizira@univen.ac.za
✉ azwidowi.mashangu@univen.ac.za

The Municipal Manager
Vhembe District Municipality
Private Bag X500
Thohoyandou
0950

18/10/2018

Dear Sir / Madam


Ref: Request for permission to conduct an academic study in Vhembe District Municipal Area

With reference to the above mentioned subject, I the undersigned hereby write to request permission for Mrs Wendy Tsoriyo, student number 17023706, to conduct her PhD research within your municipality. Her research topic is entitled: "Spatial justice and street spaces of selected small rural towns in Vhembe District of Limpopo Province in South Africa."

We also request that you may kindly authorise the research the student's research to enable her to obtain relevant data/documentation from the relevant sections of Vhembe District Municipality.

Your assistance in this regard will be very much appreciated.

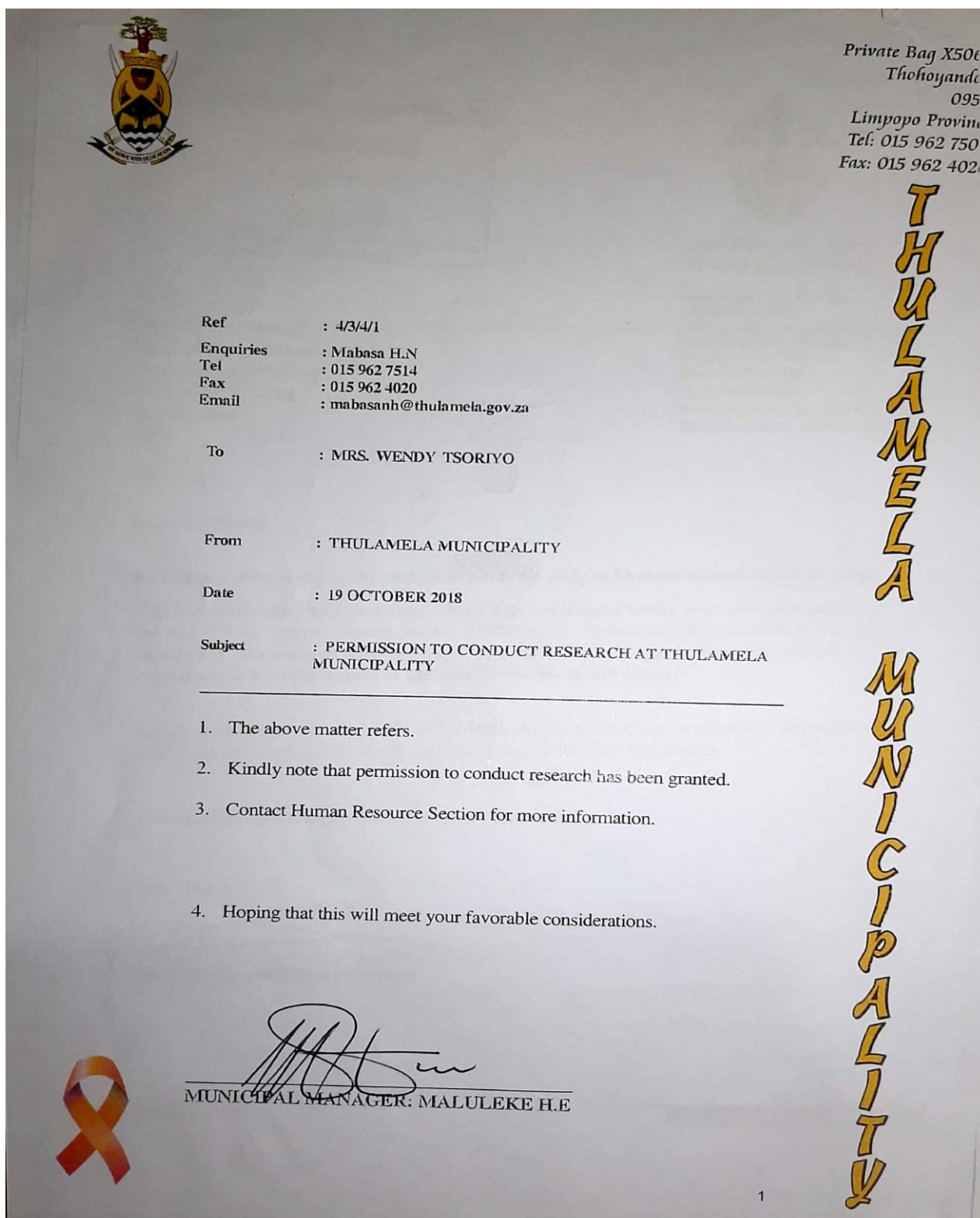
Thank you



Head of Urban and Regional Planning

079 638 6548
078 962 7212

Appendix 9: Permission to Conduct Research in Thulamela Local Municipality



Appendix 10: Permission to Conduct Research in Musina Local Municipality



Postal Address:
Musina Local Municipality
Private Bag X611
Musina
0900

Physical Address:
21 Irwin Street
Musina
0900

Information Center
(015) 534 6100
info@musina.gov.za
www.musina.gov.za

ENQUIRIES SPEAK TO

R Le Roux

REFERENCE NO

132

12 November 2018

Mrs Rika Le Roux
Manager Human Resources Management Division
Musina Local Municipality

12 November 2018

Mrs. Wendy Tsoriyo
Student no: 17023706

Per email: james.chakwizira@univen.ac.za, azwidowi.masgangu@univen.ac.za

Dear student

Re: Application for Permission to conduct Research

Your letter of application dated 18 October 2018 bears reference.

It is with great pleasure to inform you that your request for permission to conduct research at the Musina Local Municipality is approved.

The title of the research is titled Spatial justice and street spaces of selected small towns and rural towns in Vhembe District Of Limpopo South Africa.

While conducting the research and collecting data through interviews and relevant documents, kindly take note of the following:

- The research should not have any financial implication for Municipality.
- Arrangement should be made with the relevant offices for the timeslot that would be convenient to all the parties.
- The research is conducted in line with ethics in research. In particular, the principle of voluntary participation in this research should be adhered to.
- You will share with the Municipality, the final product of your study upon completion of the research assignment.
- It is expected of you to produce this letter at offices where you will be conducting your research, as evidence that permission for this activity has been granted.

The Municipality appreciates the contribution that you wish to make and wishes you success in your investigation.

Yours faithfully,

Ms Rika Le Roux

Appendix 11: Permission to Conduct Research In Makhado Local Municipality



MAKHADO MUNICIPALITY

Vision : "A democratic, accountable and service delivery orientated municipality committed to good governance and socio-economic development of its community"
Mission : "We will use available resources effectively in order to address socio-economic imbalances through infrastructure and local economic development opportunities"

INTERNAL MEMORANDUM

Ref no.: 5/3/1 & 5/4/2
Enquiries: T Manebaneba

TO: THE MUNICIPAL MANAGER
FROM: HUMAN RESOURCE DIVISION
DATE: 21 NOVEMBER 2018

SUBJECT: REQUEST TO ALLOW MRS W. TSORIYO A PERMISSION TO CONDUCT RESEARCH ON THE SPATIAL JUSTICE AND STREET SPACES OF SELECTED SMALL RURAL TOWNS IN VHEMBE DISTRICT OF LIMPOPO PROVINCE IN SOUTH AFRICA

STRATEGIC OBJECTIVE

Good Governance and Administrative Excellence

PURPOSE

To seek approval by the Municipal Manager in respect of Mrs W. Tsoriyo to be granted a permission to conduct study research based on the subject mentioned above.

DETAILS

Mrs W. Tsoriyo, a student who is studying PhD at University of Venda of student number 17023706 is hereby requesting a permission to conduct research on the spatial justice and street spaces of selected small rural towns in Vhembe District of Limpopo Province in South Africa. Attached herewith please find her request letter dated 18th of October 2018.

COMMENT

It therefore recommended for Mrs W. Tsoriyo to be granted a permission to conduct the above mentioned research, subject to best practice and conventions for students that undertake research on council's records viz.

1. Research activities will not disturb the normal operation of the Municipality.
2. Prompt and timeous arrangements must be made with the Departmental Head concerned when assistance is required.
3. Copy of the research findings / thesis must be submitted to the Municipality
4. The Municipality has no power over research conducted with community members and this part will be performed with the community at their own free will.
5. Research will be for a period of six months which can be extended for a further period determined by the Municipal Manager.
6. Confidential records / information must not be reflected in thesis documents.
7. The collection of data for research will be conducted based on prior arrangements to be made before the meeting with the Director Development Planning.
8. The Municipality is indemnified against any claims for damages by the applicant which may result directly or indirectly from the research activity.
9. Research information may not be used for any form of publication media other than the applicant's studies expect with permission of the Municipality.

Appendix 12: Permission to Conduct Research in Vhembe District Municipality

VHEMBE DISTRICT MUNICIPALITY

PRIVATE BAG X5006, THOHOYANDOU, 0950

TEL: 015 960 2000, FAX: 015 962 1017

Website: www.vhembe.gov.za



Ref: 4/2/1
Enq: Ndou T.S
Date: 23 November 2018

ATTENTION: Tsoriyo W

RE: APPLICATION TO CONDUCT ACADEMIC RESEARCH: YOURSELF

5. Your application dated 18 October 2018 refers
6. It is with pleasure to inform you that your request mentioned above is hereby granted to you.
7. Please contact General Manager Development Planning, Mrs Tshivhinda Mufunwa (076 782 2570/ 015 960 3502) in order to arrange the starting date.
8. Should there be anything you need clarity on, feel free to call our office at 015 960 3558/015 960 3541.

Kind Regards

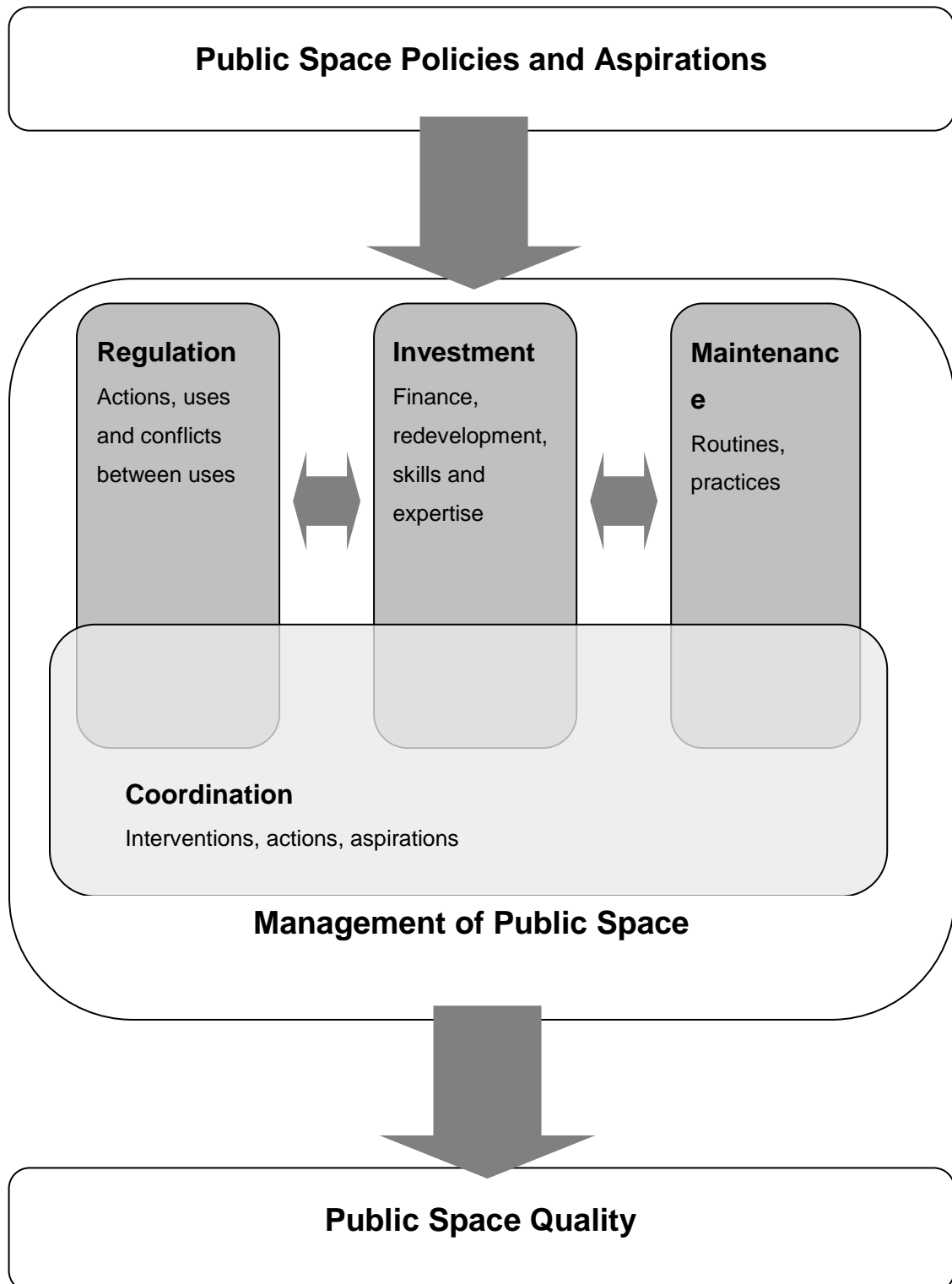


ACTING MUNICIPAL MANAGER
NDOU T.S

23/11/2018
DATE

"A developmental municipality focusing on sustainable service delivery and socio-economic development towards an equal society"

Appendix 13: Public space management framework



Source: Adopted from De Magalhães and Carmona (2008:114)

Appendix 14: Strengths and weakness of the adopted complementary case study survey

Strengths	Weaknesses
<p>Understanding of spatial (in) justice on street spaces in the context of three small rural towns of Thohoyandou, Musina and Louis Trichardt in their natural setting; making the study relevant to context.</p> <p>The socio-spatial qualities on street spaces are analysed using theories of responsive design elements, the legible city theory, the 'Right to the City' and spatial planning outcomes</p> <p>Perceptions of diverse on street spaces are obtainable through multiple case studies.</p> <p>Fostering new hypotheses and new research questions</p> <p>Large sample size of 500 street space users within the three small rural towns</p> <p>Use of multiple data sources from municipal legislative documents, photographs, interviews, questionnaires, observations.</p> <p>These actions were replicable in all towns</p> <p>Establishment of levels of confidence</p> <p>High conceptual validity</p>	<p>Small sample size of only three towns as case studies</p> <p>Extensive need for multiple methods and tools</p> <p>Conceptual stretching through grouping of dissimilar categories of street space users to get a larger sample</p> <p>Lack of more richer thick qualitative descriptions of users' spatial (in)justice experiences</p>

Source: Adopted from Emuze (2016:112)

Appendix 15: Typical case study streets selected

Town	Street level	Street Name
Thohoyandou	Local Distributor	I. Garden route
	Access Street	ii. Parliament Street iii. E
Musina	Local Distributor	I. Limpopo Avenue
	Access Street	ii. Klaff Avenue iii Watson Avenue
Louis Trichardt	Local Distributor	i. Songozwi Street
	Access Street	ii. Kruger Street iii Krough Street

Source: Author's construct (2020)

Appendix 16: Street Space Design Qualities Inventory Checklist Tool

Location:

Quadrant:

Date: dd/mm/yy

No	Street space quality	(Scale least/none or very poor-1, few/low or poor-2, moderate-3, high or good-4, outstanding/very good-5)									
		Quantity					Quality				
		Least	Few/Low	Moderate	High	Outstanding	Very poor	Poor	Moderate	Good	Very good
	Safety and security of the street										
1.	Is there a safe street crossing?										
2.	Is the adequate street lighting										
3.	Is there presence security features such as cameras of police?										
4.	Are the human activities in the street visible from the edge of the street?										
5.	Is there presence of police?										
6.	Is there continuous street movement of other street users?										
	Accessibility/permeability of the street space										
1	Does the size of street blocks encourage permeability										
2	Is there a clear demarcation between space uses on sidewalks? What is public space and what is private space on the street?										
3	Are there ramps on sidewalks suitable for people with walking disabilities? presence of ramp suitable for people with walking disabilities at street crossings,										
4..	Are the crosswalks aligned with pedestrian routes										
5.	Is there non-interference of parking with sidewalks and other street uses?										
6.	Is there ease access from the street to a nearby public transportation termini?										
7.	Is the street open and barrier-free?										
8.	Are sidewalks designed wide enough to provide easy access for pedestrian traffic that is at least 1.2 m?										
9	Are sidewalks designed wide enough (that is at least 3m) to accommodate a cycling lane										

10.	Is there any connectivity of the street with other public spaces and main nodes which create activity throughout the street?										
Legibility of the street/ visual attractiveness of the place											
		Quantity					Quality				
		Least	Few/Low	Moderate	High	Outstanding	Very poor	Poor	Moderate	Good	Very good
1.	Is there connectivity of the street to landmarks?										
2.	Is there availability of free public Wi-Fi?										
3.	Are there any way finding features										
4.	Does the designs which capture the cultural identities of the local community?										
	Is the place free from loud annoying noises?										
5.	Are there any visual cues along the street?										
7.	Clear street signage										
8.	Is the urban seating furniture attractive?										
9.	Are the lighting features attractive?										
10.	Is there any use of spectacular natural views in the design?										
11.	Are the surrounding buildings attractive?										
Adaptability/ robustness of the street											
1.	Is there any design features showing that the street can be used to celebrate special events or festivities?										
2..	Are there any a variety of activities offered at the shop floor level in buildings along the street?										
3.	Is there a fit of activities with the form										
4.	Are sidewalks wide enough to accommodate bicycle traffic?										
5.	Is there any green infrastructure along the street?										
6.	Are there any features designed to reduce temperatures and add calm to the place?										
7.	Is the street's flexible to changes in uses and activities?										

		Quantity					Quality				
		Least	Few/Low	Moderate	High	Outstanding	Very Poor	Poor	Moderate	Good	Very good
	Maintenance/Management of the street										
1	Are there potholes or visible signs of poor street maintenance?										
2	Are there proper waste disposal/ absence of illegal dumping?										
3	Are waste disposal bins placed strategically near local vendors or near seating areas?										
4	The exterior of the adjacent buildings looks well maintained/ free from vandalism?										
5	Are the street lighting features well-maintained and replaced once needing it?										
6	Are the seating furniture/benches well-maintained?										
7	Are there public toilets along the street or on adjacent streets?										
8	The quality of paving of sidewalks										
9	Clearly marked site for street trading										
10	Quality of vending stalls										
11	Storage facilities for vending ware										

Appendix 17: Questionnaire To Street Space Users

My name is Wendy Tsoriyo; I am a PhD student in Urban and Regional Studies at the School of Environmental Sciences, University of Venda. I am kindly asking you to participate in my study entitled 'Spatial justice and street spaces of selected small rural towns in Vhembe District of Limpopo Province in South Africa.' This study will contribute to my thesis, in partial fulfilment of the fore mentioned doctorate degree. The questionnaire intends to explore your personal views on streets spaces in this town. Your comments will help me to understand and evaluate the assessment process. Your participation is voluntary and you are free to withdraw at any time. All data collected through questionnaires will be highly confidential and will not be used in any way but for the purposes of the study and may be re-used only for this study purposes. This questionnaire is targeting users who come to town at least once a week. Please feel free to put an X or a signature if you are willing to proceed.

Signature of participant: I come to town at least once a week. Yes No

ADMINISTRATIVE SECTION:

Questionnaire # : Street level and name:

Date : Time.....

SECTION A: BACKGROUND AND PERSONAL INFORMATION

Sex	1.Male <input type="radio"/>		2. Female <input type="radio"/>			
Person living with a walking disability	1.Yes <input type="radio"/>		2. No <input type="radio"/>			
Place of origin						
Current place of residence						
Race						
Level of education	1.Primary <input type="radio"/>	2. Secondary <input type="radio"/>	3. College Certificate Diploma <input type="radio"/>			
	4.Degree <input type="radio"/>	5.Masters <input type="radio"/>	6.PhD <input type="radio"/>			
Occupation	1.Student <input type="checkbox"/>	2. Street trader <input type="checkbox"/>	3.Private sector employee <input type="checkbox"/>			
	4.Government worker <input type="checkbox"/>	5.Retired <input type="checkbox"/>	6. Crossboarder trader <input type="checkbox"/>			
	7.Other <input type="checkbox"/>					
Age(years)	1.18-29	2.30-39	3.40-49	4. 50-59	5. 60-69	6.70 or older

SECTION B: CHARACTERISE THE SPATIAL JUSTICES ON STREET SPACES

B1. Can you identify this street's name?

B2. Can you identify the name of any other street in this town?.....

B3. What mode of transport do you normally use to come to town?

i. on foot		ii. bicycle		iii. motorbike	
iv. bus		v. taxi		vi. car	
vii. other					

B4. When you come into town, how would you rank the following street uses in order of priority? (1- not important at all 2- least priority 3- neutral 4- priority 5- high priority)

Street uses	1. not important at all	2. least priority	3. neutral	4. priority	5. high priority
i. a channel of movement to go to work					
ii. to buy goods/wares in shops along the street					
iii. to buy goods/wares on the streets					
iv. trade informally on street					
v. residing along the street					
vi. to eat					
vii. social interaction/meeting					
viii. children/family outing					
ix. resting/relaxing					
x. guided walk/talk/tourism					
xi. events/celebrations					
ix. resting/relaxing					
xii. Other (specify)					

B5. On a scale of 1-5 (**where 1 = strongly agree and 5 = strongly disagree**) how would you rank the following sentiments which are used to describe fairness on streets?

Perception of street space qualities	5.Strongly agree	4.Agree	3.Neutral	2.Disagree	1.Strongly disagree
B5.1 I consider street safety to be:					
i. Presence of police					
ii. Presence of other street users					
iii. Availability of street lighting at night					
iv. Non anti-social behaviour					
v. Presence of cameras					
vi. Presence of fences on roadside					
B5.2. Ease of movement for me as a pedestrian entails:					
i. Wide sidewalks					
ii. Non- interference of sidewalks with parking					
iii. Barrier-free sidewalks					
iv. Availability of a cycling lane					
(If you are physically disabled please respond to B5.3 If not go to B5.4)					
B5.3 Easiness for me to move as a pedestrian living with disability (describe the condition)..... entails:					
i. Presence of ramps					
ii. Smooth pavement					
iii. Getting assistance from other people who use the street					
B 5.4 The easiness to understand what is happening around the street					

i. I consider it important that streets should relate to people's culture					
ii. I consider it important that I am familiar with what can be found from the start to the end of streets in this town					
iii. I consider it important to be well informed about activities or events that take place on the street					
iv. I would want to see major landmarks that will help me to remember this town					
v. I want street signs to be clear					
vi. I use a map to understand my location and activities in the streets					
B5.5 The variety offered by the street					
a. consider it important that a street should have opportunities for:					
ii. work					
ii. live					
iii. play					
b. I prefer using a street that leads me to					
iv. shops where I buy from					
v. the park					
vi. the mall					
vii. the bus terminus					
viii. the market					
B5.6. I consider a well-maintained street to have:					
i. General cleanliness					
ii. Timeous replacement of street lights					
iii. Availability of bins					
iv. Availability of public toilets					
v. Maintenance of seating furniture					
vi. Regular maintenance of potholes					
For street traders only (if not a street trader please proceed to B6)					
B5.7 I consider the following to be important for my business					
i. Support from the local municipality					
ii. Official sites designated for street trading in the CBD					
iii. Good quality of vending stalls					
iv. Safekeeping/security of goods					
v. Relationship with other traders					
Other(specify)					

B6 On a scale of 1-5 (**where 1 = strongly dissatisfied and 5 = strongly satisfied**) state whether you are satisfied or dissatisfied with the following on streets in this town?

Users' satisfaction	5.Very satisfied	4.Satisfied	3.Neutral	2.Not satisfied	1.Very Unsatisfied
B6.1 Safety on streets:					
i. Presence of police					
ii. Presence of other street users					
iii. Availability of street lighting at night					
iv. Non anti-social behaviour					
v. Absence of cameras					
vi. Presence of fences on roadside					
B6.2 Easiness of movement for me as a pedestrian					

i. Wide sidewalks					
ii. Non –Interference of Parking With Sidewalks					
iii. Availability of cycling lane					
iv. Barrier-free space					
(If you are physically disabled please respond to B6.3 If not go to B6.4)					
B6.3 Easiness for me to move as a pedestrian living with disability					
i. presence of ramps					
ii. smooth pavement					
iii. getting assistance from other people who use the streets					
B6.4 The easiness to understand what is happening around this street					
i. Given where I come from, I can relate culturally with this street					
ii. I am familiar with the streets, I know what features are found from the start to the end					
iii. I am well informed about activities or events that take place on along street in this town					
iv Landmarks in this town are memorable					
v. The street signs are clear					
vi. ability to use a map					
B6.5 The variety offered by the street					
a. I see the streets in this towns as having a lot of opportunities for:					
i. work					
ii. live along the street					
iii. play					
b. I prefer using streets in this town because they lead me to					
iv. shops where I buy from					
v. the park					
vi. the mall					
vii. the bus stop					
viii. the market					
ix. other (specify)					
B6.6 I consider the streets to be well maintained in terms of:					
i. General cleanliness					
ii. Timeous replacement of street lights					
iii. Availability of bins					
iv. Availability of public toilets					
v. Maintenance of seating furniture					
vi. Regular maintenance of potholes					
B6.7 For street traders only (if not a street trader proceed to B7)					
How satisfied are you with the following					
i. Support from the local municipality					
ii. Official sites designated for street trading					
iii. Adequacy of space for vending stalls					
iv. Security of goods/ware					
v. Relationship with other traders					

B.7 Please explain further on any of your responses from the section above

SECTION C: IMPACTS OF SPATIAL (IN)JUSTICES OF STREET SPACES ON STREET SPACE USERS

C1. Through your use of streets in this town, have you realised any of the following benefits?

	5. Strongly agree	4. Agree	3. Disagree	2. Strongly disagree	1. Don't know
i. Made social links with other users the is street					
ii. Learnt about other cultures					
iii. Can tolerate people of different religion or race					
iv. Can participate in any social activities that may take place on the street					
v. I am likely to look out for the safety of other street users					
vi. I have a great walking experience on this street					
vii. This street gives me a good opportunity to cycle					
viii-xi For Street Traders only (if not a street trader proceed to C2)					
viii. I can conduct my business legally on street spaces					
ix. I make a meaningful living to fend for my family through my business in this street					
x. I have a harmonious relationship with other informal businesses around this area					
xi. I have a harmonious relationship with other formal businesses around this area					

C2. Is there anything else that you particularly like from your use of this street?

.....
.....

SECTION D: THE EXTENT TO WHICH THE PROVISIONS IN THESE INSTRUMENTS GUIDING PLANNING, DESIGN AND MANAGEMENT OF STREET SPACES EMPOWER STREET SPACE USERS

Question	Opinion		Comment on your response
	Yes	No	
D1. Are you a member of any association which is involved in use of streets?			
D2. Do you have any idea about the plans of your local municipality concerning these streets?			
D3. Have you ever participated in any forums/public hearings/seminars related to street issues?			

SECTION E: LESSONS THAT CAN BE DRAWN FROM THE CASE STUDY STREETS

E1. What improvement would you like to see on this street that would encourage you to use this street more often or to stay for longer?

Thank you

Appendix 18: Informed Consent Form for Professionals

My name is Wendy Tsoriyo, I am a PhD student in Urban and Regional Planning Department in the School of the Environmental Sciences Built Environment at the University of Venda. I am kindly inviting you to participate in my study about Spatial justice and street spaces of selected small rural towns in Vhembe District of Limpopo Province in South Africa. This study forms part of a larger collaborative project 'between' the University of Venda; Durban University of Technology; and Wits University in South Africa. The theme of the project is 'Resilience and Spatial Justice in South Africa's Built Environment: Generating Interdisciplinary Transformative Knowledge.' My study therefore contributes to the pool of knowledge on the overarching question of resilience and spatial justice in South Africa; as well as knowledge generation on how spatial justice on street spaces in small rural towns can be understood. The towns that I am focusing on are Thohoyandou, Musina and Louis Trichardt.

I intend through this interview to explore your views as an expert on the key research questions. Your participation in this study is voluntary. You may refuse to participate or withdraw at any time. Consenting to participate in this study entails being interviewed for approximately 1hour 45 minutes. All data collected through the interview will be highly confidential and will not be used in any way but for the purposes of the study. All participants will be anonymous, when referred to in reporting and analysing the data numbers or pseudonyms will be used. I will be glad to send you the research findings upon project completion. If any claims arise from the research, such claims are purely the researcher's and are not by any way representative of your institution's. Your participation will be highly appreciated.

Yours sincerely

Wendy Tsoriyo

Participant signature..... Date.....

Appendix 19: Structured interview guide first round

1. What kind of street spaces would you want to see in this town?
2. Trichardt CBD? Kindly explain what currently exists and what is not currently there.
3. What could hinder the municipality from having such streets as explained above?
4. What policy documents do you use as a municipality to guide you in street planning and design?
5. What policy documents do you use as a municipality to guide you in street management?
6. Would you have an idea on the average number of people who use this town on a daily basis or per week or month?
7. As a municipality what mechanisms do you use estimate the number of people that come into town?
8. Could you explain how you use the integrated transport plan as a Municipality? If there are any challenges in implementing this, please explain.
9. Are there any organisations that are deal with issues around street planning and design?
10. Are there any organisations that are deal with issues around street management?
11. Is there any department within the municipality which deals specifically with public space management?
12. What are the key considerations that you prioritise when designing streets?
13. Is there anything in the design in the urban outlook or form which you can say captures the culture of the local people?

Appendix 20: Structured interview guide second round

1. Has your vision for ideal street spaces in this town changed? What kind of street spaces would you want to see in this town?
2. Is there any group / individuals who use street illegitimate? Y/N please describe the users and explain how so?
3. To what extent has the history of this town influenced the current form of street in the CBD?
4. To what extent has politics influenced the shaping or provisions on streets? please explain
5. What social cultural values are prioritised by the municipality in the provision of streets in the CBD?
6. What environmental values are prioritised by the municipality in the provision of streets in the CBD?
7. What economic values are prioritised by the municipality in the provision of streets in the CBD?
8. What kind of opportunities exists on street spaces that the municipality is currently or can actually benefit from?
9. What kind of challenges do you confront in the management of street spaces?
10. How do you involve different street users in the planning, design and management of streets?
11. How do you deal with any contradictions that may exist among the various users of streets?
12. In the past two years have you held any forums/public hearings specifically on improvement of streets?
13. What is the role of the private sector in the design or management of streets in Thohoyandou?
14. What are the provisions in the current legislations which the municipality is using which promote the improvement of streets or activities taking place on streets?
15. What else could be added or removed from the provisions to make them more effective?
16. Are there any contradictions that may be existing in the current legislative frameworks that may negatively affect the provision of various functions on street spaces?
17. Is there any good practice currently on the various uses or functions on street spaces which the municipal can share with or learn from with other municipalities local or international?

Thank you

Appendix 21: Street users' gender

Town * Sex Crosstabulation

			sex		Total
			female	male	
Town	Thohoyandou	Count	135	120	255
		% within town	53%	47%	100.0%
	Musina	Count	82	73	155
		% within town	53%	47%	100.0%
	Louis Trichardt	Count	48	42	90
		% within town	53%	43%	100.0%
Total		Count	265	235	500
		% within town	53%	47%	100.0%

Appendix 22: Street users' age cross tabulation

			Town			Total
			Thohoyandou	Musina	Louis trichardt	
age	18-29	Count	93	58	34	185
		% within town	39.6%	40.3%	38.2%	39.5%
	30-39	Count	78	51	30	159
		% within town	33.2%	35.4%	33.7%	34.0%
	40-49	Count	47	23	21	91
		% within town	20.0%	16.0%	23.6%	19.4%
	50-59	Count	13	9	4	26
		% within town	5.5%	6.3%	4.5%	5.6%
	60-69	Count	4	3	0	7
		% within town	1.7%	2.1%	0.0%	1.5%
Total		Count	235	144	89	468
		% within town	100.0%	100.0%	100.0%	100.0%

Appendix 23: Street users place of current residence

Place of current residence	Town		
	Thohoyandou	Musina	Louis Trichardt
Within the Local Municipality	66%	64%	70%
Elsewhere within Vhembe District Municipality	23%	16%	19%
Elsewhere within Limpopo Province	4%	3%	7%
Elsewhere within South Africa	2%	1%	3%
Elsewhere outside of South Africa	6%	16%	1%

Appendix 24: Street users' physical ability conditions cross tabulation

			Town			Total
			Thohoyandou	Musina	Louis Trichardt	
disability	yes	Count	9	6	4	19
		% within town	3.5%	3.9%	4.4%	3.8%
	no	Count	246	149	86	481
		% within town	96.5%	96.1%	95.6%	96.2%
Total		Count	255	155	90	500
		% within town	100.0%	100.0%	100.0%	100.0%

Appendix 25: Street users' occupation cross-tabulation

			Town			Total
			Thohoyandou	Musina	Louis Trichardt	
Occupation Student		Count	49	17	16	82
		% within town	20.6%	11.6%	18.8%	17.4%
street trader		Count	51	31	17	99
		% within town	20%	20%	20%	20%
private sector employee		Count	84	56	25	165
		% within town	35.4%	38%	29.1%	35.5%
government worker		Count	9	2	6	17
		% within town	3.8%	1.4%	7.1%	3.6%
Retired		Count	4	2	0	6
		% within town	1.7%	1.4%	0.0%	1.3%
crossborder trader		Count	0	21	0	21
		% within town	0.0%	14.3%	0.0%	4.5%
Other		Count	44	18	22	84
		% within town	18.5%	12.2%	25.9%	17.9%
Total		Count	238	147	85	470
		% within town	100.0%	100.0%	100.0%	100.0%

Appendix 26: Street users' level of education * town cross tabulation

				Town			Total
				Thohoyandou	Musina	Louis Trichardt	
Level of education	Primary	Count	3	9	0	12	
		% within level of education	25.0%	75.0%	0.0%	100.0%	
	Secondary	Count	123	85	43	251	
		% within level of education	49.0%	33.9%	17.1%	100.0%	
	Tertiary	Count	75	23	31	129	
	College diploma	% within level of education	58.1%	17.8%	24.0%	100.0%	
	Degree	Count	42	20	12	74	
	% within level of education	56.8%	27.0%	16.2%	100.0%		
Masters	Count	5	1	1	7		
	% within level of education	71.4%	14.3%	14.3%	100.0%		
PhD	Count	1	0	1	2		
	% within level of education	50.0%	0.0%	50.0%	100.0%		
Total	Count	249	138	88	475		
	% within level of education	52.4%	29.1%	18.5%	100.0%		

Appendix 27: Travelling mode from one point in the CBD to the next

Travelling mode	Town				Total
	Thohoyandou	Musina	Louis Trichardt	Percentage	
foot	174	109	68	70.2	351
bicycle	0	0	0	0.6	0
motorbike	1	0	0	0.2	1
bus	0	0	0	0	0
taxi	21	0	1	4.4	22
car	54	44	21	23.2	119
No response	5	2	0	1.4	7
Total	255	155	90	98.6	500

Appendix 28: Internal validation and stability measures for safety and security street space clusters

Validation Measures:	Number of clusters					
	2	3	4	5	6	7
hierarchical Connectivity	4.0008	7.6532	13.9933	17.6952	19.5563	26.5631
Dunn	0.3992	0.3992	0.244	0.2818	0.2818	0.2818
Silhouette	0.3212	0.3049	0.3079	0.3448	0.3294	0.3392
Optimal Scores:						
	Score	Method	Clusters			
Connectivity	4.0008	hierarchical	2			
Dunn	0.3992	hierarchical	2			
Silhouette	0.3212	hierarchical	2			
	Score	Method	Clusters			
APN	0.088032	hierarchical	2			
AD	1.885656	hierarchical	5			
ADM	0.264524	hierarchical	2			
FOM	0.922452	hierarchical	5			

Appendix 29: Internal validation and stability measures for accessibility and permeability street space clusters

Validation Measures:	Number of clusters					
	2	3	4	5	6	7
hierarchical Connectivity	2.929	5.8579	10.6448	17.4687	21.6095	23.6095
Dunn	0.7117	0.4163	0.5259	0.4833	0.5659	0.5659
Silhouette	0.4867	0.3206	0.3164	0.2663	0.3062	0.2953
Optimal Scores:						
	Score	Method	Clusters			
Connectivity	2.929	hierarchical	2			
Dunn	0.7117	hierarchical	2			
Silhouette	0.4867	hierarchical	2			
	Score	Method	Clusters			
APN	0.005045	hierarchical	2			
AD	3.029417	hierarchical	5			
ADM	0.052971	hierarchical	2			
FOM	0.949505	hierarchical	5			

Appendix 30: Internal validation and stability measures for legibility street space clusters

Validation Measures:	Number of clusters					
	2	3	4	5	6	7
hierarchical Connectivity	2.929	8.3869	8.8869	13.1448	17.0028	18.5028
Dunn	0.6943	0.6646	0.6646	0.5897	0.7301	0.7301
Silhouette	0.5568	0.5051	0.4424	0.4433	0.451	0.4396
Optimal Scores:						
	Score	Method	Clusters			
Connectivity	2.929	hierarchical	2			
Dunn	0.7117	hierarchical	2			
Silhouette	0.4867	hierarchical	2			
	Score	Method	Clusters			
APN	0.011074	hierarchical	2			
AD	2.163512	hierarchical	7			
ADM	0.029517	hierarchical	2			
FOM	0.904841	hierarchical	7			

Appendix 31: Internal validation and stability measures for robustness street space clusters

Validation Measures:	Number of clusters					
	2	3	4	5	6	7
hierarchical Connectivity	2.929	7.6758	8.7869	11.7159	16.7028	22.3425
Dunn	1.1494	0.8555	0.8555	0.738	0.5358	0.664
Silhouette	0.7058	0.6024	0.5552	0.48	0.4085	0.5085
Optimal Scores:						
	Score	Method	Clusters			
Connectivity	2.929	hierarchical	2			
Dunn	1.1494	hierarchical	2			
Silhouette	0.7058	hierarchical	2			
	Score	Method	Clusters			
APN	0.011434	hierarchical	3			
AD	1.18741	hierarchical	7			
ADM	0.073462	hierarchical	3			
FOM	0.699373	hierarchical	7			

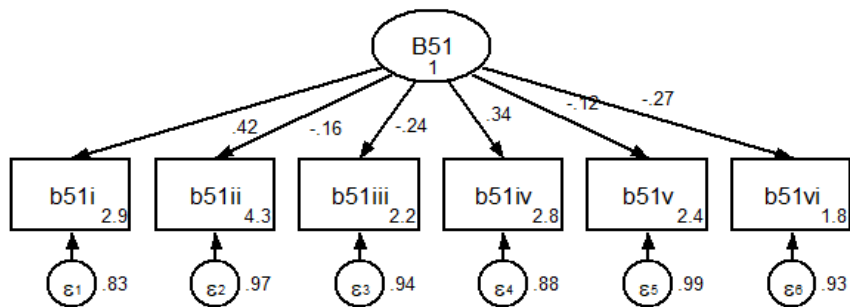
Appendix 32: Internal validation and stability measures for maintenance and management street space cluster

Validation Measures:	Number of clusters						
	2	3	4	5	6	7	8
hierarchical Connectivity	6.8913	10.7492	13.0028	15.9317	16.9317	21.0813	30.9758
Dunn	0.6686	0.612	0.612	0.5785	0.5785	0.5012	0.4079
Silhouette	0.3847	0.3806	0.3867	0.3507	0.3439	0.2443	0.2969
Optimal Scores:							
	Score	Method	Clusters				
Connectivity	6.8913	hierarchical	2				
Dunn	0.6686	hierarchical	2				
Silhouette	0.3867	hierarchical	4				
	Score	Method	Clusters				
APN	0.011628	hierarchical	5				
AD	2.327244	hierarchical	8				
ADM	0.061299	hierarchical	2				
FOM	0.744006	hierarchical	8				

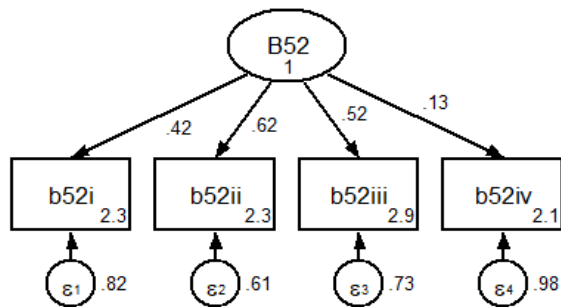
Appendix 33: Internal validation and stability measures for all variables combined street space cluster

Validation Measures:							
		2	3	4	5	6	7
hierarchical	Connectivity	2.929	5.8579	8.7869	16.0444	18.9734	19.5984
	Dunn	0.9436	0.6365	0.6083	0.608	0.6422	0.6422
	Silhouette	0.4499	0.3025	0.2152	0.2292	0.2095	0.1982
Optimal Scores:							
	Score	Method	Clusters				
Connectivity	2.929	hierarchical	2				
Dunn	0.9436	hierarchical	2				
Silhouette	0.4499	hierarchical	2				
	Score	Method	Clusters				
APN	0	hierarchical	2				
AD	5.441348	hierarchical	7				
ADM	0	hierarchical	2				
FOM	0.740542	hierarchical	7				

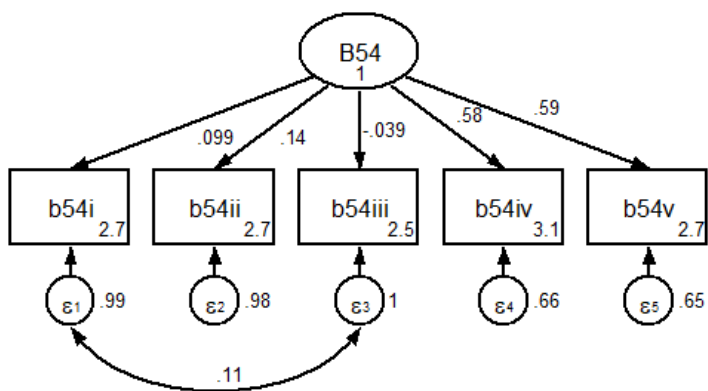
Appendix 34: Path diagrams for model fitting spatial justice variables
Path diagram for model fitting safety and security



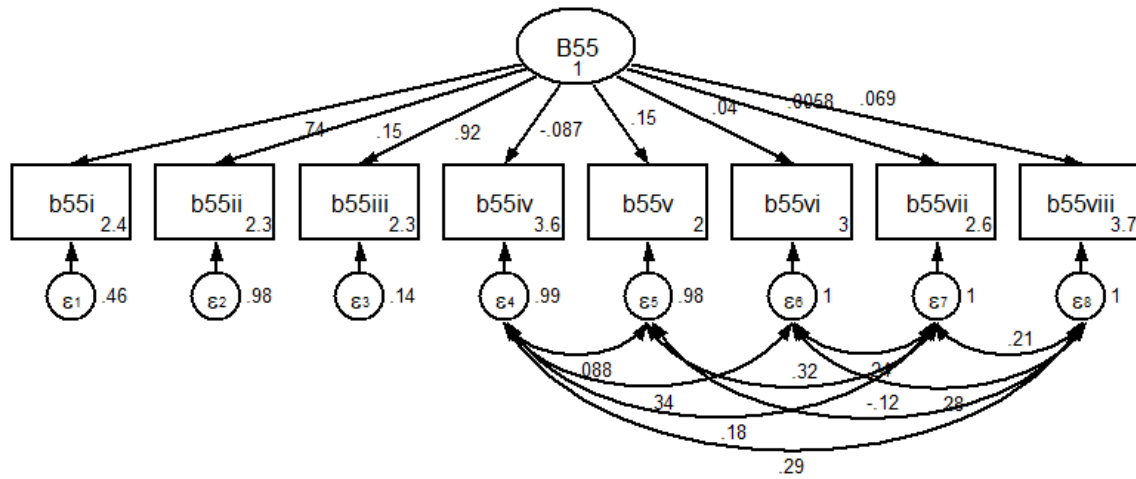
Path diagram for the model fitting accessibility



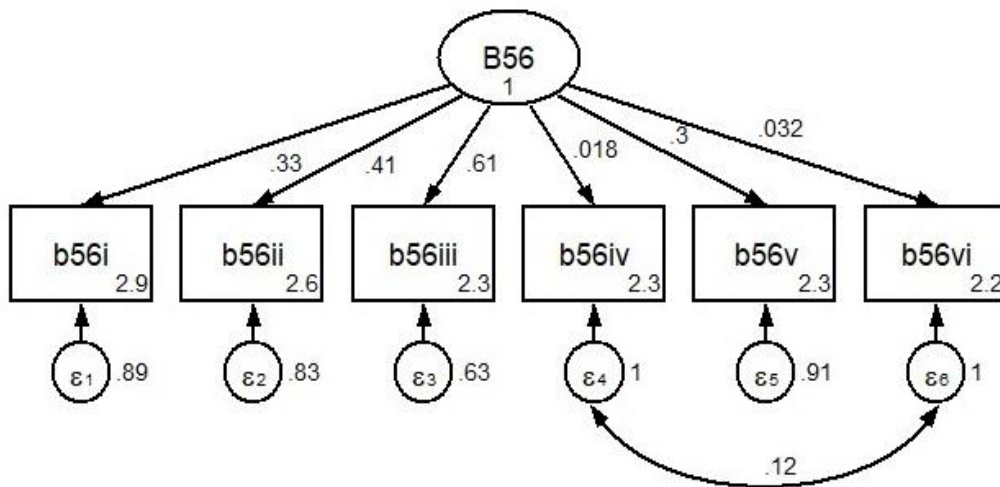
Path diagram for the model fitting legibility



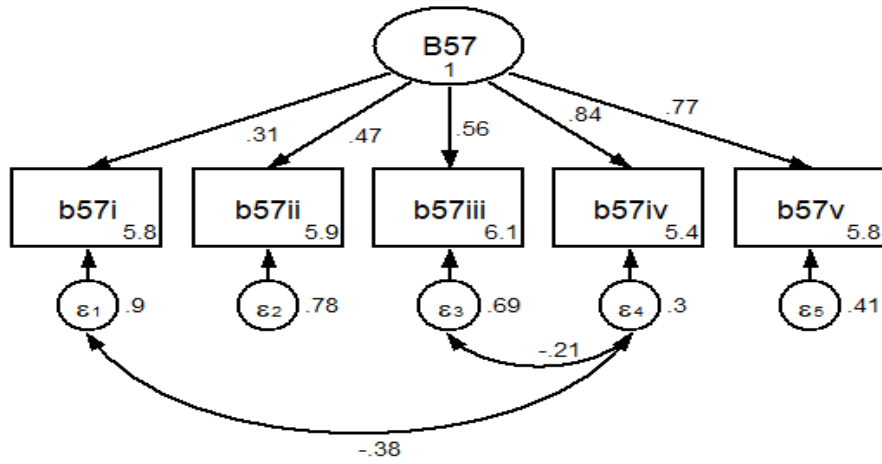
Path diagram for the model fitting variety



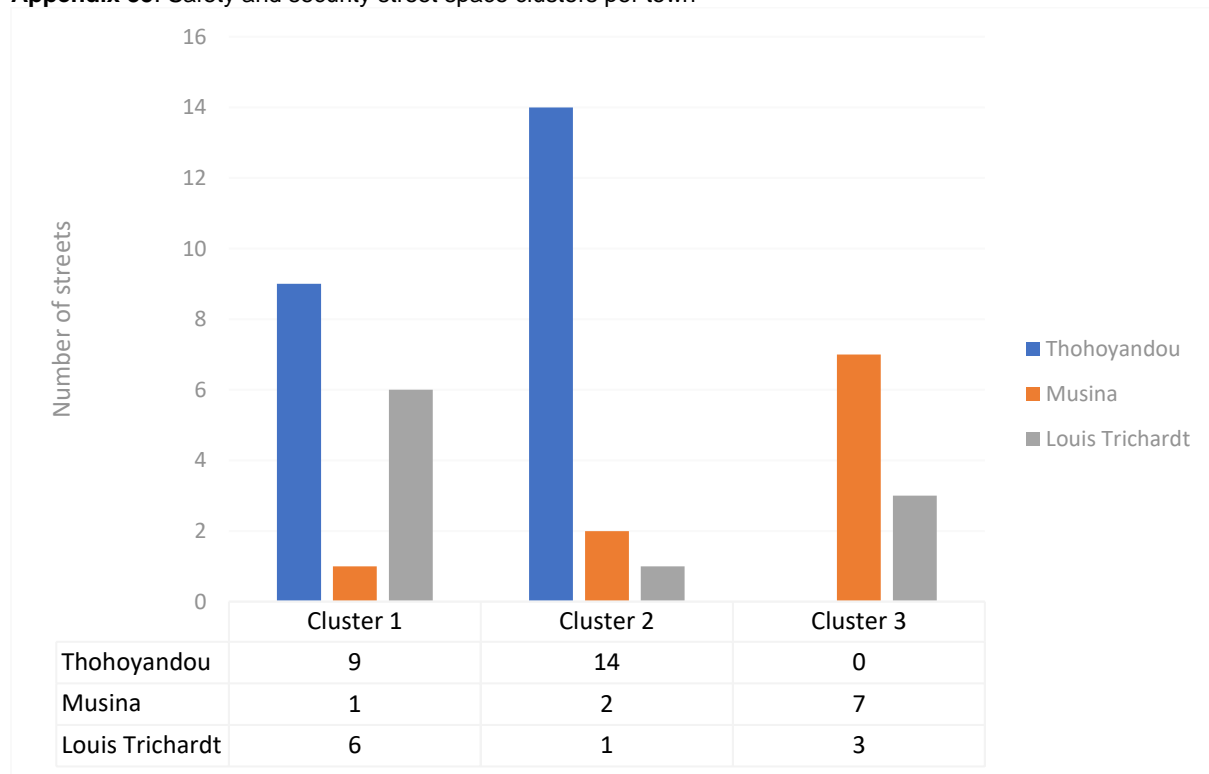
Path diagram for the model fitting maintenance and management



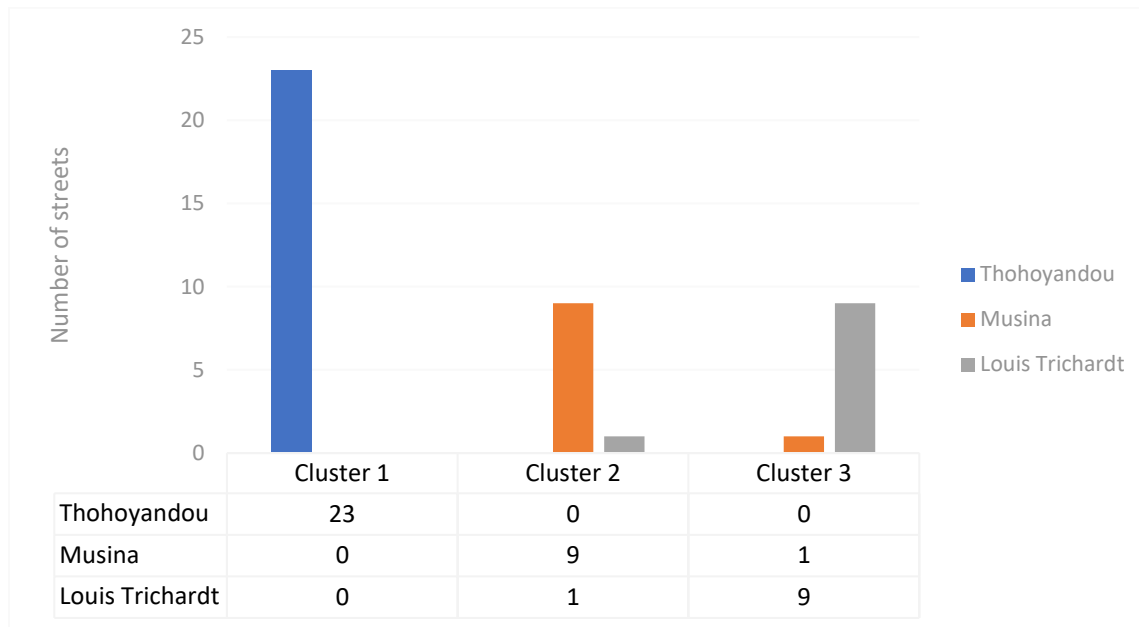
Path diagram for the model fitting management of street traders



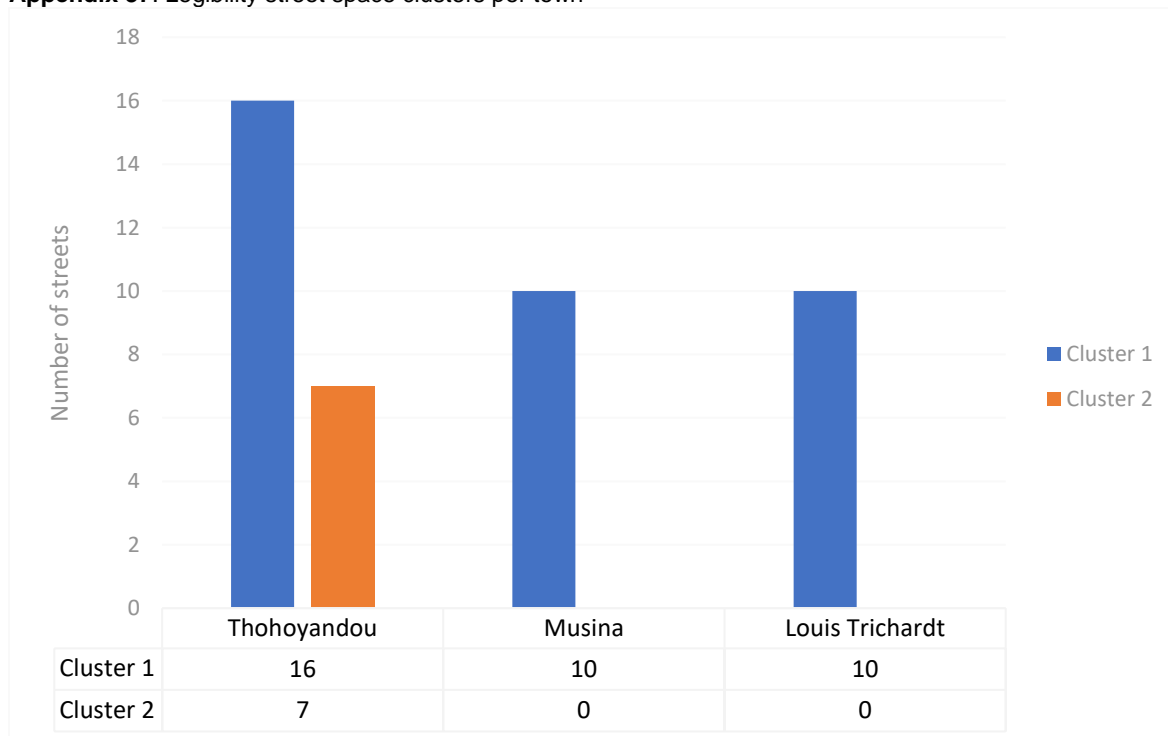
Appendix 35: Safety and security street space clusters per town



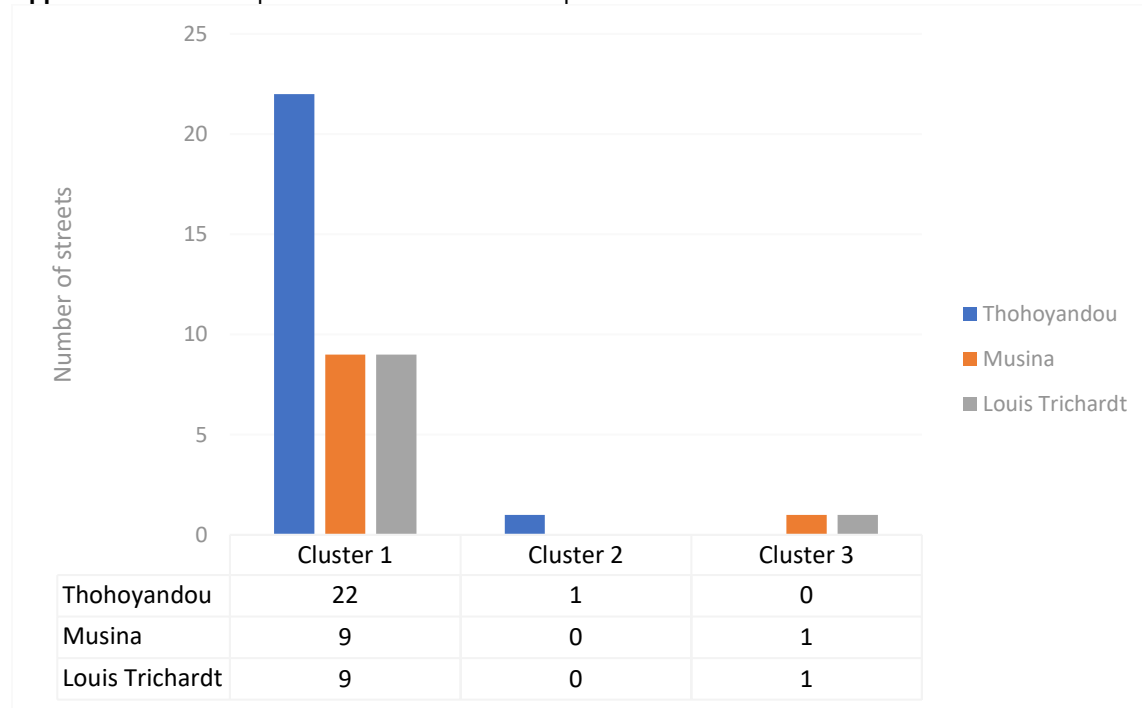
Appendix 36: Permeability and accessibility street space clusters per town



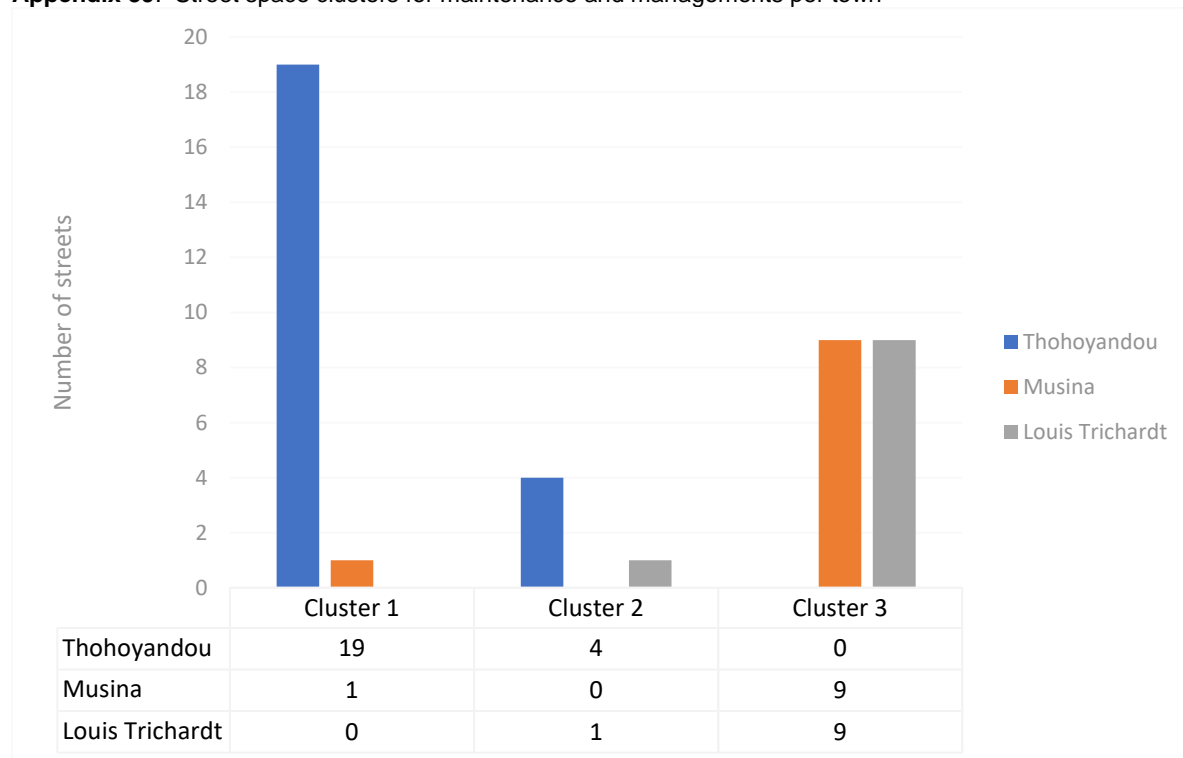
Appendix 37: Legibility street space clusters per town



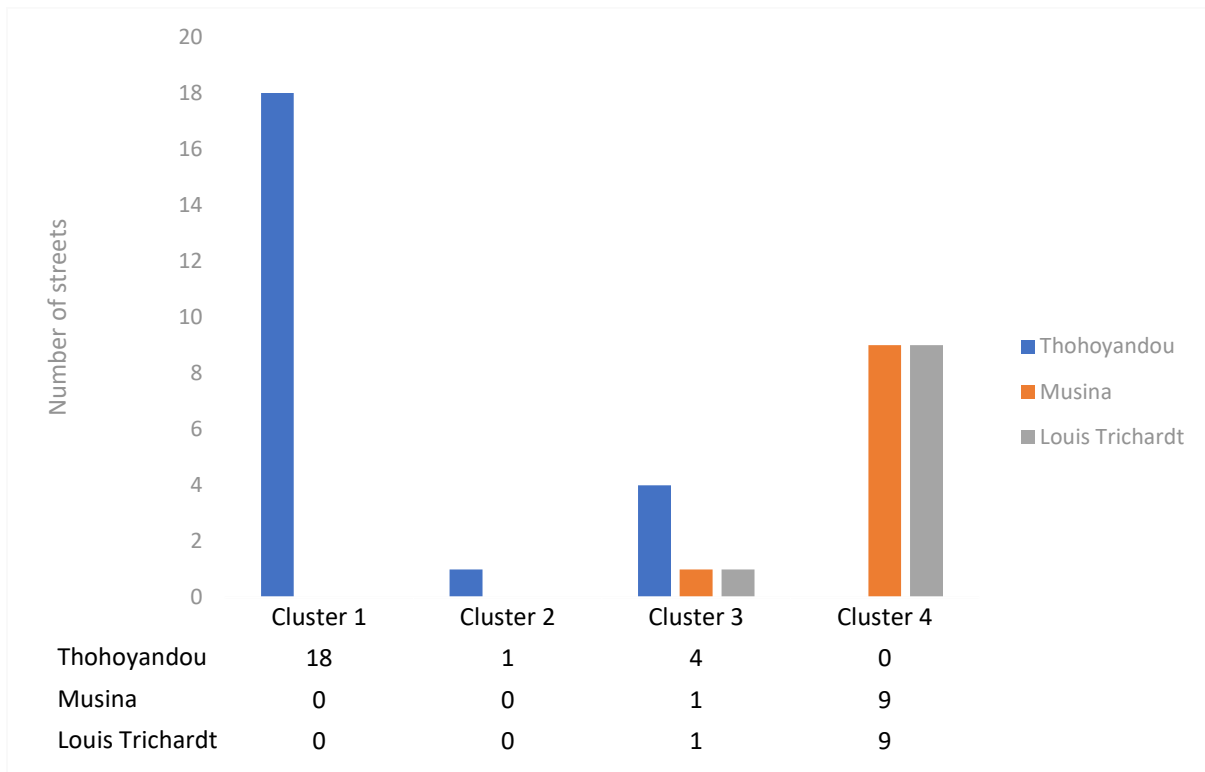
Appendix 38: Street space clusters for robustness per town



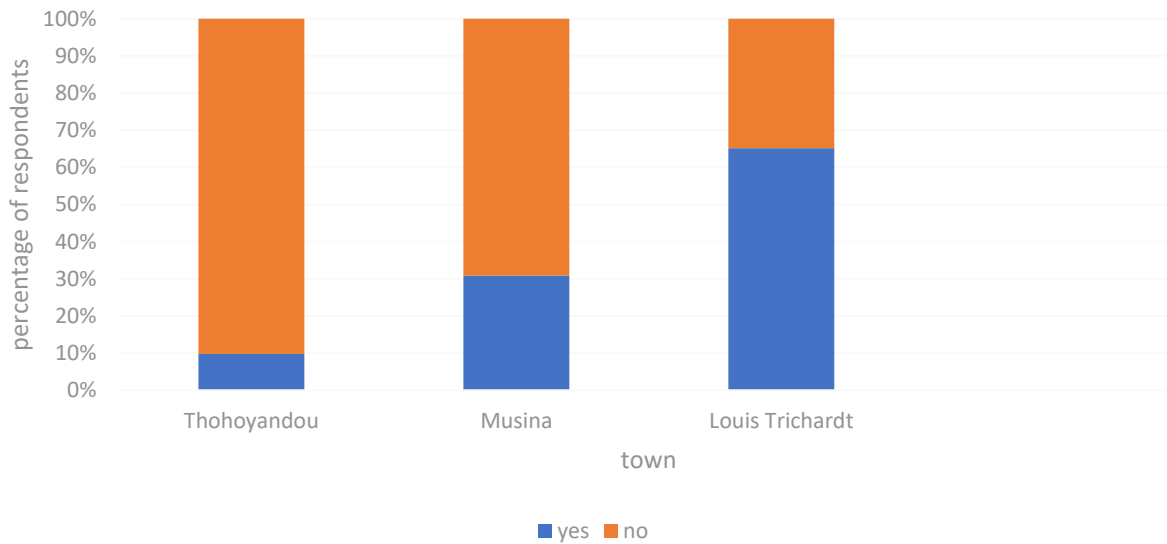
Appendix 39: Street space clusters for maintenance and managements per town



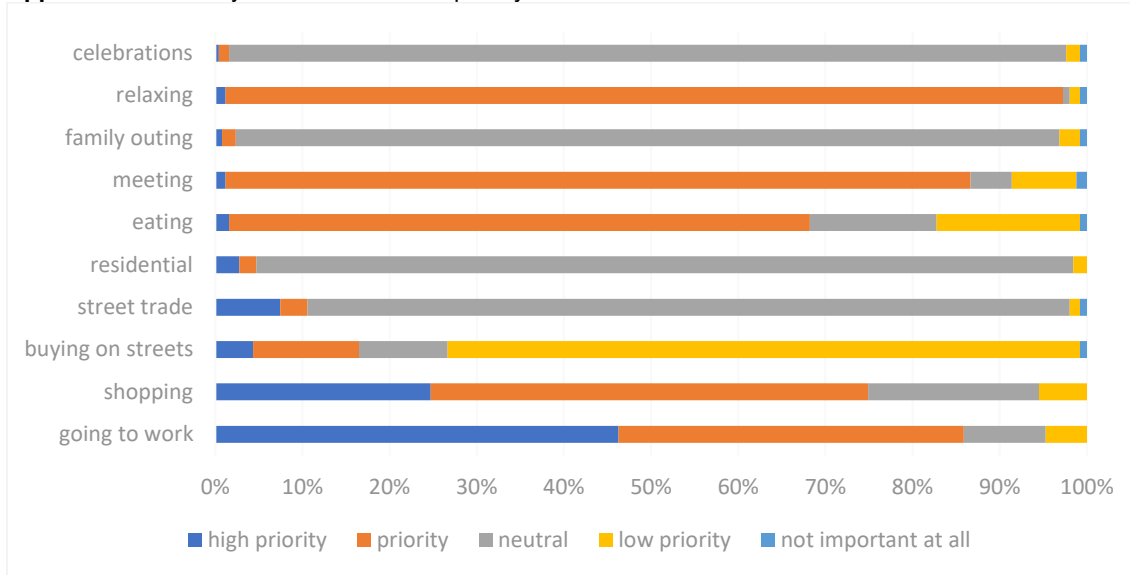
Appendix 40: Street space clusters all key variables per town



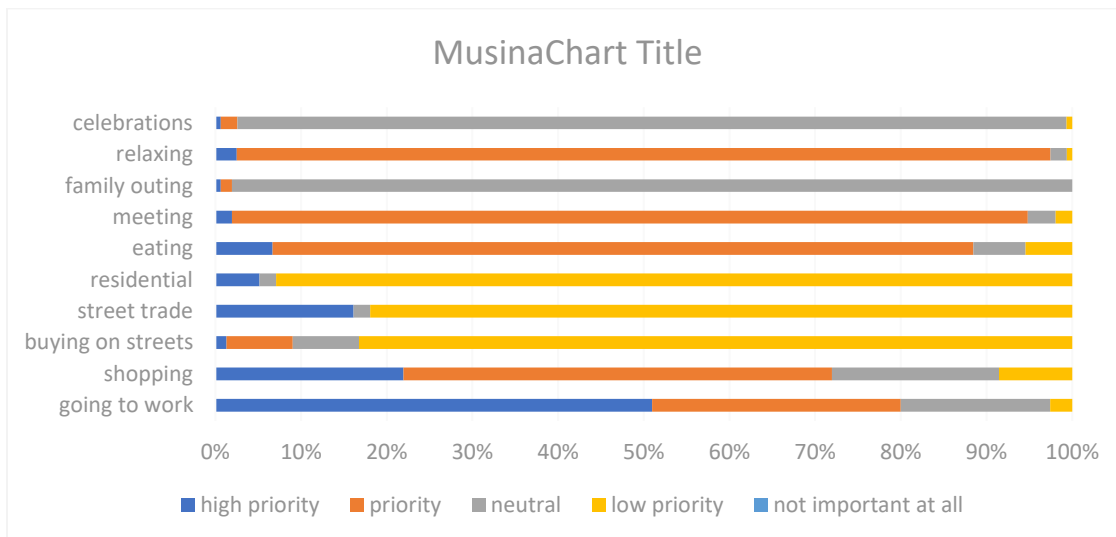
Appendix 41: Positive identification of at least 1 street



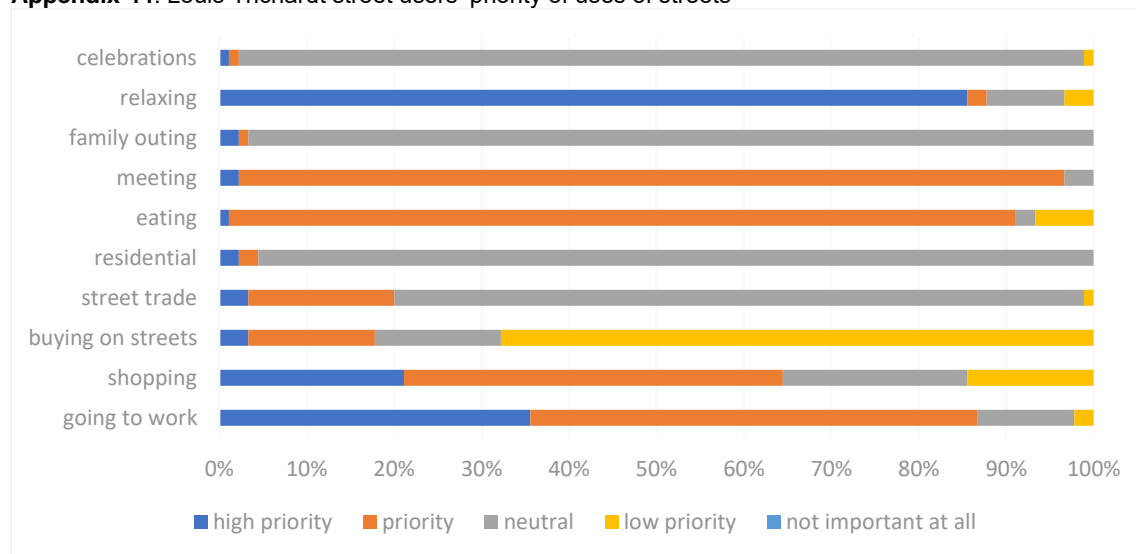
Appendix 42: Thohoyandou street users' priority of uses of streets



Appendix 43: Musina street users' priority of uses of streets



Appendix 44: Louis Trichardt street users' priority of uses of streets



Appendix 45: Perceived meaning of safety and security for street space users' in Thohoyandou Town

variable	mean	sd	strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. Presence of police	2.851	1.012	4	42	26	21	7
ii. Presence of other street users	4.161	0.923	3	2	12	42	41
iii. Availability of street lighting at night	2.937	1.457	23	20	16	21	20
iv. People using the street look after each other	2.643	0.919	6	43	35	11	4
v. Presence of cameras	3.204	1.362	14	21	19	24	22
vi. Presence of fences on roadside	2.490	1.414	29	35	8	13	15

Appendix 46: Perceived meaning of safety and security for street space users' in Musina Town

Variable	mean	sd	strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. Presence of police	2.794	0.873	3	39	39	15	4
ii. Presence of other street users	3.890	0.930	1	6	24	41	28
iii. Availability of street lighting at night	3.271	1.402	17	12	21	26	24
iv. Non –anti social behaviour	2.774	0.997	3	48	25	17	7
v. Presence of cameras	3.361	1.423	14	14	29	9	34
vi. Presence of fences on roadside	2.355	1.242	32	25	31	3	10

Appendix 47: Perceived meaning of safety and security for street space users' in Louis Trichardt Town

Variable	mean	sd	strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. Presence of police	2.733	1.003	2	53	20	18	7
ii. Presence of other street users	3.811	0.860	1	9	14	59	17
iii. Availability of street lighting at night	3.678	1.498	18	3	16	20	43
iv. Non –anti social behaviour	2.522	0.997	11	48	22	16	3
v. Presence of cameras	3.400	1.436	18	4	30	16	32
vi. Presence of fences on roadside	2.156	1.315	49	9	28	7	8

Appendix 48: Perceived meaning of accessibility for street space users in Thohoyandou Town

Variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. wide sidewalks	3.204	1.492	19	20	9	25	26
ii. non- interference of sidewalks with parking	3.529	1.562	18	13	8	19	42
iii. barrier-free sidewalks	4.000	1.226	10	2	8	38	42
iv. availability of a cycling lane	2.639	1.320	25	22	32	7	15

Appendix 49: Perceived meaning of accessibility for street space users in Musina Town

Variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. wide sidewalks	3.426	1.494	16	15	15	19	35
ii. non- interference of sidewalks with parking	3.329	1.542	17	19	17	9	38
iii. barrier-free sidewalks	3.658	1.388	14	6	20	23	38
iv. availability of a cycling lane	2.710	1.151	15	27	39	7	11

Appendix 50: Perceived meaning of accessibility for street space users in Louis Trichardt

Variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. wide sidewalks	3.522	1.400	16.7	4.4	18.9	30.0	30.0
ii. non- interference of sidewalks with parking	3.800	1.486	16.7	1.1	17.8	14.4	50.0
iii. barrier-free sidewalks	3.778	1.364	13.3	2.2	18.9	24.4	41.1
iv. availability of a cycling lane	2.811	1.332	23.3	12.2	41.1	6.7	16.7

Appendix 51: Perceived meaning of legibility for street space users in Thohoyandou Town

variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. I consider it important that streets should relate to people's culture	3.596	1.232	9	10	23	31	28
ii. I consider it important that I am familiar with what can be found from the start to the end of streets in this town	3.812	1.293	11	7	4	43	34
iii. I consider it important to be well informed about activities or events that take place on the street	2.906	1.264	12	30	31	9	18
iv. I would want to see major landmarks that will help me to remember this town	3.839	1.423					
v. I want street signs to be clear	3.800	1.448	15	7	2	32	43

Appendix 52: Perceived meaning of legibility for street space users in Musina Town

variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. I consider it important that streets should relate to people's culture	3.297	1.280	10	15	37	12	26
ii. I consider it important that I am familiar with what can be found from the start to the end of streets in this town	3.619	1.443	15	10	8	32	35
iii. I consider it important to be well informed about activities or events that take place on the street	3.006	1.131	6	33	29	19	13
iv. I would want to see major landmarks that will help me to remember this town	4.168	1.161	8	1	8	32	51
v. I want street signs to be clear	3.639	1.562	15	16	5	17	47

Appendix 53: Perceived meaning of legibility for street space users in Louis Trichardt Town

variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. I consider it important that streets should relate to people's culture	3.100	1.281	16	10	43	11	20
ii. I consider it important that I am familiar with what can be found from the start to the end of streets in this town	3.833	1.508	13	13	2	19	52
iii. I consider it important to be well informed about activities or events that take place on the street	2.833	0.986	1	44	34	10	10
iv. I would want to see major landmarks that will help me to remember this town	4.189	1.111	7	1	10	31	51
v. I want street signs to be clear	4.444	0.876	2	2	6	29	61

Appendix 54: Perceived meaning of variety for street users' in Thohoyandou Town

Variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. I consider it important that a street should have opportunities for work	3.184	1.355	17	15	18	32	18
ii. I consider it important that a street should have opportunities for living	2.898	1.419	20	28	9	26	16
iii. I consider it important that a street should have opportunities for play	3.102	1.465	21	15	19	21	24
iv. I prefer using a street that leads me to shops	3.867	1.041	5	3	22	40	30
v. I prefer using a street that leads me to the park	2.906	1.471	26	18	13	26	17
vi. I prefer using a street that leads me to mall	3.898	1.199	8	8	7	42	36
vii. I prefer using a street that leads me to bus terminus	3.800	1.237	10	7	9	42	32
viii. I prefer using a street that leads me to market	4.020	1.088	5	7	10	40	39

Appendix 55: Perceived meaning of variety for street users' in Musina Town

Variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. I consider it important that a street should have opportunities for work	3.335	1.429	19	6	21	27	26
ii. I consider it important that a street should have opportunities for living	3.090	1.276	14	24	15	35	12
iii. I consider it important that a street should have opportunities for play	3.471	1.402	17	5	20	30	28
iv. I prefer using a street that leads me to shops	3.690	1.066	6	1	34	33	25
v. I prefer using a street that leads me to the park	2.613	1.345	27	21	29	8	14
vi. I prefer using a street that leads me to mall	3.729	1.316	13	3	18	32	35
vii. I prefer using a street that leads me to bus terminus	3.013	1.410	20	17	26	15	21
viii. I prefer using a street that leads me to market	4.052	0.889	1	3	25	34	37

Appendix 56: Perceived meaning of variety for street users' in Louis Trichardt Town

Variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. I consider it important that a street should have opportunities for work	3.500	1.408	18	2	22	28	30
ii. I consider it important that a street should have opportunities for living	3.567	1.171	2	22	19	30	27
iii. I consider it important that a street should have opportunities for play	3.589	1.460	19	1	18	27	36
iv. I prefer using a street that leads me to shops	3.933	1.079	6	2	21	36	36
v. I prefer using a street that leads me to the park	3.611	1.459	19	1	16	29	36
vi. I prefer using a street that leads me to mall	3.733	1.482	19	1	9	30	41
vii. I prefer using a street that leads me to bus terminus	3.622	1.518	17	10	10	21	42
viii. I prefer using a street that leads me to market	3.778	1.296	11	6	13	34	36

Appendix 57: Perceived meaning of maintenance and management in Thohoyandou Town

Variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. General cleanliness	3.596	1.405	15	11	8	35	32
ii. Presence of street lights	3.353	1.375	11	22	15	25	27
iii. Availability of bins	3.282	1.607	21	20	5	18	36
iv. Availability of public toilets	3.647	1.355	11	14	11	31	35
v. Presence of street benches	3.263	1.441	15	24	7	29	25
vi. Street plantings neatly cut	3.486	1.463	17	12	7	34	31

Appendix 58: Perceived meaning of maintenance and management in Thohoyandou Town

variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. General cleanliness	3.865	1.329	5	19	8	20	48
ii. Presence of street lights	3.665	1.411	11	15	11	23	40
iii. Availability of bins	3.690	1.480	14	15	3	26	43
iv. Availability of public toilets	3.200	1.522	18	23	11	18	30
v. Presence of street benches	3.355	1.376	12	21	14	27	26
vi. Street plantings neatly cut	3.065	1.528	26	11	19	20	25

Appendix 59: Perceived meaning of maintenance and management in Louis Trichardt Town

variable	mean	sd	1. strongly disagree	2. disagree	3. neutral	4. agree	5. strongly agree
i. General cleanliness	4.311	0.843		4	11	33	51
ii. Presence of street lights	4.100	1.142	6	4	13	28	49
iii. Availability of bins	4.167	1.183	7	6	6	29	53
iv. Availability of public toilets	3.244	1.624	27	8	13	19	33
v. Presence of street benches	3.356	1.538	21	11	10	27	31
vi. Street plantings neatly cut	3.433	1.642	27	2	11	21	39

Appendix 60: Comments on street space users' membership status to any association per town

Town		
Thohoyandou	Musina	Louis Trichardt
Positive comments I am a taxi driver and a member of the taxi drivers association (5) I am an Environmental scientist by profession (1) Member of the security forum (2) I work for an NGO (1) I work for a political party (2) SAPI (1) Street hawkers association (6) Negative Comments I do not know of any associations (60) Because I am not a president of the municipality (1) I am very busy (15) Foreigner (12) I have never joined (10) I have not heard of any (27) Lack of information (15) There are no associations around (28) I am not interested in politics (12)	Positive comments I'm a member of a political party (4) Negative Comments Not interested (20) No such associations (21) Not a permanent resident of the area (17) Not aware of such associations (40) I once joined but I dont know what happened to it (1)	Positive comments Traffic light electrician (1) Work for a political party (2) Street hawkers association (3) Negative Comments Not aware of the associations (19) Not heard of any (10) Not important (5) Not informed (7) Not interested (6) Not interested in politics (8)

Appendix 61: Comments on street space users' awareness and participation in Municipality programmes per town

Thohoyandou	Musina	Louis Trichardt
<p>Positive comments</p> <p>Got the information from the radio (2)</p> <p>Participated in road markings (3)</p> <p>Participated in IDP (4)</p> <p>Participated politically (2)</p> <p>I participated in fixing potholes (2)</p> <p>Forum for water and sanitation (2)</p> <p>Youth against crime forum (3)</p> <p>Negative comments</p> <p>I am not interested in following such (2)</p> <p>Because I am not a president of the municipality (1)</p> <p>Busy (4)</p> <p>The municipality does not communicate with us (32)</p> <p>I have never seen any plans (3)</p> <p>It does not inform us (6)</p> <p>Lack of information about municipal plans (7)</p> <p>Such platforms are selective (2)</p>	<p>Positive comments</p> <p>Participated in the IDP process(3)</p> <p>Negative comments</p> <p>The municipality does not communicate with us (6)</p> <p>The municipality does not inform us (15)</p> <p>The municipality has not presented the plans to us (3)</p> <p>The municipality is not transparent (1)</p> <p>Never heard of the plans (2)</p> <p>Not a resident of the area (7)</p> <p>They are always changing plans (2)</p> <p>These forums are no helpful (3)</p> <p>These occur in places far away from my place (2)</p> <p>These platforms are not welcoming for us (2)</p>	<p>Positive comments</p> <p>We are informed by the IDP (2)</p> <p>Participated in road markings (3)</p> <p>We hear from the radio</p> <p>Negative comments</p> <p>No information is available to us (10)</p> <p>Not a resident (2)</p> <p>Not aware of any plans (4)</p> <p>Not informed by the municipality (10)</p> <p>Not interested (9)</p> <p>Not involved in municipal affairs(1)</p> <p>Poor communication with the municipality (4)</p> <p>The municipality is not transparent (2)</p>

Appendix 62: Maintenance and management perceptions of street traders

