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Walkability

Assessing the Complete Street Design Guidelines and Standards for the City of Johannesburg: a case of Bolani Road

By
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BSc Urban and Regional Planning, 2013

Research Report Submitted in Partial Fulfilment of the Requirements for the Degree of Honours in Urban and Regional Planning, in the School of Architecture and Planning.

Sello Mphafudi 2014
University of the Witwatersrand
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Due 26 November 2014

Declaration

I declare that this research is my own work. It is being submitted for the Degree of \bachelor of Science Honours in Urban and Regional Planning to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.

…….

Sello Mphafudi

26 November 2014

Abstract

Walking is the most basic and most natural mode of transportation. More than 50% of people in Sub-Saharan Cities such as in Johannesburg take most trips by foot. The city of Johannesburg fully acknowledges the need to deal with walkability changes in the most effective and sustainable way so as to create a liveable and usable city. As part of the process to realise this vision the city has recognised the Complete Street Design Guideline Manual as the highest level instrument to implement change and improvement in the streets. What stands out as a challenge is the fact that walkability challenges are diverse and are complex to look at in isolation without consideration to other modes of transport; more especially because the street is a shared public space between many stake holders and users. In this research, four fundamental factors to walkability are out lined and expanded on using theory, a case study analysis, a discourse analysis, and interviews. There is an interconnected and close link between all four factors and it is fundamental their use in policy in a holistic and integral way.

Dedication

Aurel Kgothatso Mphafudi, my son…
I love you so much!

To my dad, Mr Johannes Mabuku Mphafudi…
You're a King amongst ordinary man
And I love you too! This is dedicated to your 87th birthday

&
To my mom, Mrs Maria Sanie Mphafudi…
You are one strong black woman
I love you!

This research is dedicated to you three special souls

Acknowledgements

In Army's words "To everyone who's been there since day 1" Thank you…

To my parents Mr and Mrs Mphafudi, thank you so much, your support has been unconditionally amazing. Thank you mom for caring for my son when I couldn't be there, your support really pulled through. Any of this would not be possible without you.

To my 4 brothers: Lucky Mphafudi, Leboane Mphafudi, David Mphafudi, Emmanuel Mphafudi, and 3 sisters: Ndebaleng Mangesane, Ngube Thokwana, and Motsielwang Makgano, thank you guys for being there when needed and for all your financial and encouraging support. You have all been such motivation in my life. I love you!

To Armel Kadima, thank you so much Army for all your support, encouragement and for being so impressive. 7 years later and we are still growing strong, feels like yesterday when I meet you in the Wits circuit bus back in 2007. Your presence in my life made the Wits experience always filled with love despite all the hardships. You made it bearable and you've been so amazing throughout. God has been really good to us and I pray to him to continue blessing our love…"forever and for a day"

To my little king Aurel Kgothatso Mphafudi, your golden encouragement gave me an undergrad degree, focus, and the will for great success. I will get more gold for you my king… mummy love's you.

Thank you to all my friends for being there for me: Olga Koma, Khumo Sello, and Mpho Botsi, Thank you.

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Without the presence of God in my life none of this would have been possible. God made it possible. No words can express my gratitude and praise to you. Thank you so much and I love you!

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Chapter 1 Introduction

In many Sub-Saharan African cities such as Johannesburg the streets hold the largest numbers of walkers. There are more than 50% of all trips made on foot by people in these cities. But; unfortunately there are inadequate infrastructural amenities for walking and cycling that expose pedestrians to poor spatial qualities on the ground. Such surroundings bring about possessions of vulnerability from motorised traffic. Typical examples of vulnerabilities are accidents, noise, and environmental pollution which are major interferences on the public realm (Mosha and Mosha 2012).

Some of the most important and influential policy frameworks that the city of Johannesburg has developed to combat these challenges closely incorporate the Complete Street Design Guideline Manual which will be used as the focus of this study. The problem statements and following research question plus sub questions will be raised in relation to all the surrounding contexts and challenges surrounding walkability in Johannesburg looking at the case of Bolani Road. The aim of the questions raised in this research is to understanding factors that impact on walkability and the principles that would facilitate better road and street conditions for people on foot who are the majority of the population in Sub Saharan countries. This on its own highlights the importance of walkable urban environments.

This chapter covers the contextual aspects that influenced the subject topic to this research report, the importance of the research, identification of the problem statement that rose from all relevant aspects and subsequent research questions to facilitate understanding and dealing with the research problem statement. At the end of the chapter a conclusion will be drawn from all of these discussions highlighting all important facts and points of most relevance to the following chapters and to the research as a whole. The chapter will further cover as part of the above mentioned outline the challenges of non-motorised users of the road, poor spatial qualities and facilities on ground that expose such users to vulnerability issues.

1. Contextual overview of the Research Topic

Pedestrians are entitled to a right of way on public owned streets mainly because the important part of the public realm is public owned streets. Access, circulation, and enhancements to the visual character of the urban form are some of the inter-related roles that the public realm serves (Mosha and Mosha 2012).

“Cities are an immense laboratory of trial and error, failure and success, in city building and in city design. This is a laboratory in which city planning should have been learning and forming testing theories “(Jacobs, 1961: 6).

In South Africa's transition from an apartheid system to one of democracy, the post-1994 objectives of state were focused around developing human settlements for citizens previously excluded from the mainstream society. It was about improving and putting in infrastructure (e.g. roads, transport, and housing), dealing with the backlog, and not creating "niceties". Urban spaces where created, but the "usability, liveability and walkability" of those spaces remains a challenge. Hendrik Potgieter Road; Dobsonville Road; and Bolani Road are typical examples of such spaces.

In 2006 the City of Johannesburg developed and adopted the Joburg 2040 Growth Development Strategy (GDS) which is a strategy that defines the type of society the city aspires to achieve by 2040. A key concept expressed in the GDS 2040, is that of Liveability and Liveable Urbanism. This concept relates to how an urban system can contribute to the physical, social and mental well-being and personal development of all its inhabitants (ISSU, 2013).

The City's street system was identified as the most prevalent communal space and has an important role in creating a Liveable City. It was within this context that the City of Johannesburg commissioned the development of a Guideline Manual that would recognise and promote the role of streets as both movement networks and agents of social cohesion.

The Complete Street Design Guideline is recognised as the height of that process. A guide for the city to develop a street system that is in line with the concept of liveability by encouraging walking and cycling modes caters for all users and encourages the use of public transport.

2. Importance of this Research

2.1. Why Walkability?

There is a growing need for knowledge about the walkability of the built environment. Issues on pedestrian-friendly urban environments have increasingly become important in urban planning and design. The importance is outlined using different reasons such as social life, sustainability, economy, and health.

The City of Johannesburg Metropolitan Municipality is increasingly realising the issues caused by "just dealing" with backlogs and not creating liveable environments from the "get go". This is reflected in the *Sustainable Human Settlements Indices of 2009* (where walkability is used as a measure of sustainability); Non-motorised Transport Framework of 2009; Growth Development Strategy 2040 for Johannesburg; Complete Street Design Guideline Manual for Johannesburg; Johannesburg's Medium Term Budget Speech of 2013; and The Corridors of Freedom Initiative.

The common theme in all of the above-mentioned documents is that pedestrians are the primary focus of planning. This research is important in investigating the current state of the pedestrians' rights- of -ways on Johannesburg's main roads and analysing the issues of walkability; looking into the above-mentioned Complete Street Guideline Principles for the City of Johannesburg (CoJ), and analysing the planning thought and discourse informing the intended direction; and to investigate the practicality of the proposed design principles on space.

2.2. Complete Street Design

As a guiding framework for the design of Johannesburg's streets and roads it is important to understand how walkability is viewed by this policy framework. And to get an understanding of the key walkability priority indicators the city intends to use.

The concept of complete streets refers to roads designed to accommodate diverse modes, users and activities including walking, cycling, public transport, automobiles, nearby businesses and residents. Such street design is believed to help create more multi-nodal transport systems and more liveable communities (ISSU, 2013).

The concept is new to South Africa but not unique to the world. In America it is used as part of the Smart Growth American movement and is directly linked to the National Complete Streets Coalition. In this coalition Complete Streets are defined as streets for everyone. They are designed and operate to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages

and abilities (Smart Growth America, n.d).In South Africa it is used as part to Non-Motorised Transport and Public Transport Oriented Design movements.

There is no singular design prescription for Complete Streets; each one is unique and responds to its community context. A Complete Street in a rural area will look quite different from a Complete Street in a highly urban area, but both are designed to balance safety and convenience for everyone using the road. A complete street may include the following: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts, and more (Smart Growth America, n.d).

Though the use of a discourse analysis this research aims at getting an in-depth understanding of the principles of walkability proposed by the guideline manual and to evaluate its applicability to existing road. This will be elaborated and expanded on in detail in chapter 3 as part of the case study techniques.

2.3. The Case Study: Bolani Road

A case study is the best research method to use when investigating the effectiveness, practicality, implement ability and the impact a policy can make on a physical space. Furthermore in this case it is important to understand walkability conditions of an existing Johannesburg road and get a glimpse of the type of street or/and road conditions that the guideline would be used to address.

The use of a case study such as the one of Bolani road is fundamental when dealing with a present-day observable fact within real-life contexts such as the one of walkability and pedestrian's right-of-way. In this sense the research not only relies on theoretical knowledge but also on real life practical examples and experiences as they occur in space and time. The case of Bolani Road is very interesting to this research because it is surrounded and is home a variety of social amenities that attract a huge rate of both vehicular and pedestrian activity. In this road the concept of walkability and its challenges can be investigated to held fruitful insights and finding. What is most important about this case is the fact even though it is unique it is also very reflective of many roads and streets in Johannesburg. So in this way most of the finding to be obtained from this case will be a reflection of many other roads and streets in Johannesburg.

The case study will be dealt with in more detail in chapter 3 using supporting research techniques such as a discourse analysis as discussed above, photo analysis and interviews with pedestrians on the road and with Joburg city officials in relevant departments. However, what is important to outline now is the fact that viewed as an "Incomplete Street" Bolani Rd is classified as a "road" but is used as both a "street" and a "road". According to Soniak (n.d) streets connect people for interaction, while roads connect towns and cities for travel. Soniak (n.d) expresses that as cities grow, roads can become urbanized and serve the purposes of streets without having their names changed. This is the case on Bolani Rd because this Rd connects Soweto and Johannesburg to the West rand but is also at a very

small and local scale used to connect people for social interaction. But there are further definitions of streets that are described into categorise that come from the type of transport modes using the streets. In this type of definitions by Jou (2011) Bolani road would be defined as a through street because both cars and pedestrians are given some kind of prioritisation. This point will be dealt with further in chapter 2 as well.

Extracting from all the above-mentioned background of walkability in Johannesburg and the issues connected to pedestrians right –of- way together with spatial inequalities that fail to accommodate all users of the road more especial non-motorised users the following problem statement and subsequent research question plus sub questions were raised in order to guide the research study and investigations:

3. Problem Statement

There are existing challenges and gaps to the needs of all users of the public right-of-way in Johannesburg's Roads and Streets. These spaces are not accommodating to all users and do not give priority to the most energy and space efficient modes of travel such as walking.

The city of Johannesburg is fully aware of this problem and is making efforts to deal with it though a vast range of policy initiatives as mentioned earlier in this chapter such as the Non-motorised transport

framework and the Complete Design Streets Guideline Manual to facilitate and guide the planning and implementation processes of future road and street design. But since most parts of the Metropolitan Johannesburg are already developed and room for new roads and streets is limited it is important to get an understanding of the implementation or applicability of the proposed guideline on to existing roads and streets. Hence the research question rose below.

3.1. Research Question

How can the 'Complete Street Design Principles', as proposed in the Complete Street Design Guidelines Manual for the City of Johannesburg be assessed and applied - A case of Bolani Road.

To facilitate getting informative answers to this research question the following sub questions will be used to guide the process:

3.2. Sub Questions

1. For achieving a balanced human-orientated/pedestrian–orientated balanced street, what design principles should be taken into account?
2. How does neighbourhood character influence the use of the road?
3. What are pedestrians' perceptions about walkability in Johannesburg's roads?
4. How can the City of Johannesburg road design respond to neighbourhood character and the need of a pedestrian centred?

These questions were therefore very influential in structuring the type of literature this research reviewed and the type of research methods followed. For example all the literature referred to in this study was reviewed so as understand what design principles are used to get that balance pedestrian-orientated street which is = to a walkable street and these type of principles would = the principles of walkability. These literatures would future be those that address neighbourhood character and its influence to road or street use plus design; and the way urban planning and design can respond to neighbourhood character and the design that puts pedestrian as priority. Whereas, addressing questions of pedestrians perceptions for example require a case study interaction and interviews with pedestrians; and in attempt of understanding pedestrians' prioritisation in theory and practise plus the relationship between the two both theory and case study analysis is important.

4. Conclusion

Many trips in Sub Saharan African cities including in cities such as Johannesburg are made on foot. Walkability of the road and streets where users walk should therefore be a point of high importance. Since public owned streets and roads are fundamental parts of the public realm it is important for them to accommodate all users of the road more especially, pedestrians. This is because pedestrians are the most exposed, cost effective and energy effective users of the road. With the commissioning of the Complete Street Design Guideline Manual for the city of Johannesburg as a tool that would recognize and promote the role of streets as both movement networks and agents of social

cohesion it is important to understand how this Guideline can be applied to existing roads and streets. In attempt of answering this question other related questions are raised from these questions the research will be able to weave together possible answers and a coherent structure.

The following chapter will look into theory for some of the answers. The chapter will therefore use theory to develop an argument for walkability and thereafter a guiding framework for further investigations in the research methods.

Chapter 2
Literature Review

As outlined in the previous chapter, it is important to recognise and promote the role of streets as movement networks and agents of social cohesion. And the walkability of the built environment through the development of pedestrian friendly environments is very important in that regard. The Complete Street Guideline Manual was commissioned by the City of Johannesburg as a key instrument to achieve this goal. Assessing the walkability aspects of this Guideline Manual is therefore very important to this research, however before this is done it is equally important to draw on relevant and fundamental walkability theories and literature to gain understanding of the key concepts and theories of walkability.

This chapter aims at using theory and literature to define walkability; identify the main theories/ideas/arguments of walkability; highlight other key concepts of walkability; and identify some of the research done to date on the topic, build a summary of walkability from all mentioned theorist and simultaneously build a case. At the end of the chapter a conceptual framework will be drawn from all the concepts and arguments from the varying sources and; a research argument will thereafter be developed in the form of personal reflections on the literature. The conceptual framework will later be used as a guideline in chapter 3, which will include a discourse analysis, case study analysis, and a photo inventory as some of the research methods for the study.

5. Defining Walkability

According to Janeswalk (n.d) walkability is a measurement of how inviting or un-inviting an area is to pedestrians. It is much more than just providing citizens with the 'ability to walk'. Research on "walkability" is multidisciplinary; it has been mostly initiated from the medical field with the health beneficial aspect of walking as the most significant motivation. From the above definition it can be said that walkable environments are an important part of the built environments social and physical wellbeing, be it for reasons of social life, experiential quality, sustainability, economy, or health.

5.1. Street typology

There are different typologies of streets which govern the design, and these are based on the primary user of the streets. Jou, 2011 indicates four basic types of streets: through, shared pedestrian, pedestrian streets and bus way. Through streets prioritize cars and pedestrians. Shared streets are similar to the concept where pedestrians are comfortable walking and vehicles are permitted. Pedestrian Streets would be reserved largely for non-motorized traffic (Jou, 2011).

6. Main theories of Walkability

There are a vast number of literatures on how urban streets can be made to be more accommodative and user friendly for people on foot. And there is a variety of walkability studies that look exclusively at aspects of safety, crime etc. This literature review will only look into theories relating to walkability aspects of the city and its streets and most importantly the design principles that facilitate walkable environments because the ultimate focus is to find out if the design principles proposed in the subject guideline can be applied to existing roads.

These theorise draw their key concepts from fields of urban design, sociology, and psychology. The following theories will be discussed respectively:

- The theory of imageability, structure, and identity by Lynch, 1961;
- The theory of Liveable streets by Appleyard, 1981;
- The theory of walking in urban areas by Jou, 2011 ;
- A theory of safe streets by Jacobs, 1961;
- The theory of Flâneury by Tester and Ferguson, 1994. This is closely connected and linked to Jane Jacobs theory and the connection will be elaborated on;
- A theory of great streets by Jacobs, 1993; and
- Lastly a theory of neighbourhood space by Hester, 1975

6.1. The theory of imageability, structure and identity

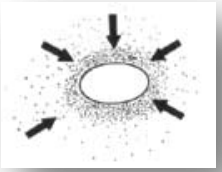


Fig0.1 Imageability: the quality in a physical object which gives it a high probability of evoking a strong image in any given observer
(Lynch, 1960: 70)

An image of the city that is legible and has structure and identity is very important to the in reinforcing meaning of the city (Lynch, 1961). Lynch (1969) refers to physical forms, which he classified into five types of elements: paths, edges, districts, nodes and landmarks that give identity and structure to the city and therefore contribute to the city's walkability.

From Lynch's argument we learn that in all of the above-mentioned elements paths appear more in most people's thinking about the city and the environment. This is simply because paths always lead us to something out there, for example; landscapes are recognized because a path led us to them and everything that we refer to as a landscape is a place that has been trodden upon by human feet. People observe the city while moving through it, and along these paths the other environmental elements are arranged and related.

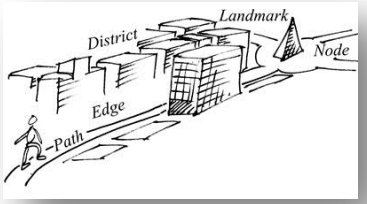


Fig0.2 Elements of the city
(Monro, 2012)

Paths, streets, walkways, transit lines, canals, and railroads sometimes serve as edges, and intersect to form nodes. They make districts accessible and often define them, forming spaces, and, help determine what a landmark becomes. They are the predominant city elements because they are not simply one of the five kinds of landscape elements along with nodes, districts, edges, and landmarks but they stand in for or contribute to each of the other four elements.

Paths roles are more universal than simply urban. It is therefore, of crucial importance for the city planner and the designer to make these city elements accessible and comfortable to all users especially the pedestrian as the most exposed user of the subject space.

6.2. The theory of livable streets

Appleyard (1981) expresses walkability in terms of liveable streets where streets are defined as social centres of towns and cities, but also the scene for conflict between living and access, between resident and traveller, between the street life and the threat of death; and as the mediator between the private world of the family and the wider community.

Appleyard (1981) advocates that the protection and creation of liveable streets is not simply a matter of increasing the comfort or safety of urban living, it has other crucial functions such as those of mediation and symbolizes one's position in the world almost as much as the house one lives in. This advocacy highlights the need and importance of creating and protecting streets that are orientated around design that promotes the use of the street more especially by the pedestrian.

Vehicle traffic as highlighted by Appleyard also has a very huge impact on pedestrians' wellbeing and use of the streets. But as a means to make this impact less negative it is highly important that attributes such as tree planting, safety measures (speed control), increases attractiveness of the street, and

provision of social amenities. Furthermore, there are street characters that can be used or be put in place to protect the pedestrians from traffic/cars these include; pedestrian crossings, street dumps, pavement changes, traffic signs and stop lights, barriers, street narrowing's, landscaping. In sloppy streets, as street slope increases, downhill speeds may also increase. Street width, sidewalk width, setbacks, and front yards can all protect residents from traffic. And the presence of trees and shrubs can screen traffic, enhance appearance and compensate for other disadvantages.

6.3. A theory of walking in urban areas

"...all city-travel in any vehicle begin with and end with walking" (Jou, 2011: 453).

Fig0.3 Walking is the simplest and most natural form of travel (Monro, 2012)

The act of walking can be considered as the best type of human interaction with the human environment. Pedestrians experience and interact with their urban environment because they are distinctly open and slow. And the structures, spaces and people of a city are knitted together through walking. However, most urban environments do don't encourage the walking and this is a walkability challenge.

Walkable environments have a variety of benefits for people in them. *Leyden,* 2003 indicates that the lack of social networks and community involvement have negative health consequences and that persons who are socially engaged with others and actively involved in their communities tend to live longer and be healthier physically and mentally. Walkability stands out as an important factor to facilitate good social networks and community involvement. Because it is through walkable

environments that such activities are made simple, and would therefore contribute to the social and health spheres of persons involved.

6.4. A theory of safe streets

As the main public organs of a city, streets and sidewalks are the city's most vital organs. In her argument for walkability of urban streets *Jane Jacobs* (1961) mostly argued that the attribute of a successful city is that a person feels safe and secure on the streets amongst other strangers. Jacobs highlights that streets of successful neighbourhoods must always have three attributes:

Fig0.4 Informal supervision by local residents from windows above the street helps create a safe neighbourhood (Hester, 1975: 96)

1. Clear demarcation between what is public space and what is private
2. Eyes upon the street
3. Continuous users of the sidewalks

However, Jacobs (1961) identified that stores and other public places sprinkled along the sidewalks and public places that are used at the evening and the night are the basic requirement for the above mentioned surveillance. This is because these factors give people solid reasons for using the sidewalks, they draw people along the sidewalks past places which don't have attractions to public use in them, the storekeepers and other small businessmen are strong proponents of peace and order themselves, and most interestingly the activity generated by people errands, or people aiming for food or drinks, is itself an attraction to other people.

The sight of people attracts still other people and encourages walkability. But this is something that planners seem to find incomprehensible. The love of people to watch activity and other people is constantly evident in cities everywhere.

"...A lively street always has both its users and pure watchers" (Jacobs, 1961: 39).

The above mentioned element is very important in facilitating walkability of streets and it has its roots in what Priscilla Parkhurst Ferguson (1994) refers to as Flâneury.

6.5. The theory of Flâneury

Fig0.5 the Flâneur in the streets of Paris (Tester, 1994)

Flâneury is an activity of strolling and looking which is carried out by the Flâneur. The Flâneur articulated as the urban explorer and the connoisseur of the street took his first steps on the streets of 19th century Paris. He is part of the public domain and to him nowhere if forbidden to him spatially, morally and culturally, the public holds no mysteries (Tester, 1994).

The Flâneur walks the streets and interprets the meaning of world as he strolls. He holds definition of the world. He consumes the city at one remove, savouring the display without expenditure, financial or emotional. He is entertained and not distressed by the ever changing urban spectacle as he reads the city as he would a book (Tester and Ferguson, 1994). What is most interesting about such a figure is that the city revolves around him as the spectator. The Flâneur copes with urban diversity by reducing it to a marvellous show (Ferguson, 1994).The Flâneur's most important feature is his vision. This activity is

however, very much dependent on the city and the city's crowds. Though closely linked and associated to 19th century Paris and its passages and corridors; Flâneury is an emblem of modernity and urbanity that is slowly fading away from the city's streets.

It is a very symbolic activity of mobility in the city by pedestrians who have to be entertained by the city's restaurants, shops, people, and vast activity and whose eyes are captured by the show that all these elements present when combined. These are aspects that keep and draw people to the city's streets and re-emerge the marvellous show the city's streets have to show. This show has instead gone inward into the Malls and Flâneury is very much present there. This change of urbanity and city form might be the reason why the streets of most cities around the world lack walkability because it has shifted indoors into the Malls.

Malls or shopping centres are very successful in pedestrian comfort and walkability of their internal paths. This is because they have more transparent frontages in the form of class, that give the pedestrian a sense of safety as there are eyes upon the path. Everyone walks in comfort and easy because the paths/corridors of the mall are wide enough and everyone can see who's who and where they're going. The layout of the Malls gives a clear communication between the pedestrian in the mall and the store keepers. The shops cater to the needs of the people, and they are diverse and dynamic in layout. They present a beautiful and attractive show that draws and entertains the eyes of the

spectator. Why can't this show be brought back to the street so as to facilitate walkability and bring back the life of the city's street which is its people?

As outlined above diversity is a very important aspect of walkability, one that has the power to capture the eyes of the pedestrian and create a sense of flexibility in the city. However, diversity can also be self-destructing as it can happen in small streets, at small nodes of vitality, in groupings of streets, or in whole districts where there is too much completion because of the economic opportunities in the space. This mixture of uses can be very popular and very successful but at the same time enthusiastic competition for the space in that locality can develop. This type of competition can turn out to be negative because at some point the winners in the competition will represent a narrow segment of the many uses that created success.

6.6. The theory of great streets

Public rights of way are often shared by vehicles and people on foot, and there is no problem with that because it has been accounted for in design. However, it is only on foot that an individual can see people's faces and statures and those they can meet and experience them in the city. The most intimate involvement with the urban environment, stores, houses, the natural environment, and with people can only be achieved on foot. Walking allows for and arbitrates public socializing and community enjoyment in daily life. Streets that can facilitate both driving pass them and walking in them are great streets.

Fig0.6 People walking in comfort (Jacobs, 1993: 270)

Fig0.7 closely placed trees (Jacobs, 1993: 273) the most common way of separating and protecting pedestrians from vehicles is through curbs and sidewalks. But these features do not essentially give a sense of tranquillity of safety, trees do that. A pedestrian zone that feels safe is created when trees are added at the curb line and placed close enough to each other (Jacobs, 1993).

There are certain physical qualities required to make streets into better public realms. These requirements include accessibility, bringing people together, publicness, liveability, safety, comfort, participation, and responsibility. These include amongst the following:

- Walkways that permit people to walk at varying leisure paces, with on sense of crowding and being unsafe;
- Transparency: edges of the streets where the public realm of the street and the less public realm of property and buildings meet can provide a good quality of transparency. On the best streets windows and doors invite people in, they show you what is there and if there is something to sell or buy. Sometime they may be a transition zone between the street and the actual shop doorways (Jacobs, 1993);
- Trees'...all great urban streets have tree...'(Jacobs, 1993: 270);
- Complementarity: buildings that get along with each other most particularly in height and in the way they look produce great streets;
- Maintenance: cleanliness, smoothness, and no potholes are general attributes of maintenance;
- A sense of comfort and safety is also achieved by the street setting that exposes it to warmth or sunlight when it is cool and shade and coolness when it is hot. Importantly people need to be sheltered from wind (Jacobs, 1993);

Fig0.9 Neighbourhood space provides a chance for the informal peer group reinforcement that is necessary for the feeling of safety and belonging (Hester, 1975: 97)

Fig 0.8 Special design features (Jacobs, 1993: 298 & 299)

- Beginnings and Endings, that says in effect that one has arrived, or left. The street must have special physical qualities that give boundaries. Places to meet, or reference points, these are similar to Lynch's landmarks;
- Many Buildings rather Than Few; Diversity, different buildings can be designed for a mix use and destination that attract mixes of people from all over a city. This helps create a sense of community;
- Special Design Features, Detail;
- Density Helps, streets with many people living along them or near them and that have many activities are great streets and it is a matter of density;
- Diversity: variety, activity, liveliness of physical place is likely effects of diversity of uses;
- Length;
- Parking;
- Contrast; and
- Time: the history, change, and future of a street have to be present.

All of the above physical qualities when well-designed facilitate walkability though the provision of comfort and safety.

'...if we do right by our streets we can in large measure do right by the city as a whole-and, therefore and most importantly, by its inhabitants' (Jacobs, 1993: 314).

Fig10 Physical comfort involves both site factors and facilities and incorporates the social factors of comfort and usable space. These factors include weather, pollution, and adequate facilities for transportation and safety often people choose to use a neighbourhood space because it meets their physical needs (Hester, 1975: 97)

6.7. The theory of neighbourhood space and use

Similar to all the above mentioned theories of walkability Randolph Hester argues that there are certain aspects that influence the use of neighbourhood space/the street, which are physical, social and psychological. These aspects include the following: safety, aesthetic appeal, convenience, psychological comfort, physical comfort, symbolic ownership, policy on use, and cost of use. In most cases the physical aspects of space will be a fundamental contributor to the psychological and social aspects of the pedestrian's wellbeing. A brief description of the aspects is presented below:

- Safety incorporates the social interaction processes, territoriality and dominance, and interaction and activity variations;
- The way a place looks is important to the users of space but in their own terms and not in that of the designer;
- Convenience as a balance between availability and desirability is very important to the use a street as a neighbourhood space;
- Psychological comfort;

Fig11 Policy on use (Hester, 1975: 106)

- Physical comfort;
- The more one users a space the one comes to consider the space their own. In most cases if a person lives close to a neighbourhood space, he is likely to exercise symbolic ownership over it;
- Official rules and regulations regarding the use of neighbourhood space affect the residents by both enabling policies that permit and encourage activities and restrictive policies that prohibit activities. Informal policies established by various neighbourhoods themselves are also very important; and
- Neighbourhood space is usually within walking distance and free of charge. In the minds of people using neighbourhood spaces, the cost consideration is that the lowest cost is best.

7. Other concepts of walkability

Sustainability: According to Jou (2011), sustainable development equals to a positive change that does not undermine the environment or social systems on which people depend. Such sustainability depends on a widespread understanding and collaborations of critical relationships between people and their environment. The vision of walkable communities also correlates with concepts of Neo-traditional Urbanism and Transit-Orientated Development (Al-Hagla, 2009). Walkability is therefore, reflected as a measure of the effectiveness of a community design and sustainability (Rattan, Campese, and Eden, 2012).

Density: Urban sprawl and the development of low-density residential areas are seen as major contributors to unworkable neighbourhoods by many literature publications on the subject of place making. MARC (1998) suggests that the low-density suburban development patterns and transportation investments have created environments that do not support walking. For some authors such as Benfields, 2013; for walkable cities, it is not about the density but about finding the right kind of density. This would therefore, be relative to specific neighbourhood characteristics and form.

Distance and Topography: According to Johannesburg Framework for Non-motorised Transportation (2009): Given the low density of urban form of Johannesburg, the city destinations are further than the 500m-1km international standards. This brings about a challenge because for many South Africans walking is the only available mode of transport.

Vulnerability: Walking is accepted as the best type of human interaction with the environment (Jou, 2011). Pedestrian fatalities account for a large proportion (over 40%) of deaths on South African roads. According to Albers, Wright, and Olwoch (2010) the factors that could potentially increase pedestrian vulnerability are the lack of pavements, pedestrian crossing and pedestrian lighting.

Mixed land use: MARC (1998) argues that in the planning, design and development of our communities walking has received little or no attention. This is especially reflected in the fields of land-use planning in which concepts of mixed land use development should be encouraged as key role players to creating walkable environments. Mixed use development is part of a critical component of the smart growth principles to achieving better places to live. Driving alternatives such as walking and cycling become more viable when there is a mix of residential, commercial and recreational uses in close proximity to one another.

According to Jou (2011) within the last 5 decades, public and private actions have often created obstacles to walkable communities due to regulations that prohibit mixed land uses. These are more evident in suburban areas. Such regulations result in longer trips and makes walking a less-viable option. Jou expresses this as a regulatory bias against mixed-use development which is reinforced by private financing policies that consider mixed-use development riskier than single-use development. As a consequence communities that are dispersed and largely auto-dependent employ street and development design practices that reduce pedestrian activity.

MARC (1998) suggests that in order to achieve the goal of creating a walkable community local government should fully integrate pedestrian considerations and provisions into on-going planning activities such as:

- Comprehensive planning;
- Zoning regulations;
- Site plan ordinances and review; and
- Street design standards.

Effective pedestrian-oriented land-use and transportation systems planning will have a significant impact on pedestrian travel.

Walkability challenges in the built environment can also be viewed from a medical perspective. Authors such as Leyden (2003), Elsawahli, Ahmad and Ali (2013), and the Mid-America Regional Council (1998) debate that the built environment influences participation in physical activity. This highlights that the impacts of unwalkable neighbourhoods are not only on safety, comfort, access, connectivity and convenience but also health implications of built environments that discourage walking as a physical activity.

8. Research done to date on topic and relevance

Albers, Wright, and Olwoch (2010) in their article "Developing a South African pedestrian environment assessment toll: Tshwane case study", did a study evaluating existing audit tools in relation to South African issues and conditions of walkability and developed a South African Pedestrian Environment Assessment Tool (PEAT). PEAT was tested at five sites in the Tshwane Metropolitan Area in Gauteng to assess its applicability. This study is relevant to my topic as it investigates pedestrian environments and elements of walkability. It even goes further as to evaluate the PEAT on practical space. This is very relevant because in my study the end results will be to formulate a similar criterion using various traditional theories and the Complete Streets Design Guideline Manual together with pedestrian inputs to retrofit design principles of walkability on the street in a design intervention.

The Mid-American Regional Council guide for local governments is based on relevant research done on local neighbourhoods of America such as Kansas City. All of the principles, issues, and challenges of retrofitting existing areas to serve pedestrians are discussed in detail. This is a very important and relevant study and guide to my research because it considers that the vast majority of existing communities are already developed and face walkability issues that need to be dealt with from an urban design perspective. Local communities in this regard, are expressed as having opportunities to encourage reinvestment in existing neighbourhoods and commercial areas that results in greater pedestrian activity.

9. Analysis of walkability main theories and developing an argument

Before drawing a conceptual framework from all mentioned arguments and concepts of walkability it is most important to analyze, summarize, and develop a case. This section of the chapter will build on that case/argument in not more than 5 pages.

Lynch stresses that good city streets that have walkability qualities must have attributes that would enhance the image of the city. These attributes are not as complicated as one would think because they form part of most good city landscape. The attributes which include as mentioned earlier are fivefold and include nodes, landmarks, districts, edges, and most importantly paths. From this view of the city, paths are so the most influential because they have the power to net together all the other ingredients and it is within them that all other elements are laid out in space to make walkability. Even though these elements facilitate navigation of all modes of transport the walkers are the most important because they are more exposed and in direct contact with their surroundings.

These elements are the physical attributes of walkability but they affect the social and psychological aspects of people's lives, and they are in fact affected and/or shaped by policy and current governmental agendas of state.

On the other hand Appleyard (1981) views walkability attributes from a very social perspective because in his main argument streets are seen as the social centres of towns and cities. This social aspect as

expressed by Appleyard (1981) is closely related and expressed psychologically in peoples thinking and perception of the city. Appleyard (1981) indicates this psychological influence in the power that the streets have to position a person in the world and that position is mostly experienced while on foot.

But just as Lynch (1960), Appleyard (1981) gives some significant reference to the physical attributes that impact on the social and psychological. But unlike Lynch's elements Appleyard refers to the negative impacts of traffic on peoples movements and experiences on the street. The importance of physically protecting the pedestrians from this traffic by including measures such as traffic signs and stop lights, barriers, street narrowing's etc. is stressed. The effect of a neighbourhood's topography is also highlighted as a major contributor of traffic. In this it is important to understand the relationship between the two because traffic speed is increased for downhill sloppy streets whereas uphill traffic might be slowed down. But this type of topography has other underlying impacts on the pedestrians sight of the street as it will affect what one sees as they move up hill and therefore change the fell of the street in general.

In more simple terms Jou (2011) expresses the importance of walkability in relation to the act of walking as the most natural form of travel and off humans to interact with their environments. Since most if not all travel starts and ends with walking why not making as confortable and interesting as possible?

And as Leyden would put it there is so much gain from walkable environments in both urban and natural settings. But since the majority of the world's population is located within cities it is fundamental to facilitate their walking experiences in a positive way. In actual fact many of society's ills can be limited such as air pollution from car emission and all negative impacts that come with traffic more especially at a local neighbourhood scale.

This city scale is very important because even though as humans travel long distances for vast important reasons we live and experience life at a local scale. And it is where we spend most of our time in space. This is why the local experience is and should be of high priority. And this prioritisation should not be made or/and does not undermine the importance of city region connectivity and relationships that are weaved through economic and industrial relations and connections across cities and towns. But all of this does not mean much and cannot be achieved if the local neighbourhoods are not well designed to make the best of people's experiences and comfort in the city. This is done through the city's streets because as mentioned the streets are the city elements that knit everything else together.

Jane Jacobs (1961) just as the entire mentioned theorist in recognition of the above mentioned fact of streets as the main public spaces of the city, views the use of the street by pedestrians from an element of safety. In her argument this is the most important attribute to whether or not people will walk or not

walk on a particular street. This aspect is twofold as it expressed in terms of physical terms and psychological terms. The psychological attribute of safety has to do with how one feels when navigates the streets and is sharing the street with strangers. In this light safety becomes a priority and if one fells safe and secure in that particular street they are highly likely to walk on it regularly. Unlike Lynch and Appleyard, Jane Jacobs (1961) relates the psychological aspects not with even though she does mention it, sidewalk barriers such as curbs or trees to separate and protect pedestrians from vehicular traffic. Jane Jacobs (1961) links this to land uses along the sidewalks. The link between how one fells when walking along a particular streets sidewalk and the land uses on the surrounding that sidewalk is made very significant to aspects of safety. The presence of stores, restaurants, and public places used during day and night spread along the sidewalks create that sense of safety. But is equally as important is the type of edges that define these places. Open and transparent edges would be more accommodative and inviting than hard closed edges.

The land uses mentioned above together with transparent edges would not only facilitate informal supervision of the street and its sidewalks but also would engage a continuous use of the sidewalks. This continuous use is also an important factor of safety because most people feel safe through expressing other people's presence in a public space. And this site of other people on the sidewalks not only makes one feel safer but also entertains the observer. This is because as much as humans walks or travel so-they're also natural observers and site of other people is something that cannot be avoided

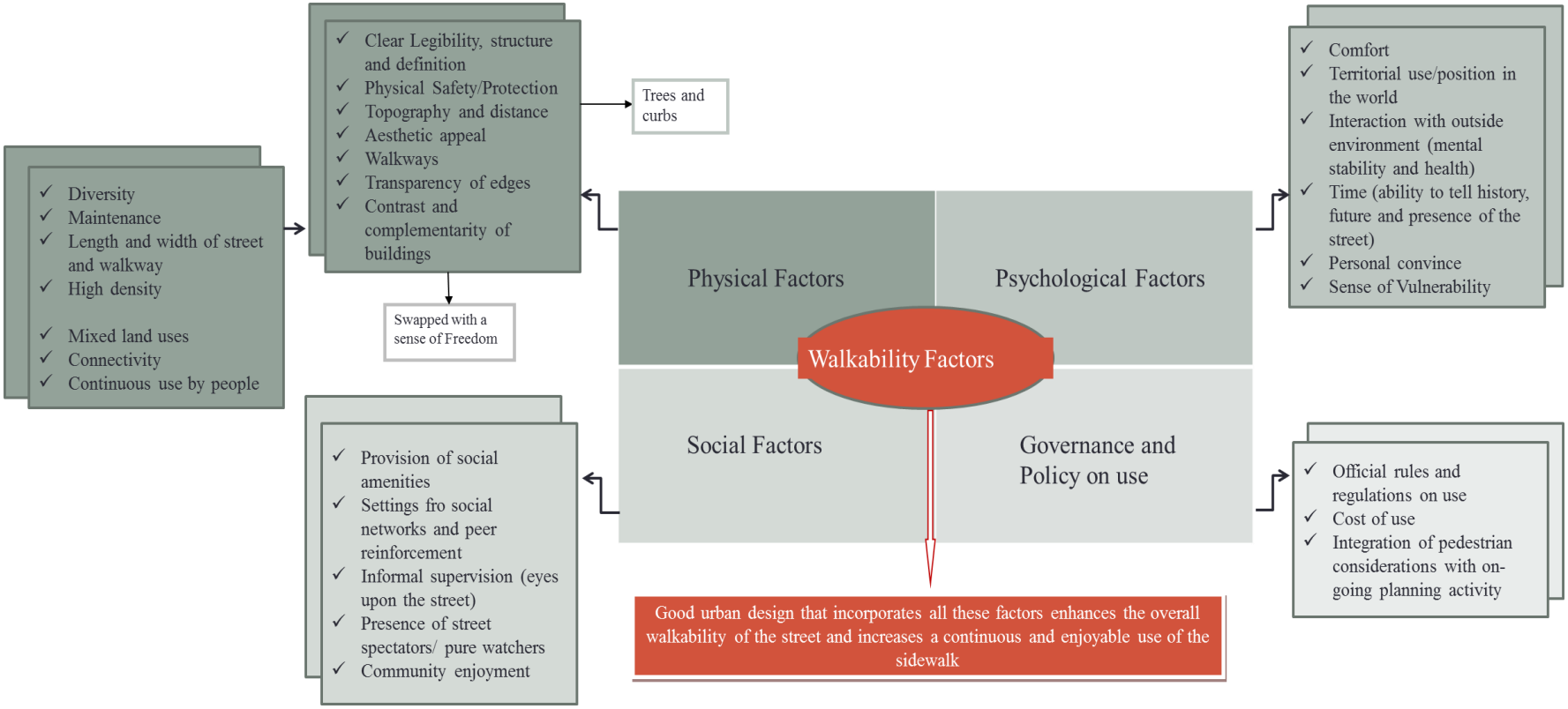
when walking. However, at the same time it is essential to acknowledge that there are people who purely navigate the streets just to observe other people and they are as indicated by Jacobs (961) pure watches. Pure watching is in most of us and it facilitates the feeling of safety and encourages walking. People make cities and cities are home to entertainment.

It is through the theory of Flâneury by Tester and Ferguson (1994) that we get to fully engage with literature that looks into the origins of pure watchers in the city's streets. The activity is facilitated by the ever changing spectacle and entertainment the city has to offer and it is only through the streets that the Flâneur can experience such entertainment. This activity is dependent on vision and this vision can only be captured by diverse land uses just as expressed by Jane Jacobs. Flâneury is also a symbol of mobility in the city, mobility of the people on foot who are free to explore all corners of the public sphere. Transparency of edges and crowds on the streets are therefore very important elements.

The theory of great streets by Allan Jacobs (1993) and that of Hester (1981) weave all together all the above mentioned ingredients and attributes of walkability. However, even though Jacobs (1993) indicates the role of streets as facilitators to social and community enjoyment. And the importance of walking as the most direct interaction with environment, the most influential aspect is the physical attributes of walkability because they can shape peoples thinking and emotions and behaviours in the streets. What fails to be mentioned is the importance of the policy that shapes how these physical

spaces and there attributes are to be designed, laid out or used. This is a point that Hester goes into more detail about when he talks to policy on use that would impact on how people would general experience and physically use neighbourhood space.

10. Conceptual Framework



There are four main branches that influence walkability in most urban areas; these are the physical, social, psychological, and factors of governance and policy on use. The physical attributes contribute the most leaves in terms of influence on to how walkable an area might be. This is because it stands as the basis of where all walking begins. This does not however make it the most important because all the above-mentioned factors overlap and complement one another to form the element of walkability.

11. Conclusion

As social beings humans are highly influenced by their surroundings. Social networks, community enjoyment, and a sense of belonging are fundamental to physical and emotional wellbeing. The most memorable experiences are created on foot. These experiences cannot be achieved while driving.

Pedestrian sense of comfort, safety and aesthetic appeal is fundamental to whether or not people will walk on a particular street or not. All humans are fundamentally pedestrians, because once one comes out their vehicle they automatically become pedestrians.

The link between the factors contributing to walkability is very close and highly dependent. The physical factors of design are fundamental as the influence the outcome of people's reactions and use of the street/space. But these physical aspects are also highly dependent on how policy around walkability is structured. This is because urban designers also follow protocol and in most cases try to be in line with policy guidelines for a particular area. This outlines the influence and power that policy has on the overall design, use, and impact of a particular street. It is in that regard very important for the policy guideline to be clear and knowledgeable about the physical aspects of the road that influence and facilitate the social and psychological aspects of walkability, hence the importance of evaluating the Complete Streets Guideline Manual for the City of Johannesburg.

Chapter 3
Research Methods

The research methods done for this report involved undertaking a case study that was facilitated by techniques of undertaking a discourse analysis of the Complete Street Guideline Manual for the City of Johannesburg, conducting a photo analysis of the case study site, conducting interviews with pedestrian at the case study site, and conducting interviews with City of Johannesburg city official in the transport and city transformation units. In using the discourse analysis to fully analyse the case of Bolani Rd an evaluation of the policy will also be done to look at the merit of the framework and how or if can be applied to existing roads and streets. The nature of the research methods used is qualitatively based.

The chapter will start of by giving a detailed background of all the research methods and the rationale behind using them with ethical conditions at the end of the section. Then a detailed background of the case study will be laid out indicating the location, this will be followed by a discourse analysis which will be done using the Conceptual Frame done in chapter 2 as guide for analysis, the discourse analysis will be followed by a photo analysis of the case study site to evaluate what is said in policy and theory in comparison to practical situations, thereafter an overview of interviews conducted in relation to the study will be elaborated on in comparison to the other techniques as findings in Chapter 4.

12. Rational Behind Research Methods: Background

In order to respond to the research question qualitative research in the form of a case study will be used with supporting techniques that would include a discourse analysis of the Complete Street Design Guideline Manual, a Photo Analysis of the Case Study and Interviews with relevant participants. This section of the chapter will resume as follows:

1. Back ground on Qualitative research;
2. Case study approach;
3. Discourse analysis; and
4. Photo Analysis

12.1. Qualitative research approach

Philip (1998) expresses qualitative studies as small-scale intensive pieces of research in which everyday life experiences by different people and communities at different times and in different places is explored. According to Creswell (2009) qualitative approaches draw on diverse strategies of inquiry and rely on both text and data image. Qualitative researchers gather multiple forms of data, such as interviews, observations, and documents, rather than relying on one data source (Creswell, 2009). The qualitative approach is therefore; significant to follow in this research because the study is small in

scale, intensive in evaluation, and requires multiple data sources in order to answer the research question.

The shortfall to this method as compared to quantitative research is that in qualitative research there are no accurate data and calculations to ensure an accurate result for results. It is a method that incorporates both the subjective and objective modes of thought and observation. The difficulty in this is that findings can turn out to be more subjective, based on the researchers point of view on the topic being researched.

This method was used by reading the Complete Street Design Manual, conducting interviews with relevant people onsite and in the city council, and through analysis of the case study site. The qualitative interviews used involved one-on-one interviews with participants.

- These interviews used unstructured and generally open-ended questions that were few in number and intend to draw views and opinions from the participants.
- 6 street users (pedestrians) were interviewed and the interviewed participants were selected randomly while on site. All participants were over the age of 18.
- 4 City of Johannesburg Metropolitan Municipality officials in the City Transport Unit were interviewed according to different hierarchical roles of involvement in the Complete Street Design Guidelines Manual.

12.2. Case study

When “how” questions are being posed, case study strategies to research are preferred and are commonly used (Yin, 1994). This is also an important method when the investigator has little or no control over events, and when the focus is on a contemporary phenomenon within real-life contexts. This method was used to narrow down the study of assessment as outlined in the research topic, focus on a current phenomenon of “walkability” within real-life context, and to answer the “how” question outlined in the research question.

The Case of Bolani Road was used to evaluate whether or not the Complete Street Design Principles can be applied to an existing road. Bolani Road was also used to answer the other sub questions by analysing the site through visual observations, photographic images, and by interviewing the pedestrians on the road.

The use of a case study is very important because it exposes the researcher to the real-life scenario of the researcher. But, it also exposes one to elements of vulnerability and safety especially if the researcher is not familiar with the site. People who stay in the neighbourhood might not be comfortable with you being there taking pictures while they are passing, or with answering any questions. Sometimes through the interview processes participants get the intention that you are there to bring about good change, and by answering your questions they might benefit. In essence the researcher’s presence there might bring about and raise expectations for the neighbourhood.

It is important to note that in this research; the evaluation method, discourse analysis, and the case study method followed as part and parcel of the qualitative umbrella.

12.3. Discourse analysis

Jacobs (2006) expresses discourse analysis as a research method that is important in providing the researcher with a set of tools to interpret urban policy in a theoretically and insightful way. This method was critical in the process of evaluation of the Complete Street Design Principles as a means of getting an in-depth understanding of the dialogue presented in the manual. This was done in conjunction with the evaluation method through reading and keeping track of the type of words used to emphasise 'walkability', the frequency of such words in the document, and the contexts in which they are expressed.

The discourse analysis was very challenging because it required immense attention to detail and evaluation at a top analytical level. The interpretation of the findings from this method also presented a challenge because until the process is complete it cannot be predicted that walkability is a top priority in the design principles presented.

12.4. Photo Analysis

Visual materials/ photo inventory: qualitative visual materials in this research took the form of photographs. This type of data is creative in that it captures attention visually and may be an unobtrusive method of collecting data.

13. Ethical Considerations

In compiling this research the following ethical considerations were followed:

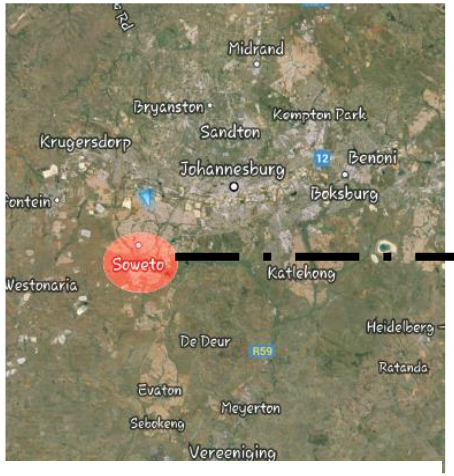
- No plagiarizing or claiming the results of others;
- An informed consent from participants was received;
- The confidentiality and anonymity of the respondents was respected;
- The participants' participation in the study was voluntary; and
- The research is independent and impartial.

Also find attached to this report the Application to the Human Research Ethics Committee Form and Checklist; the Participants Information Sheet for Walkability of the case study area together with the Participants Questionnaire for Walkability on the case study area; and the Participants Information Sheet for Walkability in Johannesburg together with the interview questionnaire.

14. The case of Bolani Road

Fig.13 Bolani Road (After Mphafudi; 2014)

Bolani Road is located in Emdeni, Soweto. It is a link between the township and the West Rand and was upgraded and officially opened on 19th April 2009. Costing R65-million, the upgrade was undertaken under the province's 20 Prioritised Townships Programme. Upgrades to Bolani Road entailed the widening of the route from Koma Street to Emdeni Bridge (COJ, 2012).



Map 1 (Adopted from Google Maps)

Map 2 (Adopted from Google Maps)

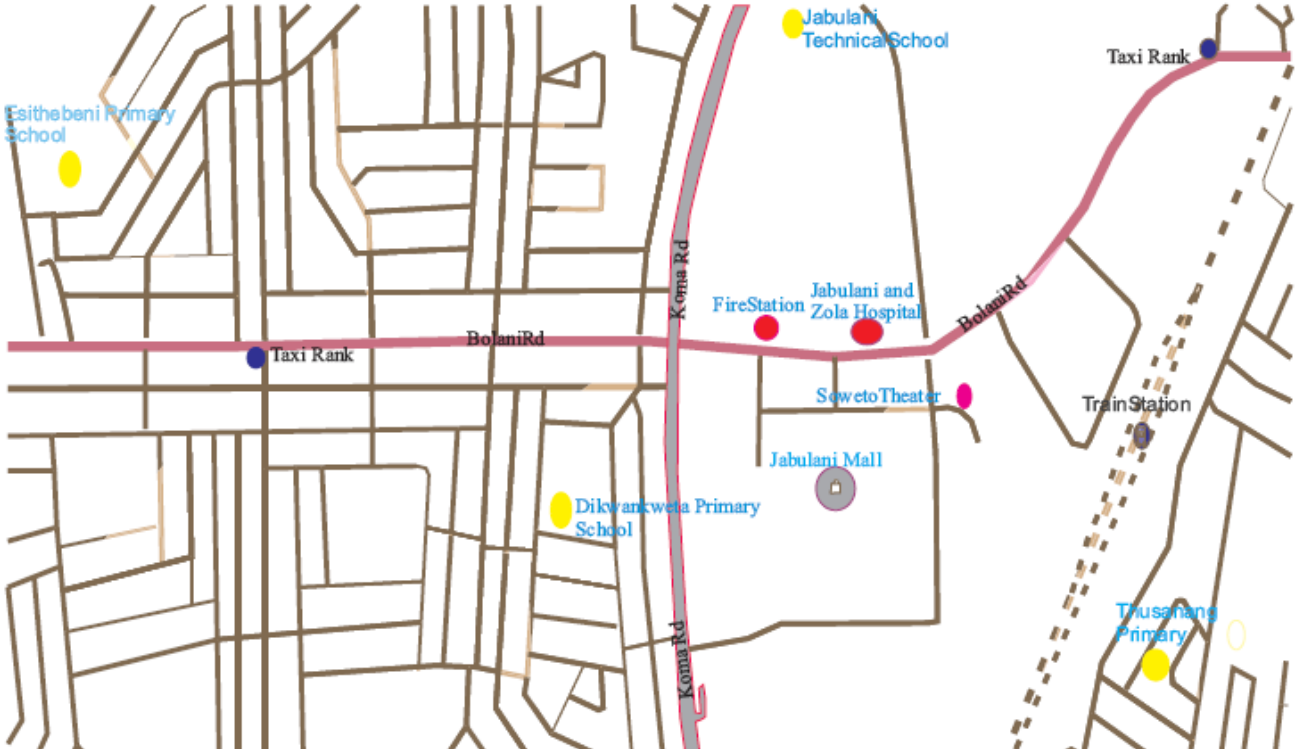
On Bolani Road commercial nodes such as Jabulani Mall and public facilities such as the Zola Jabulani Clinic are found. These draw people from Zola, Emdeni, Jabulani, and Tladi to use the road as a point of access.

Zola Jabulani Clinic/Hospital

Jabulani Mall

Soweto Theatre House

Map 3 (Adopted from Google Maps)



Map 4 (Adopted from Google Maps)

There road has in it social amenities that attract people on it, such as the ones highlighted on the map. The mall stands out as a major node on the road and there is a great concentration of economic activity and competition. The nodal point is very much dynamic and crowded.

15. Photo Analysis

Fig.14 The use of rocks as a beatification measure and as a means to keep informal trading out works against creating a nice environment for the pedestrians

Fig. 15 Most of the road doesn't have any proper paved sidewalks and crossing zones for pedestrians. There are a number of trees but these are scattered all over the place

Fig. 16 The site lacks continuity of users because there isn't any activity laid out along the sidewalks to encourage continuous use

Fig. 17 There is provision of public transport and some medium density residential development. It might help to introduce a mixed use development to sprinkle activity

Fig. 18 Sidewalks are quite narrow for a high use shared street as this one. Two people going on one direction cannot be accommodated

Fig.19 There is a lot of underdeveloped space that can be converted to a park or any other urban uses that can facilitate the use of the street as a mode for social stability

Fig.20 The entrance to the Mall is demarcated by a fence that excludes the pedestrian and exposes him to the hostility of the road and there is no protection from car movement by trees, curbs or vegetation

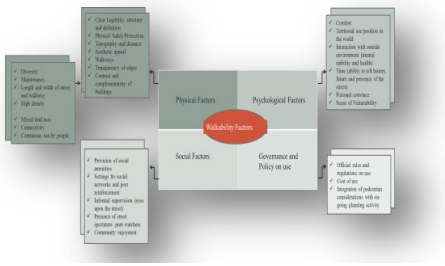
Fig.21 The vacant space exposes the pedestrian to windy conditions. But as seen in the picture the space is alternatively used for advertisement

Fig.22 The new hospital on the road serves as a social need and amenity but the use of the stones creates a hostile feel that is opposite to what the development

Fig.23 The Soweto Theatre is a great spot for much growth and improvement of the road as it serves as an entertainment not and as a landmark but the edges are not inviting at all

Fig.24 The maintenance of the road surroundings especially as one move away from the Mall is very bad, with litter and potholes that might be a danger to a person walking at night

Fig.25 The fencing on the picture illustrates a general trend of the edge conditions of the buildings on Bolani Rd. These type of edges do not communicate with the road at all



Check list of walkability factors from framework:

Physical factors- clear legibility, structure and definition; physical safety/protection; Topography and distance; aesthetic appeal; walkways; transparency of edges; contrast and complementarity of buildings; diversity; maintenance; length and width of street and walkaway; high density; mixed land uses; connectivity; and continuous use by people.

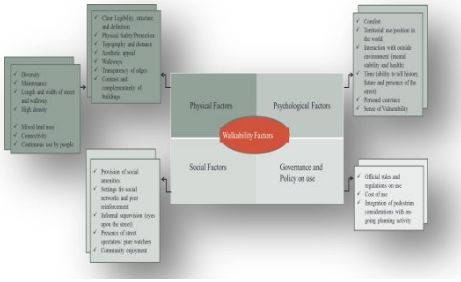
Social factors- provision of social amenities; settings for social networks and peer reinforcement; informal supervision; presence of street spectators/pure watchers; community enjoyment

16. Complete Street Design

Fig.26 Complete Street Concept

Complete Streets Guideline Manual for the City of Johannesburg

In a process of analysing the discourse used by the guideline though comparison of the walkability factors as identified in the literal review conceptual framework, it was extremely important to outline the aims and principles of the guideline, these are highlighted below.



Check list of walkability factors from framework continued:

Psychological factors- psychological comfort; territory on use; interaction with the outside environment; Personal convenience; sense of freedom, experience and the ability to tell history; future and presence of the street and its surroundings.

Governance and policy on use- official rules and regulations on use together with zoning regulations; cost of use; on-going planning activity integration with pedestrian considerations

16.1. Guideline Aim

The guideline manual aims at promoting the role of streets as both movement networks and agents of social cohesion. The concept of Liveability by encouraging the walking and cycling modes, caters for all users groups and encourages the use of public transport. It is envisaged that this Design Guideline will serve as a starting point for a conversation between the City and its citizens as to how together we build movement spaces that are Liveable emphasis on safer streets.

16.2. Complete Streets Principles

- Balance the needs of all users of the public right-of-way by providing safe and convenient travel and access for cyclists, public transport users and operators, heavy vehicle and car drivers, and people of all ages and abilities.
- Contribute to liveable communities by providing public open space that integrates amenities including street trees and landscaping, street and sidewalk lighting, public transport facilities, street furniture, water features, and public art work.
- Promote neighbourhood vitality through infrastructural improvements that attract private investment and encourage pedestrian activity.
- Promote active living by providing safe and attractive conditions for walking and biking.
- Provide safe and comfortable access for persons with disabilities.

- Improve local air quality by reducing car use (emissions) and incorporating trees and vegetation.
- Improve water quality through the integration of low impact development techniques that both reduce storm water runoff and remove pollutants.
- Promote the use of public transport modes by improving the efficiency of public transport systems and creating safe, attractive walking environments.
- Implemented through a coordinated approach among City departments, and the leveraging of City assets and programs.
- Enhanced by encouraging adjacent new development to contribute Complete Street amenities through applicable city development standards and incentive programs.
- Within communities are designed to be integrated with a future comprehensive city-wide network of Complete Streets.

The design elements followed by the policy guideline are defined as Universal. Universal Design refers to a process which attempts to make any facility (or product) usable in comfort and safety by people with the widest range of abilities (physical or cognitive), sizes or shapes. This type of design gives priority to all non-motorised modes of transport and special consideration to vulnerable groups like people with disabilities and women and children.

17. The Complete Street Analysed

The approach followed by the guideline is a very technical and top down because of the nature of environment from which it was designed. The guideline will be analysed using the quadrant framework and will look firstly at the physical factors, then the social, psychological and, lastly the rules governing the use of the streets. The tables below will be used to focus the analysis as some factors overlap.

Physical factors	*Use in policy*	*Number of occurrence*	*Brief Description*
Clear legibility, structure and definition	Yes	13	Clarity of the urban scape is prioritised
Physical safety/protection	Yes	37	Emphasis on road safety for all users is prioritised. The framework uses a whole chapter to emphasis road safety but is linked to the impacts of street trading on all users of the road with much interest on the wellbeing of the pedestrian.
Topography	Yes	2	Pedestrian crossing discouraged on steeply sloped areas.
Distance	Yes	29	Distance considerations related to walking, transfer point, sight distance, travel distance and crossing distance are highlighted with reference to safety as the main factor for pedestrian consideration and the use of distance considerations to maximise this safety. For example the framework indicates that bulb-outs in the form of kerb extensions that narrow the roadway width at the intersection to

			slow the speed of motor vehicles and shorten the crossing distance for pedestrians and other road crossing users are an important safety measure, as well as adequate sight stopping sight distance and signage with a minimum spacing of 60m to 90m Fig.27 (ISSU, 2013) Crossing bulb out Another example is that of a reduction in the curb radius at an intersection that would enable shorter Crossing distances for pedestrians, while also promoting lower vehicle turning speeds.

			Fig. 28 (ISSU, 2013) Reduction in curb radius
Aesthetic appeal	Yes	7	Street utilities such as substations, kiosks and street lights must be well placed and be aesthetically pleasing. For example the framework indicates the intensity of street light must be carefully balanced between the need to create a well-lit and safe public realm and the desire to create a dynamic and aesthetic evening environment marked by interplay of light and shadow.

			 Fig.29 (ISSU, 2013) Example of Street Utilities
Walkways			The mention of walkways is closely related to that of appearance and storm water maintenance. The following example as extracted from the framework is outline below: Fig30. (ISSU, 2013) Pavement storm water management Successful water management will require a comprehensive effort and an acknowledgement

			that storm drainage, flood control, water supply, water conservation and sewage treatment are all facets of a broad and integrated system (ISSU, 2013).
Transparency of edges	No	0	The policy doesn't make reference to edge conditions of buildings but that of pavements(ISSU, 2013)
Contrast	Yes	2	Contrast in relation to placement strategies development to address contrasting physical conditions such as sunlight/shade and a range of temporal conditions such as quiet/noisy, active/passive, formal/informal and enclosed/open but not that of buildings(ISSU, 2013)
Complementarity	No	0	The importance of building complementarity is not outlined(ISSU, 2013)
Diversity	No	0	There is also no mention of diversity of uses but the word variety is used to indicate its significance when it comes to street furniture and the creation of a design statement(ISSU, 2013)
Maintenance	Yes	22	Maintenance of the complete street project is closely linked to that of street furniture, vegetation and public open space maintenance. The proposed maintenance program includes the provision or addition of pedestrian refuges or islands, traffic signals and pedestrian signal heads and count down equipment. But this is not as the type of

			maintenance found in the literature. (ISSU, 2013).
Length	Yes	4	
Width	Yes	33	The policy framework indicates that sidewalk width should be chosen based on surrounding land uses (higher density areas requires wider sidewalk) (ISSU, 2013). The following guideline examples are given: – The minimum width of walkways on commercial streets must be at least 4m – A minimum width of 2.0m will be needed Class 4 CBD Road/Activity – With a minimum width of 1,5m will be required Class 5 Residential collectors/Residential
High density	Yes	1	The mention and consideration to high density development along certain streets to facilitate walkability is not present (ISSU, 2013).
Mixed land uses	No	Not applicable	Mixed land uses and is not prioritised at all and from looking at all the above factors as they appeared or not appear in the policy framework it can be noted that this framework generally looked at the design of the road itself without any consideration to surrounding uses (ISSU, 2013)
Connectivity	Yes	1	Ensure connectivity through the development of a bicycle master plan(ISSU, 2013)

Continuous use by pedestrians	No	0	None
Trees	Yes	18	As in theory the use of trees is very important in the policy guide for complete streets more especially in the Green Zone to create a canopy that shades the pedestrians and also as a protection from cars (ISSU, 2013).

Table 1: Physical Factors of Walkability

Social factors	*Use in policy*	*Number of occurrence*	*Description*
Provision of social amenities	No	0	None
Settings for social networks	No	0	None
Informal supervision	No	0	None
Presence of street spectators	No	0	None
Community enjoyment	No	0	None

Table 2: Social Factors of Walkability

Psychological factors	*Use in policy*	*Number of occurrence*	*Description*
Psychological comfort	Yes	10	Psychological comfort was a very difficult factor to asses because the difference

			between comforts that is physical band that is psychological is complex. Though the use of good physical design of walkways that have assessable and good surface area the both physical and psychological comfort standards can be meet (ISSU, 2013).
Territory on use	No	0	None
Interaction with the outside environment	Yes	Not applicable	Even though not used in the same language as found in theory the policy framework highlights the importance of pedestrians to engage with their outside environment and to make that environment as sustainable as possible (ISSU, 2013).
Personal convenience	Yes	1	This element is used once and only in relation to sidewalks as infrastructure that should provide comfort, safety, convenience and encourage walking (ISSU, 2013).
Sense of freedom	No	0	None
Experience and the ability to tell history	No	0	None
Future and presence of the street and its	No	0	None

surroundings			

Table3: Psychological Factors of Walkability

Governance and policy on use	*Use in policy*	*Number of occurrence*	*Description*
Official rules and regulations on use	Yes	Not applicable	the framework uses rules and regulations of the road design and road classifications to regulate certain uses on different road hierarch (ISSU, 2013)
Zoning regulations	No	0	The policy gives guide as to which procedures to follow for a land use amendment on a road but the type of regulations that are to be regulated or encouraged on different types of class roads is not given at all (ISSU, 2013).
Cost of use	Yes	6	Reference to cost on use is unfortunately not used in relation to the pedestrians cost effectiveness when walking it is rather made in reference to other users like cars parking cost and petrol costs (ISSU, 2013).
On-going planning activity integration	Yes	Not applicable	There is a very close relationship of the framework with the City of Johannesburg 2040 Vision and the

			Non-Motorised transport policy, just to mention a few (ISSU, 2013).

Table 4: Walkability Factors of Governance and Policy on Use

18. Comprehensive analysis of the discourse

Fig. 31 (ISSU, 2013) Example of proposed sidewalk design

In analysis of the information highlighted above from the Complete Street Guideline Manual for the City of Johannesburg one can distinguish that the discourse followed by the policy framework is very technical and the approach is quite top down. This might be because the makers and implementers of the policy come from an engineering background that mostly looks at the practical and physical solutions of problem solving. In this sense the guideline as seen from the four tables gives little preference to personal and social interest of pedestrian. But this might be an element strongly communicated in the Johannesburg 2040 Vision which is the mother policy to the Complete Street Guideline Manual. Even though highlighted in the guideline the relationship between the two is not communicated too well. There is a lot of emphasis on the physical aspects of the road. And because the guide is communicated in a generic type of way, implementation can be manipulated to suit the designer's needs.

Out of all the physical walkability factors that have to do with pedestrians use of the road the guideline highlights the provision of sidewalks as a standard way to provide comfort, safety, convenience and as a means to facilitate the act of walking. As mentioned in the guide it is because walking as the most basic

mode of transport for people should be accommodated through the provision of sidewalks on preferably both sides of all street types. But through this provision there is recognition and the social and psychological impacts of physical attributes. The framework goes even further to deal with matters of accessibility of the street and its utilities by the pedestrian. This is an important element that the guideline highlights but was not so much emphasis in the literature review.

Fig. 32 (ISSU, 2013) Transparency, continuous use, and Eyes on the street

In other occurrences the framework may not directly mention the importance of attributes like transparency or informal supervision but it is illustrated in the diagrams like the one the left. But it is still important to note that emphasis is only made to physical attributes of the road and even though he pedestrian is mentioned as important other road users are still given priority. This is because the guideline gives preference to the road as the ultimate public space for access and mobility but does not consider the social aspects to which it also serves. For example pedestrians comfort and movement on the sidewalks is only prioritised to connect the pedestrians to public transport. That is the ultimate goal. But the way the pedestrian feels corresponds to certain attributes on asocial level is not really looked into.

The guide stresses the points made by Allan Jacobs in his theory of great streets where he indicates certain physical attributes that contribute to walkability of a path. It also gives a lot of significant to traffic calming measures to ensure pedestrian safety this is something Appealyard strongly emphasis.

These two arguments come out very strong and are presented. But theories as mentioned in the literature review of eyes on the streets by Jane Jacobs; the Flâneur's theory of pure watchers and

spectators of the streets, the one by Hester of feelings of belonging when walking on a neighbourhood street, onto have setting along the streets that reinforce social networks with friends and even facilities like water taps for kids passing from school; and Lynch's combined legibility and imageability of the landmarks, nodes, edges, districts, and paths. These are very significant factors that bring life to a street and not just the physical aspects as stressed in the framework. The following section of the chapter will look into a photo analysis of Bolani Road and the chapter after that will combine the findings from all methods used including interviews.

Chapter 4 Findings

In this chapter the findings from the interviews will be used to get an understanding of the broader walkability issues as related to the theory, challenges on Bolani Rd, and the Complete Street Guideline for the City of Johannesburg. The chapter will first look at the findings from pedestrian interviewees and then after to city officials interviews.

Thereafter, an analysis of the missing gaps and key findings from all research methods will be given.

19. Interviews

As outlined at the beginning of the chapter, qualitative interviews were used to get a perspective of pedestrians and city officials perspectives on walkability challenges in the City of Johannesburg. The case of Bolani Rd was used as an example.

19.1. Interviews with Pedestrians

From the interviews conducted on side the following findings can be outlined:

- The use of the road is due to need as it serves as a feeder road to Koma Rd where most public transport passes and because of the Mall;
- The perception of the physical conditions of the Rd and their impact on walkability varies for most users but most of the difference is gender based:
  - Four males were interviewed and 3 females; all males thought the road was comfortable to walk on and that the conditions where fairly good. Whereas the females felt that the road is not accommodative to pedestrians and that the physical conditions were generally bad
  - The use of the road for males is because of both affordability and leisure reasons, whereas for the females it is because they do not afford a car and so are forced to walk
  - Two male interviewees indicated that they walk on Bolani Rd as a part of fitness mechanism

- Males expressed feelings of comfort while females expressed discomfort, not feeling safe, being at risk of crime, and one of the female interviewee expressed anxiety due to traffic and congested walkway;

– The issue of traffic was a general concern for all the interviewees, highlighting that Bolani Rd always has heavy traffic that impacts on mobility of pedestrians, more especially because there is only two lanes for both oncoming and going cars;
– The rate of usage of the road varied from seldom to everyday for different reasons; and
– All interviewees felt that the road definitely needed certain varied upgrades which included road signage for pedestrians, more lanes, wider sidewalks, pedestrian crossings, taps for drinking water, and more shade.

The social aspect of walkability seems to be not a priority for all interviewees for them the path is just a means of access to other routes, to the mall, the theatre, the clinic, and other surrounding facilities such as schools. The Complete Street Design Guideline also shares the same kind of sentiment. Physical and practical aspects of the road that make the journey from one place to other easier are what matters most. Safety is also a priority but more especially for the female interviewees. The matter of gender and walkability factors in the urban environment is a critical one, more especially because it has not been explored a lot in theory or in policy. The Complete Street Design does outline that women and children are amongst vulnerable groups that need to be

considered with special attention in planning, design, and implementation of the Complete Street project. However, this does not indicate the underlying rational. The importance of streets or roads at a local level as public spaces that can facilitate social networks and as a very important social sphere of the public domain is not visible to most pedestrians because they are not exposed to facilities that may facilitate such interaction on the street. Out is most noticeable is that all the social life that is not found or realised outside in Bolani Rd is internalised within Jabulani Mall.

But it was very interesting to find that the concept of the Flaneur is present at Bolani Rd. And interestingly enough it is still a male dominated act just as in 19th century Paris. The presence of pure watchers that walk the streets just as observers and just to break away from the indoors is very important to facilitate walkability and more especially the safety aspects.

Siting utilities, lighting, design detail, pavement types, storm water management, management of the side walk, and land uses along the sidewalks seem to not be something pedestrians and the guide seem to be concerned about, and to emphases, Bolani Rd is all about access and mobility for both.

19.2. Interviews with City Officials

From the interviews conducted with officials from the City Transformation unit and the Transport department it became very clear that the city recognises that there are a lot of walkability challenges facing the city's roads and streets. The city is overloaded with petitions and there a lot of mortalities that result from lack of safe measures for pedestrians.

The Complete Street Guideline Manual was closely linked and related by the officials to the Non-Motorised Transport Framework and the Public Transport Framework. So in essence the challenge of walkability even though is very important is viewed as something that has to be solved so that most people resort to the use of public transport.

As outlined in the policy framework, the city prioritises the improvement of physical attributes of walkability such as storm water management, pavement surfacing, sidewalk building, creating curbs, beautifying, landscape, etc. But these factors are still very concentrated on the road itself without any consideration to the surrounding land uses and merging the two.

When it comes to governance and policy on use the city has made it clear through the guide and through the interviews that the most regulations that have to do with sidewalks are those related to street trading. This is because street trading is seen as an activity that is in competition of the sidewalk with the pedestrian. Priority in this regard is to the pedestrian.

It was acknowledged that retrofitting of the Complete Street Project is still a challenge because most streets and roads do not have enough reserve space for any upgrades. In other situations the streets would need narrowing down as a means of traffic calming. Of high importance to the development of this project is that there's now a political buy way from the current administration. This is a big achievement because once political buy way is part of a project financial back up is never a problem. As mentioned earlier in this report changes in cities are often initiated politically, expressed physically and experienced socially. But the use of the road as mediator for liveability, community enjoyment and social reinforcement is not giving much thought.

The Complete Street project is already on way with programmes initiated at Orlando and the Wits UJ Empire Road link. Priority of these projects is to make walkability and use of public transport easily for schools. Since there are a lot of schools on Bolani Rd maybe the project will soon be implemented. The only challenge is the rate of success when there so many other role players in the walkability factors. These include taxi drivers, street traders, and cyclist. Walkability is affected by many challenges because pedestrians are directly in contact with the outside world.

20. Key findings

20.1. Approach

The Complete Street Design Guideline uses an approach which is technocratic and it is general in its proposed designs. And this is a reflection of the school of thought from which it originates. There is emphasis on physical attributes that would make a better road for access and mobility reasons with no relation to the human aspects of social interaction and belonging. Safety is also only dealt with from a very physical perspective with no reference to how people feel and how the streets activity can facilitate feelings of protection.

20.2. The role of the street as a sphere for social enhancement

From theory we can get an understanding of the important role of streets as platforms to provide fundamental settings for sociability. Normal and ordinary public spaces can be transformed to become great social settings and Bolani Road has the potential to develop into such a space. But policy frameworks such as the Complete Street that are fundamental to the creation of streets for people and that inspire liveability and the creation of a dynamic social urban environment must incorporate all aspects of urban living for people. The creating of policy implementation that is top down and has no sense of community involvement to include the psychological and social aspects that govern communities lives will led to un-usable spaces. Dealing with walkability challenges is more complex than the provision of physical basics such as paved path ways, street lighting or benches; it has a lot to do

with how the community to which the design is intended for use that space. And if the social aspects and social enjoyment of the community is not reflected in the streets environment and energy then the project of upgrading has failed. The Complete Street project for the City of Johannesburg is still at its initial stages and so there is much room for improvements

Physical attributes such as the provision of taps sitting areas, parks, etc. that have the power to make people use a space more often as it would enhance feelings of belonging, being part of the space, and peer reinforcement are not dealt with by the guideline and standards. What steams out as a major concern is that such provisions are necessities for people's wellbeing on earth. For example, water is a basic human need and everyone is entitled to safe drinking water. As the ultimate public realms, streets should have proving to drinking water. An important aspect that literature, policy, and findings from people missed is that of sanitation (proving of public toilets).

In streets such as Bolani Road there are a vast number of schools, and social public spaces like the clinic. Naturally in urban areas such places draw people of all ages onto using the street as often as required. And this fact makes Bolani Road a shared street which is also a commercial street. Such a place needs to have basic public utilities like toilets and drinking water. To enhance the nature of the public realm and purpose to which Bolani Road serves a public square or park would also help.

20.3. Scale Courts

Walkability issues have to be dealt with from an appropriate scale, and this scale has to be understood according to local contexts of how far do people in that area walk on average. From this research it is concluded that the right scale is that of neighbourhood. The Complete Street Design does not effectively deal with this aspect as the planning is at a metropolitan scale. This makes the chance for success of the Complete Street project limited because only people directly affected can understand it better.

20.4. Economic Efficiency and Land uses

Pedestrians on Bolani Road mention the importance of walking as a cost effective measure of transport for their individual needs. However, this can further be expanded to the benefits of good walkability on the economic growth of the neighbourhood in general. This growth is also well linked to the nature of land uses boarding the street. In my believe it is only land uses that have the influence to shape how people will use the space. For example if Bolani Road was to be fully turned into a commercial street with restaurants, and other supporting outlets like a movie house then the continues use that theory speaks to would be addressed. In so doing multiple problems are dealt with. This type of development can even be merged with the Jabulani Mall development.

Walking gives people the most interactive contact with the physical environment. And it is after all the most cost effective mode of transport at a local and walkable scale. Therefore, it should always be a priority of the planning and implementation of road and street design. It is within streets that the social core of communities could and can be enhanced. Streets are the most important of all public spaces. Mostly because they provide to people the freedom of being in the city, the freedom to be part of the urban fabric and to belong, the freedom of being an explorer of the urban activity and its people, the freedom to socialise with friends and with your community, and the freedom to access and mobility in the city.

The most memorable experiences of the city happen while walking and so it is important make sure that pedestrians get to walk in comfortable, safe and exciting places. This excitement would be personalised to neighbourhood needs and wants of course. And what is so wonderful about walking is that it is after all the only mode of transport that is people without any disabilities do on their own natural bodies without any technological assistance. Plus it is the only one that all humans can afford whether homeless or rich we can all be part of the city by walking through and in it.

People are the life and heartbeat of the city and neighbourhoods are the people in them. Streets are the cities arties and without both the people and the streets there is no city. There is a certain romance between the street and the people in them, but without people walking and engaging with a neighbourhood or District Street on a one on one basis then the street is as good as a dead street. It is ordinary pedestrians walking on a street that bring life to it.

In this research at this stage in time, it is recommended, that the Complete Street Guidelines and Standards for the city of Johannesburg follow a more holistic approach that would look into incorporating the existence of people in the physical world with their social and psychological aspects of living. This can be done with close interaction of the transport infrastructure and design policy processes with housing departments, social development, and environmental affairs.

A close relationship between all these sectors would a street system design that incorporates elements of sustainability and liveable plus usable communities. The use of an approach that is top down at a local scale where the impact of street or road design is most felt should be reviewed to one that incorporates the users of the road in the planning process. It is complex to view walkability challenges without incorporating other transport modes but in this case it is recommended that a policy guideline that only looks at improving walkability be formed as a sister policy to the Complete Street Design. In this way there would better and more in depth understanding of the conditions and attributes that need to be looked at to deal with pedestrians rights on the road.

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Appendix A

Fig. 1 Path (Lynch, 1960: 47

Path: the channels along which the observer moves. Paths may be in the form of streets, walkways, transit lines, canals, railroads. These are the predominant elements in people's image of the city. The city is observed while moving through it. It is along the paths that other elements are arranged and related. Paths are very important

Fig.2 Edge (Lynch, 1960: 47

Edges: boundaries between two phases, linear breaks in continuity such as shores, railroad cuts, edges of development, walls. These elements may be barrier, more or less penetrable and which close one region off from another or seams, lines along which two regions are related and joined together. Edges are important organising features in the role of holding together generalised areas like the outline of a city by water or a wall.

Fig. 3 Districts (Lynch, 1960: 47

Districts: the medium-to-large sections of the city, which the observer mentally enters inside of. Districts are normally recognizable as having some common identifying character. These elements are always identifiable from the inside and are also used for exterior reference when visible from the outside.

Fig.4Nodes (Lynch, 1960: 47)

Nodes: nodes are the strategic spots in a city into an observer can enter and which are the intensive foci to and from junctions, places of a break in transportation, crossings of convergence of paths, moments of shift from on structure to another, nodes are points. In some cases these elements are

presented simply as areas of concentration, where importance is gained from being the concentration they are the focus and epitome of a district, over which their influence radiates.

Fig. 5 Districts (Lynch, 1960: 47)

Landmarks: landmarks just like nodes are points of reference, however in this case the observer does not enter within them. Landmarks are external. They are defined physical objects such as a building, sign, sore, or a mountain. Often, landmarks are used as radical references as they symbolize and can only be recognised at a local level and from certain approaches. These types of landmarks can be signs, store fronts, trees, doorknobs, and other urban detail.

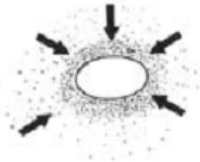

Fig. 6 Imageability (Lynch, 1960: 70)

Imageability is defined as: „the quality in a physical object which gives it a high probability of evoking a strong image in any given observer (Lynch 1960:9).“Clear, understandable and organized sidewalk, street and land-use system consistent with the scale and function of the surrounding urban context is fundamental to the walkability of a street. Lynch (1960) states that, the most important elements of contents of the city image are streets (paths): “the paths, the network of habitual or potential lines of movement through the urban complex, are the most potent means by which the whole can be ordered” (Juo, 2011).

Appendix B

Participants Information Sheet for Walkability on Bolani Road- Pedestrians

God day,

My name is Sello Mphafudi and I am currently completing my honours degree in Urban and Regional Planning at the University of the Witwatersrand, Johannesburg.

My research is entitled Walkability, Assessing the Complete Street Design Guideline Manual for the City of Johannesburg. Through my research, I am to explore walkability challenges and how streets or roads at a local level can be made to be pedestrian friendly to be encores of social enhancements in neighbourhoods, how the subject guideline can be used to assist walkability challenges.

I am inviting you to be a participant in my search study. Your selection into this research was based on the fact that you are a pedestrian on Bolani Road.

But being a participant in this research study I would request an interview session to be conducted right here on Bolani Road. This interview session will be not more than 15 minutes in length.

Your participation in this research is voluntary and I can guarantee that your personal details will remain anonymous throughout this research study as well as in the final research report. You as the participant may refuse to answer any questions which you feel uncomfortable with and may also feel

free to withdraw from this study at any time. By being a participant in this research you will not receive payment of any form and the information you disclose will be used in the research report.

This research will be written into a honours research report and will be available through the University's website. Should you require a summary of the research, I can make this available to you.

Should you have any further questions or queries you are welcome to contact myself or my supervisor garth Klein at any time at the contact details provided below.

Researcher	Supervisor
Ms Sello Mphafudi	Mr Garth Klein
sellomphafudi@students.wits.ac.za	garth.klein@wits.ac.za
081 365 1951	011 717 7616

Participants Information Sheet for Walkability in Johannesburg- City of Johannesburg Metropolitan Municipality Officials

God day,

My name is Sello Mphafudi and I am currently completing my honours degree in Urban and Regional Planning at the University of the Witwatersrand, Johannesburg.

My research is entitled Walkability, Assessing the Complete Street Design Guideline Manual for the City of Johannesburg. Through my research, I am to explore walkability challenges and how streets or roads at a local level can be made to be pedestrian friendly to be encores of social enhancements in neighbourhoods, how the subject guideline can be used to assist walkability challenges.

I am inviting you to be a participant in my search study. Your selection into this research was based on the fact that you are a relevant stake holder and role player in the planning and implementation of the guideline

But being a participant in this research study I would request an interview session to be conducted the relevant offices. This interview session will be not more than 15 minutes in length.

Your participation in this research is voluntary and I can guarantee that your personal details will remain anonymous throughout this research study as well as in the final research report. You as the participant may refuse to answer any questions which you feel uncomfortable with and may also feel

free to withdraw from this study at any time. By being a participant in this research you will not receive payment of any form and the information you disclose will be used in the research report.

This research will be written into a honours research report and will be available through the University's website. Should you require a summary of the research, I can make this available to you.

Should you have any further questions or queries you are welcome to contact myself or my supervisor garth Klein at any time at the contact details provided below.

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One example of each set of interviews through a transcript will show in this appendix.

Interview transcript for one Pedestrian Participants

Interviewer: Sello Mphafudi

Interviewee: Joyce

Interview Setting: Interview conducted in Bolani Road Jabulani. The interview was conducted at 3:30 PM on Sunday afternoon.

Affiliation with interviewee: Joyce is a 25 year old female employee at a well-known retail store at a mall in the east rand who lives at Zola

(Start of Interview)

Interviewer: Would you mind telling me your age

Interviewee: No, I am 25 years old

Interviewer: How often do you walk on Bolani road?

Interviewee: I walk on this street seldom, when I need something at the Jabulani Mall

Interviewer: What is the main reason for you to walk and not drive or use public transport?

Interviewee: I cannot afford my own car so I am forced to walk

Interviewer: How do you feel when walking on this road?

Interviewee: I feel unsafe because there are too many cars and the pavement is too small. I am always on guard for muggers and strange looking people.

Interviewer: In which way would you describe the physical conditions of the road?

Interviewee: This road is really bad, these just too many things about I don't like; for one there is no pedestrian crossing, the robots are always malfunctioning, there only two lanes for cars, and the pavement is too small. Plus on a hot day this is the worst place to walk.

Interviewer: If you would change anything about Bolani road, what would that this is?

Interviewee: Definitely the issue of shade and shelter. Maybe more trees would work.

Interviewer: Thank you so much Joyce. Would you mind if I took a picture of you?

Interviewee: Am not too comfortable with the picture part

Interviewer: Okay no problem, Thank you once more

Interviewee: You are most welcome

Interview transcript for one City Official

Interviewer: Sello Mphafudi

Interviewee: Matshidiso Modiba

Interview Setting: Interview conducted in the Johannesburg Department of Transport Offices 66 Sauer St, Johannesburg, 2001 .The interview was conducted at 4:00 PM on Friday afternoon.

Affiliation with interviewee: Matshidiso is a civil engineer in the depart. She is a key role player in the implementation of the Complete Street Design Guideline Manual for the City of Johannesburg. Matshidiso was also part of the planning process where she worked closely with the transport planning team.

(Start of Interview)

Interviewer: How would you describe walkability conditions of Johannesburg's Roads?

Interviewee: The issue of walkable urban environments is something the city is looking into. We have received many petitions on road safety from citizens and we acknowledge our backlogs. But from our stand point walkability can never be viewed in isolation from transit-orientated development. We try to create an environment that is sustainable by incorporating all of these important aspects of the road. The processes that lead to the development of the Complete Street concept borrowed from America were motivated by this need. But there is a long way to go as we dealing with a lot of challenges. The goal is to get more people using public transport as opposed to private cars. But making the urban environment walkable would work in our favour.

Interviewer: What inniatives is the city coming up with to improve walkability challenges?

Interviewee: There are a number of projects on way that fed from the concept of Transit-Orientated design and development. These would include for example, Public transport Framework and the Non-motorised Transport Framework, the Corridors of Freedom project, and the Johannesburg 2040 Vision are the major ones. And with the guide of the Complete Street the city is now doing some implementation projects in places like Orlando, and Empire Road. With both projects the priority areas are schools. In the Orlando project area there are a lot of primary schools with small kids needing assistance and safety when crossing or walking on the road. Kids are regarded as vulnerable and have to

be given the out most priority. The challenge we having with these group is that most of them are not educated about road safety…basic things like how to cross a road is still something kids need to be educated on. So what we do is to visit schools and educate kids and teachers about the value of road safety measures. Like narrowing down the road, creating curbs, and kerbs, narrowing down lanes when one approaches more residential areas. The use of speed hubs only shifts the issue to the next street on the block so we are moving away from that.

It would actually be helpful for you to communicate with some safety expects from the department because when it comes to pedestrians and their rights of way on the road safety is the most important thing to look at.

Interviewer: Is the social role of the street given any priority

Interviewee: For now we are focused no safety and traffic calming measures in local roads an streets. But with the Empire Road project we are looking into that aspects by connecting UJ and Wits through the BRT. We are also trying to make the road more user friendly for students to walk. We even installed Wi-Fi in bus stops and we would like to make this area as sociable as possible. We even look into more creative ways of storm management by coming up with new surface areas for pavements. Another important this is the use of vegetation which serves a double purpose of storm management and beautification of the street scape.

Storm water management is a very important aspect of walkability because so many people drown in flood prone areas where there is no proper management.

Interviewer: So the Complete Street Design project is already on way?

Interviewee: Yes, the guide was released for public comments last year July and was officially published this year in August. This will be an important tool for any future developments by both private and public developers. The guide will be used as a means to assess the way the road should be and to set up some concrete standards for roads and streets. The only challenge we are facing if applying this to existing roads and streets. The issue is the very small room for improvements and upgrades.

Interviewer: Thank you so much Matshidiso for your time, I learnt a lot from our discussion and it was really nice talking to you. Who else can I talk to about this Complete Street Project?

Interviewee: Pleasure Sello. It was nice talking to you too. I will try schedule two more interviews for you with someone from road safety and one from transport planning. Here is a disk of the policy for you to read through.

Interviewer: Thank you