

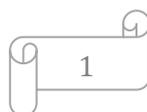
Public open space planning and development in previously neglected townships

**A THESIS SUBMITTED TO THE FACULTY OF NATURAL SCIENCES; DEPARTMENT OF
URBAN AND REGIONAL PLANNING, UNIVERSITY OF FREE STATE, IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE 'DOCTOR OF PHILOSOPHY'
IN URBAN AND REGIONAL PLANNING.**

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ABSTRACT (ENGLISH)

The focus of this research was on the use of urban open spaces in the revitalisation of Galeshewe Township. It is an in-depth analysis of community perceptions, the provision of open space, land use planning and development of urban open spaces in the township. The study does not compare the Galeshewe Township to any other township that has successfully rolled out an urban renewal programme using public open spaces.

The hypothesis of this research was that “by understanding the contextual meaning of the urban open space concept in Galeshewe Township; the perceptions of the Galeshewe community and the most important factors that affect the functionality of urban open spaces in Galeshewe, town and regional planners could improve the outcomes of the revitalisation of previously neglected townships”.

The results proved that there is enough reason to believe that the current approach to urban open space planning in Galeshewe is out of context, i.e., it does not respond to the community’s values and needs. The results also showed something that is contrary to existing literature about the benefits of urban open spaces in urban areas, i.e., the value of urban open spaces. The community of Galeshewe Township does not regard urban open spaces as valuable, both in ecological; social and economic sense.

The study concludes that the purpose of township revitalisation is to improve the quality of life and to decrease urban poverty. The provision of unsuitable types of urban open spaces in previously neglected townships will not lead to the improvement of the quality of life for township dwellers, mainly due to the low value that is associated with the main benefits of urban open spaces, i.e., ecological; social and economic benefits.. Urban open spaces in the townships are mainly used for pedestrian movements. It is suggested that the creation of urban greenways that are connected to unavoidable types urban open spaces (e.g., heritage sites; aquatic; and geological open spaces) and institutional open spaces is one way that will bring success to the use of urban open spaces in the revitalisation of previously neglected townships.

ABSTRACT (AFRIKAANS)

Die fokus van hierdie navorsing was op die gebruik van stedelike oop ruimtes in die vernuwing van die Galeshewe dorp. Dit is 'n, in-diepte analise van die gemeenskap se persepsies, die voorsiening van oop ruimtes, grondgebruik beplanning en die ontwikkeling van stedelike oop ruimtes in die dorp. Die studie vergelyk nie die Galeshewe dorp aan enige ander dorp wat 'n suksesvolle stedelike vernuwing program ontwikkel het, vir die gebruik van openbare oop ruimtes nie.

Die hipotese van hierdie navorsing was dat "deur die begrip van die kontekstuele betekenis met betrekking tot die stedelike oop ruimte konsep in Galeshewe Dorp te verstaan, sal die persepsies van die Galeshewe-gemeenskap en die belangrikste faktore wat die funksionaliteit van stedelike oop ruimtes in Galeshewe verstaan moet word, sodat stads-en streekbeplanners verbeterde uitkomst in die vernuwing van voorheen verwaarloosde dorps kan bewerkstellig"

Die resultate bewys dat daar genoeg rede is om te glo dat die huidige benadering tot stedelike oop ruimte beplanning in Galeshewe, buite konteks is, dit wil sê, dit reageer nie op die gemeenskap se waardes en behoeftes nie. Die resultate het ook getoon dat daar faktore is wat teenstrydig is met die bestaande literatuur oor die voordele (waarde van stedelike oop ruimtes) van stedelike oop ruimtes in stedelike gebiede. Die gemeenskap van Galeshewe Dorp beskou nie stedelike oop ruimtes as waardevol nie, beide in die ekologiese, sosiale en ekonomiese sin nie.

Die studie het tot die gevolgtrekking gekom dat die doel van die dorp vernuwing program is om die kwaliteit van lewe te verbeter en stedelike armoede te verminder. Die gebruik van ongeskikte tipes van stedelike oop ruimtes in voorheen verwaarloosde dorpe, sal nie lei tot die verbetering van die kwaliteit van lewe vir die dorp se inwoners nie, hoofsaaklik as gevolg van die lae waarde wat geassosieer word met die belangrikste voordele van stedelike oop ruimtes, d.w.s., ekologiese; sosiale en ekonomiese voordele. Stedelike oop ruimtes in dié dorp is hoofsaaklik gebruik vir voetganger beweging. Daar word voorgestel dat die skepping van stedelike groen-voetpaaie, aan onvermydelike

tipes stedelike oop ruimtes (bv., erfenisterreine, waterlewend; en geologiese oop ruimtes) verbind moet word en dat institusionele oop ruimtes een manier is wat sal lei tot die sukses vir die gebruik van stedelike oop ruimtes, in die vernuwing van voorheen verwaarloosde dorpe.

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Even though he was not involved in this study, I would like to thank Mr Lindile Petuna for introducing me to the vast world of urban and regional planning. Had I not met Lindile in 1999, I don't think I would have had any interest in the planning profession.

The first time I studied urban open spaces, in depth, was in 2002 under the guidance of Mr George Cilliers for a mini-dissertation in urban and regional planning. The interest was further expanded in 2003 during my short, but wonderful days, working for the KwaZulu Natal Department of Agriculture and Environmental Affairs along Mr. Nthangeni Nwendamutswu; Ms Nevashree Moodley and Mr. Jacobus Dreyer. During the same time there was a gentleman by the name of Mr. Tumelo Shakwane, who was working with us in the same department and with whom I would later meet at opposite ends in the fight for the use of urban open spaces in Bloemfontein. I thank these guys for the time they spent with me when I needed professional advice; training and education.

In 2005, with motivation from Prof JJ Steyn, of the University of Free State, I was accepted to join the Research Capacity Initiative (RCI) of the South African Netherlands Partnership on Alternatives in Development (SANPAD) programme. I gained valuable knowledge on research methodology and introduction to scholarly research in social sciences. The tips from SANPAD came in handy in this project and I truly appreciate the time spent in the programme and the motivation from Prof Steyn.

Between the years 2004 and 2008 I spent a lot of time with Mr Nico Janse van Rensburg; Mr Hennie Banard and Mr Kallie Beyleveld; Mr Hadley Goliath and Mr Donald Barlow as a consultant for Vodacom (Pty) Ltd. My role was simple, trying to obtain Local Authority approvals; facilitate property lease agreements and compile basic assessment reports for environmental authorisations for telecommunications. Most of the base stations I dealt with were on urban open spaces and this was probably the time when I worked the most on urban open spaces, especially in the Bloemfontein area. The Mangaung Local Municipality had by-laws that required separate rules for any development that

would fall on urban open spaces. An example is what was known as the 90 day public participation rule for development on critical open spaces. Mr Shakwane was seen as the enforcer of those rules but it was always funny to me how communities in townships would never comment irrespective of the length of time and the method you used in informing them of the proposed development. Whenever a person had an enquiry, it was about whether there would be jobs or vacancies with the upcoming project. This was in total contrast to the comments we got from more affluent neighbourhoods. This is probably one of many reasons I had a particular interest on urban open spaces in townships.

Having explained the background, at this point I wish to extend my sincere gratitude and appreciation to Prof Verna Nel who guided me and provided support from the time my research proposal was still fuzzy up until the completion of the project. Prof Nel, thank you for keeping me motivated, I truly appreciate your efforts. Special thanks to Prof Wynand Senekal who provided some light at crucial times during the research process.

I would like to thank the Dean of the Faculty of Natural Sciences at the University of Free State, Prof Neil Heideman, for financial assistance for a trip to the University of Minnesota as well as the funds for field work.

Mr Daniel and Mrs Chrystal Meyer borrowed Perine and I their holiday house in Struisbaai, and this is where I came back from a December vacation with a complete research questionnaire. I truly appreciate their help. Regarding accommodation, I would also like to thank the staff of the N12 Manor Guesthouse in Kimberly for accommodating my team during the time we spent there. I acknowledge the assistance from Dr Van Zyl of the University of Free State Statistics Department for helping me out with the measuring scales that I used in the questionnaire. Special thanks to Ms Dudu Dlodlo, from the UFS (Faculty of Economics and Management), who gave me a couple of tutorials in interpreting cross-tabulations and chi-square statistics.

Even though it was hard to answer some of the questions, I would like to thank the urban and regional planners who asked questions and gave insight on the topic during

my presentation at the South African Planners Institute Conference in Durban 2010. Planners from the Free State and Northern Cape Provinces also gave their comments on some of my preliminary findings during a SAPI meeting in Kimberly 2011; your inputs are highly appreciated.

This research wouldn't have been possible without the participation from the people of Galeshewe Township. They opened their doors and treated us with dignity and respect, at a time when we needed their time for nothing other than academic questionnaires. We managed to finish the project without any major incidents. Special thanks to the guys that were on the frontline of the field survey, i.e., Mr Jerry Mholo from Thaba Nchu; Mr Tshepo Mekgwe from Galeshewe; Mr Agreement Malanka from Warrenton; Ms Boitumelo Moheta from Ipopeng in Galeshewe; Ms Yolande Meas from Greenpoint in Kimberly; Ms Rosemary Riet from Vergenoeg in Galeshewe and Mrs Pabalelo Mokgosi from Pampierstad. I will never forget the time I spent with you guys, and Bra Tshepo, I promise, we are still going to conduct more surveys together.

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At the UFS Sasol Library, I would like to thank Mrs Estie Pretorius of Library & Information Services and Mrs Rothea Pelser for getting me those articles that I could not get on my own.

I also wish to thank my colleagues at the University of Free State for their support and inputs; their suggestions and comments throughout this project (Dr MM Campbell; Mr Piet Potgieter; Mrs Elizabeth Barclay; Mrs Dienie Steenkamp; Mej Antoinette Nel and Mrs Carin Coetzee). Special thanks to my other colleagues at YB Mashalaba & Associates Consultants who gave me support and took a lot of pressure off me, during many difficult times including the period of writing this thesis (Mrs Perine Mashalaba; Mr Thandwefika Mateyise; Mr Arno Pelser; Ms Nthabiseng January; Ms Nomsa Ninini; Mr Wynand Myburgh; Ms Zanele Dlomo; Mrs Confidence Mothlanke; Ms Boitumelo Lenchoance; Ms Zipho Mateyise; Mr Mawethu Ndenze; Ms Nadine Booysen; Ms Sandy Mufamadi; and Ms Elisa Senatsi). Over and above their support, I wish to acknowledge the assistance from Ms Zanele Dlomo for language editing and Mr Arno Pelser for translating the abstract from English to Afrikaans.

Most importantly, I would like to thank family and friends who gave me support during this research and especially during the depressing moments. Thank you, your support is always appreciated.

DEDICATION

For 12 years of patience; love and support; for reading my drafts and encouragement, I dedicate this work to my wife Perine and the little one that will be with us by no later than the end of February 2013; we won't call her "Open Space".

As agreed, we'll call her Lynn Mashalaba ☺

DECLARATION

I hereby declare that this thesis, which is submitted for the qualification PhD (Urban and Regional Planning) at the University of the Free State, is my own independent work and to my knowledge it has never been published nor submitted to any other institution for the award of any other degree.

Signature

Yandisa Bavulele Mashalaba : _____

Date : _____

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CHAPTER 1

THE NEED FOR A RESEARCH IN URBAN OPEN SPACE PLANNING AND DEVELOPMENT IN PREVIOUSLY NEGLECTED TOWNSHIPS

1.1 INTRODUCTION TO CHAPTER 1

Some of the aspects that characterise South African Townships include marginalisation from the mainstream economy, dysfunctional local government systems, inadequate infrastructure, urban poverty and poor quality urban space. Watson (2009, p. 2259) and UN Habitat (2009a, p. 1), mention the dominant urban characteristics of 21st Century as “urban poverty; inequalities; informality; rapid urbanization and spatial fragmentation”. Whilst these city problems are neither new nor unique in many parts of the world’s developing cities, the South African Townships bear scars of racial and spatial segregation which was conceptualised and successfully implemented through colonisation and apartheid policies. In 2005 South Africa had a population of 46.9million people (Statistics South Africa, 2005). During this time, South African townships were a home to 36% of the total South African population (Republic of South Africa, Co-operative Governance and Traditional Affairs, 2009, p. 8). This means at 50%, this figure was 14 percentage points more than the national average for communities that live in Metropolitan¹ areas (Ibid.).

Several urban renewal initiatives of the last 15 years² in South Africa focussed on the revitalisation of townships. However, the South African government believes that the average living conditions³ in some of the major metropolitan areas show little to no improvement over the same years (Republic of South Africa, Co-operative Governance and Traditional Affairs, 2009, p. 10). Unfortunately, this study did not include the living conditions outside the metropolitan areas and there is no reason to believe those areas would be any better.

Amongst their many benefits, urban open spaces have a potential to assist in the provision of a healthy environment, which is one of the basic human rights according to

¹ Percentages (2005) of people living in townships in the following Metro Councils: Cape Town Metro (46%); eThekweni Metro (38%); Nelson Mandela Bay Metro (67%); Johannesburg Metro (49%); Ekurhuleni Metro (70%); Tshwane Metro (42%) (Republic of South Africa, Co-operative Governance and Traditional Affairs, 2009, p. 8).

² 15 years since the first democratic elections in 1994.

³ Conditions based on average percentage of people living in informal settlements; formal settlements; and access to basic services (piped water, sanitation, electricity and solid waste removal).

the Constitution of South Africa (Republic of South Africa, 1996). As it will be shown in chapter 2, there are many authors who believe that urban open spaces space can improve **the quality of life** in an urban area. In order to improve the quality of urban life in townships, it is important that the provision and nature of urban open space is understood.

1.2 URBAN OPEN SPACE AS A PLANNING CONCEPT

The meaning of public open space is not something that is always understood by land administrators and communities. For example and from experience, urban open spaces in South African town planning schemes or land use management schemes, as they are called these days, are most of the time classified in terms of ownership and accessibility rather than the actual land use and function, i.e., Public Open Space and Private Open Spaces. This classification interestingly does not look at the function, size or even the locality of these open spaces. It is all about ownership, and that ownership can either be a private person, company, or government. This is further confirmed by the fact that in some land use management systems, sports grounds, cemeteries and undeveloped land are sometimes not classified or even linked to open spaces even though they may contribute to the commonly known uses of open spaces (see the discussion on Galeshewe urban open spaces under paragraph 2.7). Tom Turner (1998, p. 113) acknowledges that using the term 'public open space' fails to draw a clear distinction between parks and greenways. This means there is even a greater need to know what exactly should be classified under open space due to the different functions that different types of open spaces have.

One must admit though that, through research and policy formulation, there has been a lot of improvement in understanding urban open spaces both locally and internationally. However, consistency in the defining and classifying urban open spaces has been lacking. For example, Mangaung Metro Council in Bloemfontein tried to define 'urban open space' but without defining what an open space is.

“Urban Open Spaces can be defined as all spaces on a continuum of open space within the city, ranging from the urban and per-urban structure of the city and integrating with the rural.” (Mangaung Local Municipality, 2004, p. 4)

A couple of years later, in 2008, Mangaung Local Municipality tried to correct this problem. The municipal bylaws regarding urban open spaces had a definition of an open space as ‘...any open space in ownership of the municipality which is situated outside normally built-up areas and ...but is not limited to nature reserves, game farms, riverine vegetation and private open space.’ (Mangaung Local Municipality, 2008, p. 2). Again, the Mangaung Local Municipality still went on to confuse the public in this definition, by trying to define an urban open space without clarifying what an ‘open space’ is.

This does not mean though the definition of urban open space is better internationally; there are still inconsistencies in the manner in which different organizations have tried to define urban open spaces. The New York State in America recognises that an open space is an open space due to its surroundings, especially the size of the city. This literally means that whatever is described as an open space in one city may not necessarily be described as such in another city. They wrote, “*A vacant lot, community garden or small marsh can be open space in a big city. A narrow corridor or pathway for walking or bicycling is open space even though it is surrounded by developed areas*” (New York State Department of Environmental Conservation, 2007, p. 3).

The City of Burlington, in its policy statement on what open spaces meant to the city wrote: “...*Burlington’s citizens, non-profits, and city government have a proud tradition of protecting its sense of place, natural environment, open spaces, and recreational opportunities.*” (City of Burlington, VT, 2000, p. 1). This raises a question on whether natural environment in a city is seen as something of a different category than open space. One would have assumed that by mentioning open space natural environment and recreational opportunities would be included, but this is not the case with the City

of Burlington, VT. This is another example that shows ambiguity in the manner in which open spaces are described

As it is seen in the above examples, defining an urban open space without knowing what an 'open space' is may create serious problems for planners and the public in general. Before one can attempt to define what an open space is, there is a need to define the discipline with which this research is done, i.e., open space planning. Open Space Planning, management and design can be described as a branch of environmental planning that focuses only on the role of open spaces in town and regional planning. Open space planning and regulation is increasingly taking an important role in environmental policy. Traditional methods of acquisition and protection are being expanded by future-oriented planning (such as spatial development frameworks), changing property law, and environmental impact assessment.

The following discussions will show that several authors have tried to define open space and over the years there has been a change in the way open spaces are defined.

1.2.1 DETERMINING FACTORS FOR THE DEFINITION OF URBAN OPEN SPACE

There are some factors that are common in the understanding of what an open space is. These factors include:

1. The fact that open space refers to space, i.e., a piece of land or a property;
2. That it is not developed or less developed than its surroundings;
3. That whether an open space is urban; peri-urban or rural, depends on its location and relation to an urban area;
4. That an open space has a specific function

1.2.1.1 SPACE

There is a general consensus from most authors, that open space refers to a piece of land or space.

1.2.1.2 LEVEL OF DEVELOPMENT

There is a number authors that define open space according to the level of development permitted on the land, i.e. Cape Town Metropolitan Council (2000); Durban Metropolitan Council (1999); New York State (2001); City of Corvallis, Oregon (2002); City of Joburg (2002); (CSIR, 2005, p. 5.3.2).

The level of permitted development of a piece of land is one of the determining factors in the definition of open space. Some authors believe that open space should be undeveloped and vegetated, i.e., City of Joburg (2002); (City of Burlington, VT, 2000, p. 3); whereas others recognize the level of development within urban open space and rather use 'not intensively developed', e.g., State of New York (2001); (New York State Department of Environmental Conservation, 2007, p. 3).

Open space is land which is not intensively developed for residential, commercial, industrial or institutional use (New York State; 2001).

Mangaung Local Municipality took the issue of 'not intensively' developed to another level by classifying urban open spaces in terms of their development integrity, e.g., functional open spaces allowing for engagement with the community and critical open spaces being those open spaces that have a sensitive ecosystem (Mangaung Local Municipality, 2008, p. 3).

1.2.1.3 LOCALITY

Other authors define open space according to location, i.e., urban or rural land; Cape Town Metropolitan Council (2000); (City of Burlington, VT, 2000, p. 3).

“Open space’ is the open, usually green land within and on the edges of settlements.”
(Eyuboglu, et al., 2007, p. 3).

In trying to understand the location of open space, one has to look at the manner in which human settlements exist. Some places are strategic for the lifestyle of their inhabitants, be it agriculture; mining; tourism or even job opportunities. Some of these human settlements have grown to become urban areas of various types and sizes. It is therefore, due to the character and presence of urban areas that planners would talk of open spaces, otherwise the focus would be on the original land use type which was present before the existence of cities, i.e., agricultural or mining land. It is therefore important that urban planners define open space in relation to its surroundings and such definitions should consider the context of the urban areas and its relation to other urban areas, i.e., urban open spaces and rural open spaces (New York State Department of Environmental Conservation, 2007, p. 3). The Cape Town Metropolitan Council (2000) talks of open space as areas “the unbuilt component inside the urban edge, which serves a variety of purposes and functions’. Contrary to the Cape Metro definition of open space, the Durban Metro Council differentiates between urban and Natural Open Space, with the latter defined as the remaining undisturbed natural and undeveloped areas within the Durban Metro Area (Durban Metropolitan Council, 1999). It must be noted though that ‘not all the land within the Durban Metro is urban, and this means that Natural Open Space may actually refer to the rural character of open space within the boundaries of the city of Durban.

1.2.1.4 FUNCTION

It may seem easy to define an open space as just a space that is not built, but when it comes to functions; ownership; types and hierarchies, it becomes increasingly difficult to define what an open space is. According to the City of Burlington, VT (2000, p. 3), the best way of defining an open space is by its function. Level of development as a determining factor for the definition of open space seems to be a problem seeing that open spaces have various functions that need a certain level of functionality and development for them to be successful, e.g., sports; recreation; agriculture.



Figure 1: Mayibuye Park, a type of a hard open spaces designed and built for heritage purposes in Galeshewe Township

Source: (Author, 2013)

In addition to the space; level of development and location, some authors define open space according to its functions, e.g., Cape Town Metropolitan Council (2000); (Durban Metropolitan Council, 1999).

The Durban Metropolitan Council (1999) states that open space are the human made or legally designated places and areas that are developed for community use.

1.2.2 TYPOLOGY OF URBAN OPEN SPACES

Grouping together certain types of open spaces helps with planning and understanding open spaces better. As shown in the determinants of open space definition, several methods are used in the differentiation and typology of open spaces, e.g., scenic value

(City of Burlington, VT, 2000, p. 3). The ambiguity that exists in the typology of open spaces emanates from the challenges that are experienced in defining what an open space is.



Figure 2: A soccer field within a school can also be classified as a type of an urban open space in the Galeshewe Township

Source: (Author, 2013)

The British planning system, during its 1947 development plans identified ‘activity’ differences between open spaces (e.g. golf courses, cemeteries, allotment gardens), but it failed to pay attention to their ecological and socio-economic differences (Nicol & Blake, 2000, p. 193). According to Woolley (2003), the London Planning advisory Committee defined a hierarchy of open spaces in terms of size, i.e. small local parks, local parks, district parks, metropolitan parks, regional parks and linear open space. At the same time, the London Institute of Leisure and Amenity Management grouped open spaces in terms of land use both in rural and urban areas including their cultural and aesthetic value.



Figure 3: ABC and Ramatshela Cemeteries in Galeshewe Township are not identified as urban open spaces in the General Plans of Galeshewe Township, but they can be classified as urban open spaces according to the typologies in Table 2 below.

Source (Author, 2013)

As mentioned by Woolley (2003, p. 55), Kevin Lynch provided a typology of open spaces that includes; regional parks; squares; plazas; linear parks; adventure playgrounds; wastelands; playgrounds and playing fields. However, she argues against classifying open spaces only on this basis, because of its importance to planners and government rather than the distance from the home of the open space user. Woolley’s classification includes the following:

1. Domestic Urban Open Spaces (associated with home and maybe used by families; friends; and neighbours).e.g. Community gardens & Allotments which are basically small fruit and vegetable farms but may also be used to grow flowers within the city.
2. Neighbourhood open spaces (associated with the neighbourhood and community within which one lives.
3. Civic open spaces (set within an urban area but are the furthest from home, they are more of a social space and one is more likely to know a very small percentage of the other users.

Tom Turner differentiates open spaces into two based on the shape and continuity of the property within the landscape, i.e., Parks and Green ways. Parks are intended for protection whereas greenways are for movement; with parks designed to be patches whereas greenways are supposed to be designed as corridors (Turner, 1998, p. 113).

Parks	Greenways
Public parks; commons; municipal parks; squares and plazas; public gardens; village greens; national parks in towns; national parks in the country; private pleasure grounds; and festival parks.	Ceremonial avenues; boulevards; parkways streets; riverside parkways; park belts; park systems; greenbelts; green trails and environmental greenways

Table 1: Examples of parks and greenways (Turner, 1998, pp. 113-147)



Figure 4: Typical urban open space in Galeshewe Township, here cattle are seen grazing on one of the open spaces in the township.

Source: (Author, 2013):

Mangaung Local Municipality (2004, p. 5) differentiates between urban open space typologies and natural open space typologies even though some of the open spaces that are classified to be “natural” may actually exist within the city. Urban open space typologies include (Surfaced; recreational; utility (infrastructural); private and productive open spaces) whereas the natural open spaces include (freshwater; terrestrial and potential ecosystems) as typologies. The methodology used in these typologies is inconsistent for classification purposes. It ranges from ground cover (surfaced open spaces); land use (recreational; utility); ownership (private open spaces); value (productive open spaces & ecosystems).

Land Type	Reference
Agricultural land; forest land, shorelines, scenic lands, public parkland preserves; lakes; vacant lot, community garden; small marsh; pathway for walking; historic and archaeological sites; heritage; mountains; rivers; wetlands; forests; coastal seashores.	State of New York (2001)
Green land within and on the edges of settlements; Parks, public gardens, allotments, woodland, play areas, playing fields, green corridors and paths, churchyards and cemeteries, natural areas, institutional land as well as 'civic space' such as squares or other paved or hard surfaced areas with a civic	(Eyuboglu, et al., 2007, p. 3).
City greens and tree-belts; conservation areas; parks; lands with significant geological features; topographical features; wetlands; streams; wildlife habitat corridors; agricultural use; community gardens; forested areas; riparian strips, hedgerows and windbreaks; views points; roadsides; greenways; natural strips; public parks; trails; vacant lots; lands with historical; cultural; archaeological values; archaeological, historical sites; cultural sites; religious sites. campus greens; streetscapes; parks; cemeteries	(City of Burlington, VT, 2000, p. 3)
Wasteland habitats; derelict land; vacant land	(Harrison & Davies, 2002, p. 95)
Golf courses; cemeteries; allotment gardens	(Nicol & Blake, 2000, p. 193).
Private gardens; community gardens; allotments; parks; playgrounds; playing fields and sports grounds; school playgrounds; streets; city farms; incidental spaces; natural green space; squares; plazas; water features; office grounds; hospital grounds; university campuses; courtyards; roof gardens; waterway corridors; woodlands; golf courses; and cemeteries	Woolley (2003, p. 55-109)
Public park; garden; school ground; institutional ground; playspace; playing field; golf course; tennis court; bowling green; sports; green access route; riparian route; woodland; open semi-natural; open water; allotment; church yard; cemetery; civic space	(Eyuboglu, et al., 2007, p. 7)
Pleasure ground; reform park; recreation facility	(Cranz & Boland, 2004, p. 102)
Gardens; temple compounds; ceremonial grounds; outdoor markets; social places; gymnasia; burial grounds; hunting and wildlife reserves.	(Turner, 1998, p. 113)
Properties zoned as "public open space" or undetermined; transport reserve areas; Special use areas; sport facilities; vacant and undeveloped land; Natural conservation areas; cultural and historical areas. Cemeteries; vast portions of land within a developed property; commonage or grazing camps; Infrastructure servitude areas	(Mangaung Local Municipality, 2004, p. 4)

Table 2: Types of lands/properties that are usually classified as open spaces

Source: (Author, 2013):

CSIR (2005) differentiates between hard and soft open spaces in urban areas. Soft open spaces being the natural areas whereas hard open spaces include built public space that are linked to transport services, i.e., public facilities and walkways (CSIR, 2005, p. 5.3.2)

To classify open spaces, one has to look at the way the open spaces are defined in terms of the fact that an open space should be a piece of land; undeveloped/not intensively developed; and serve a specific function. The issue of location, as it applies to the definition of open space, is only important depending on whether the open space will be classified as either urban or rural, e.g., most of the land types can exist both in urban and rural settings. In that case, it means there is no use using 'location' in open space typologies.

Using the table above, a comprehensive typology of open spaces based on the type of land and its functions is proposed. The following type of open spaces can occur both outside and within the city boundaries: Agricultural Open Spaces; Heritage Open Spaces; Parks; Aquatic Open Spaces; Architectural Open Spaces; Natural & Semi-natural Open Spaces; Sports Grounds; Geological Open Spaces; Greenways; Institutional Open Spaces; Incidental Open Spaces.

The discussion above sees the importance of conservation; biodiversity and conservation in improving the ecological integrity of open spaces. Social factors such as urban liveability; culture and environmental equity are central in the understanding of what open spaces can do for a city. This section comes to a conclusion that,

An urban open space is a piece of land, either developed or pristine, that is either existing or planned to maximize the ecological integrity of an urban area by sustaining both urban and natural ecosystems; while improving the quality of human life in both social and economic terms. Source: (Author, 2013).

The table below gives details of what is included in the 11 types of open spaces that are found in cities.

Agricultural Open Spaces	Heritage Sites	Parks	Aquatic Open Spaces	Architectural
Agricultural land	Archaeological sites	City greens	Lakes Coastal seashores	Roof gardens
Allotment Commonage or grazing camps	Burial grounds Cemeteries	Hedgerows Community Gardens	Wetlands Natural shorelines	Plazas Squares
City farms	Cultural sites	Private gardens	Riparian Land	Courtyards
Forested areas	Ceremonial grounds	Green corridors	Rivers & Streams	Outdoor markets
Sports Grounds	Historic Sites	Green land Parkland preserve	Water features Waterway corridors Waterways	
Bowling Green	Religious site			
Golf Course	Temple compounds			
Tennis Court	Reform Park			
Gymnasia	Church Yard			
Playing Fields				
Natural & Semi-natural Open Spaces	Geological Open Spaces	Greenways	Institutional Open Spaces	Incidental Open Spaces
Natural conservation areas Natural green space Hunting and wildlife reserves	Lands with significant geological/topographical features Ridges Mountains Valleys & Lowlands Dolomite areas due to the risk of sinkholes. Undermined areas e.g. the Goldfields	Infrastructure servitude areas Pathway for walking Transport reserve areas	Pleasure Ground Hospital grounds Institutional Ground	Undeveloped land Undetermined Vacant land
Woodland Wildlife habitat corridors Natural areas Natural strips Conservation areas		Streets Streetscapes Treebelts Roadsides Green Access Route Trails Scenic buffer areas Scenic lands	Office grounds University campuses Campus greens Playing areas Paved or hard surfaced areas Vast portions of land within a developed property School playgrounds Recreation Facility	Special use areas Derelict land Wasteland habitats

Table 3: Open space classification based on definitions and existing literature

Source: (Author, 2013)

1.3 THE NEED FOR A SCIENTIFIC ENQUIRY ON URBAN OPEN SPACES IN SOUTH AFRICAN TOWNSHIPS

There are several challenges that make it difficult to provide sustainable urban open spaces in townships. These challenges need to be identified so that planners can come up with sustainable strategies for township dwellers. As discussed in the few paragraphs below, some of these issues include, amongst others, the costs of open space provision; the functionality of open spaces; how the community perceives urban open spaces; housing as a basic need and ineffectiveness of some open space planning approaches.

1.3.1 PREVIOUS RESEARCH ON URBAN OPEN SPACES IN THE TOWNSHIPS

Jurgens and Donaldson (2012) wrote a literature review of the transformation process of South African Townships. They discovered only 400 published articles that concentrated in the township for the past 20 years with a particular focus on housing and health. Besides the lack of research in townships, there is also little research that is specific on urban open spaces in the townships. For their book 'Guidelines for Human Settlements Planning and Design' CSIR (2005, p. 5.4.2) acknowledged the lack South African literature on soft open spaces. Out of the 44 articles they cited on their chapter on soft open spaces, only 9 was based on a South African (specifically, the Western Cape) setting whilst only one article was based on a township setting, i.e., Nguta, F (1992). *Khayelitsha residents' opinion on the need for natural open space and the future of driftsands as a multi-use area*, National Botanical Institute, Kirstenbosch, Cape Town (CSIR, 2005, p. 5.4.18).

1.3.2 APPROPRIATENESS OF THE EXISTING PLANNING APPROACH

There is a growing number of authors, in South Africa and abroad, that are calling for a change in the way urban planning is done, e.g., (Watson, 2009); (Campbell, 1996); (du Plessis, 2009); (UN Habitat, 2009a); (Todes, 2011, p. 115). The arguments are based on the changing characteristics of urban areas and a system of planning that has been criticized for having failed the majority of urban dwellers, i.e., urban poor (UN Habitat, 2009a, p. 1). Planners need to look back at their processes and draw knowledge from the complexities that exist in their cities, with a specific focus on the relationship between institutions and multiple spatial interests that exist in their cities (Todes, 2011, p. 115).

There is also a concern from Asian countries that some western planning concepts may not be appropriate for the problems experienced in various parts of the world, e.g., developing countries. The failure of concepts such as zoning and greenbelts in controlling urban growth in Asian mega-cities is an example. The argument is that historically, Asian cities integrate urban and rural environments and that this relationship has worked. Therefore there is a call for planning concepts that respect the historical landscape of Asian cities (Yokohari, et al., 2000, p. 159). Not everyone is convinced about the impact of public open spaces in cities and this is demonstrated by a study that was conducted in Hong Kong (China) proved that some of the claims that have been made about urban open spaces are not necessarily consistent in all urban open spaces, i.e. noise levels; air quality; (Lam, et al., 2005, p. 55). The author calls for a re-examination of those claims in improving the urban liveability.

It will be shown later on in the study that, the majority of township dwellers are poor and therefore fit the description of urban poor and the conditions of the 21st Century as described above. If one has to link the issue of urban poor with the scepticism of Asian scholars about the implementation of European forms of planning outside European soils, one would begin asking questions. For example, does the current planning practice in South Africa, really fit township conditions? Does the provision of urban open space improve the quality of life in the townships?

1.3.3 COMMUNITY PERCEPTIONS ABOUT URBAN OPEN SPACES IN TOWNSHIPS

In answering the questions above, one has to look at the development programmes and responses of the South African government to township re-development after the fall of apartheid. As it has been mentioned before, several urban renewal initiatives of the last 15 years⁴ in South Africa focussed on the revitalisation of townships with not much success in alleviating urban poverty.

In 2009, the Sol Plaatje Municipality, as part of its urban renewal programme, conducted a household survey with the specific aim of discovering the values and needs of the community in Galeshewe (Sol Plaatje Municipality, 2009a). In their questionnaire, the researchers asked respondents to prioritise the most important options out of these three (from a set of pre-determined variables) answers from three types of infrastructure (bulk services infrastructure, social infrastructure and environmental infrastructure). The methodology employed in the research did not allow respondents to prioritise the three given types of infrastructure. It is clear therefore that, any analysis that came out of the study would not analyse the three types at an equal footing, and the researchers would have never been able to determine whether environmental infrastructure is valued above the other two types of infrastructure. In that case, it is not clear whether the Galeshewe Township community actually values green infrastructure at all. With that in mind, the ecological value of open spaces was valued less as compared to other environmental priorities such as sports and recreation (Sol Plaatje Municipality, 2009a, p. 21).

It is known that different communities have different views of urban open space and they also use urban open spaces differently. In Zhuhai city (China), the majority of residents (65.7%) frequently used public open spaces for leisure activities. However, young residents aged between 20 and 30 were least frequent users of all the other age groups (Chen & Jim, 2008, p. 298). In a study conducted in Cleveland and Ohio (USA), respondent age was found to be the strongest predictor of a need for urban open spaces as compared to race and residential location, whereas race was the strongest predictor

⁴ 15 years since the first democratic elections in 1994.

of the types of urban open space use. The research discovered that in Cleveland and Ohio, older adults and Blacks preferred recreation rather than the conservation use of public open spaces as compared to younger adults and Whites. With regards to the frequency of open space use, older adults and Blacks were the ones that were less frequent as visitors on open spaces (Payne, et al., 2002, p. 181).

The design of an urban open space should therefore reflect the needs of the different end users in each community. Any open space plan that does not reflect these may lead to underutilisation or oversupply of an urban open space for a particular group. This is one of the aspects that still need to be explored from a South African perspective. CSIR (2005) lists the need of different age groups and vulnerable groups, the summary of which is given in the table below.

Age Group	Safety	Sports & Recreation	Passive and Active Engagement	Shelter	Comfort & Nature
2-5yrs	x	x	-	-	-
6-12 yrs.	x	x	-		
13-19 yrs.	-	x	x	-	-
20-55 yrs.	-	x	x	-	-
Elderly	-	x	x	x	x
Women	x	-	-	x	x
Disabled	x	-	-	-	x
Homeless	-	-	-	x	x
Workers	-	-	x	x	x

Table 4: Different end user groups according to CSIR (2005, p. 5.4)

In American cities, the question of homelessness is affecting how the public space is used with many cities opting to take the legal route in solving the problem. However the legal route tends to criminalise the actions of homeless people, such as loitering, begging, urinating and defecating on streets; parks and other public spaces (Mitchell, 1998, p. 6). Could this be the same in South Africa? Are the people in the township using open spaces as known in existing planning literature? These are questions that need to be researched in a suitable setting.

1.3.4 THE FUNCTIONALITY OF URBAN OPEN SPACES IN TOWNSHIPS

The paragraph above talks about how the community perceives urban open space but it does not look at the end result of their perceived ideas. How the community perceive an urban open space, may affect the manner in which that urban open space is used. Aberdeen City Council (2010, p. 15) believes that the success of urban open spaces depends on their quality and general acceptance by their communities. The quality of an urban open space is measured in terms of accessibility; attractiveness; level of activity; community support and biodiversity.

One of the challenges with planning and management of open spaces is the lack of knowledge about the real benefits of the open space, more especially the economic benefits. In a study done in the city of Warsaw in Poland, it was shown that public space continues to be displaced by other lucrative investments and developments even after all the efforts have been made to develop and maintain them, to educate and let everyone know of the many benefits that public space has (Szulczewska & Kaliszek, nd, p. 155). As the condition of the open spaces worsens, potential investors including the municipality, may see urban open spaces as high risk in terms of financial investments. The general understanding is that monetary investments on public open spaces are a social issue that would yield no financial returns (Cabe Space, 2005, p. 7).

1.3.5 RESIDENTIAL DENSIFICATION AND DEVELOPMENT PLANNING ON URBAN OPEN SPACES

Town and regional planning has to deal with increases in urban populations throughout the world. An increase in population translates to an increase in the need for urban resources such as engineering services and socio-economic activities and opportunities. Some countries are battling to provide housing and food for their people. At the same time those countries still have to fend off urbanization related environmental problems such as increasing waste, land degradation, air, noise and water pollution, and depletion of easily accessible and good quality open spaces. It is evident though that in some parts of the world, planning is not always ready for these challenges. That is why it is of vital

importance that relevant and affordable strategies and management tools are developed in order to address the needs of these growing urban populations. Developing countries might have other essential priorities than the planning and management of open spaces (Woolley, 2003). In South Africa, the lack of appreciation of role of open spaces vis-à-vis their maintenance, and the fact that urban open spaces can be easily serviced unlike other land required for expansion/housing, has resulted in some of the municipalities choosing to develop and close some of the reserved open spaces. This may be due to various reasons and one of which this research aims to investigate is the role played by land use management systems in these developments.

Urban open spaces are under threat because of increasing housing density in townships. The focus on housing provision for the poor within a reasonable distance from job opportunities together with theoretical concerns regarding urban sprawl affect the way public open spaces are provided and managed. To discourage urban sprawl and use existing resources for housing provision, planners tend to densify using, underutilised, and available open spaces.

In most highly urbanising cities, urban planners have to deal with the question of conserving urban open space in areas that need land for housing development for the urban poor. Authorities, due to various reasons that may include political pressure, scarcity of affordable land, inefficient housing policies, may want to densify. The consequence of this approach is that the damage that is done on urban open spaces may be difficult to undo and it is also virtually impossible to replace such open spaces once lost due to the high cost of developed land. Even well used, although undesignated urban open spaces, have proved difficult to protect (Beer, Delshammar, & Schildwacht, 2003, p. 132).

As the economy of a city develops, there is usually an increase in the demand for affordable land. Due to this demand, certain areas of the city become so expensive that the poor struggle to survive in those areas. The need for re-planning and upgrading of land uses such as open spaces, housing and infrastructure then arises (Lee, 2008). Some authors believe that the value of urban open space should be assessed before it is given away for development. For example, the actual quantification of economic benefits of

having greenery and trees along the streets and in the parks should be assessed. All the benefits that can be accounted for should be listed together with the expenditure. If municipalities see urban open spaces and public land as a liability that needs to be privatised, they have to assess the value of such an initiative before taking a decision (McPherson & Simpson, 2002, pp. 61-74).

Some developing cities lack effective policies to deal with housing challenges for urban poor and that would make it difficult to provide urban open space. Mumbai (India) is a highly populated city with 50% of its population living on only 8% of the land. For obvious reasons, the city lacks urban open spaces save for the large urban forest they have. It is reported that in the 1990s, their urban population expanded into this only existing urban open space in Mumbai leading to protests by environmental groups. The way the city of Mumbai dealt with urban open space and peri-urban open spaces made it difficult to preserve any open space as they were used as reserves for housing development for the urban poor leading to other social problems such as, displacement of urban poor (Zerah, 2007, p. 122); (Van Herzele & Wiedemann, 2003, p. 124).

There is recognition that open spaces are not just a challenge to the developing world, but developed countries are faced with difficult questions about urban open spaces too (Beer, et al., 2003, pp. 132-143). In the city of Boulder (Colorado, USA) which was experiencing rapid urban growth, whilst managing one of the largest open space systems in America, a change in the grassland habitat landscape of the open space system led to a change in the bird count and species that used to inhabit the grassland open space (Jones & Bock, 2002, p. 643). A different study in Phoenix (Arizona, USA), proved that the increased intensity of land uses adjacent to the open space preserve was likely to reduce the value of the habitat and that also results in a decline in urban ecological integrity (Esbah, et al., 2009, p. 846).

In Warsaw, attractive open spaces have disappeared and they have been substituted by property investment projects and major developments. Some cities are still struggling to capitalise on the economic benefits of urban open spaces (Szulczewska & Kaliszuk, nd, p. 144).

Studies in the allocation of green spaces on urban renewal projects of about five sites in Germany, Switzerland and United Kingdom showed that the allocation of green space by developers tends to be lower in commercial city centres as compared to residential neighbourhoods. This is due to the various priorities and meanings that are attached to such spaces by different space users (Altherr, et al., 2007); (Lev, 1998). For example, developers want the greenery for marketing purposes; residents or citizens need the space for social and leisure activities, whilst conservationist groups would like to see proper conservation of habitats. In a different study, also focusing on greenery of commercial areas, Snep, Van Ierland, & Opdama (2009) found that measures that enhance biodiversity may be successful only if they are suited to the functional appearance of the development site and are combined with other green functions such as recreation (Lev, 1998, p. 26) The problem with commercialisation of public space is that it leads to restriction of access. Emerging development policies tend to exclude some users of public spaces in a way that gives an unfair advantage to the larger community but disadvantages minority groups such as the homeless and certain cultures (Atkinson, 2009, pp. 1829-1843).

1.3.6 THE COST OF URBAN OPEN SPACE PROVISION

Urban open space planning has received a lot of attention and research since the beginning of town and regional planning. The main problem with open spaces as a land use is that they are not (primarily) revenue generating land use as compared to other uses such as; commercial and industrial land uses. Open spaces are there for the benefit of the general public when needed, and they fulfil various roles for communities in which they are situated but their usage cannot be classified in the same categories as that of food and shelter.

Despite its many benefits, urban open space as a non-revenue generating land-use is still seen as a liability by some. This has led to a general decline of urban open space provision in some cities, e.g., according to Tang and Wong (2008) some of the reasons that lead to the decline of open space provision in Hong Kong, China include the following:

1. Inefficient division of government responsibilities,
2. Lack of public representation,
3. Pro-growth planning ideology,
4. Revenue-maximizing land sale policies
5. Privatization of urban space

Atkinson (2002, p.1830) argues that financial deficiencies are the cause of the decline of public open space maintenance. In some cities, e.g., Missouri (USA), due to the lack of funding for maintenance, public officials questioned the value that the community put on publicly owned trees. Contrary to their assumptions, there was strong community support for the introduction of a tax fund in favour of the maintenance of these green assets (Treiman & Gartner, 2006, p. 1537).

The provision of urban open spaces is becoming a high priority in many Chinese cities. It is recognised though that a cost benefit analysis needs to be conducted before such a programme is adopted (Chen & Jim, 2008, p. 298). Community willingness to pay for environmental programmes was recorded by two researches. In the first research (rehabilitation of the Ejina ecosystem), the monetary contribution the community was prepared to pay was less than the cost of the project (Zhongmin, et al., 2003, p. 345). In a related but different programme (use of urban open spaces) there was also proven community willingness to support the programme financially (Chen & Jim, 2008, p. 298).

In Valencia (Spain), even though there is wide support across the public sector for the provision of urban open spaces and their benefits, there is still a difference in the people's willingness to pay for urban open spaces. People that reside in close proximity to urban open spaces are more willing to pay for urban open space provision than those who stay further away from urban open spaces (Salazar & Menendez, 2007, p. 296).

1.4 RESEARCH OUTLINE

The urban open space challenges, as discussed above, make urban open space planning such a huge task to tackle all at once. This is especially so when considering that issues such as design requirements; and other various factors that affect the usability of urban open spaces have not been discussed above but will be mentioned later on in the study, e.g., crime and safety; sizes and length of an urban open space; legislation and policy issues; theories of urban planning and the benefits of urban open space are not discussed under the challenges mentioned above.

The discussion below outlines the focus of this research and its main purpose is to lead the reader into the specific issues that will be addressed in this report. It would obviously be impractical, in terms of time, to study everything there is to know about urban open spaces in one report. The purpose of this research outline is therefore to introduce the reader to the actual objectives; research questions and how the report is structured.

1.4.1 RESEARCH OBJECTIVES

According to the CISR (2005), there is little published literature that is specific to South Africa on soft open spaces. This means, without information, this topic is still an unknown subject and South African planners do not really know whether there is a difference in the needs of different cultural and socio-economic groups concerning urban open spaces (CSIR, 2005).

The objective of this study is therefore divided into two, namely, the academic and strategic objectives. Academic objectives are based on debates in the academic literature and are aimed at an academic audience (Bak, 2008). Whereas, strategic aims will be the real outcomes of the thesis, aimed at a non-academic audience and policy makers:

1. Academic Aim:

To contribute to the development of theory regarding open space planning and development as a means of improving the quality of life in townships, by formulating propositions that are grounded on the outcomes of the surveys, interviews, observation and analysis of empirical data from the Galeshewe setting.

2. Strategic Aim:

To improve town and regional planning practice with regards to the planning and development of urban open spaces in township revitalisation.

1.4.2 RESEARCH QUESTIONS AND DELIMITATIONS OF THE STUDY

The study focuses only on township urban open spaces in Galeshewe. It is an in-depth analysis of community perceptions, the provision of open space, land use planning and development of urban open spaces in the township. The study does not compare the Galeshewe Township to any other township that has successfully rolled out an urban renewal programme using public open spaces. It focuses on understanding human perceptions of public open spaces; the history of the township and it constructs theoretical and practical propositions based on available data from the Galeshewe Township.

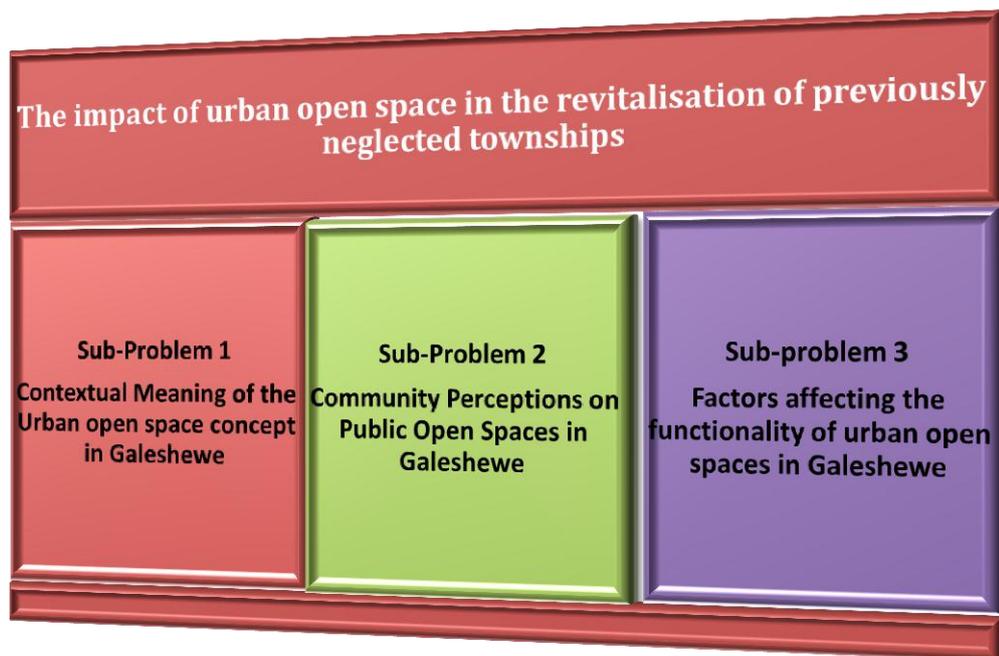


Figure 5: A summary of research problems and sub-problems

Source (Author, 2013)

This research seeks to gain a deeper understanding of the attributes linked to this question:

- ✚ How can town and regional planners maximise the impact of urban open space in the revitalisation of previously neglected townships?

It is an explanation and description of existing plans to develop urban open spaces in Galeshewe Township, with the main aim of discovering the extent to which town and regional planning can assist in the planning and development of existing urban open spaces in order to improve the municipality's urban renewal initiatives.

Secondary Questions:

1. What is the contextual meaning of the urban open space concept in the townships?
2. What are the perceptions of the Galeshewe community regarding urban open space usage in their townships?
3. What are the most critical factors that affect the functionality of urban open spaces in Galeshewe?

1.4.3 RESEARCH HYPOTHESIS

The hypothesis of this research is that “by understanding the contextual meaning of the urban open space concept in Galeshewe; the perceptions of the Galeshewe community and the most important factors that affect the functionality of urban open spaces in Galeshewe, town and regional planners can improve the outcomes of the revitalisation of previously neglected townships”.

The first question on understanding the contextual meaning of urban open spaces in Galeshewe has to do with the planning context within which planning is conducted. One has to understand the value people put on urban open spaces; the history of urban open spaces and the general theoretical basis of providing urban open spaces in the townships. From the work of (Watson, 2009); (Campbell, 1996); (du Plessis, 2009); (UN Habitat, 2009a); (Todes, 2011, p. 115) and their calls for planning to change; the scepticism of (Yokohari, et al., 2000, p. 159) and (Lam, et al., 2005, p. 55), there is enough reason to believe that the current approach to urban open space planning in Galeshewe is out of context.

The hypothesis for the second question on community perceptions is based on the outcomes of the Galeshewe household survey that in all respects, the community of Galeshewe does not place the value of urban open spaces in high regard. Lastly, known benefits of urban open space may not necessarily apply to the conditions of the urban poor in the townships. Yes, as mentioned in the problem statements, the quality of an urban open space is measured in terms of its benefits and how accessible; attractive; frequently used; and the community support it receives from the community. Due to the quality of urban open spaces characterised by littering and the fact that they are not developed, different measuring instruments that are unique to a township setup may arise.

Statistical hypothesis, as shown in chapter 4, differs from research hypothesis in that the latter is an educated guess which is merely a logical framework that guides the researcher in answering the research questions posed. On the other hand, a statistical hypothesis is divided into a Null Hypothesis and the alternative Hypothesis. A null

hypothesis means any result that is observed is a result of nothing else but chance. This means that no other factors have influenced the results obtained.

1.4.4 CHAPTERS

This report is organised into seven self-explanatory chapters as shown in the diagram below.

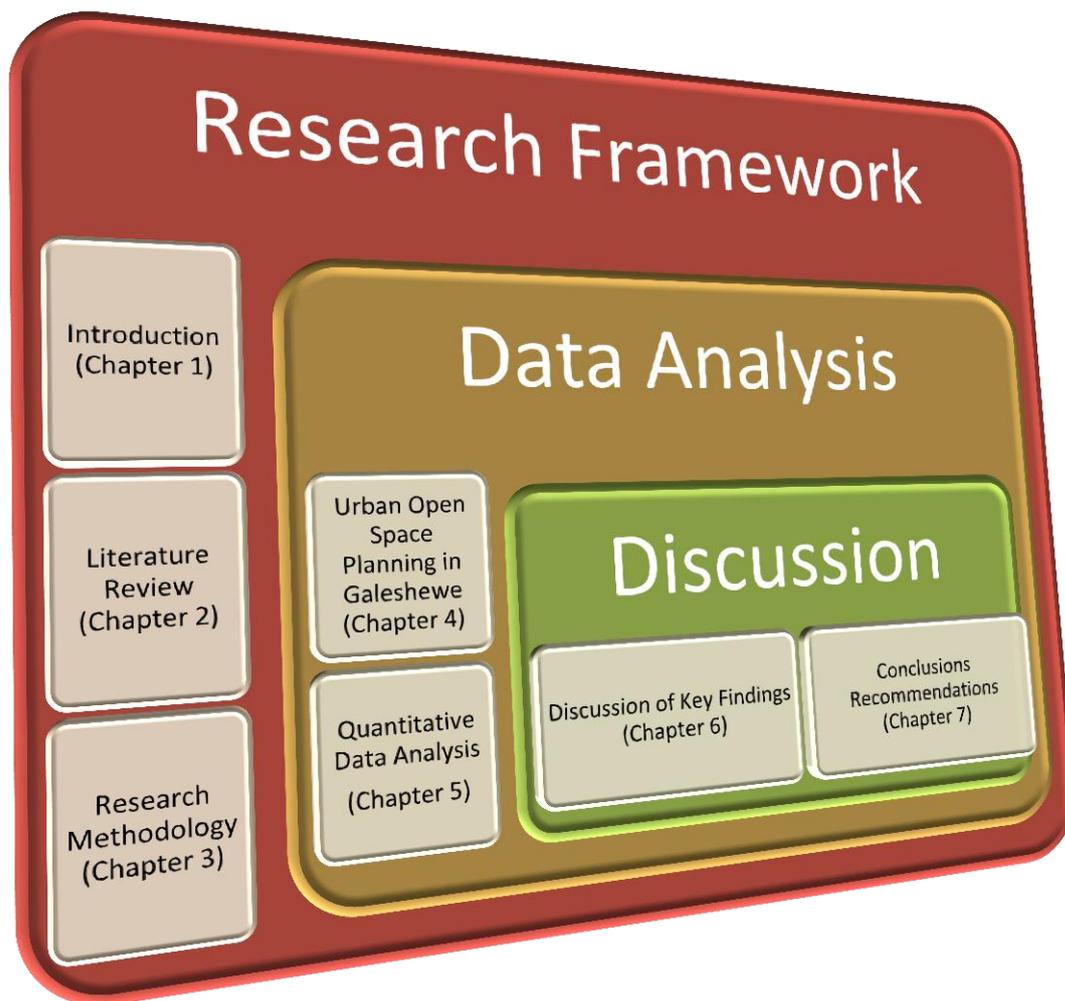


Figure 6 : Structure of the report

Source (Author, 2013)

1.5 CONCLUSION

All urban open spaces should have a well-defined use and function. It is the aim of this research to find the best ways of planning; designing and managing urban open spaces in order to optimize or realize the function of each urban open space within a township. The need arises because in some areas of South Africa, urban open spaces are utilised for uses that do not promote or increase the quality of human lives, e.g., as rubbish dumps; strategic crime areas and most importantly they also limit development potential.

Before town and regional planners and municipalities start spending tax payers' money on urban renewal projects, there has to be some sort of justification on the possibilities of success for the proposed projects. The purpose of this research is to answer those questions that would be able to guide policy makers about the development of public open spaces. The South African government faces a big challenge in urban poverty, but the solutions lie with increasing the quality of life for township dwellers at a cost that is affordable and sustainable for the urban poor. There is an information gap on whether the current practices and theories are relevant or not, particularly in the direction of open space planning in townships.

It is therefore easy to conclude that, there is indeed, a need to study urban open spaces in depth. This will start with mapping out the existing body of knowledge and organising it into a meaningful report that illustrates the history; benefits; planning ideologies and the way those have been implemented or how they have affected the planning and provision of urban open spaces in Galeshewe. All these discussions are found in the next, chapter (Literature Review).

CHAPTER 2:

LITERATURE REVIEW

“Town-planning-the art of laying out towns with due care for the health and comfort of inhabitants, for industrial and commercial efficiency, and for reasonable beauty of buildings-is an art of intermittent activity.”
(Haverfield, 1913, p. 13)

2.1 INTRODUCTION TO CHAPTER 2

As shown in the quotation above, in 1913 Haverfield (1913, p. 13) likened town planning to art and that its process would be a stop and start process which deals with aesthetics; liveability and economic efficiency. It is now 100 years since Haverfield wrote this quotation and planning has changed in many ways but these three principles of aesthetics; liveability and economic efficiency still find themselves being discussed in debates of the 21st Century but rather in a more specialised way. These days, there are debates about economic efficiency in urban planning and the importance of liveability in cities. However, planning still finds itself entrenched in the principles that are enforcing order in cities. The question is, how much of planning has changed and what is relevant today that was not relevant before and how does that affect the way in which one responds to the questions this research is trying to answer?

This literature review constitutes an analysis and critical evaluation of existing literature on urban open spaces. It involves research findings and discussions from the most influential writers about open space planning. In this study, the review of literature is broken down into the following:

1. Theories and Models
2. Empirical studies
3. Open space planning design standards and
4. Case Studies

The primary aim of this analysis is to explain and discover the existing body of knowledge that has an impact on urban open space planning. Firstly, the ambiguity of the term 'open space' was unpacked in the previous chapter and the conclusions was that:

An urban open space is a piece of land, either developed or pristine, that is either existing or planned to maximize the ecological integrity of an urban area by sustaining both urban and natural ecosystems; while improving the quality of human life in both social and economic terms.

Source: (Author, 2013)

It is also acknowledged that one cannot define an urban open space without discussing its principal components. The patterns in the historical development of the concept of open space are traced back to Biblical times, but more importantly to the time of the Industrial revolution, a time when town planning became a profession. It is clear in the literature that the origins of the term 'open space' and its functions have changed over the years. Cities have changed, and the context of the 21st Century cities is forcing planners to reconsider the way they deal with urban planning matters. Theoretically, the role of the urban open space is becoming more important in the adaptation strategies for climate change, whereas the relation that urban poor have with the environment is being questioned.

There is a general consensus about the benefits of urban open space. In cities of the developed world, planners talk of the economic advantages of having urban open space. Whether this phenomenon is true to all contexts, and whether it is economically wise to preserve developable land as open space and whether unmaintained open spaces also have a positive impact on urban open spaces is questionable. The conservation of urban ecosystems and the natural environment seems to be one of the most agreed upon function of urban open space whereas there is also a general view that urban open spaces can improve the quality of life in cities.

The planning for urban open spaces asks questions of open space distribution, size and accessibility of urban open spaces. How different cities embark on planning and

management of open spaces is discussed in more detail, but with a specific focus on European and American contexts as pioneers of the 21st Century open space planning literature. The study also looks at how open space planning is conducted in South Africa, with a specific reference to townships.

2.2 HISTORICAL DEVELOPMENT OF URBAN OPEN SPACE PLANNING

Cities of the ancient world had open spaces. The grid layout system that was used by the Greeks in the ancient world provided some of the early open spaces in terms of squares or town markets. However, the current open space planning history from the 19th00 has its origins in the British and American contexts.

2.2.1 ANCIENT CITIES AND URBAN OPEN SPACES

The oldest known urban-like settlement dating 2500 B.C. is Kahun in Egypt (Haverfield, 1913, p. 21) but it is small and does not resemble the ancient principles of layout planning, i.e., straight-line and right angle forming a chessboard layout (Haverfield, 1913, pp. 16-18). This means that there is no proof of evidence for the existence of an urban open space in the oldest city that has been studied.

The importance of open spaces has a history that goes way before the current civilization and even before town and regional planning became a profession. Even in the Christian Bible (Numbers 35 verse 1-5), the relationship between a city and its grazing land is acknowledged, i.e.

“...the LORD said to Moses, “Tell the Israelites that from the property they receive they must give the Levites some cities...The pasture land will be for their cattle and all their other animals. The pasture land is to extend outwards from the city walls 450metres in each direction, so that there is a square area measuring 900metres on each side, with the city in the middle.” (TEV, n.d.).

Ancient Greece; Europe; and Asia during the early Middle Ages, only had one or two main dominant buildings which were mostly for religious purposes; with processional avenues for worshippers. In ancient Priene (Greece), excavated between 1895 and 1898, a market place (2450 square meters) was found at the centre of the town (Haverfield, 1913, p. 47). These ceremonial avenues and squares reflect the existence of some ancient types of open spaces (Turner, 2006, p. 243). In Southern Africa, there are remains of an ancient city (Mapungubwe) estimated to have been there in the 13th Century A.D., but the remains of its spatial setup has not yet been studied or published. However, in UMgungundlovu, it is reported that there was a clear distinction of dwellings; open spaces and rights of way (van Wyk, 2012, p. 26).

2.2.2 19TH CENTURY URBAN OPEN SPACES

Due to the lack of specialized information on the planning and development of urban open spaces, the history of open space planning will be mapped out from the 19th Century A.D. It is reported that during the 19th Century, the idea of urban open spaces became increasingly important in the planning of industrial towns. The open space concept received its formal recognition in 1833 when it was used by a “Select Committee on Public Works” in London (Turner, 1992, p. 366). It does not mean there

was no use of the term before that, rather the classification and concept of ‘open space’ particularly in ‘urban planning’ was formally used for the first time in 1833.

The 19th Century was the time of the industrial revolution, with London being the largest city and the capital of the British Empire. London became an example of what Peter Hall calls the ‘City of dreadful night’ (1880-1900), (Hall, 2002, p. 14) characterised by smoke; raw sewage; poverty; housing shortage and overcrowding. There was a short supply of greenery and open spaces during and after the industrial revolution (Daniels, 2009, p. 178). This era saw a need for the provision of public open spaces in order to improve the quality of life in cities. However, when open spaces in the form of public gardens were introduced, they were rather used to manipulate and control urban citizens that were working in the factories. These gardens had walls; gates and fencing and they were later called parks because of the fencing (Turner, 1998, p. 114).

The situation in London became so dire that in 1877, there was a legal mandate to acquire open spaces in terms of the Metropolitan Open Space Act of 1877 (Turner, 1992, p. 365)

In America, another idea of open space planning was developed. Greenway planning began in the early 19th century based on Landscape Architecture, particularly the works of Frederick Law Olmsted in Boston. Olmsted developed a 25km long park system that is also known as the Emerald Necklace. His work was complemented by Charles Eliot who connected five open spaces on the outskirts of the Boston Metropolis by using rivers as greenway connectors (Fábos, 2004, p. 321).

2.2.3 20TH CENTURY URBAN OPEN SPACES

In the 20th Century A.D., the conservation of natural resources and the protection of wilderness within cities became a challenge for planners (Daniels, 2009, p. 178). The current history of open space planning can be traced back to the 1920s and 30s when there was a marriage between “green open space” and the automobile inspired design of suburbs. New proposals and needs for urban open spaces were also exacerbated by

industrialisation; urbanisation; transportation; and the rise of private automobiles. All these contributed to overcrowding and substandard livelihood and working conditions.

Similar to the garden city ideas of Ebenezer Howard, greenway systems were then used to guide urban growth and to preserve the countryside (Walmsley, 2006, p. 253). Authors such as Ludic, 2000 refer to this type of planning as the “tower in the park model” or “City of Towers” according to Peter Hall (2002). This type of planning was based on the segregation of primary land uses in a city. Land uses such as residential; commercial; industrial would be grouped together, whilst all congested streets would be cleared for the production of green open spaces within free standing blocks of residential blocks or towers.

2.2.3.1 LONDON

During the 20th Century the role of parks in London changed even though the focus was still on the working class, and the new role became physical fitness at a time when the machine was taking over manual labour. Later on, parks would be used to control ‘juvenile delinquency’ by means of organised sport (Turner, 1998, p. 114). The role of the open space and the way open spaces were planned still continued to evolve. Turner (1992, p. 365) even argues that the most dominant concerns about the changes in open space planning were mostly coming from people that wanted to establish a belt of open land outside the city in order to remedy the perceived lack of city open spaces. Their focus was more on the provision of a greenbelt rather than open space use; open space quality; accessibility and continuity of open spaces.

The 20th Century legal framework for open space planning in London began with the Open Space Act of 1906 which gave a definition of what an open space would be, stating that an open space is:

“any land, whether inclosed or not, and which there are no buildings, or of which not more than one twentieth part is covered, and the whole of the remainder is laid out as a garden or is used for purposes of recreation or lies waste and unoccupied” (Turner, 1992, p. 366)

Due to the poor supply of urban open space in London in the 1920s, the Greater London Regional Planning Committee was formed and it produced its first report in 1929. In this report, Raymond Unwin had identified a shortage of open space in London. In order to solve this problem, Unwin recommended 2.83Ha of open space per 1000 people and to achieve this with the population of London of that time, he proposed a green girdle around the city in order to provide land for recreational and sporting activities (Turner, 1992, p. 366).

Patrick Abercrombie, with his 1943/1944 London Plans, proposed a new concept, i.e., the park system. Abercrombie argued that open spaces had to be considered and planned as a whole system and not in patches in order to make it possible for the communities to walk from their gardens to the greenbelt which was outside the City of London (Turner, 1992, p. 368). In the Abercrombie plan, different types of open spaces were introduced in order to link the entire park system, i.e., linear strips; riverside walks; footpaths; bridle tracks; green lanes; bicycle tracks; motor parkways and express arterial roads.

In 1947, the 'Town and Country Planning Act' was introduced and it required all local authorities to produce development plans. London then developed a plan which had now reduced the open space requirements from 2.83Ha of open space per 1000 people to 1.01Ha/1000 inhabitants due to the difficulty of achieving the former. In 1964, a survey conducted by the City of London, found for the first time that demands for open space use differed across age and gender; sports and recreation. This survey also determined the catchment area for each park based on size, i.e. for a park of between

0.81 and 19.83Ha, the catchment area was found to be 0.4km; between 20.23-60.3Ha it was 1.2km and for a size of up to 60.7Ha the catchment was 3.22-8.05km (Turner, 1992, p. 372).

In 1976, the London County Council approved a development plan which split open spaces into the Green Belt; Metropolitan Open Land and Open Lands, i.e., Greater London Development Plan. The standard of acres/1000 was also scrapped and replaced by a hierarchy of open spaces in terms of needs and functionality. This was followed by the introduction of 'ecology policies' in 1983 and the need for regional parks of about 400Ha; linear parks and interlinking of urban open spaces in 1989. The 1990s saw a move towards a green strategy that sees a series of overlapping plans in a manner that would improve the quality of open spaces (Turner, 1992, p. 384).

2.2.3.2 UNITED STATES OF AMERICA

At the same time in America, the development of the greenway evolution continued through the early 20th century and it was driven by Olmsted's sons and Eliot's nephew when they expanded the works of their predecessors. Authors such as McKay and Patrick Geddes and Ian McHarg popularized the incorporation of ecological ideas (Flores, et al., 1998, p. 295). Ebenezer Howard also made greenbelts around cities popular in order to curb urban sprawl and to preserve open space. This in turn, influenced legislation such as the London's Green Belt Act of 1938 and Britain's Town and Country Planning Act of 1947. Due to the failure of the post-1947 layout plans in addressing ecological balance, there were new variables (biodiversity; scenic value/aesthetics and place making) in the planning of urban open spaces. These variables were brought into the planning field by the environmental crisis of the 1960s and 1970s (Fábos, 2004, p. 321).

During the rise of environmentalism in the 1960s and 1970s, Phil Lewis proposed an environmental corridor called the Wisconsin's Heritage Trail in Wisconsin. The focus of this trail was the protection of environmentally sensitive areas, such as wetlands and river systems (Fábos, 2004, p. 321).

The rise of environmentalism went on to correct the impacts of the pro-development approach during the urban regeneration processes of the 1980s. The 1990s were dominated by concepts such as sustainability; waste recycling and social inclusiveness, which highlighted the need to protect and maintain urban green infrastructure in cities (Nicol & Blake, 2000, p. 193). These days there is a general acceptance of a drive for sustainable development in cities and issues such as climate change have also come to influence planning and the way town and regional planners have to design low carbon cities in order to reduce the impact cities have on the global environment.

2.3 URBAN OPEN SPACE PLANNING THEORIES

The design and planning for urban open spaces should not be viewed as a separate phenomenon from the development of the planning profession. Whilst it is understandable that planning for the growing human needs is done through various planning and development theories, the development of open space models comes from the broader spectrum of planning theory. In responding to the different needs of the communities, planners have used various theories to base their decisions and planning methods.

CSIR (2005, p. 2.2) recognises two approaches to urban and regional planning. The human-centred approach with emphasis on ensuring the developmental needs of the people through a democratic process and a nature-centred approach recognizes the need for a synergy between the needs of the people and the relationship with the natural environment. (CSIR, 2005, p. 2.2)

In the case of urban open spaces, these theories formulate the desired principles and goals that influence the type, purpose and function of a particular public open space. Some of these theories and concepts include the following:

There are several planning theories that are discussed herein. They include the following:

1. Utopianism
2. Blueprint planning
3. Normative planning
4. Modernism
5. Post-modernism planning theories

2.3.1 GARDEN CITY THEORY, AS A UTOPIAN IDEA

The Garden City concept that is attributed mostly to Ebenezer Howard, existed before he published his only book 'Tomorrow-a peaceful path to real reform' of 1898. Hall (2002) does not provide evidence of people who popularised the term 'Garden City' however, he believes that the concept came due to Chicago's rebuilding after the city was burnt down by fire in 1871. Even though the garden city theory was later popularised by Ebenezer Howard through the book 'Garden Cities of Tomorrow in 1902' (a revision of his 1898 publication), the origin of this idea is therefore American rather than British (Hall, 2002, p. 90).

The main objective of the garden city theory was to provide a polycentric social city made up of self-sufficient and self-governing small towns that would be linked by rail and would be floating on vast amounts of open space (Hall, 2002, p. 94). The promises of this self-sustainable system of homesteads/suburbs included amongst others, the following advantages:

1. Nature
2. Social opportunity
3. Fields and parks of easy access
4. Pure air and water
5. Good drainage, etc.

(Hall, 2002, p. 93).

The amount of open space was not quantified except for the fact that this open space would form a greenbelt around the town. Because the population was specified to be 32000 on 400Ha, the density requirements for open space would therefore be in relation to the number of people that would be staying in the town.

Utopianism also includes the Corbusian modernists, who Fainstein (2000, p. 251) believes are still promoting physical solutions to the problems of the city.

2.3.2 RATIONAL/BLUEPRINT PLANNING

Early planning theorists held the view that planning was all about laying out of cities and regions with a specific focus on design. This approach is what is referred to as master-planning or blue print planning with the primary objective of spatial configuration and re-configuration (Taylor, 1998, p. 5). This type of planning is also called the rational scientific method which was concerned with efficiency and orderly planning (Todes, 2011, p. 117). This is reported to have been the most widely accepted form of planning (Watson, 2002, p. 29); (Fainstein, 2000, p. 251).

The planner was seen as a technocrat who did not consult with other stakeholders. Planners held the belief that layout planning would physically determine neighbourhoods without taking into cognisance any other socio-economic needs and/or possibilities of change over time. A planner would then decide where to provide public open spaces on the layout plan without any community consultation and consideration of other factors that are known to affect the planning process these days.

2.3.3 NORMATIVE PLANNING

Normative planning is an approach that is driven by a set of values, in response to social reforms after World War 2. During that time, planners wanted to understand what exactly constitutes an ideal urban form (Taylor, 1998, p. 20). A set of values would then be compiled which were somewhat responsive to the challenges of cities from one area

to the other. For example, according to (Giles-Corti, et al., 2005), the Western Australian 1955 Metropolitan Plan stipulated 10% of Public Open Space from all Greenfield developments. This is synonymous with some of the requirements by South African planning authorities which require about 10%-17% of the total development area to be reserved for active open space land for all new housing developments.

Other strands of normative planning could include the functionalist ideas and the social reformist planning (Todes, 2011, p. 117). It is known that before modernism, there were two types of planning, i.e., 'functionalist planning' and 'socialist reform planning' which were based on correcting the wrongs that were created by the industrial revolution (Ibid.)

2.3.4 NEW URBANISM

New Urbanism focuses on the physical picture of a desirable city, with neighbourhoods and attachment to one's environment, which can be achieved through planning. It is based on design and urban form; also a response to the disadvantages of the rational methods which favoured markets and destroyed 'community' through zoning laws (Fainstein, 2000, p. 472).

New urbanism fosters the traditional neighbourhood system that is self-sufficient in terms of everyday human settlement needs. Land uses are structured in such a way that they are easily accessible, clustered and within a walking distance. New urbanism has been criticised for its standardization of street systems; urban sprawl and its focus on social aspects of development (Walmsley, 2006, p. 277). Even though this theory does not say anything about urban open spaces, the fact that a neighbourhood is small enough to have services clustered within walking distance, does in turn mean that there is an easy escape from the city or neighbourhood into undeveloped areas that may possess open space benefits.

2.3.4 MODERNIST PLANNING THEORIES

The modernist movement in urban and regional planning was based on functionality, i.e., with concerns of efficiency and technology. This meant that urban life systems were compartmentalised into different categories of activity (i.e., residential, work areas, recreation and entertainment; movement). In many areas, modernist theories resulted in spatial segregation based on these activities (CSIR, 2005, p. 2.0).

When rational scientific approaches of planning were displaced by new planning ideas, the belief was that social transformation was the answer to the problems of the city (Watson, 2002, p. 29). The following forms of planning dominated the planning theory landscape, i.e., communicative planning theory (Patsy Healey) (Watson, 2002, p. 29); advocacy planning, radical planning; participatory planning (Todes, 2011, p. 117). These planning theories came about as a result of some planning activities that resulted in the displacement and marginalisation of the urban poor; increased crime, gender inequalities in planned communities and the fact that these planning ideas were seen to be promoting only the interests of the wealthier citizens (Todes, 2011, p. 117).

Whereas blueprint planning focused only on the physical side and normative planning on value driven aspects of planning respectively, by the end of the 1970's the following approaches to planning were being used (Hudson, 1979: 389-321):

1. Incremental planning means that planning is conducted through a series of negotiations amongst decision-making bodies and it is based on experience and intuition of the planner (Hudson, 1979, p. 389). Incrementalist theorists relied more on the revival of old economic models (Fainstein, 2000, p. 251).
2. Transactive planning promotes community engagement and the advancement of their goals and interests. It results in mutual understanding and learning whilst advancing the goal of the community and or personal development of all stakeholders (Hudson, 1979, p. 389). Whereas an advocacy planner fights through legal means for social justice whilst promoting the interest of minority groups.

3. Radical activism is based on interaction of social ideas in order to achieve immediate results and it criticises the role of the state in the creation of social problems (Hudson, 1979, p. 390).
4. Collaborative planning: is based on place making and consensus building amongst all stakeholders that are involved (Harrison, 2006, p. 321). The collaborative model sees the urban and regional planner as mediator among different stakeholders and participants within the planning process (Fainstein, 2000, p. 251).
5. Just City approach: It is based on spatial equity within the city and it is concerned with creating an urban vision which is based on cooperation and decentralization of state powers (Fainstein, 2000, p. 472)

However, some believe that modernism, has failed the developing world which has its unique characteristics that are different from the European and American contexts that were the main drivers of modernist planning theories (Watson, 2002, p. 29); (Harrison, 2006, p. 321). Modernist plans were weak in social and economic analysis of aspects that shape cities, Harris (1983) in Todes, 2011, p. 117.

2.3.5 RATIONAL COMPREHENSIVE PLANNING

Rational comprehensive planning started in the 1960s due to criticism of the blueprint and normative types of planning (Taylor, 1998, p. 59). Rational comprehensive planning comprises two views, i.e., systems approach and rational approach.

The systems view of planning sees planning as an exercise in the analysis and control of complex and interconnected independent aspects of human settlements as a living system (Taylor, 1998, p. 61). The rational process is all about an independent decision-making that involves setting up of goals and alternatives; the evaluation of means against ends together with the implementation of plans. It is also characterised by a continuous process with a constant feedback to its processes (Taylor, 1998, p. 66).

2.3.6 POST-MODERN PLANNING THEORIES

The past urban planning theories desired to achieve “aesthetics (order; harmony; formality and symmetry); efficiency and modernity (removal of slums; sky-scraper buildings; connectivity; and abundance of open spaces)” (Watson, 2009, p. 2261). Watson argues that those theories, which originated in the ‘global North’, are based on planning assumptions that are no longer adequate in solving urban problems of the 21st century (Watson, 2009, p. 2272). It is suggested therefore, that planning has to take a different direction, a direction that is inclusive and one that favours poor people more than wealthy citizens (Watson, 2009, p. 2260).

Planners have to look beyond the existing theories of urban planning (Campbell, 1996, p. 296), e.g., “concept of conflicting rationalities”, to fully understand the conflicts and dichotomies that are experienced in cities, e.g., the difference between planners as administrators and the means of survival employed by the urban poor (Watson, 2009, p. 2273). Du Plessis (2009, p. 1) suggests that development planners have an imminent challenge of changing the existing development paradigm into one that recognises the world as a complex living system. For example, planners are seen as collaborators in a broader planning system, and they have to deal with emerging dominant themes such as; sustainability; Social justice; economic efficiency; integration of various ideas (Todes, 2011, p. 120).

In the 2010-2013 UN Habitat Climate Change Strategy, it was recognised that the cities’ generation of carbon dioxide should be reduced in order to slow down or curb climate change. One of the strategies proposed was to rehabilitate city parks and green spaces (UN Habitat, 2009b). The question is, 'are original theories and practice best methods of urban planning sufficient and appropriate in dealing with urban problems of the 21st Century?'

2.3.6.1 ECOLOGICAL DETERMINISM

Flores, et al., (1998, p. 295) believes that in order for modern planning to achieve an ecologically rich urban environment, it needs to focus on the interaction of different sites of different temporal scales using the following five principles:

These principles are explained as follows:

1. Ecological content: Ecosystem which includes the functional interconnection and relations that exist among organisms and their environment
2. Ecological context: Refers to the location; adjacency and the neighbourhood elements in which the ecosystem exists.
3. Ecological dynamics: Results from inevitable changes on the ecosystem over time or due to either natural or human induced disturbances in the ecosystem
4. Ecological heterogeneity: Refers to the richness and uniqueness of biodiversity from one site to the other.
5. Ecological hierarchy means that urban open space has to be organised into different functional units of different scales.

(Flores, et al., 1998, p. 295).

Open space planning in this case is driven by ecological conservation whereby conservation areas are first identified and any other plan may follow after that (Willis, 2011, p. 166). Biotope planning therefore becomes an essential tool for urban spatial planning whereby the main purpose is the improvement of ecological or biological diversity of an area. A context-based approach such as biotope planning may provide the flexibility that is needed to deal with the conditions of each area. There is a strong link between recreational and cultural values of an open space in biotope planning (Lofvenhaft, et al., 2002, p. 223). Two variants of this approach are smart conservation and green modernism discussed below.

2.3.6.2 SMART GROWTH AND SMART CONSERVATION

Smart growth theory considers social, economic and ecological factors in planning the direction of development into areas that have existing infrastructure or in those areas where **infrastructure** can be provided with ease (Arendt, 2004, p. 264). This means that the provision of urban open space as a strategic component of a land use system is determined by the position of suitable land for development. This approach would therefore foster a practice whereby poor quality land is the one that is left over as public open space. Contrary to smart growth, smart conservation is just the opposite in its quest to identify primarily a larger framework of necessary green corridors that should be preserved permanently and maintained mainly for ecological reasons (Walmsley, 2006, p. 264). Conservation subdivisions are consistent with the smart conservation theory by determining areas that are worth preserving whilst keeping developable land between 40-70% of new neighbourhoods (Arendt, 2004, p. 264).

2.3.6.3 COMPACT CITY THEORY

Compact city theory suggest that higher densities decrease the space for trees and plantations that usually grow and thrive in urban open space and this decreases the benefits that come with urban open space that is attributed to soft open spaces. However, the impact of this densification is not fully understood. Studies in Belgium showed that older areas that increased their densities experienced accelerated rates of outmigration into other areas Pelfrene (2000) in (Beer, et al., 2003, p. 134). Pre-1990 high-rise mass housing schemes had vast open spaces throughout Europe; however those open spaces are now subjected to revitalization strategies and cannot be maintained due to financial constraints. One driving force in the revitalization strategies was the need to integrate open spaces with wildlife and plants, and it created a problem with regards to the provision of local urban open space for everyday needs (Beer, et al., 2003, p. 135).

2.4 URBAN OPEN SPACE BENEFITS

It is estimated that between the years 2000-2030 cities of the developing world will triple their size whilst also doubling their population to an average of 4 billion inhabitants (Shlomo, 2008, p. 146). This is going to need strategic development planning that will be able to address the growing community needs. Existing public open spaces will continue to be under immense development pressure if no policy solutions are advanced early enough to maximize the benefits of open spaces. Urban open spaces are an integral part of the complex and dynamic urban ecosystem and they have various benefits for urban communities as discussed below.

There has been no publication in the last ten years on the benefits of open spaces in the South African journal of town and regional planning. The lack of research on this topic does not mean that there are neither challenges nor concerns; rather it presents the lack of interest in public open space solutions during this past decade.

Internationally though, a lot has been written about the various benefits that open space planning and development bring into the city. These benefits can be classified according to the following categories:

1. Social advantages
2. Economic advantages
3. Ecological advantages
4. Planning advantages

(Baycan-Levent & Nijkamp, 2009); (Maruani & Amit-Cohen, 2007)

Other authors have classified these benefits rather differently, but this does not take away the fact that such benefits exist, irrespective the manner in which they have been classified, e.g., Flores, et al., (1998, p. 298)

Ecological Benefits	Social Benefits	Physical Planning Benefits
Refuge for threatened and endangered species	Recreational opportunities	Flood control
Increased biodiversity	Enhancement of property value	Reduction of erosion
Habitat for flora and fauna	Community cohesion	Modulation of temperature
Storage and cycling of nutrients	Aesthetic enhancement	Removal of air pollution
Ecosystem community representativeness	Source of knowledge	Protection of water quality

Table 5: examples of open space benefits according to Flores, et al. *Source:* (Flores, et al., 1998, p. 298)

The following diagram represents the different types of benefits that will be discussed in this research. The assumption is that if all benefits are studied, therefore it will be easier to plan according to the three main benefits, i.e. ecological, social and economic benefits add up to planning benefits.

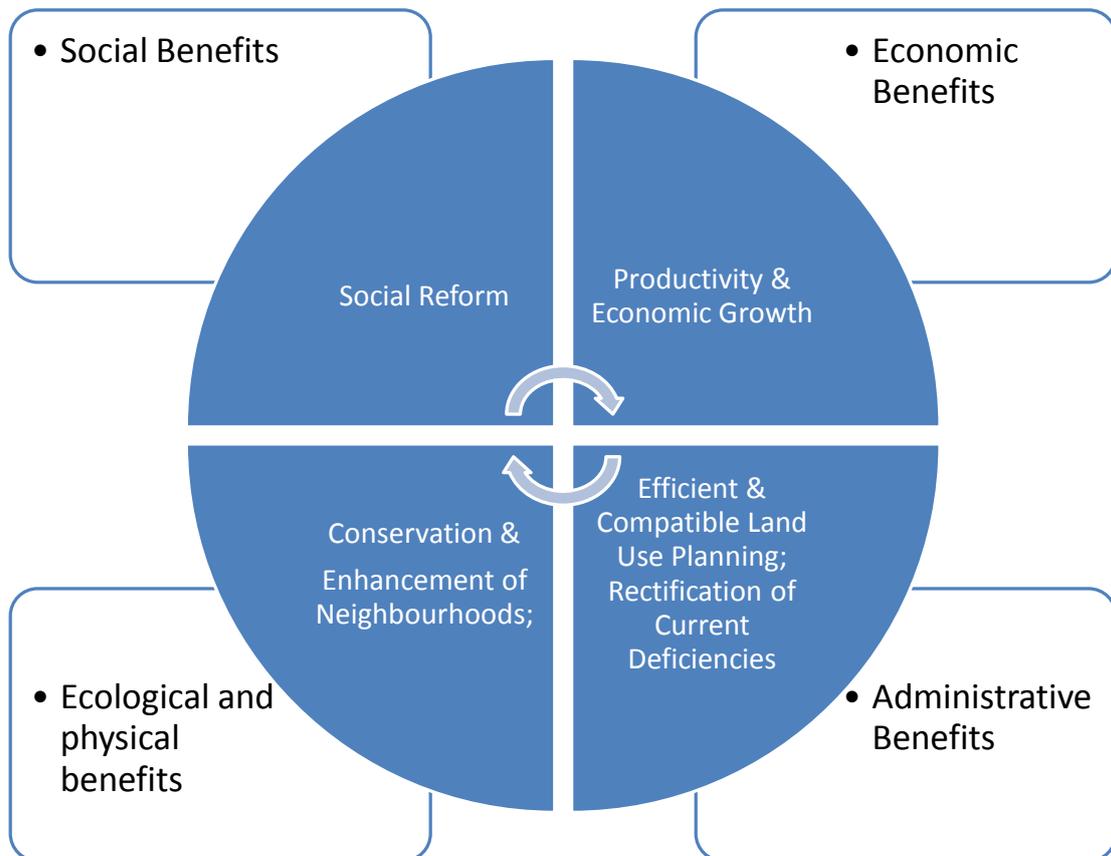


Figure 7: Summary of urban open space benefits. Source (Author, 2013)

2.4.1 ECOLOGICAL BENEFITS OF URBAN OPEN SPACE

Ecological benefits of open spaces are those functions of open space that increase the biodiversity and conservation of natural resources that are necessary to sustain human life and the lives of all living organisms that occur naturally on earth.



Figure 8: The principle of ecological determinism and sustainability has been found in many documents and aspects of planning in South Africa, the picture above shows a project sponsored by an insurance group in Galeshewe Township.

Source (Author, 2013)

2.4.1.1 BIODIVERSITY

Urban open spaces have a potential to play a significant role in conservation and biodiversity even in highly urbanised areas. In a study that was conducted in Flanders (Belgium), it was proved that urban open spaces can also maintain a high percentage of different species if the species habitat/ecosystem is kept in a semi-natural manner

(Cornelis & Hermy, 2004, p. 385). Urban planning needs to consider the spatial aspect of biodiversity in a strategic manner in order to identify proper biotopes that are ecologically viable (Lofvenhaft, et al., 2002, p. 223).

2.4.1.2 URBAN ECOSYSTEMS

There is a general concern about the quality of urban environments and the liveability of cities amongst planners (Flores, et al., 1998, p. 295). The intensification of the urban environment due to urbanisation brings pressure on the existing urban open space. Evidence exists that underlines the importance of contact with nature for city dwellers (Home, et al., 2010, p. 494). However, the ecological framework that is currently used in land use planning is compromised by inappropriate concepts that emphasize a static landscape view and short term (project based) planning than the acknowledgment of a rather dynamic view of biologically rich urban interactions at different temporal scales (Flores, et al., 1998, p. 295).

Urban open spaces have a potential to reduce noise and cleanse the city's atmosphere (Lam, et al., 2005, p. 55); (City of Burlington, VT, 2000, pp. 8-14). Authors such as (Gomez, et al., 2004); (Gomez, et al., 2001) have studied the amount of greenery that is needed for a city to achieve comfortable levels. Climatic attributes need to be studied for different cities with different climatic conditions and there are no current existing standards that need to be met. This can have a significant influence on the way open spaces are provided in cities that are warmer as compared to colder ones (Gomez, et al., 2004, p. 99).

Proof exists that the urban microclimate (such as urban temperatures; rainfall and humidity) is usually better than the climate of its surrounding hinterlands. Depending on the vegetation of the surrounding areas, radiation can be better in the city, i.e., due to the presence of green open spaces and thicker greenery on urban open spaces. Urban open spaces tend to correct the harsh climatic conditions that dominate areas outside the city, and thus provide better comfort for city dwellers. Trees have the capacity to control luminosity and radiation by preventing sunrays from reaching the paved surfaces (Gomez, et al., 2004).

Urban open spaces also promote biological diversity by providing ecosystems for fauna and flora and this may increase the linkage that communities have with their natural environment (Morancho, 2003, p. 35). Some of the urban open space benefits that Morancho (2003) identifies include the following:

1. Absorption of atmospheric pollutants and carbon, thus providing cleaner air;
2. Regulation of atmospheric oxygen by releasing oxygen from the various types of plants that are found on open spaces;
3. Regulation of atmospheric humidity and urban climate;
4. Restraining soil erosion by slowing storm-water runoff thus reducing the need for drainage infrastructure;
5. Provision of opportunities for the recycling of organic materials (Morancho, 2003, p. 35).

One of the benefits of urban open space is the reduction of noise. The design of open space must look at the acoustic value of these open spaces because urban open spaces are believed to have the potential to lower the noise produced in urban areas, thus one has to look at the land uses that need open spaces (Brown & Muhar, 2004, p. 827).

2.4.1.3 CONSERVATION

“Conservation subdivision is a design concept used by landscape architects and other built environment professionals to conserve wildlife habitat within growing communities. The idea is to cluster homes together to maximize open space, whilst conserving urban biodiversity” (Hostetler & Drakeb, 2008). The public benefits of conservation subdivisions include the following:

1. Storm-water management and protection of aquatic ecosystems.
2. Protection of habitats and biodiversity.
3. Reduction of demand for public open spaces (Carter, 2009).

Whilst this type of development has been practiced in the USA, in South Africa it has not taken place at a wider policy level. Private estate developments such as Woodland Hills in Bloemfontein and in other big cities in South Africa have used the same concept in attracting private investments. The question that needs to be asked is whether this concept is financially viable for all income groups.

2.4.2 SOCIAL BENEFITS OF URBAN OPEN SPACE

The social benefits of open spaces include the advantages that public open space has for communities. These attributes enhance the social aspects of human life in cities and they include the following:

1. Liveability
2. Health
3. Places for social integration and
4. Environmental justice and equity

2.4.2.1 URBAN LIVEABILITY

CABE SPACE (2005) recognises that the revitalization of public space is also embodied on the term liveability, which includes **improvement of the quality of life** in a neighbourhood. Urban liveability can be determined by an indication of the presence of couples with children in an area as they are the first to leave the area when living conditions are poor. This is particularly true in a study that was done in Belgium whereby, since the late 1980s, there had been an outmigration of families with children from urban centres to suburban areas due to the poor quality of urban life in those urban centres (Van Herzele & Wiedemann, 2003, p. 109).



Figure 9: A Playground in Galeshewe Township with play and recreational equipment installed to improve the quality of life in the township

Source: (Author, 2013)

Social variables such as employment, education and safety are some of the factors that indicate urban liveability. Some link urban open spaces to a better quality. Furthermore, there are other environmental variables that can also indicate urban liveability and they include healthy air, a quietness of a neighbourhood and aesthetically pleasing urban open spaces within a walking distance (Van Herzele & Wiedemann, 2003, p. 109). In a study conducted in 1998 by Tratsaert it was proven that in Leuven the lack of public open spaces was the main reason why people decided to leave the city and the majority of those that were moving were looking for urban green and a calm neighbourhood in the outskirts of the city (Van Herzele & Wiedemann, 2003, p. 110).

Not everyone is convinced about the impact of public open space in cities. A study that was conducted in Hong Kong (China) proved that some of the claims that have been made about urban open spaces are not necessarily consistent in all urban open spaces, i.e. noise levels; air quality; (Lam, et al., 2005, p. 55). The author calls for a re-examination of those claims in improving the urban liveability.

2.4.2.2 LEVEL OF EDUCATION & OPEN SPACE POLICIES

Urban planners and the communities they are planning for do not always have the same views about urban open spaces. In a study conducted in America, the level of education as opposed to the level of income seemed to be one of the significant reasons that affect the community support of land use policies that are intended for the protection of

natural resources, i.e., urban open space policies (Broussard, et al., 2008, p. 21). An illiterate society may not be aware of the implications and limitations of land use policies. This means that urban planners, as the drivers of land use policies need to understand community values and make sure that those values are reflected in the land use policies they use.

2.4.2.3 HEALTH BENEFITS

Some of the health benefits that are associated with public open spaces include; personal fitness; relaxation and stress relief (Lee, 2008, p. 9). Ulrich (1999) identified that the advantages that urban open space has on health has been acknowledged by the planning community but it does not necessarily influence city planning (Beer, et al., 2003, p. 133). However, what planners need to understand is that there are certain benefits, which may be enhanced when paired with other planning objectives. For example, planners may increase the chances of people visiting an open space by making sure that public open spaces are easily accessible to the people. How the people relate to the public open space is not something that a planner may control, but that understanding that there is an aspect that needs to be considered is relevant to town and regional planning.

As much as it is not the objective of this study to find the link between active lifestyle and public health, it is important though for planners to understand that the opportunities that public open space have, may foster active lifestyle in a community. An article called “a walk in the park” shows that an easily accessible and functional open space can offer help to some of the obese UK citizens (Volker, n.d., p. 1). Studies from a health perspective show that easy access to an attractive and large open space increases the usability (by walking) of urban open spaces (Giles-Corti, et al., 2005, p. 165). Contrary to this finding though is that, in New Zealand, Witten, Hiscock, Pearce, & Blakely (2008) concluded that there is no enough evidence that suggests connection between locational access to an open space and physical activity (Witten, et al., 2008, p. 299).

2.4.2.4 AGE AND GENDER ISSUES IN URBAN OPEN SPACE USE

When testing the relationship of interests between different age groups; race and location of resident on needs for additional open space; preference for the style of recreation and levels of visits to a local park; Payne, Mowen, & Orsega-Smith (2002) found that:

1. Age was a determining factor for additional open spaces;
2. Race influenced the type of recreation
3. Older adults and African-Americans were a determining factor for the levels of visits to local parks.

The issue of gender and urban planning is aimed at empowering women and to increase the voices of woman in planning. It realizes that women have been marginalized in their own cities (Todes, 2011, p. 124).

One of the challenges that South Africa has had because of apartheid is a division that exists between people of different racial and cultural groups. Since human settlements were also divided in terms of racial lines, an opportunity exists to use public space in order to meet the integration needs of the current generation.

2.4.2.5 SOCIAL INTEGRATION

In some areas, the segregation of the poor causes neighbourhood deterioration (Carman, 1999) in (Lee, 2008). The middle and upper income groups can afford to move out of an area that is over-crowded with deteriorating infrastructure. If allowed to continue, this can create poverty hotspots and places of squalor. In such cases, it is better to provide integrated community facilities at locations that have opportunities for everyone (Lee, 2008, p. 22). These social amenities may include schools; public open spaces; transport terminals and health and other facilities.

2.4.2.6 CULTURE & OPEN SPACE SYMBOLISM

Public open spaces present an opportunity for people to meet willingly at their own places and time. This is an advantage that needs to be explored when planning for the physical integration of human settlements. A good quality open space will provide a safe area for people to meet and it also provides an opportunity for free association amongst people (Cabe Space, 2005, p. 9). They also provide cultural and historical integration with the past and furthermore, urban open spaces promote a sense of place and identity whilst also increasing opportunities for community events (Cabe Space, 2005, p. 9). There is also a clear distinction between preferences of urban landscape for different cultural groups (Home, et al., 2010, p. 494).



Figure 10: A multipurpose park (Phillip Mpiwa), for walking through; recreation and also serving as a storm-water drainage in Galeshewe

Source (Author, 2013)

In a study that was conducted in Britain for different ethnic groups, it was proven that landscapes have a symbolic dimension and that some aspects of landscapes can be recognized as ‘familiar or alien, welcoming or excluding’. This is in line with the notion that the physical environment may have positive or negative roles in people’s

perceptions of everyday life (Risbeth, 2001, p. 351). A comparative study of ground cover (the structure, function, and value) of street and park trees in Modesto and Santa Monica in the United States proved that street and park trees can increase the aesthetic appearance and recreational opportunities of the city, thus also increasing a sense of place (McPherson & Simpson, 2002, p. 61).

2.4.2.7 ENVIRONMENTAL JUSTICE AND EQUITY

It is also believed that the use of urban open spaces is closely linked with environmental justice and equity (Ferris, et al., 2001, p. 559). Public open spaces increase social and environmental justice by creating equal opportunities to various groups and thus providing a sense of freedom and association (Cabe Space, 2005, p. 9).

2.4.2.8 CRIME AND ANTISOCIAL BEHAVIOUR ON OPEN SPACES

A conference organised by Urban open space in New Castle in the UK, 2007 identified crime and antisocial behaviour as one of the major challenges that are experienced on city parks throughout Britain (Green Space, 2007, pp. 1-81). The purpose of the conference was to seek solutions on how to make parks safe and presentations for the following were discussed: partnerships; engaging young people; liveability (Green Space, 2007, p. 4). It is also believe that poor quality urban open spaces promote **anti-social behaviour and the takeover (land grabbing)** of neglected spaces by the homeless including those who immigrate to the cities in search of a better quality of life. Open spaces therefore end up being the targeted areas by illegal settlers and thus create some further challenges to planners and municipalities at large. A poor quality open space affects the moral and self-esteem of local residents and it has a negative impact on the commitment levels of those who would like to invest in an area, be it the municipality; local residents, developers or others (Cabe Space, 2005, p. 7).

2.4.3 ECONOMIC BENEFITS OF URBAN OPEN SPACE

Urban open spaces **possess economic functions** and elements that have a potential to play a role in the alleviation of poverty in the townships. The economic value of public open spaces refers to direct benefits (paying for recreational or sports facilities); indirect benefits (spill over benefits from health; lack of crime and business opportunities); and lastly the symbolic values (sense of place) (Cabe Space, 2005, p. 11).

1. Urban open spaces define communities by improving neighbourhood identity and a sense of belonging;
2. They attract an economically active workforce and business; and thus promote inward investments.
3. They enhance local property values.
4. They increase the economic influence of recreation; leisure and cultural festivals, which may draw visitors into the area and thus boosting local tourism.

2.4.3.1 THE IMPACT OF PUBLIC OPEN SPACES ON PROPERTY VALUES

There seems to be a general consensus amongst researchers that urban open spaces increase property values (Poudyal, et al., 2009, p. 975); (Robert Wood Johnson Foundation,, 2010); (Northwest Regional Development Agency, nd) (Hobden, et al., 2004); (Jim & Chen, 2006, p. 422); (Molly & Owusu-Edusei, 2001). However, this consensus still needs to be tested as it concerns developing countries and cities that do not have a robust property economy dominated by the urban poor. Even though such a general agreement on the value of urban open space exists, there is a need for urban planners to investigate the type of urban open spaces that will be beneficial to the different types of communities and neighbourhoods. For example, a well-maintained community garden (as a type of an urban open space) will have a positive impact on the property values of a poorer neighbourhood (Voicu & Been, 2008, p. 241).

Findings from a study conducted in London by the Greater London Authority identified a positive relationship between the value of the property and its proximity to an open space. In the same study, there was also a positive relationship between the amount of urban open space in the area and the average property price (Cabe Space, 2005, p. 12). Another study done by the University of East Anglia also recorded an average property price increase of 1-30% depending on the visibility, proximity and type of open space (Cabe Space, 2005, p. 12). View; distance and size of an urban open space are the three variables that affect property prices (Morancho, 2003, pp. 35-41).

The manner in which a community values open spaces is reflected in the high price of properties that are situated in close proximity to urban open spaces. In Minnesota, USA, it was also proven that urban open spaces had a positive effect on property values and that Minnesotans would even go to the extent of accepting a raise in taxes in order to acquire new lands for open spaces and even to preserve existing ones (Anton, 2005, p. 1). In some areas, the economic benefit of urban open space goes beyond property prices. A study conducted in Roanoke and Virginia came to a conclusion that the demand for urban park land did not change due to property price and household income, rather the size of the park substituted the home living space and the proximity to the park (Poudyal, et al., 2009, p. 975). In a separate research conducted in Spain (Castellon), it was discovered that house prices go down with the longer distance from an urban green area (Morancho, 2003, pp. 35-41).

There is also a need to check the context of the area and the impact urban open spaces have on prices across the different types of housing. A study conducted in Aberdeen, Scotland showed that there is a difference in the manner in which property prices responded to the proximity to urban open spaces, i.e., the price of higher density properties (flats) would increase with closer proximity to urban open space but this was not necessarily true for other types of housing (Dehring & Dunse, 2006, p. 553).

Even though studies believe that urban open space has a positive impact on the price of properties, Shively (2009, p. 6), believes there are two factors that can decrease the monetary value of property. These factors are loss of income from potential property

development when buildable land is preserved as open space and non-maintenance of open space also has a negative effect on property values.

2.4.3.2 ECONOMIC EFFICIENCY

Lee C.-M. , (1999) argues that economic efficiency of the urban open space should be examined periodically. In the assessment of the economic efficiency of Seoul's greenbelt, it was discovered that as the city was congested, the economic efficiency of the greenbelt decreased (Lee, 1999, p. 41). To generate economic benefit from public open space is a choice that every local authority needs to take seriously. By providing qualities that are in short supply and that would be valued, local authorities can turn the social value of public space into an economic benefit (Cabe Space, 2005, p. 6).

The following represent attributes that have an impact on the economic benefits of green spaces (Cabe Space, 2005, pp. 80-83):

1. Height of buildings and the influence of layout planning and design: blocked views may lead to less value impact of open spaces unless there are vistas or rooftops that enhance visual accessibility.
2. Houses should front up the park rather than to have their backs towards it. This will deter crime and anti-social behaviour. Crime and perceptions of anti-social behaviour are one of the major impacts in keeping property values low.
3. History of the park may also have an impact on the property values, as parks that have long been established and well maintained are likely to have a positive influence on property values as compared to new ones. The opposite of this should also be true when it comes to spaces that have been notorious for a particular undesirable use.
4. Enclosed parks have a lesser impact as compared to parks that are visually inviting and are connected to road networks.
5. There is also a positive relationship between the park size and its area of influence in terms of property prices.

2.5 URBAN OPEN SPACE PLANNING

Planners have to consider various aspects such as opportunities and constraints when they are planning for human settlements. This is no different when it comes to open space planning and development. The integration of conservation initiatives with other social, political and economic aspects should form the basis of open space planning (Tjallingii, nd, p. 110); (Jim, 2004, p. 311). Urban open spaces should be planned in such a way that they are integrated with other developmental land uses. Ecological networks that are necessary for habitat creation and survival of wild species in the city together with traffic flow (walkways; cycle paths and bridle paths) are inseparable.

In some instances, there is just a general drive to improve the social amenities of a city or a neighbourhood. In the case of South Africa, it is a constitutional right of every citizen to have an environment that is clean and safe. Planners can also use urban open spaces to achieve planning objectives. These benefits are achieved by maximising the core benefits of open spaces such as the social; conservation and economic benefits.

Such planning objectives include the following:

1. Enhancing the identity of towns and cities
2. Improving accessibility and attractiveness of local facilities
3. Forming barriers from noise generated by transport routes
4. Visual screening
5. Supporting the segregation of distinct neighbourhoods where it is necessary

Some general recommendations by Beer, Delshammar, & Schildwacht, (2003) about open space planning in urban renewal projects include the following:

1. Understanding the perceptions of quality of life, e.g., recreational needs
2. Bio-diversity: what needs to be preserved and where
3. Water engineering (Flood control and protection of underground water)
4. Waste disposal (using the potential of urban open space to compost biodegradable waste and also to make biogas where conditions allow)

5. Air quality and local climate (landform and surface texture, the impact on local air quality of the presence or absence of trees, and the moderation of the urban heat island problem) (Beer, et al., 2003, p. 134).

2.5.1 SUPPLY AND DEMAND APPROACH TO URBAN OPEN SPACE PLANNING

One study that tries to understand these issues concerning public open space planning is that of Maruani and Amit-Cohen in 2007. They believe that the allocation and supply of open spaces is based on supply and demand. Demand of open spaces is measured in terms of the number of people, and animals that need a particular open space, and it is also linked to the socio-economic needs of the people from time to time and may differ from one place to the other. The supply approach is concerned more with the availability of resources, e.g., steep slopes; rivers and mountainous areas that are undevelopable; and areas of high cultural and conservation value that are worth preserving. The supply approach is more suited for open spaces outside the urban areas and for environmental and conservation purposes whereas the demand approach is best in the urban areas where it may have more success in satisfying the social, economic and planning benefits of open spaces (Maruani & Amit-Cohen, 2007).

2.5.2 PUBLIC OPEN SPACE DESIGN STANDARDS

The **multi-functional nature of urban open space** is important in the success of open space planning and development. A case study research by Beer, Delshammar, & Schildwacht (2003), showed that in most European countries, local urban open space plans focused only on the **aesthetics and re-creational** purposes. Public open space plans does not share the same importance in city plans as that of other infrastructure plans and they also do not have similar budgets (Beer, et al., 2003, p. 133).

The following aspects affect the planning and design of urban open spaces:

1. Location & Size

2. Connectivity/Open Space continuity
3. Access
4. User groups & Land cover

(CSIR, 2005)

Whilst (Lotfi & Koohsari, 2009) acknowledges this debate, based on their research of Tehran City in Iran, they do not agree that the less privileged are marginalized from public space. Van Herzele & Wiedemann (2003) developed a model for the monitoring and measuring of accessible urban open space based on the following:

1. Provision of urban open space should be citizen based
2. All urban open space should have a function. No one urban open space is a substitute for the other. This implies that different spaces may have different function and therefore cannot be substituted.
3. Pre-condition for urban open space use
 - a. Proximity
 - b. Accessibility
 - c. Surface
 - d. Safety
4. Variety of open space quality and experiences
5. Multiple use (Van Herzele & Wiedemann, 2003, pp. 111-113)

2.5.2.1 URBAN OPEN SPACE DENSITY

The size of an area and the population the city has, affects the amount of urban open spaces that should be provided. The question is, when do planners know when there has been an oversupply of urban open spaces. Land use intensification in principle, is believed to increase opportunities of economic activity; convenience and efficiency in movement functions. Such intensification efforts are achieved by promoting high densities (CSIR, 2005, p. 2.3).

The issue of location depends on various aspects, such as the terrain of the area; the geology of the area and the type of open spaces that are planned. For example, a quarry that is found within an urban environment may represent some kind of an open space after it has been closed down and rehabilitated, e.g., according to Nel, V (2013) there was a quarry in Waterkloof (Pta) filled with water that was long used for windsurfing until developers decided to build on the surrounding land. However, its geological formation and conditions may deem it expensive and unsafe to build a permanent structure on it.

The distribution of urban open space will affect the way people respond to it (New York State Department of Environmental Conservation, 2007, p. 3). Just like in the history of open space planning in London, where the provision of an open space had to be a certain acre/1000 city dwellers, some countries have also adopted this style of planning, e.g., 10% of Public Open Space is needed for new developments in Australia (Grose, 2009, p. 53); where a similar figure (10%-17%) exists in South Africa even though it is not legislated.

The new CSIR guidelines for the provision of social facilities in South Africa, recommend an average of 0.5Ha per 1000 people for parks and 0.56Ha/1000 people for sports and recreational facilities (CSIR, 2012, p. 105). They also acknowledge that these recommendations could be lowered in cases where there is multi-purpose use and in lower density areas (Ibid.).

Poudyal, et al., (2009, p. 975) believe that the increasing population and urbanisation in the cities of the United States will contribute to congestion of urban open spaces. In order to support the conservation of resources and thus contributing in the ecological function of urban open spaces, the size of urban open spaces needs to be considered. Larger urban open spaces sites are believed to have a greater advantage of supporting more species (Hudson & Bird, 2009, p. 1); (Lam, et al., 2005, p. 55).

Small and isolated patches of green space within neighbourhoods are neither sustainable nor practical in the long terms sustainability of their areas. Conway (2006) cites Griffiths, Martinka and Price (2000) and Wiens, Schooles and Weeks (1997) who

respectively believe in both the structural and functional connectivity of open spaces as opposed to green islands surrounded by built environment. In these cases, connectivity refers to the free movement of biotic and abiotic materials and the formation of ecological and green corridors within and around neighbourhoods (Conway, 2006, p. 218).

Studies from a health perspective show that easy access to an attractive and large open space increases the usability (by walking) of urban open spaces (Giles-Corti, et al., 2005, p. 165). A study done in Castellón (Spain) revealed that there is an inverse relationship between the selling price of the dwelling and its distance from an urban open space. The research was done by studying three aspects of public open space, i.e. (Open space view; Distance and Size). The authors concluded that smaller public open spaces should be provided throughout the area rather than to have big ones that may be far from the majority of the households. This does not mean bigger open spaces are not encouraged; rather they should be there to complement the smaller ones that stand to have an economic benefit for the households (Morancho, 2003, p. 40).

Lerner and Poole in Bailkey (2003, p. 289) recognized that urban open space development may have some economic value in cases where such land parcels are large (e.g., prominent land marks and major urban parks); and that development of such urban open spaces is part of a multi-land use development plan. This notion therefore, rules out the success of smaller open spaces. However, the functions, size and threshold of such urban open space are not specified in their research.

More affluent people with higher incomes tend to demand higher environmental quality. If the properties were expensive, they would rather buy a smaller property in a neighbourhood that provides environmental quality. The size of their residential sites is not seen as a substitute for environmental quality (Brasington & Hite, 2005, p. 78).

From a South African point of view, the recommendations by the CSIR (2005) reflect a similar line of thought on the sense that it is proposed that open spaces should be sufficiently large in order to accommodate the regenerative and restorative function that each ecosystem should have. However, there is no mention of what this size is and

whether there should be different sizes for each function. In terms of location, urban open spaces should be located in close proximity to the main landmarks and sensitive environments in order to increase the interaction with the people and the preservation of sensitive ecosystems, respectively (CSIR, 2005).

Based on these arguments, there seems to be more evidence that rules out the provision of smaller open spaces than bigger ones. This means local authorities should engage with the communities in order to assess the priorities of the people in order to achieve the desired impact.

2.5.2.3 THE CONTINUITY OF URBAN OPEN SPACES

CSIR (2005, p. 2.3) reminds urban planners that, most people in South Africa are poor and therefore urban planning has to come up with plans that prioritize pedestrian movement. This can be further linked to the principle of connection and continuity whereby connection refers to the various activities that occur in an urban environment and continuity means an un-interrupted landscape form for both ecological and human activity.

Open space systems comprises of an interconnected and managed network of open spaces, which supports interactions between social, economic and ecological activities, sustaining and enhancing both ecological processes and human settlements (JMOSS 2002); (Shively, 2009, p. 11); (Li, et al., 2005, p. 325). CSIR, (2005, p. 5.4.8) suggests that networks of urban open space should be promoted in order to create opportunities for movement functions, something that is not always possible with segregated open spaces. As much as urban open spaces should also allow for continuous uses such as walking and jogging for the community, the ecological value is the most important aspect when it comes to the continuity of urban open space (Conway, 2006, p. 218); (Jim & Chen, 2003, p. 95); (Sodhi, et al., 1999, p. 123).

Due to the ecological benefits of urban open spaces, planners need to maintain the natural system of open space in order to preserve and enable the existing ecological systems to survive. This would be impossible if the movement of species is prohibited by discontinuity in the open space system. This continuity is promoted by various aspects that include the following:

1. Location of open spaces in close proximity to sensitive ecosystems such as rivers and wetlands
2. Road network
3. Linkages with other land uses and different types of open spaces

The continuity of open space should reflect the different types of habitats that are needed for various living organisms. For example, Rudd, Vala, & Schaefer (2002) see backyard habitat in urban areas as crucial components of structural connectivity of open space systems. It supports green corridors because of a lack green spaces in cities. The only problem with this approach is that it may support different kinds of fauna and flora species. Planners should identify the species that are applicable in their open spaces and determine the minimum habitat size they need in order to sustain themselves (Rudd, et al., 2002, p. 374). These backyard habitats together with planted boulevards link habitat nodes by acting as green corridors.

The goal of the Urban open spaces Habitat Restoration Program in the early 1990s was to fund restoration and enhancement of urban natural areas. However, the emphasis was on the establishment of corridors and consolidation of fragmented public and private open space (Lev, 1998, p. 103). This was seen as central in achieving a sustainable urban open space in the Portland Metropolitan region.

2.5.2.4 ACCESSIBILITY AND PROXIMITY TO URBAN OPEN SPACE

Accessibility refers to the ease at which a public open space is reached. Accessibility is not only limited to physical contact with the open space, but it may extend to mental; economic and financial factors around the open space that need to be accessed (Lotfi & Koohsari, 2009, p. 134). The availability of easily accessible and aesthetically pleasing

urban open spaces is important in improving urban liveability (Van Herzele & Wiedemann, 2003, pp. 109-126).

Both sociological and natural benefits of urban open spaces are important in the choice of residential proximity to urban open spaces (Van Herzele & Wiedemann, 2003, p. 110). For urban open spaces to be used efficiently, they have to be easily accessible they should also be in close proximity to the residential areas they were intended for. Easy accessibility of an urban open space will reduce time and costs of visits (Lotfi & Koohsari, 2009, p. 134).

CSIR (2005, p. 5.4.7) recommends a maximum walking distance of 500m for open space access.

Age Group	Daily Use	Weekly Use	Recommendation for open space accessibility	Other
6-12 yrs.	x	x	500m radius from schools and homes	-
13-55 yrs.	x	x	500m radius from schools and homes	Less frequently used open spaces can be accessed via public transport
Elderly	-	x	400m radius from schools and homes	

Table 6: Recommended distance for accessibility to urban open space for different users,

Source: (CSIR, 2005, p. 5.4.7)

Studies from a health perspective show that easy access to an attractive and large open space increases the usability (by walking) of urban open spaces (Giles-Corti, et al., 2005, p. 165). However, a study done in New Zealand, Witten, Hiscock, Pearce, & Blakely (2008) concluded that there is not enough evidence that suggests a connection between locational access to an open space and physical activity (Witten, et al., 2008, p. 299)

Management of existing open spaces in Britain is subject to questions and discussions. Atkinson (2009), believes that certain groups of people are being marginalized in terms of access to good quality public space and this is all in the quest of providing safer public

space. Restrictive building and zoning codes together with commercialization of public space are some of the reasons that are cited for this failure of urban policies with regards to accessibility of open space.

2.5.3 OPEN SPACE MANAGEMENT & ADMINISTRATION

Like any other land use, urban open spaces need some form of land management policy in order to fit in within the built environment. Various initiatives exist for the maintenance of urban open spaces. These initiatives range from policy, legislation and even planning norms that govern a city's asserts. In some countries such as Sweden, there is even a move of privatization and commercialization of urban open space through housing companies (Lindgren & Castell, 2008).

2.5.3.1 GEOGRAPHIC INFORMATION SYSTEM AS A MANAGEMENT TOOL FOR URBAN OPEN SPACES

The use of Geographic Information System (GIS) as a management tool for urban open spaces involves the development and use of integrated indicators. These indicators are the ones that are fed into the system for the monitoring of urban open space provision against a city's planning targets, e.g., one of the examples is the introduction of a methodology to assess the accessibility to public open space using GIS. What would be done here is to measure access (by proximity) to urban open spaces and also measure access to quality open space and therefore its desirability (Lotfi & Koohsari, 2009, p. 133). This means, if a city intends to provide a certain number of urban open spaces per given number of city dwellers, then the GIS would be used to measure the desired targets. City targets may include quantitative and qualitative objectives; the impact of policies and identification of areas that need intervention (Van Herzele & Wiedemann, 2003, pp. 109-126).

Furthermore, there is also an opportunity of building statistical models, which can identify constraints and predict how the community may use an urban open space. Once

these are known, planners can incorporate this information into a GIS system and help in the design of sustainable public open spaces (Stemerding, et al., 1999, pp. 145-158).

2.5.3.2 STAKEHOLDER ENGAGEMENT

Urban planning involves the implementation of theoretically sound urban planning policies which at any given time may not necessarily have the support of various stakeholders in a city. For example, there are various sectors that are interested in helping out in the fight against the loss of biodiversity and the threat of losing essential habitats because of city development. Professionals from different sectors need to be involved in the planning process in order to use existing information and to improve the quality of planning decisions.

Different professionals contribute in the planning process in different ways. Their knowledge and methods differ due to the different types of training and experience. Therefore, the networks; partnerships and cooperation that exist amongst different professions, need to be formalised in order to achieve sustainable and meaningful contributions in decision making (Harrison & Davies, 2002, p. 95); (Freeman, 1996, p. 375); (Altherr, et al., 2007, p. 512).

The following aspects of open space planning need to be addressed in re-development and these suggestions are based on experiences from the redevelopment of the World Trade Centre redevelopment:

1. Centrality of politics in land use planning
2. Public/private partnerships in terms of ownership can have a detrimental impact on the autonomy of land use planning; the flexibility in decision making and practical considerations in financial management.
3. Public participation: public needs and consultation in the face of politics and economic constraints (CLARK, 2005).

2.5.3.3 LAND USE ZONING

The different types of management may include strategic land use management and extend down to the level of site management. Physical planning and strategic environmental assessment have a way of identifying areas that need preservation and protection. Conway (2006) does not believe that general land use policies may be successful in protecting the connectivity of corridors of open space. Conway (2006) based her assessment on the following three types of land use policies:

1. Cluster zoning or densification of land uses
2. Down-zoning
3. Water and wetland buffers

Zoning laws have a significant impact on the way urban open spaces are managed and developed (Tang & Wong, 2008, pp. 258-268). If the zoning laws are not clear in the way they define urban open spaces, there is bound to be confusion in the manner in which development plans are approved. For example, a research conducted by Nicol and Blake (2000) revealed that some local authorities tend to give higher green values in parks and sport-fields than to other sites of higher biomass which may not enjoy the status of formal urban open space, i.e. vacant land (Nicol & Blake, 2000, p. 193). They recommend that urban open spaces should also be classified in terms of their biotic/abiotic qualities and the type of land cover.

Previously, in traditional settlements, zoning and land use depended on boundaries and physical parameters of bioregions in which they were situated rather than city boundaries. This means that the urban edge was not the definite boundary of an open space management system. An example of this is that a city can be divided into its ecological zones such as river edges, foothills, plains, plateaus, marsh etc., (Viswanathan & Sharpe, 2000).

One of the challenges regarding the use of zoning laws is that, in developing countries it has failed to protect open space from development. In San Salvador, illegal occupation of green space and land that is declared as an open space, accommodates squatter

settlements. This is not too different from what has been observed in Galeshewe. Even though there are various reasons that could be attributed to illegal occupation of urban open space, the impact it has on the value of public open space needs a closer look. In the city of Guatemala, the municipality had declared land a high risk and therefore unsuitable for human occupation and even tried to come up with solutions to evict the people but this failed (Shlomo, 2008, p. 150). According to Yokohari, et., al (2000) the zoning concept has failed to protect the open spaces and greenbelts in the outskirts of Asia's mega cities. It is mentioned that together with the greenbelt concept, it produced a chaotic mixture of urban and rural land uses along the boundaries of big cities (Yokohari, et al., 2000, p. 159). In a highly urbanised city like Hong Kong, Jim (2002) suggests that there is a need for planners and government to recognise both the ecological and economic advantages of green spaces. Government must take the centre stage in enforcing and realising these issues without over relying on land use schemes that can be exploited by the private sector (Jim, 2002, p. 149).

2.5.4 LESSONS FROM INTERNATIONAL CASE STUDIES: EUROPE

The United Kingdom approach to open space planning gives a view of the problems that existed for them to invest such a lot of energy and time on open spaces. Their journey of open space planning begins from the time of the industrial revolution to the time of neglected and underutilised open spaces. What is experienced in South Africa is not new, however the context is different and therefore the solutions can never be the same.

2.5.4.1 UNITED KINGDOM

More than 80% of the population of the United Kingdom (UK) lives in urban areas and it is estimated that half of the urban population makes more than 2.5 billion visits to urban open spaces each year (Williams & Thwaites, 2007, p. 58). But, over the last 30 years, there has been a gradual decline in the quantity and quality of public parks.

The United Kingdom has about 25000 parks and green spaces of different kinds and according to Williams and Thwaites, 39% of these parks are neglected. In some UK communities these urban open spaces are vandalised and are seen as dangerous due to the fact that they are frequented by marginalised groups such as drug users. (Williams & Thwaites, 2007, p. 59). This problem has escalated from the neighbourhood level to become a political priority at both local and central government. Urban Green Spaces Taskforce (in 2001) and later CABI Space were then created in order to provide advisory support regarding the issue of declining urban green spaces in the UK.

The UK was a pioneer in the development of the London Green Belt concept and the use of it thereafter. In the last 15 years there have been calls from politicians to reform the London Green Belt to make it more flexible to development (Amati, 2007, p. 579). Due to this political pressure, the protection of the greenbelt against commercial development failed in some parts. Even local authorities have followed the calls for flexibility by developing strategies that revise the green belt boundaries (Amati, 2007, p. 592). Scotland also has political pressure to reform its green belt policy in order to diversify and to align with modern land use planning principles and to facilitate cultural change (Lloyd & Peel, 2007, p. 639).

It is clear that the demands for urban parks in the 21st Century have changed. New skills are needed in order to raise the capital for park maintenance and restoration work. Whereas the public sector in UK has gone into partnerships with the private sector in order to raise the necessary maintenance funds for some of the urban parks, they concentrated on profitability at the expense of a service that caters for the needs of all users (Williams & Thwaites, 2007, p. 70).

2.5.4.1.1 ABERDEEN

In 2010, the city of Aberdeen conducted an open space audit in order to determine the quality; extent; and distribution of open spaces within its boundaries. The city open spaces were identified and mapped on a GIS according to their typology and location (Aberdeen City Council, 2010, p. 5). The maximum distances that people have to travel

to reach the open spaces was also measured in order to determine where there may be deficiencies or over supply of urban open spaces.

The majority of urban open spaces were 'woodlands (801Ha or 23%)' and 'semi-natural grounds (760Ha or 22%).' Amenity open spaces (i.e., those found in residential, business and other land uses) were (649Ha or 19%) followed by golf courses (Aberdeen City Council, 2010, p. 7). These measurements do not include the qualitative measurements which were assessed according to:

1. Accessibility and connectedness
2. Aesthetic appearance
3. Level of activity in supporting health and well being
4. Community support and
5. Biodiversity

The limitation to this qualitative approach is due to the fact that the researcher's impression of the site depends on the day the site was visited and on the surveyor's impression.

2.5.4.2 NETHERLANDS

Netherlands over the years has produced much work on open spaces. The following Two case studies are discussed: Overvecht region and the Midden-Defland case. It is also mentioned that the city of Utrecht in the Netherlands shifted its planning and development approach from green areas to green networks, a move that is synonymous with the London approach in striving for a green strategy rather than quantity and distribution (Tjallingii, nd, p. 110).

2.5.4.2.1 OVERVECHT DISTRICT (UTRECHT):

The problem with the Overvecht District in Utrecht was the maintenance of open spaces that were designed as part of a housing solution that had been developed in the 1960s

whereby 30,000 people were located within a 400Ha area. Utrecht developed a citywide green-structure policy but it was unsuccessful in helping with the detailed housing development plans due to the country's priority on biodiversity. The solution that was proposed was the survey of local bio-diversity in order to create a detailed recreational policy for the district for the use of those open spaces. The objective of the detailed recreational policy was to understand how people react with their immediate spaces so that the project team could come with an appropriate approach for revitalisation of those spaces. The study was conducted through a focused group survey on quality of life and it found that people did not want to lose their urban open space and the problems identified are the following:

1. little diversity of open space experience
2. no comfortable spaces to enjoy
3. no sense of place
4. no clarity of ownership
5. little sense of security (Beer, et al., 2003, p. 138)

Based on the results of this survey, project team then came up with a plan from different backgrounds and perspectives, such as the consideration of people from different political dynamics concerning community participation in urban regeneration processes. Landscape designers, who are (traditionally) the drivers of urban open space design in Utrecht, would then integrate their skills and knowledge with other professionals and relevant stakeholders.

The lessons that were learned from this case study are the following:

1. Community understanding of open space is important
2. Recreational needs change from one age groups to the other
3. Layout planning for open spaces should promote the following:
 - a. Management of floods and surface water runoff
 - b. Ameliorating local climate,
 - c. Waste management
 - d. Opportunities for alternative energy (wind, sun and water)
4. Improving biodiversity by increasing more natural habitats
5. Analysing maintenance cost (Beer, et al., 2003, p. 140).

2.5.4.2.2 PRESERVATION OF URBAN BUFFER ZONES: THE MIDDEN-DELFLAND CASE

The Dutch institutional framework is one of the best in the world. Its success demonstrated the preservation of buffer zones (i.e. green corridors) against development pressures that would have catalysed further development and rendered the greenbelt worthless between the cities of Delft and Rotterdam in the Netherlands. Here it is shown that to keep open spaces, cities need to improve their recreational, natural and agricultural potential.

Land acquisition, consolidation and zoning and buffer zone policies were initiated in order to protect the green corridor between Delft and Rotterdam. The Midden-Delftland Act was passed in 1977 to supplement the buffer zone policy and to govern land re-allocation. However, land use control still continued to be done in terms of the zoning system. About 60% of the green corridor was used for dairy farming and the rest divided amongst recreational, nature and horticultural activities. The area used for dairy farming had only decreased by 40% since 1977 as new land uses that were compatible with the existing land use zones were introduced. Long leases over acceptable land uses were granted.

As the cities of Delft and Rotterdam expanded, the Midden-Delftland statute was established to preserve the open space; to develop recreational activities and to improve the farming conditions. A Reconstruction Committee consisting of the municipalities, provincial government, farming community and other civil organisations was also formed so that it would decide on proposed building initiatives. Financing for the project came from National Government.

Using Geographic Information Systems analysis, it was proven that this project was a success compared to similar areas in the Netherlands over the 31 year period (from 1977- 2008) (Van Rij, et al., 2008, pp. 115-124).

2.5.4.3 SWEDEN

There were 2500 people living in 1100 high rise flats in a low cost area called Holma in Malmo. This was a social housing scheme with a large percentage of immigrants. The ten years of success with urban renewal was due to the fact that:

1. The area is maintained by the residents, through voluntary participation agreements between the residents and the caretakers of the flats
2. The solution was the understanding of the community needs ahead of technical planning requirements and
3. The aim of the tenant-focus strategy was not to reduce costs but to empower the community (Beer, et al., 2003)

In a similar project in Loma, an area with 8000 inhabitants, a dumping site was transformed into a park. The park was then maintained mainly by retired men “Friends of Slattang Park” without them being asked to do so. The success of the project was attributed to the fact that the participation was voluntarily (Beer, et al., 2003, p. 141).

2.5.5 LESSONS FROM INTERNATIONAL CASE STUDIES: AMERICA

Even though most of South Africa’s planning was borrowed from the British concepts, there is a close resemblance in the way the Americans acquire open spaces. Through the township establishment processes in their contexts, and the manner in which their open space policies are drawn is much similar to South Africa.

2.5.5.1 USA: BURLINGTON, VT

Similar to the trends that are experienced in the UK, the City of Burlington had been losing valuable open space land from the 1960s to the extent that by the 90s, this constant decline had reached critical stages to an extent that it threatened the quality of life. By the 2000s, the community was generally opposed to any form of development within the city (City of Burlington, VT, 2000, p. 18).

Open space protection and conservation then became a high priority through various land use planning and regulation measures. The most prominent and comprehensive form of regulation was through land use zoning through the Burlington's zoning ordinance. This ordinance designates which properties are for recreation; conservation or open space and no development is allowed in those zones unless it complements an existing agricultural use. However, there has been permission for land uses such as "public and institutional uses to be allowed, including libraries, dormitories, laboratories and places of worship". The most widely used tool for open space acquisition was the regulation of subdivision of land, which required that 15% of any property that is larger than 1.2Ha, should be set aside for urban open space. (City of Burlington, VT, 2000, p. 20)

Unfortunately, the zoning laws and subdivision regulations are insufficient as a long-term solution for open space provision and protection. They are subject to change due to socio-political conditions of the time and their use does not permanently set aside those properties for urban open space purposes.

Other efforts such as the 'open space risk profile' have been used in the city in order to improve the provision and conservation of an open space (City of Burlington, VT, 2000, p. 20).

The city of Burlington has the following challenges that make its preservation and acquisition of urban open space difficult:

1. Unclear policies: poor definition of priorities for conservation purposes.

2. Lack of authority; resources; skills and equipment to acquire and manage conservation land.
3. No dedicated local funding

2.5.5.2 USA: HASSAN

Hassan employs two ordinances for the provision of urban open spaces, i.e. 'park dedication ordinance' and 'open space development ordinance'. The challenge with urban open spaces provided through these ordinances is their continuity, i.e., these parcels of land are provided at different times and are disconnected from one another and that makes their maintenance and accessibility difficult. Due to their isolation, their habitat value for wildlife is limited and they therefore serve only the functional and aesthetic benefits to adjacent properties (Shively, 2009, p. 5).

The town of Hassan uses the following tools to plan and preserve urban open space:

1. Greenway Corridor Overlay District: it helps to reflect underlying development principles in the area that is covered by the greenbelt.
2. Open Space Development (OSD) Ordinance: This ordinance requires between 30 and 40% of the gross area to be permanently preserved as open space and the public open space is then donated to the town
3. Park Dedication Ordinance (PDO): this is a policy that is used to acquire land for public open spaces in existing developments.
4. Conservation Easements: These are buffers that mitigate the impact of human activity to a sensitive ecosystem or habitat.
5. Voluntary Land Donation (Shively, 2009, p. 14)

2.5.5.3 USA: NEW YORK STATE

The State of New York uses various techniques for the acquisition and conservation of urban open spaces. These include the following:

1. Voluntary Programs Private: whereby property owners can identify and implement a local open space plan by agreeing to good land use management techniques.
2. Deed Restrictions/Restrictive Covenants: The land developer legally and voluntarily restricts the use of land in order to provide for urban open spaces
3. Conservation Easements
4. Land Trusts: Property owners voluntarily work with government agencies in order to preserve public open space
5. Zoning: different types of land use zones exist, setting development parameters for development of a property.
6. Cluster Development & Planned Unit Development (PUD)
7. Recreation Land Dedication
8. Transfer of Development Rights
9. State Environmental Quality Review Act
10. Taxation Policy
11. Land Acquisition
12. Purchase of Development Rights

The State of New York recognizes the different types of funds that are necessary to improve the financial deficit of urban open space planning and maintenance. These funds include the following: Local Bond Acts; Environmental Protection Fund (EPF); conservation Assistance Program; Transportation Efficiency Act (TEA-21); Farm Security and Rural Investment Act; Forest Legacy Program; Farmland Protection Program; Forest Land Enhancement Program; Conservation Security Program (CSP); Urban and Community Forestry Program; The Conservation Reserve Program (CRP); Environmental Quality Incentives Program(EQIP); National Flood Insurance Program (NFIP); Coastal and Estuarine Land Conservation Pro-gram (CELCP).

2.6 CONCLUSIONS

At the beginning of this chapter the question was, how much of planning has changed in the last 100 years and what is relevant today that was not relevant before and how does that affect the way in which one responds to the questions this research is trying to answer? In answering this question the literature review took a journey of analysing the history of urban open spaces from the ancient world; through biblical times and right up until the birth of the planning profession. The conditions of planning and the needs of the people are still seen as being vital in the planning and use of urban open space.

This literature review also revealed the names of the first pioneers in urban open space planning; the theories of urban planning and how it has changed from rigid master planning to theories that see man as the centre of planning interventions. These changes in planning theory are also changing with the changing times and open space benefits, even though there is currently a wide acceptance on the ecological function debates, are still there on how to deliver these benefits in an efficient manner for different communities. It also looks at how different nations have dealt with some of the issues that affect urban open spaces, e.g., development pressures; biodiversity and urban open space policies on management and acquisition of urban open space. All these issues that are identified in the literature review, form the basis of data analysis and they also inform the research instruments that have been chosen in order to deliver a theoretically sound judgment in the manner in which town planning deals with urban open space planning in South African townships.

The next chapter on methodology will borrow from the existing and known methodologies of scientific and social research and the best available means of scientific enquiry. The question remains, how can town and regional planners maximise the impact of urban open space in the revitalisation of previously neglected townships?

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION TO CHAPTER 3

The literature review indicated a number of topics that are relevant to urban open spaces. Several methods which are also identified in the sections below came from studies that were analysed in the literature review. The research orientation that is described makes it clear that urban and regional planning, as a profession, falls within social sciences and therefore uses some of the concepts and theories of research that are applicable in social sciences. This chapter gives a detailed account of what was done in Galeshewe Township, how the population was chosen; sampling methods that were used; the manner in which data was gathered and managed up until the analysis techniques that were used.

3.2 RESEARCH ORIENTATION AND THEORETICAL FRAMEWORK

To provide a picture of what is going on in the researcher's mind, the reader needs to understand the manner in which the researcher reasons. For example, what makes the researcher to solve the problem in a certain manner and not the way the reader would have preferred? This answer to this question lies with understanding the purpose of the research; the manner in which similar research has been conducted and lastly, the research paradigm.

3.1.1 OBJECTIVES OF THE STUDY

Urban and regional planning is one of the professions in built sciences, which are merely sciences about development of structures for human inhabitation. The objective of the study was based on improving urban and regional planning practice and it was also aimed at an academic audience formulating a theory grounded on the science of urban and regional planning. De Vos, et. al, 2011, p. 43 differentiates between scientific

theory and professional research, by stating that scientific theory is based on typologies; models and theories whereas professional research is aimed at solving practical problems that are experienced in a profession. Professional research also tries to remove ingenuous theories for the particular settings that are being investigated.

Whereas the profession of urban and regional planning is based on scientific knowledge, the proposed research is aimed at contributing both to the science and the practice of the profession. This inquiry therefore requires a practical setting and knowledge of science that drives urban and regional planning practice and urban and regional planning research.

3.1.2 RESEARCH METHODS USED TO STUDY URBAN OPEN SPACES

The answers to this research are being studied using multiple methods of data acquisition and interpretation. Various research methods exist in the planning and development of urban open spaces. The choice depends on the type of questions the researcher intends to answer and the purpose of the research as explained above. As explained below, some of the research methodologies that have been found to be connected to urban open space research include, open space audits; quantitative data analysis; Geographic Information Systems; and cadastral surveys.

3.1.2.1 OPEN SPACE AUDIT

In order to quantify the amount and quality of urban open spaces, the city of Aberdeen in Australia conducted an Open Space Audit. The audit uses a pre-defined checklist of the type of land uses; and infrastructure that is available on open spaces.

3.1.2.2 QUANTITATIVE DATA ANALYSIS

Other authors such as Beer, Delshammar, & Schildwacht (2003) and Tang & Wong, (2008) used quantitative data analysis methods to study the different types of urban open space land covers and longitudinal analysis of urban open spaces respectively. In a study conducted in Ohio and Cleveland in the United States, a logistic regression model was used to test the relationship of interests between different age groups; race and location of residents on the following questions (Payne, Mowen, & Orsega-Smith, 2002, p. 181):

1. Need for additional open space
2. Preference for the style of recreation
3. Levels of visits to a local park

3.1.2.3 CADASTRAL SURVEY

Tang & Wong (2008) used the cadastral data of Hong Kong in order to analyse the provision of urban open spaces over a period of a decade (Tang & Wong, 2008). This method answered the following questions:

- a. What affected the geographical distribution of open spaces?
- b. Performance of urban open spaces against other land uses?
- c. Provision of planned open space and developed open space (Tang & Wong, 2008, p. 260):

3.1.2.4 GEOGRAPHIC INFORMATION SYSTEMS

There is also an influence of geographic information system (GIS) in the study of urban open spaces. Van Herzele & Wiedemann (2003) used GIS modelling in order to identify the pre-conditions for urban open space usage and to improve the monitoring of urban open space (Van Herzele & Wiedemann, 2003). When trying to measure objective accessibility and distribution of public space based on socio-economic circumstances of

communities, Lotfi and Koohsari (2009), identified challenges with conventional research methods of focusing on geographical data that is based on political/administrative units. Their argument is that, researchers are doing that because it is easier to get data based on census or administrative section, however this limits the integration of accessibility measurements. The mitigation for this is seen to be the Geographic Information Systems analysis (Lotfi & Koohsari, 2009, p. 134). These authors also argue that there is a difference between subjective research and objective research concerning access to public open space. The subjective research is done via questionnaires and interviews, whilst the objective research or view focuses on quantitative indicators such as:

1. Number of public open spaces
2. Density of open spaces
3. Minimum distances to the open spaces
4. Travelling costs to open spaces
5. Gravity, i.e. the number of public open spaces divided by distance (Lotfi & Koohsari, 2009, p. 134).

3.1.3 RESEARCH PARADIGM

Before one can describe the type of research design and the possible solutions to the research problems that have been identified, it is important to understand the theoretical framework for understanding the basis of the proposed contribution to existing knowledge and this is referred to, as research paradigm. A research paradigm reflects the manner in which the researcher views life and makes meaning to its many forms. The researcher is guided by a complexity in the type of data and available methods of analysis in order to make meaning. In addition to this, the researcher's views; experience and professional knowledge in urban and regional planning also affects the decisions about the type of data to be collected, research design and analysis methods.

As shown in the theories of urban and regional planning (in chapter 2), by the move from Utopianism to a people centred approach to urban planning, urban and regional planning is a social science. This implies that a research in urban and regional planning should be within the following approaches of scientific research acceptable in social sciences, as mentioned by de Vos, et.al (2011, p. 5); positivism; post-positivism; constructivism; interpretive; critical theory; feminist and post-modernism .

Realism, which includes both positivism and constructivism, is also known as post-positivism (Krauss, 2005, p. 761). According to Nieuwenhuis (2007, p. 65), post-positivism assumes multiple realities that are subjective and mentally constructed by individuals. Positivism is more of the objective look at the reality and analysis using methods of natural science, whilst constructivism considers the role of the human values in analysing reality. The “interpretivist view to the world”, sees science as a way of understanding the world to an extent that one may be able to predict certain solutions through observation of people and measurement but also believing that observation and measurement are fallible (Henning, Eilhelm, & Brigitte, 2004, pp. 17-20). Post-positivists, as opposed to positivists believe that reality can never be fully known rather estimated. Their research relies on multiple methods of data collection and analysis by studying the evolvement of the process of research and adapting the research methods in order to react to the situation at hand (de Vos, Strydom, Fouche, & Delpont, 2011, p. 7).

Due to the nature of the questions that have been posed and their contribution to the field of urban and regional planning, using only qualitative methodologies was seen as inadequate in answering the multiple complexities of the impact of urban open spaces on township revitalisation. The fact that one is looking at the planning and development of urban open spaces in numerical terms, also warrants a good look at quantitative methods. Understanding of urban open spaces in the township, was also done using historical documents (conditions of establishment documents) and surveys which were conducted via questionnaires; checklists and observation of empirical domain. Geographic information systems were used to study the geographic features of urban open spaces in terms of distribution; location and size.

The research methods attributed to quantitative and qualitative studies are allowed within the chosen research paradigm of modernism (Krauss, 2005, p. 762). Modernists contend that progress and knowledge can be attained through understanding human values; technology and science (de Vos, Strydom, Fouche, & Delpont, 2011, p. 10).. This is the reason why the applicability and use of the statistical formulae of regression; and measures of association are not questioned in this study. They are used in full faith of the sciences that have produced them.

3.3 RESEARCH DESIGN

A research design refers to the modus operandi of a research project, how the researcher aims to collect the data, the methods of data analysis and the general plan for reporting of findings. It is, generally the programme of action from the inception stage to the dissemination of results. Different types of questions and different types of studies need to be addressed by different research designs (Henning, Eilhelm, & Brigitte, 2004, p. 30); (Welman & Kruger, 1999, p. 46).

In a quest for knowledge, a researcher cannot be held bound to a discipline specific method in answering a research problem. The general research procedure is fundamentally the same in all fields (Leedy & Ormrod, 2010, pp. 85-87). However, a research design should not be confused with research methodology because the former represents nothing more than a plan of action to be followed in answering the research questions. Mixed methods as preferred research method in this study, must have an integrative character in all steps, i.e., research design; sampling; data acquisition; analysis and presentation of findings (McMillan & Sally, 2006, p. 396)

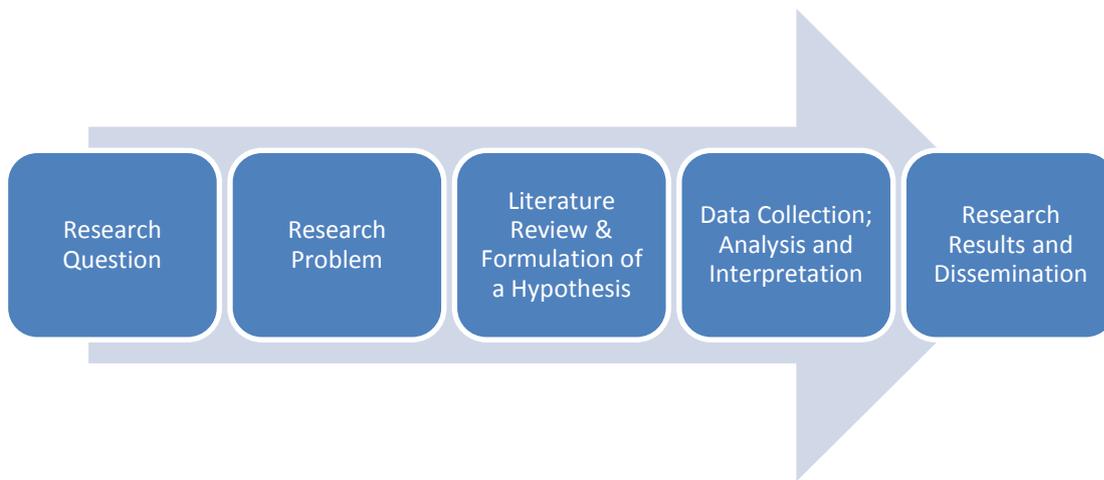


Figure 11: Generic research process
(Author, 2011)

The objective of this particular design is to capture and analyse the widest range of factors & issues that have a potential to affect the planning and development of urban open spaces in Galeshewe Township. In this study, quantitative research reveals the factors that have an influence on urban open spaces in the townships. However, qualitative methods look at historical data on how urban open spaces have been planned in Galeshewe Township.

3.3.1 EMBEDDED MIXED METHODS APPROACH

The research design followed here is an embedded mixed methods approach. This approach is used when a secondary question needs a different type of data in order to be fully answered (Ivankova, et al., 2007, p. 267). In this case, the first question that needs to be answered is the contextual meaning of urban open spaces, and it needs the use of a different type of tools (GIS; Document and artefacts) in order to illustrate what is happening in Galeshewe Township.



Figure 12: Different types of data that influence the research results (Source: Author)

3.3.2 RANDOMIZED CROSS-SECTIONAL SURVEY DESIGN

This study uses both qualitative and quantitative data capturing and analysis methods. The reason behind the mixed methods approach is the fact that no one type of data will fully answer the research questions. Randomized cross sectional surveys as a non-experimental design is associated with studies that want to explore or describe phenomena at one point in time (de Vos, Strydom, Fouche, & Delpont, 2011, p. 156). It can also be used in case study research via surveys.

According to Henning, Eilhelm, & Brigitte, 2004, p. 40, a case study is characterised by a description and analysis of a single unit or a bounded system of identifiable parameters, which in this case that system is represented by township urban open spaces that are developed and or planned under the auspices of an urban renewal programme. The main aim is to understand the uniqueness and idiosyncrasy of each case and its systems which make it what it is (Welman & Kruger, 1999, p. 21).

In a case study research, a researcher may choose to concentrate on one case or on a number of small cases for comparative purposes. Even though some of the case study

researches are quantitative, most case study researches are qualitative in nature. Case study research can only be studied in real life context and scores are analysed in a qualitative manner (Dul & Hak, 2008, p. 4). A qualitative manner of analysis does not include inferential statistical methods and it may include descriptive statistics whereby the scores generated from quantitative data are analysed by visual inspection.

In this type of research, a researcher needs to clearly define the parameters of each case, the focus of the research, the unit of analysis, and the research methods that are going to be used prior to taking decisions on the methods of data collection and analysis.

However, the question still remains, is case study research design applicable in this research? One could simply answer 'YES' without getting into the explanation and details on why case study research is the most suitable research strategy for this project, but this would not provide the necessary research rigour that a research of this magnitude deserves. There are many angles from which to answer this question, but one angle that is most suitable is to look at the description of a case study research as mentioned above.

1. The research purpose: "To find ways of maximising the impact of township urban open spaces"
2. The research objectives: Clear exploration and interpretation of the relationship between the planning and development of urban open spaces in townships with the aim of formulating theoretical propositions for urban open space planning and development in the township.
3. The bounded system: The study of urban open spaces and how the community of Galeshewe Township relates to them.
4. The parameters of the system: the urban open spaces have to be in a township, must be part of a general development or planning framework plan in a township.
5. The focus of the research: urban open space in Galeshewe Township
6. The type of data to be analysed: both qualitative and quantitative data
7. The method of analysis: both quantitative and qualitative data analysis

All these aspects add up to the characteristics of a case study and this research fits this profile.

3.3.2.1 RESEARCH DESIGN FOR BUILDING A THEORY USING CASES STUDIES

One of the academic objectives of the study is to build theory as mentioned above:

1. Contributing to the development of theory regarding open space planning and development as a means of improving urban renewal programmes, by formulating propositions that are grounded on the outcomes of the surveys, interviews, observation and analysis of empirical data from the chosen case studies and literature.

In this case:

1. The independent variable is known: Urban open space
2. The dependent variable is not known: Planning and Development for Urban Renewal Purposes in Previously neglected townships
3. This translates to a “research that aims to identify, explore and specify the dependent concept or variable together with specifying the type of relationship that exists between the two (Dul & Hak, 2008, p. 176).

3.3.3 SELECTION OF THE STUDY AREA

The purpose of the research was to study urban open spaces in a township that is undergoing revitalisation under the 2001 Urban Renewal Programme. The assumption on this was the fact that there was a lot of information and existing ideas on how to solve the urban open space challenge in the renewal of the township. Whereas there were eight urban renewal nodes that were identified for the 2001 Presidential Urban Renewal Programme, not all these areas were at the same level of development and planning. The Alexander urban renewal programme was well ahead of other areas and they had implemented quite a number of urban renewal initiatives including the rehabilitation of the Juskei River. However, Alexander township is about 400km from

where the researcher is based, as compared to Galeshewe at about 180km. The issue of distance was one of the major issues in selecting a research study.

3.3.4 RESEARCH INSTRUMENTS

Research instruments refer to the tools that were used to collect data for the research. Due to the complexity of the research and the different types of data that was required to answer the research questions, several research tools were used. These tools include the following:

1. Interviews
2. Observation
3. Documents and artefacts

3.3.4.1 UNITS OF ANALYSIS

Each member or element of a population is referred to as the unit of analysis (Welman & Kruger, 1999, p. 49). In this case, surveyed erven represents the households that were given questionnaires in Galeshewe.

3.3.4.2 MEASUREMENT SCALES

Leedy & Ormrod (2010) Believe that the type of a measurement scale that is used in a questionnaire will eventually determine the statistical method of analysis that will be used in processing and understanding the data (Leedy & Ormrod, 2010, p. 25).

The checklist method was used to assess whether the presence of a certain attribute was either true or false. Respondents had to mark with an 'x' only one of the checkboxes that were provided next to the questions. Each checkbox was marked with either a 'T' representing True or 'F' representing False. This is also referred to as the 'nominal scale' of measurement and this has its limits in terms of the analysis methods one can

use, e.g., mode; percentage; and chi square to mention a few (Leedy & Ormrod, 2010, p. 26).

An ordinal scale was used on two occasions where respondents had to state whether they wanted to stay far away or very close to an urban open space and also to judge the quality of vegetation on urban open spaces. This scale ranks different attributes in terms of greater or higher than one another. The following statistical methods are usually appropriate for this scale: median; percentile rank and Spearman's rank order correlation (Leedy & Ormrod, 2010, p. 26).

3.3.5 SAMPLING

In research generally, there are two major categories of samples and those being the probability and non-probability samples. They both refer to a section of a population that has been carefully chosen for the study, in such a way that the results may be comparable to a larger population, which would have been uneconomical and impractical to study at once. In this research, surveyed households from the cadastral data of Galeshewe formed a population of the area that is studied. A sample was chosen randomly from that population for questionnaire distribution.

Probability samples (any member of the population has a chance of being included in the sample):

1. Simple random samples; stratified random samples; systematic samples and cluster samples

Non- probability samples

1. Accidental samples; purposive samples; quota samples ad snowball samples
2. Quantitative data sampling

3.3.5.1 QUALITATIVE SAMPLE DESIGN

When a researcher conducts a contents analysis in order to study a certain phenomenon, it would be unrealistic to study everything that is written on the particular subject. The researcher has to choose which documents to study and that would represent what is called a sample. The other determining factor in choosing a sample of documents is the type of question that the researcher needs to answer. The sample therefore needs to represent that entire body of knowledge that exists under a particular topic (Leedy & Ormrod, 2010, p. 147). The most relevant type of sampling for this research is the purposive sampling research, which focuses on the urban open space documents on Galeshewe together with those documents that try to analyse the theoretical basis for an open space.

The procedure that was followed in selecting a sample for qualitative analysis is that of a literature review as recommended by Leedy & Ormrod (2010). During a literature review, a researcher may uncover linkages in certain debates about the research questions.

3.3.5.2 QUANTITATIVE SAMPLE DESIGN

1. Sampling: “Purposive Random Sampling” & Stratified random sampling
 - a. Firstly, a population of all households in Galeshewe is gathered.
 - b. Secondly, a population of all open spaces in Galeshewe is developed
 - c. Using a simple random sampling, a sample size of 648 households is chosen (Quantitative)

3.3.5.3 DETERMINING THE SAMPLE SIZE

Irrespective the size of the population, it is not necessary to have a sample size of more than 500 units (Hysamen in Welman & Kruger; 1999: 64). The following formula was used to determine the size of the sample for households within Galeshewe Township.

$$n = \sqrt{N/20} \times 20$$

Where n is the sample size and N represents the population (Stoker, 1981).

A sample of 648 households was chosen randomly using the website www.randomizer.org out of 21000 households.

At this stage it is necessary to look back at the type of this research, the fact that it is a case study research means a lot when it comes to sampling methods. As much as quantitative data will be analysed, this does not mean that the sampling methods must be quantitative. If a phenomenon is observed in an erf that is not in the sample list, one has to ask why that phenomenon occurs there and not on other households.

When the sample was calculated using Stoker's formula for sampling, a total of 648 households were chosen randomly from the population. However, 53 erven did not fit the criteria of a household. They were either vacant erven; businesses or open spaces and they amount to 8.2% of the sample size. At 595, this sample was big enough to study the community's perceptions on urban open spaces.

3.3.6 DATA COLLECTION

The information that was gathered for this research came from different sources and it was collected by various people. Municipal documents such as, the urban renewal documents were obtained from the Sol Plaatje Local Municipality whereas the Conditions of Establishment came from the Department of Land Affairs and Rural

Development, Deeds office in Kimberly. The biggest task was the administration of questionnaires to get data from willing participants in Galeshewe Township. The office of Statistics South Africa has a list of trained data enumerators that they normally use in an area, a total number of 10 enumerators were requested from them, and only 7 were able to make it to the final selection after training. Two supervisors were also appointed to manage and transport the field workers from one area to the other and to provide technical assistance regarding the questionnaires.

3.3.6.1 SELECTION OF FIELD WORKERS

The criterion used for the selection of enumerators was, locality; training from StatsSA, and the ability to read English and translate to either Afrikaans or SeTswana. Only people that come from Galeshewe Township were appointed for the job due to the lack of funds for transportation costs.

3.3.6.2 TRAINING OF FIELD WORKERS

The data enumerators were equipped with a map of the area with marked surveyed erven; a questionnaire and a pencil. The field workers had to be competent in reading a map in order to locate the correct households. The focus of the training was to educate data enumerators on the meaning of an urban open space; how to fill in the correct answer and general presentation of the questionnaire to the respondents.

Field workers had to introduce themselves and the purpose of the research in order to make an appointment for filling the questionnaire. The dressing code was smart-casual and the field workers had to wear clothes that they normally wear in the township. Even though the questionnaires were written in English, the data enumerators had to explain to the respondents in their own language. The respondent had to be the owner of the property or the eldest person available in the household at the time of the research.

Self-enumerating was not allowed, only the field worker was allowed to write on the questionnaires, using a pencil rather than a pen. The use of pencils allowed the researchers to go back to the respondents if and when there was something missing. No community members were allowed to write on their own unless if they insisted. Where there answer was not clear, the field workers were allowed to probe in order to make sure that they understood the answer from the respondent.

There was a 'no-contact' rule which meant that where there was no-one during the day, the questionnaire would be marked in order to be done after working hours if the respondent was willing. In a case where the respondent was not willing, a rule was to go to their neighbour on the left and failing which they would go to the one on the right.

3.3.6.3 PARTICIPATION OF RESPONDENTS

Respondents were informed in their own language that their participation is voluntary and they had a choice to pull out anytime if they so wished. They had to also understand that the data enumerator could come back in case of missing information. This helped in checking of the questionnaires for quality purposes. A certain percentage of questionnaires would be checked for quality after the initial survey and there was a continuous quality control measure conducted by the researcher and a student assistant.

3.3.7 DATA ANALYSIS SOFTWARE

Three different types of software were used to analyse and capture data for different purposes. SPSS was used for statistical data analysis; Atlas.ti for qualitative data analysis and Planet GIS for cadastral data whereas MS Word was used to store the bibliography and references used in the document.

3.3.7.1 SPSS

IBM SPSS Statistics 20 was also used to capture; manage and code the data that was obtained from the questionnaire.

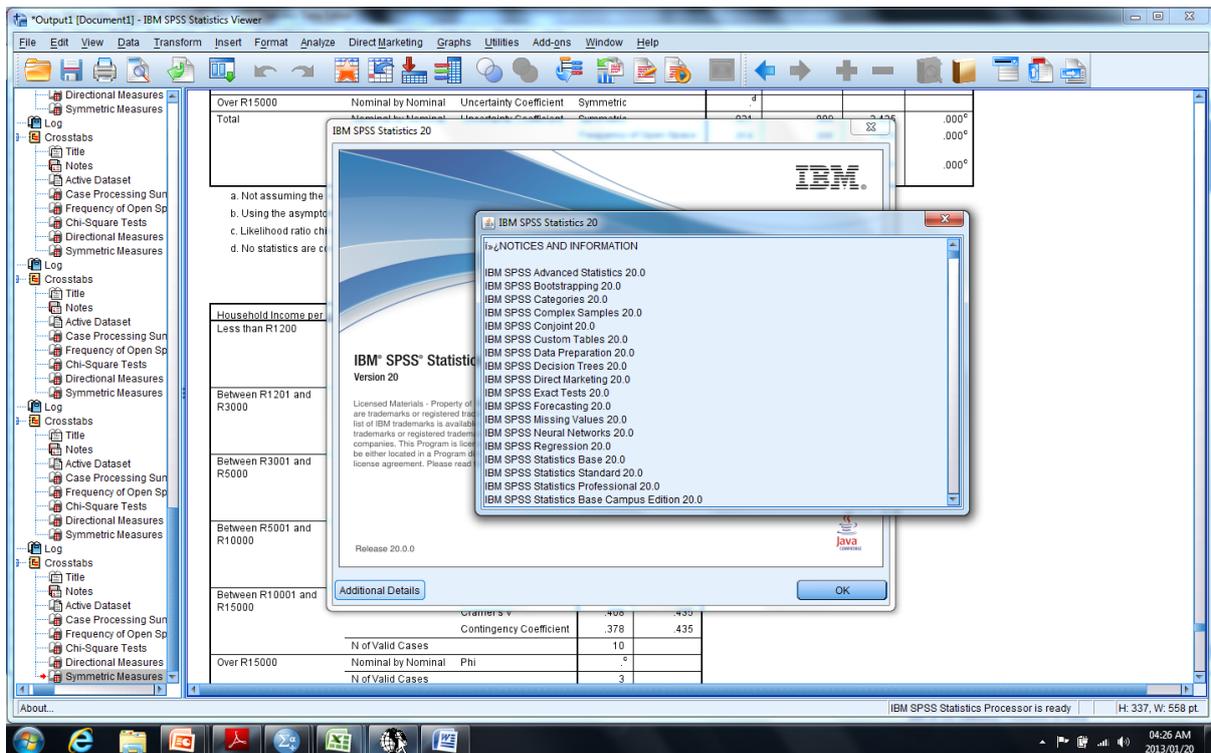


Figure 13: IBM SPSS statistics 20, was used for data management and analysis

Source (Author, 2013)

3.3.7.2 PLANET GIS

As demonstrated in the diagram below, a GIS database was used to identify approved and surveyed urban open spaces in Galeshewe Township. This database also gave out the following information:

1. Sizes of the open spaces
2. Their locations and development control measures
3. Surrounding land uses investigations and observations
4. Type of an open space and its geo-morphology
5. Date of creation based on the approval of the general plan

6. Location and shape of created polygons

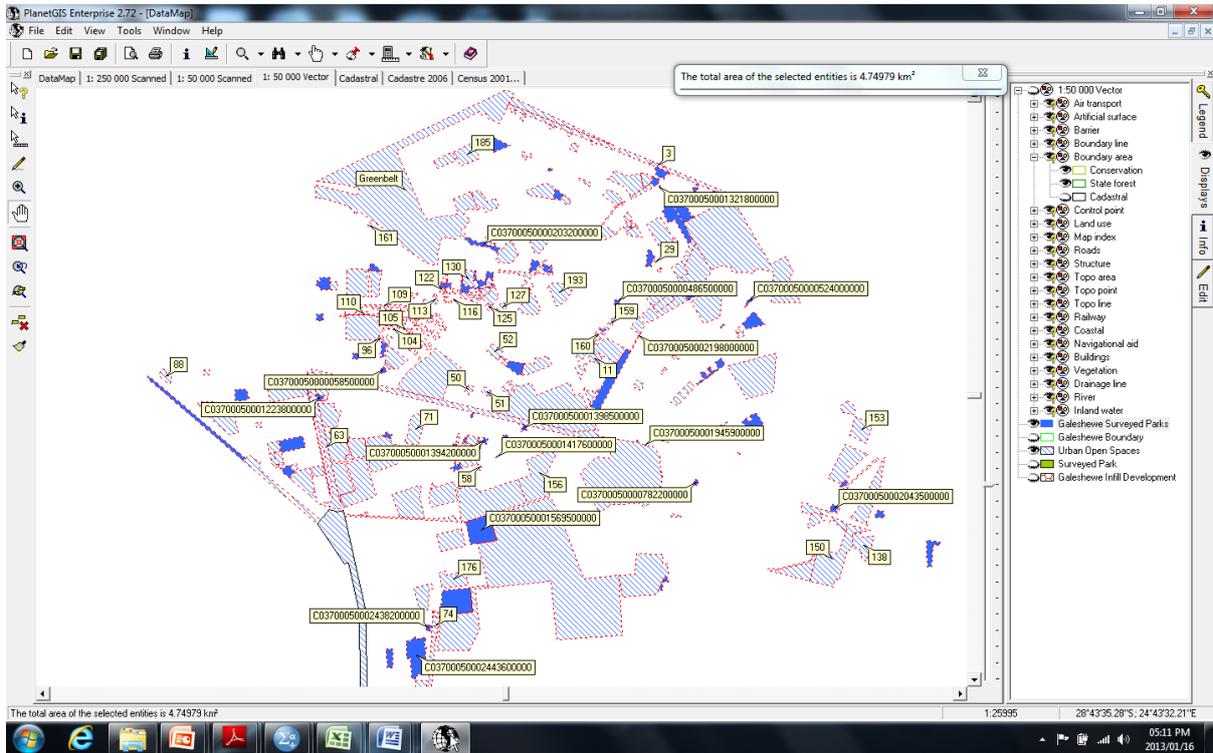


Figure 14: The Use of Planet GIS in calculating the size of urban open spaces in Galeshewe

Source (Author, 2013)

3.3.7.3 ATLAS TI

Atlas.ti was used for qualitative data analysis. In the image below, it shows the benefits of urban open spaces as studied from various articles.

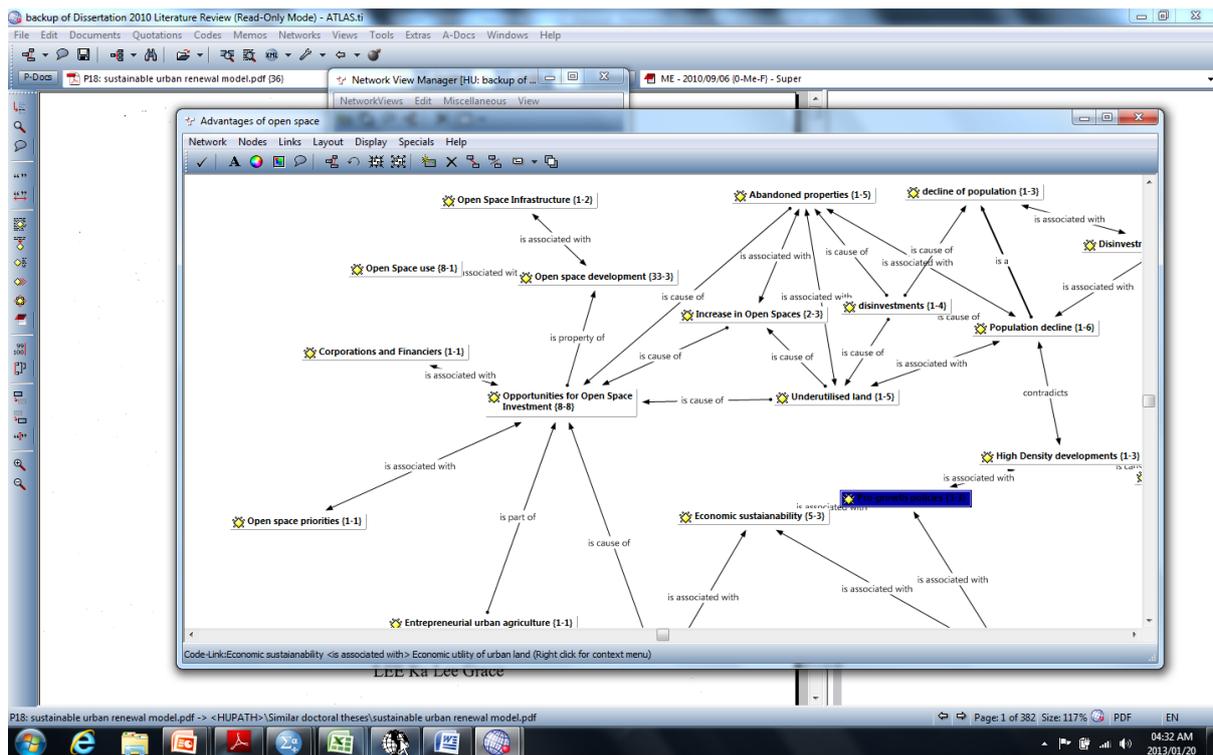


Figure 15: Atlas.ti was used for qualitative data analysis

3.3.8 REPORTING AND DISSEMINATION OF RESULTS

At the time of writing, only parts of the research were presented at South African planning conferences in Durban, 2010 and in Kimberly 2011. The bulk of the work will be published after completion of the report.

3.4 DATA COLLECTION

As mentioned in the research design above, the information that was gathered for this research came from different sources and it was collected by various people. The data was collected by data numerators using standardized questionnaires whereas the researcher conducted unstructured interviews; collected the relevant documents and artefacts from the various stakeholders and conducted the land user survey.

3.4.1 STANDARDISED QUESTIONNAIRES

The primary research instrument that was used in this study was the questionnaire. A standardised questionnaire is a collection of tasks in which the content; the administration and scoring of the responses are the same irrespective who is administering it (Welman & Kruger, 1999, p. 154). The purpose of the questionnaire was to gather data on community perceptions about urban open spaces in Galeshewe. The questionnaire had both open ended (qualitative) and close ended (quantitative) questions. However, a limitation exists in the proportion of the questions asked.

The strengths of this technique, for type of population the research was looking at, lies on the fact that the same questions could be asked from one respondent to the other in the same sequence. Questionnaires are constantly used in the town and regional planning profession and therefore that increases acceptability of the methods within the people that will end up using the results.

The objective of the questionnaire were:

1. To get the socio-economic and demographic information of township dwellers;
2. To gather their understanding of the open space concept;
3. To understand the general perceptions and attitudes towards urban open spaces and its related attributes, such as greenery; and open space benefits.

The advantage of this type of data acquisition method and the manner in which the data was gathered is the high response rate; and the fact that it is easier to use with illiterate people and those that could be too young or too old to read and write. It was the perfect choice for Galeshewe due to the low literacy levels as compared to the suburban areas of Kimberly. Some of the disadvantages of this method are:

1. The fieldworkers need to be properly trained
2. It is costly
3. Time consuming and
4. Labour intensive

It is also subjective in the sense that it relies on the level of understanding the researcher has on the topic (McMillan & Sally, 2006, p. 205).

As much as it has disadvantages, its advantages are the reason it was perfect for the community of Galeshewe.

1. The enumerators could interpret the questions to the respondents in their own language.
2. Respondents were trained to present themselves as just field workers with no other interests from the research other than their remuneration for the job they were doing.

3.4.2 UNSTRUCTURED INTERVIEWS

The interviews were held with the community of Galeshewe and town planners that have worked in the area, in order to assess opinions and beliefs about the development of open spaces for urban renewal projects with a specific focus on attracting private sector investments.

There are three major types of interviews that are acceptable in academic research:

1. Structured interviews: done with an interview schedule.
2. Semi structured interviews: the researcher is allowed to probe and select which questions to ask.
3. Unstructured interviews are explorative in nature.

Unstructured interviews are explorative and they were useful in cross-referencing information from the community with the municipal town planners that were involved in the planning and development of urban open spaces in Galeshewe and who also provided technical support in South African Planners Institute (SAPI) conferences and meetings. The following people (in alphabetic order) have made technical inputs to the study:

Name	Designation	Organization	Date
Fouché, Cornelius	Former Chief Town Planner	Maluti-a-phofung Municipality	Local SAPI Presentation 28 October 2011
Grobler, Schalk	Chief Town Planner	Northern Cape Provincial Government	SAPI Presentation 28 October 2011
Higgs, Mienieh	Town Planner	Orecon Engineers	SAPI Presentation 28 October 2011
Phatedi, Fumane	Senior Town Planner	Sol Plaatje Local Municipality	June 2010,
Seeco, Danisile	Urban Renewal Manager	Sol Plaatje Local Municipality	February 2010
Seele, Marvellous	Former Town Planner	Sol Plaatje Local Municipality	SAPI Presentation 28 October 2011
Tyabashe, Nomonde	Executive Director of Planning	Sol Plaatje Local Municipality	February 2010
Wilfred Machogo	Executive Director of Planning	Mangaung Local Municipality	2010

TABLE 7 Local Town planners that have added value in the study through questions and feedback conversations after the SAPI presentations in November 2010 and October 2011

3.4.3 DOCUMENTS AND ARTIFACTS

There are documents that had to be analysed in order to understand the complexity of urban open space planning and development in Galeshewe. These documents include the following:

1. Official Municipal Documents
2. Official Land Affairs archive documents

The official municipal documents that were received include the following:

1. The Spatial Development Framework of Sol Plaatje
2. Galeshewe Urban Renewal Programme: Environmental Management Framework
3. Galeshewe Urban Renewal Business Plan
4. Business case for the greenbelt project
5. Galeshewe Household Survey, 2007
6. Galeshewe Open Space and Landscape Plan

The official Land Affairs archive documents included the conditions of establishment and the original general plan layouts of Galeshewe. These documents and maps that have the planning history of Galeshewe are kept by the Department of Land Affairs and the researcher was able to collect them from the Northern Cape Deeds Registry. These

conditions of establishments include the original planning information on Galeshewe, i.e., before any further subdivisions of land were approved. They show all properties that were originally reserved for urban open space purposes. By cross-referencing this information with the latest data, a researcher is able to analyse whether there is an increase in the provision or the decline of urban open spaces in Galeshewe.

3.4.4 LAND USE SURVEY

According to McMillan & Sally (2006), observation as a research tool relies on the researcher hearing or seeing things rather than to depend on respondents telling things to the researcher. This method of research is commonly used in town and regional planning in aspects such as land use surveys and site inspections (McMillan & Sally, 2006, p. 209).

Observation should be replicable by independent observers that have nothing to do with the researcher's study (Welman & Kruger, 1999, p. 131). This means that a researcher must be there and use a checklist to tick off those aspects of the open space that may be the subject of the research. A checklist was designed in order to mark those attributes that represented either development/underdevelopment or good quality or poor quality of the urban open spaces. A Land use survey was conducted in order to determine the actual use and conditions of existing urban open spaces. The land use survey included observable phenomena on selected urban open spaces.

One round of observation was sufficient as the purpose of the observation was to gather the quality and level of development of each urban open space. There was no need to study the occurrences that are found in each urban open space. The role of the researcher was that of a complete observer without taking part in the activities or any observable phenomena in the urban open spaces of Galeshewe.

3.5 DATA MANAGEMENT

Done by trained town and regional planners

1. Enumerators

Data Management:

1. Numbering of journals and books.
2. Capturing of the information in MS 2000 Source Manager for later use as either bibliography or list of references.
3. Classification of the data using the Sub-problems
4. Storage of data as PDF articles and hard copy print-outs

3.5.1 DATA IMPUTATION

Data that was either irrelevant or inconsistent had to be checked. The data enumerators would be interviewed on responses that did not make sense, for example, a respondent would indicate that they do not use the urban open spaces in Galeshewe and yet, in the frequency the person responds that they use urban open space in Galeshewe on a daily basis. This had to be done on the same day in order to plan on where to begin with corrections on the following day. The supervisors would check for invalid; dynamic and logical imputations. Invalid responses would be in a case where somebody responds with an answer that has not been provided for in the questionnaire.

3.5.2 DATA FILES

The following list was also used to manage the questionnaires in order to know who had captured the data.

1. Questionnaire Number
2. Enumerator Name

3. Date
4. Address
5. Name of the respondent (optional)
6. Code list
7. Description of variables
8. Descriptive name:
9. Number of the variable
10. Final code list:
11. Not applicable: The code for not applicable is provided for each variable.
12. Missing value: The code for 'missing'/'unspecified' values is given for each variable.

3.5.3 DATA CODING

Once the data is collected, it needs to be coded for analysis purposes. In statistical analysis one must identify the variable that needs to be analysed and then decide on different code values such a variable may present (Welman & Kruger, 1999, p. 208)

3.5.3.1 DATA CODING: MAIN QUESTIONNAIRE

Where the question was not either 'true' or 'false', the answers from the questionnaires were written down in order to get an understanding of what they meant. This could not be done on the same day because it needed all the questionnaires to be finished. Once the answers were written down, they were then categorised based on the answers that were given, see tables below. The categories were further given alphanumerical codes for use in SPSS statistics, see table below.

Code	Code number	Code	Code number
No answer	: 00	Government buildings	07
No idea	: 01	Municipal buildings	07
Irrelevant answer	: 01	Entertainment	: 08
Housing	: 02	Sports facilities	: 09
Business	: 03	Layout plan	: 10
Park	: 04	Cemeteries	: 11
Social facility	: 05	Municipality has no plans	: 12
Future development (unspecified)	: 06	Lack of funds	: 13

Table 8: A list of codes used in SPSS for the answer on question 11 in the questionnaire

Source (Author, 2013)

After the data was prepared, it was then analysed as explained below.

3.6 QUANTITATIVE DATA ANALYSIS

The aim of the analysis is to explain what is happening in the township of Galeshewe by exploring the different types of relationships that exist between urban open spaces and township dwellers and to draw conclusions based on available data from observation; survey and content analysis. The type of statistical analysis that was done was non-parametric analysis due to the fact that the majority of the data is either ordinal or nominal. This type of analysis assisted in understanding the community perspective on the quality; visual appearance; usability; preferences for urban open spaces and;

1. Identifying factors; issues that can serve as a basis for urban open space planning in the townships.
2. Responses were summarised using:
 - a. Percentages
 - b. Frequencies
 - c. Statistical indexes
 - d. Draw inferences using statistical methods

In qualitative analysis, descriptive statistics are used to describe and or summarise the data gathered and to determine the frequencies of occurrence for specific words or answers.

3.6.2 ANALYSIS OF CENTRAL TENDENCY

Descriptive statistics are concerned with the description or summary of the data gathered. The mode and median were used to identify central tendencies for various questions. Mode represents scores that occur most frequently and it is appropriate only for nominal data (Leedy & Ormrod, 2010, p. 265). It may be used to describe whether data is bi-modal; trimodal or multi-modal (McMillan & Sally, 2006, p. 159). The median represents the centre of numerical array and it is appropriate for ordinal data and data that is highly skewed, e.g., income levels (Leedy & Ormrod, 2010, p. 266). It can also be used to divide one group of respondents into equal halves (McMillan & Sally, 2006, p. 158).

3.6.3 ANALYSIS OF VARIABILITY

The amount of variability was measured on how far the distribution of scores was from the central tendency and how the scores differed from each other, i.e., the extent to which different variables are associated with one another. Measures of variability are inappropriate for nominal data, rather frequencies and or percentages are used. Range: the spread of data from the highest to the lowest score (Leedy & Ormrod, 2010, p. 269). Inter-quartile range is used only when the research uses a median as a measure of central tendency (e.g., ordinal data; highly skewed data and financial variables). It is measured based on the difference between the 25th and the 75th percentiles.

3.6.4 ANALYSIS OF RELATIONSHIPS

Correlations and cross-tabulation were used to describe relationships between variables, e.g., the relationship between household income and the frequency of urban open space use. These relationships estimated the extent to which the changes in one variable are associated with changes in the other variable. Positive correlations reflect a direct relationship but it would be inappropriate to consider that correlation relationship to be causal. That needs inferential statistics.

3.6.4.1 TYPES OF RELATIONSHIPS

According to Dul & Hak (2008), there are four types of relationships that one may find, from the strongest to the weakest relationship, they are: sufficient; necessary; deterministic and probabilistic relations.

What is the evidence for sufficient condition?

This becomes clear if a specific value of 'Urban Open Space' as an independent variable always results in a specific value of the dependent variable, i.e., private sector investments (Dul & Hak, 2008, p. 189).

What is the evidence for necessary condition?

This becomes clear if a specific value of the dependent variable, i.e., private sector investments exists only if there is a specific value of 'Urban Open Space' as independent variable (Dul & Hak, 2008, p. 190).

What is the evidence a deterministic relationship?

An increase or decrease in a specific value of an 'Urban Open Space' consistently results in an increase or decrease in a specific value of private sector investments, as an independent variable (Dul & Hak, 2008, p. 190).

What is the evidence for probabilistic relation?

An increase or decrease in a specific value of an 'Urban Open Space' consistently results in a higher chance of an increase or decrease in a specific value of private sector investments, as an independent variable (Dul & Hak, 2008, p. 190). This relationship can be confirmed only if the increase or decrease of the values is not consistent.

3.6.4.2 BIVARIATE ANALYSIS

Analysing a relationship between two variables is called a bivariate analysis, e.g., the relationship between household income and the frequency of urban open space use. The cross-tabulation method was used to determine the degree of association between two variables. First, one had to determine the nature of the anticipated relationship. For example, is there a variable that is likely to act on another, thus making it the independent variable? Any association between two variables obtained using these methods does not result in causality due to many factors that may be pre-existing, i.e., antecedent variables. Once a relationship has been explained, the question would be the test of statistical significance. These tests are performed either at .05 and .01; the 95% confidence interval is the lowest acceptable result. If it is less than that, it means the results were produced either by chance or due to sampling error

3.6.4.1 CROSS-TABULATIONS

In interpreting cross-tabulations, these were the guiding questions:

1. Where does the biggest percentage margin lie in the cells?
2. In terms of quarter/half/three quarters, how big is the spread of the biggest margin?
3. Is there a gradient in the way the percentages look? Or is there a plateau.
4. Is the gradient falling or increasing?

5. By what percentage points is this gradient increasing or decreasing. What is the difference from the highest category to the lowest in terms of percentage points and how does this difference compare to other categories

3.6.4.2 PEARSON CHI-SQUARE

A Chi-square is a test of the significance of association and it is used to examine the relationship or association between 2 nominal variables. It does not say if the relationship is weak or strong, it only determines if the association exists or not. It operates from the Null hypothesis that states that there is no association between two variables. The alternative hypothesis is that the (2) variables are dependent or that there is an association between the 2 variables. One can say that the significance is high or just normal. It also determines whether such an association is strong enough to be generalized to the population from which the sample was drawn. The conclusion is based on the p-value. If the p-value is less than 0.5, the conclusion is that there is an association between the 2 variables in question.

3.6.4.3 UNCERTAINTY CO-EFFICIENT

Uncertainty co-efficient is a directional measure of the degree of association (strength) between 2 nominal variables. The uncertainty coefficient is derived from the likelihood-ratio statistic and is an alternative way to measure the proportion of the variation in the row variable attributable to the column variable or vice versa. This uncertainty coefficient ranges between 0 and 1, with 0 implying no reduction in row variance when the column category is known, and 1 implying complete reduction in row variance when the column category is known.

3.6.4.4 CRAMER'S V

The Cramer's V statistic is a symmetric measure of the degree of association (strength) a between two nominal variables. It is used when the table (cross-tabulation) is larger than 2x2 and it also uses the chi-square statistic but corrects for size. This measure is also used for testing the null hypothesis that there is no association, which is the same as the chi-square p value. Cramer's V coefficient ranges between 0 and 1, with 0 signifying no association and 1 signifying perfect association. Interpretation is the same as the Chi-square statistic.

3.6.4.4 CONTINGENCY CO-EFFICIENT

The Contingency Co-efficient is another symmetric measure of the degree of association (strength) between two nominal variables. It is also used when the table (cross-tabulation) is larger than 2x2 and it also uses the chi-square statistic but corrects for size. The only difference is that, its maximum value depends on the size of the table and it is interpreted the same way as the Cramer's V.

3.6.4.5 SPEARMAN'S RANK ORDER CORRELATION

Cross-tabulations are only applicable when at least one of the variables is nominal. For ordinal variables, the statistic moves from cross-tabulations to correlation. Correlation involves both the relationship and the strength/degree of that relationship by using the correlation co-efficient. In addition, correlation involves the direction of the relationship, which means a positive relationship is when a change in the independent variable produces a positive change in the dependent variable

Correlational research examines the extent to which differences in one variable are related to differences in other variables e.g., the differences between the use of urban open space and its cleanliness (McMillan & Sally, 2006, p. 183). It is a statistical process

that is used to measure whether two variables are associated with one another. This statistical process leads to a correlational co-efficient which can be any number between -1 and +1. The correlational co-efficient illustrates the relationship in terms of direction and strength i.e.

1. Positive number indicates a positive correlation whereas a negative number indicates an inverse relationship.
2. A number close to either -1 or =1 indicates a perfect correlation whereas correlation in the middle range (0.4-0.5 positive or negative) indicates a moderate correlation.
3. Zero means there is no relationship between the two variables.

3.6.5 QUALITATIVE DATA ANALYSIS

An analytic historical research was conducted in order to map out the series of events that has happened with regards to the creation and closure of open spaces in Galeshewe Township. History of the creation of these open spaces was tracked using the original Conditions of Establishment and General Plans. This information was compared with the existing database of open spaces in order to understand and establish the manner in which urban open spaces were used.

Land use surveys/observations were also conducted in order to determine the actual use and conditions of existing urban open spaces. The land use surveys concentrated only on the observable phenomena and that was compared to the cadastral data of Galeshewe Township.

3.7 ETHICAL CONSIDERATIONS

Professional and scientific research ethics that are relevant to research depend mainly on the type of questions and measuring instruments that the researcher used. Fieldwork for the survey was done three months prior to the South African Local

Government elections of 2011 and fieldworkers were informed to avoid political debates with the sampled households as some of the people (during the pilot survey) felt that it the study was linked to the municipality as a ploy to get the community's support.

In this research, all participants were properly briefed about their rights to cancel their participation and they had to give either verbal or written consent to the fieldworkers before proceeding with the questionnaire. The participation of all households was free of charge and no respondent was paid to participate in the research. The issues that are related to data acquisition and the fact that people can decide to opt out of the interview or decide to stop their participation in the research, has a potential to increase the validity and accuracy of the research data.

The privacy and confidentiality of the data was ensured and that all information was going to be used only for academic purposes.

3.8 PILOT STUDY

A pilot study was conducted in Galeshewe Township (Ext 7), which is the oldest part of Galeshewe Township. As advised by (de Vos, Strydom, Fouche, & Delpont, 2011, pp. 241-246), the purpose of the pilot report was to test the questionnaire and to understand how the community would react to the research. The responses were used to adapt the questionnaire scales; the procedure for data collection; to determine the response rate and to estimate the costs of the research.

The main issue that was addressed was the ineffectiveness of the measurement scale as it was difficult for the type of community that was encountered. A change from a liekert scale to a true/false question was then effected. At less than 40%, the response rate was particularly low when the questionnaires were left with the respondents, hence the decision to explain the question in either SeTswana of or Afrikaans. However, this led to more costs as the data enumerators would spend more time per questionnaire and per

household. None of the questions were changed from the pilot results. The pilot study was also used to test whether the data enumerators were indeed able to conduct the survey as instructed. As a result of this, only seven of the ten enumerators continued.

3.9 RELIABILITY AND VALIDITY OF RESEARCH INSTRUMENTS

The reliability and validity of research instruments influence the acceptability of the research conclusions. Validity asks whether the measurement tool that was used to gather a certain data, was actually the right tool for the job. Validity of the research claims is also about professional judgement of the research conclusions that have been gathered using a particular research tool and measurement methods (McMillan & Sally, 2006, p. 174). Whereas, reliability refers to the consistency with which a measuring tool shall yield the same results (Leedy & Ormrod, 2010, p. 29).

The research draws its strength and validity from the accurate implantation and appropriate use of acceptable research methods in social sciences.

3.10 CONCLUSION

The mixed methods procedure in data collection and analysis as presented in this chapter serves as a guide to the following two chapters. The research methods had to meet the purpose of the research in both data acquisition and analysis methods. This chapter has demonstrated in detail, the use of quantitative analysis methods and to a lesser extent the qualitative methods. Perhaps what is not stressed is the fact that the qualitative methods of analysis were used to supplement information that could not have been gathered using questionnaires.

CHAPTER 4

URBAN OPEN SPACE PLANNING IN GALESHEWE TOWNSHIP

(RESEARCH SETTING)

“I, Zweledinga Pallo Jordan, Minister of Environmental Affairs and Tourism, after consultation with the Minister of each department of State responsible for the execution, approval or control of such activities, the Minister of Finance and the competent authorities of the provinces, hereby under section 21 of the Environment Conservation Act, 1989 (Act No. 73 of 1989), identify the activities in Schedule 1 in general as activities which may have a substantial detrimental effect on the environment.

1. *The change of land use from-*
 - a. *Residential use to industrial or commercial use;*
 - b. *light industrial use to heavy industrial use;*
 - c. *agricultural or zoned undetermined use or an equivalent zoning to any other land use;*
 - d. *use for grazing to any other form of agricultural use; and*
 - e. *Use for nature conservation or zoned open space to any other land use.”*

Government Gazette No.18261, Pretoria, 5 September 1997,

4.1 INTRODUCTION TO CHAPTER 4

The cover page for this chapter shows a quotation by the former Minister of Environmental Affairs and Tourism, Pallo Jordan. It shows an era in the history of urban open space planning in South Africa, whereby urban open space was protected at a national level. This is a time when one needed an environmental impact assessment to change the land use of an open space into any other land use. It will be shown later on in this chapter that things have changed the planning and development of urban open spaces has changed since those times.

Urban open space planning, with a specific focus on a township setting, is something that is relatively new in the history of South African planning. The history of the development of town planning in South Africa has characteristics of neglect which started even before apartheid. These challenges remain unresolved and current initiatives have also failed to efficiently address the challenges of the urban poor living in townships.

In South Africa, the word ‘township has two meanings’: one is the legal use which refers to the process of human settlement planning and design, i.e. township establishment (van Wyk, 2012, p. 31). The second meaning refers to areas which provided temporary accommodation and housing for urban labour. Townships accommodated labour that would support the industrialization efforts of the apartheid government.

Several planning tools are discussed, whose focus was never on the townships, but which are now used in a manner that is supposed to eradicate the spatial inequalities of the past. The Galeshewe Township Profile sees a township that is in transition. However, the relationship between the community and its urban open space is yet to be tested.

The contextual aspects that make Galeshewe Township that are discussed in this chapter include the demographic profile; the general knowledge and community needs of urban open spaces. Other

4.2 ABOUT GALESHEWE TOWNSHIP

In 2001, Galeshewe was identified by the then President of South Africa, TM Mbeki, as one of the eight urban nodes that would be supported for urban revitalisation purposes. The primary objective of the programme was the alleviation of urban poverty and the improvement of the quality of township life.

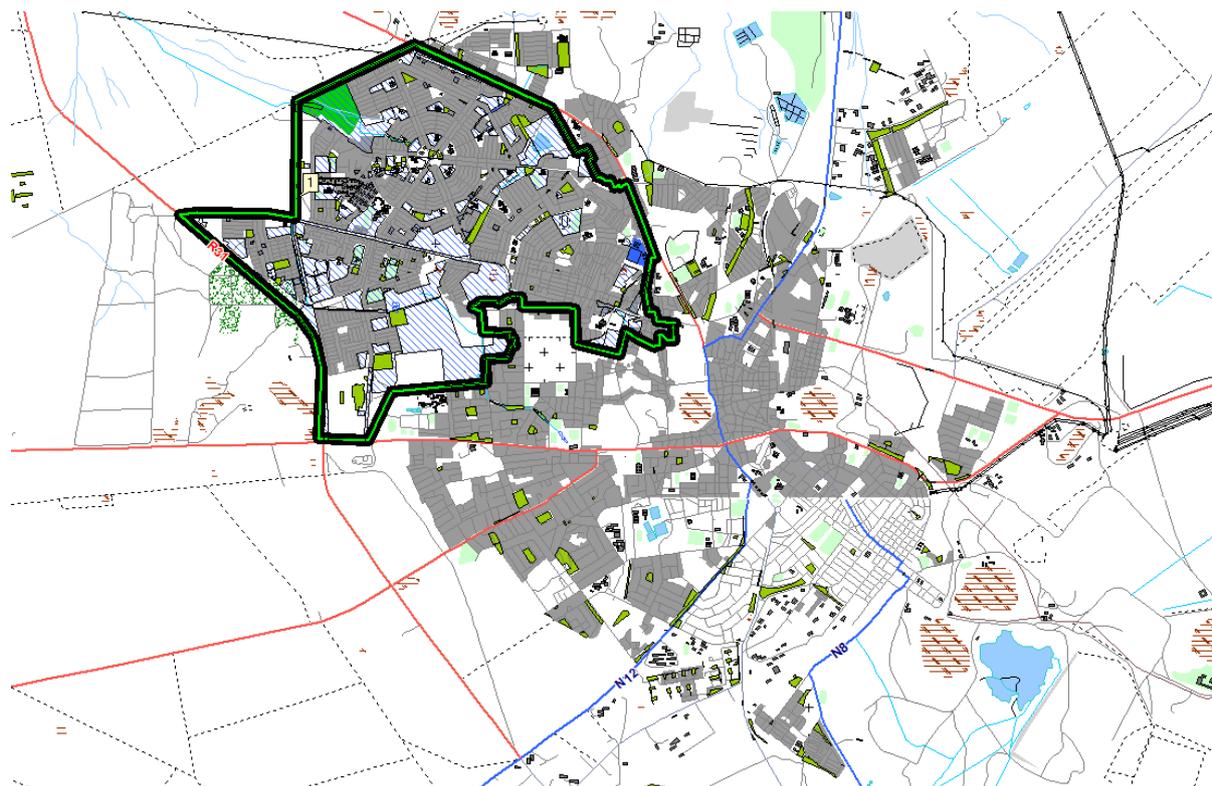


Figure 16: Location of Galeshewe towards the NORTHWESTERN side of Kimberly. The extent of area is 17.75 square kilometres. The population of Galeshewe stands at about 120,000 and at an average of 3.4 persons per household

Source: (Author, 2013)

The outlook of township urban open spaces represents the interaction between the community and their urban space. Littering and dumping on open spaces is evident in most townships in South Africa. One of the challenges that town and regional planners face is the understanding of the **urban open space concept** in the midst of an unsustainable human settlement dominated by the urban poor. It is one of the challenges of the planning system to understand and quantify open space needs for township dwellers.

Galeshewe is the largest township in the Northern Cape and one that came about after the discovery of Diamonds in Kimberly in the 1800s. It falls under the Sol Plaatje Local Municipality. Sol Plaatje is a small to medium sized municipality and it boasts the largest town (Kimberly) in the Northern Cape. The demographics of the settlement are described in the table below.

4.2.1 DEMOGRAPHIC PROFILE

As part of this research, this socio-economic profile also provides a snapshot view of the average person in Galeshewe and compares the sample data to existing information about the township. The Galeshewe household survey of 2009 is the latest survey, which forms part of the planning documents for the on-going Urban Renewal Programme in Galeshewe. It makes sense to use this data as the results of the Census data of 2011 are not yet available and the 2001 information could be deemed as outdated after 10 years.

The following demographic questions were recorded from respondents:

1. Gender
2. Age
3. Household income
4. Source of income
5. Level of education
6. Household size
7. Property ownership/tenure and;
8. Language

4.2.1.1 GENDER

There are more females (69.3%) than there are males (36%) in the sample (See Figure 17). The modal category at 69.3% is that of females and with a low variation ratio of 0.36 it shows that the modal category represents a typical response. Unfortunately, the Galeshewe Household Survey of 2009 did not report on the issue of gender but StatsSA in 2001 obtained 46.8% for males and 53.2% for females.

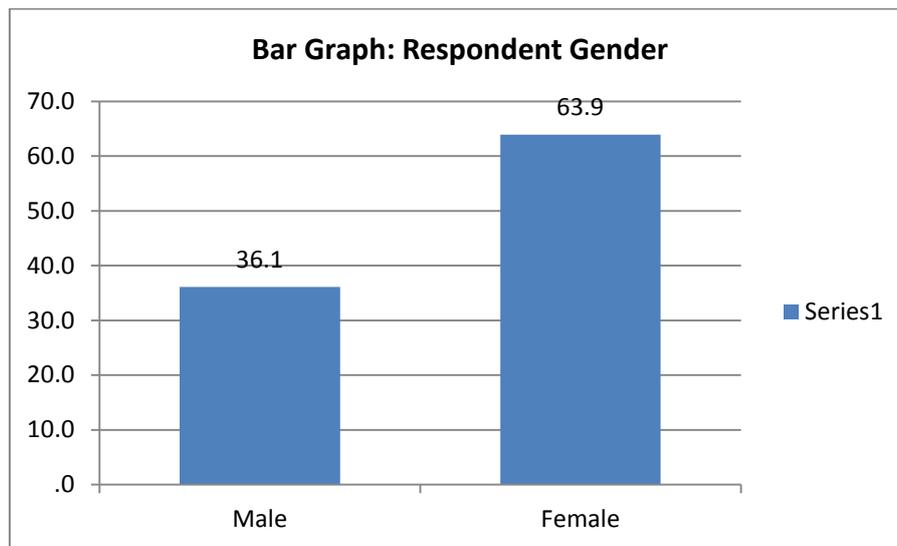


FIGURE 17: (n=595, mode= females; variation ratio = 0.36.)

The reason could be due to the number of women that are unemployed and were available at home during the times of data acquisition. This could serve as an indication of a labour market that favours the intake of more men than females, the majority of which work outside Galeshewe.

4.2.1.2 AGE CATEGORIES OF THE RESPONDENTS

The data represents an even distribution of responses between the ages 20 and 50. The variation ratio of this data is 0.776 and this represents a ratio of the total population that does not fall within the median (between 41 & 50). This big variation ratio of 0.776

represents a very weak median category, in order to understand the spread of the distribution; one has to look at the range (See table 1 & 2).

Only 25% of the respondents fall under the age of 30 whereas about 70% of the people are below the age of 50. This represents a population that is young and is within the young and middle age economically active groups. The less than 20 years old group of people represents the amount of young people that were present and were the eldest people that were available during the survey. This number could also represent child headed households or families in which both adults are currently employed and therefore were not available during the time of the survey. Furthermore, most of the people that are less than the age of 20 should be at either school or at a tertiary institution.

		Respondent Age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 20	32	5.4	5.5	5.5
	Between 20 and 30	114	19.2	19.6	25.1
	Between 31 and 40	133	22.4	22.9	48.0
	Between 41 and 50	130	21.8	22.4	70.4
	Between 51 and 60	75	12.6	12.9	83.3
	Over 60	97	16.3	16.7	100.0
Total		581	97.6	100.0	
Total		595	100.0		

Table 9: Respondent age (n=595, Median: Between 41 and 50; variation ratio: 0.776)

Statistics: Respondent Age		
N	Valid	581
	Missing	14
Median		4.00
Mode		3
Skewness		.107
Std. Error of Skewness		.101
Kurtosis		-.999
Std. Error of Kurtosis		.202
Range		5
Percentiles	25	2.00
	50	4.00
	75	5.00

TABLE 10: Statistics for respondents age (Median: Between 41 and 50) Range = 5 (Over 60- Less than 20)

The Galeshewe Household Survey of 2009 found 59% of the people under the age not less than 30. There is a huge discrepancy of 29% between this research and the Galeshewe Household Survey. It is not something that should be taken lightly especially if the age group is a significant determinant of open space use. The paragraph below ‘Household Size’ also gives a better understanding of the age groups of people that are found in the households of Galeshewe. According to the Galeshewe Household Survey (2009, p. 7), 95% of the people in Galeshewe are under the age of 65 whereas this survey found 16.3% of the people to be over the age of 60. In 2001 Statistics South Africa reported the population of Galeshewe as 0-14: 29.7%; 15-29: 29.5%; 30-44: 21.3%; 45-64: 14.6% and 65 and above as 4.9%. There is a little difference between the results of the Household Survey in 2009 and the stats published by StatsSA in 2001. This means, for the implementation of any proposals that may come out of this study, the most up to date results should be used.

4.2.1.3 HOUSEHOLD INCOME

The most typical response for household income is “less than or equal to R1200” per month (see table 3 & 4). The household income in the sample is represented by an uneven distribution of data with 44.1% of the cases falling within a single category “Less than or equal to R1200”. This also translates to the majority of households (55.9%) however, earning more than R1200 per month.” (See table 3 and 4)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than or equal to R1200	249	41.8	44.1	44.1
	Between R1201 and R3000	159	26.7	28.2	72.3
	Between R3001 and R5000	97	16.3	17.2	89.5
	Between R5001 and R10000	46	7.7	8.2	97.7
	Between R10001 and R15000	10	1.7	1.8	99.5
	Over R15000	3	.5	.5	100.0
	Total	564	94.8	100.0	
Missing	0	31	5.2		
Total		595	100.0		

Table 11: Household income per month (N=595, Mode: “Less than R1200 and the variation ratio is equal to 0.56)

Statistics		
Household Income per month		
N	Valid	564
	Missing	31
Median		2.00
Mode		1
Skewness		1.025
Std. Error of Skewness		.103
Kurtosis		.498
Std. Error of Kurtosis		.205
Range		5
Percentiles	25	1.00
	50	2.00
	75	3.00

Table 12: Statistics: Household Income per month

The measure of central tendency is 2 and it represents a median category of respondents with household income that is between R1201 and R3000. About 72% of the respondents earn less than R3000pm and only 2.3% of the respondents earn more than R10, 000 per month. According to StatsSA 2001, 86% of the people of Galeshewe earn less than R3200 per month whereas only 4.7% earn more than R6400 per month with the Galeshewe Household Survey of 2009 estimating this high end amount to be R9126 per month for the top 4.7%.

4.2.1.4 SOURCE OF INCOME

The measure of central tendency concerning the source of income is bimodal, with the majority of people being on fulltime jobs (37.9%) and a considerable number (27.6%) of those falling under the category of pensioners. Only 1.9% of the population has business as their source of income (see table 5). If one combines the frequencies between those who hold temporary jobs and those that have full time jobs, it becomes evident that they cover about 44.5% of the sample. This is similar to the household survey, which showed that only 46% of the people are employed (Sol Plaatje Municipality, 2009a, p. 8).

		Source of income			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Social Grant	82	13.8	14.4	14.4
	Old Age Pension	157	26.4	27.6	42.1
	Temporary Job	60	10.1	10.6	52.6
	Full time job	215	36.1	37.9	90.5
	Business	11	1.8	1.9	92.4
	Other	43	7.2	7.6	100.0
	Total	568	95.5	100.0	
Missing	0	27	4.5		
Total		595	100.0		

Table 13: Source of income (N=595, Mode = Full time job & Old age pension; variation ratio= 0.35)

There is a huge percentage (42.1%) of people who are not economically active i.e., (social grants and old age pension). The small variation ration of 0.35 represents a number of people who do not fall within the modal categories; this means the bimodal range is the most typical response in this distribution.

4.2.1.4.1 RELATIONSHIP BETWEEN SOURCE OF INCOME AND AGE

Out of the 31 respondents who are under 20 in terms of age, 48.4% hold full time jobs whereas only 6.5% of them are employed temporarily. This represent 55% of the total that is currently employed with 22.6% receiving social grants and another 19.4% living off old age pensions from their households.

The age group between 20 and 30 has the highest percentage of fulltime employed respondents. In both the groups between ages 31 and 50, about 54.6% of the respondents do not have full time jobs whereas an average of only 15% (between the two groups) holds temporary employment (See Table 6).

Respondent Age * Source of income Crosstabulation

		Source of income						Total	
		Social Grant	Old Age Pension	Temporary Job	Full time job	Business	Other		
Respondent Age	Less than 20	Count	7	6	2	15	0	1	31
	% within Respondent Age	22.6%	19.4%	6.5%	48.4%	0.0%	3.2%	100.0%	
	% within Source of income	8.5%	3.8%	3.3%	7.0%	0.0%	2.4%	5.5%	
	% of Total	1.2%	1.1%	0.4%	2.6%	0.0%	0.2%	5.5%	
	Between 20 and 30	Count	18	15	9	62	1	9	114
	% within Respondent Age	15.8%	13.2%	7.9%	54.4%	0.9%	7.9%	100.0%	
	% within Source of income	22.0%	9.6%	15.0%	28.8%	9.1%	21.4%	20.1%	
	% of Total	3.2%	2.6%	1.6%	10.9%	0.2%	1.6%	20.1%	
	Between 31 and 40	Count	22	15	22	58	4	6	127
	% within Respondent Age	17.3%	11.8%	17.3%	45.7%	3.1%	4.7%	100.0%	
	% within Source of income	26.8%	9.6%	36.7%	27.0%	36.4%	14.3%	22.4%	
	% of Total	3.9%	2.6%	3.9%	10.2%	0.7%	1.1%	22.4%	
	Between 41 and 50	Count	19	15	17	59	4	15	129
	% within Respondent Age	14.7%	11.6%	13.2%	45.7%	3.1%	11.6%	100.0%	
	% within Source of income	23.2%	9.6%	28.3%	27.4%	36.4%	35.7%	22.8%	
	% of Total	3.4%	2.6%	3.0%	10.4%	0.7%	2.6%	22.8%	
	Between 51 and 60	Count	12	25	9	18	2	6	72
	% within Respondent Age	16.7%	34.7%	12.5%	25.0%	2.8%	8.3%	100.0%	
	% within Source of income	14.6%	15.9%	15.0%	8.4%	18.2%	14.3%	12.7%	
	% of Total	2.1%	4.4%	1.6%	3.2%	0.4%	1.1%	12.7%	
	Over 60	Count	4	81	1	3	0	5	94
	% within Respondent Age	4.3%	86.2%	1.1%	3.2%	0.0%	5.3%	100.0%	
	% within Source of income	4.9%	51.6%	1.7%	1.4%	0.0%	11.9%	16.6%	
	% of Total	0.7%	14.3%	0.2%	0.5%	0.0%	0.9%	16.6%	
Total	Count	82	157	60	215	11	42	567	
% within Respondent Age	14.5%	27.7%	10.6%	37.9%	1.9%	7.4%	100.0%		
% within Source of income	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		
% of Total	14.5%	27.7%	10.6%	37.9%	1.9%	7.4%	100.0%		

TABLE 14 Respondent Age * Source of income Crosstabulation

4.2.1.5 EDUCATION PROFILE

Table 7 shows that only 21% of the population has some form of tertiary education. The modal category of people (58.2%) has respondents who have up until grade 12 (matriculation). The variation ration of 0.42 represents a strong modal category as more than 50% of the population distribution falls within the modal category.

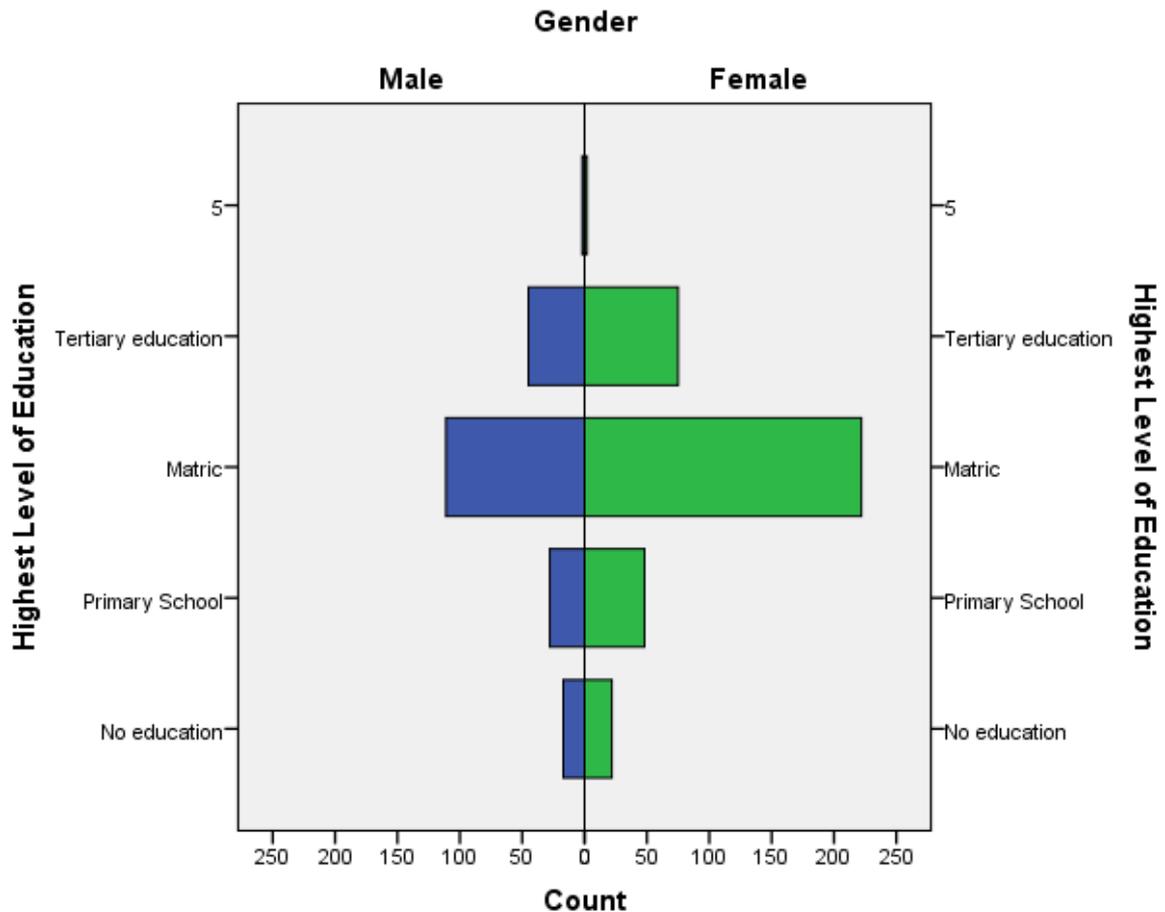


Figure 18: Population pyramid showing that more females are educated than males in Galeshewe

		Highest Level of Education			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No education	39	6.6	6.8	6.8
	Primary School	76	12.8	13.3	20.1
	Matric	333	56.0	58.2	78.3
	Tertiary education	120	20.2	21.0	99.3
	5	4	.7	.7	100.0
	Total	572	96.1	100.0	
Missing	0	23	3.9		
Total		595	100.0		

Table 15: Highest level of education (N=595: Mode= Matric; variation ratio: 0.42)

According to the Galeshewe Household survey, only 17.5% of the people in Galeshewe have Matric whereas 12.7% of them do not have school at all. Only 4.6% of the respondents in the household survey had some form of higher education (Sol Plaatje Municipality, 2009a, p. 8).

4.2.1.6 HOUSEHOLD SIZE

From a population of 119151 people, the average household size according to the Galeshewe Household Survey of 2009 is 3.4 (Sol Plaatje Municipality, 2009a, p. 7). According to table 8, the typical household size is between 3 and 5 members (43.9%). This is followed by larger families that have more than 5 people and a considerable number of small families (21.6%) that have less than three members.

		Household size			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 3	124	20.8	21.6	21.6
	Between 3 and 5	252	42.4	43.9	65.5
	More than 5	197	33.1	34.3	99.8
	5	1	.2	.2	100.0
	Total	574	96.5	100.0	
Missing	0	21	3.5		
Total		595	100.0		

Table 16: Household size (N=595; mode "Between 3 and 5; variation ratio: 0.56)

55.8% of the respondents do not have teenagers living with them. Those that have children, the majority only have one (47.6) or two (30.4%) living with them in the house. About 52% of the sample does not have any minors living with them. The majority could represent young families or people of child bearing age, who may prefer to live outside Galeshewe. As much as the majority of people in the sample are young, but the majority (52%) of those that have minor children do not stay in Galeshewe.

The 4.9% of the families who do not have adults which represents child headed households. This is in line with the 5% of the people that responded as being under 20 in the category of the age groups. 83.4% of the families do not have an elderly person living with them. Of the remaining households (16.6%), only 16 families have two elderly people living with them.

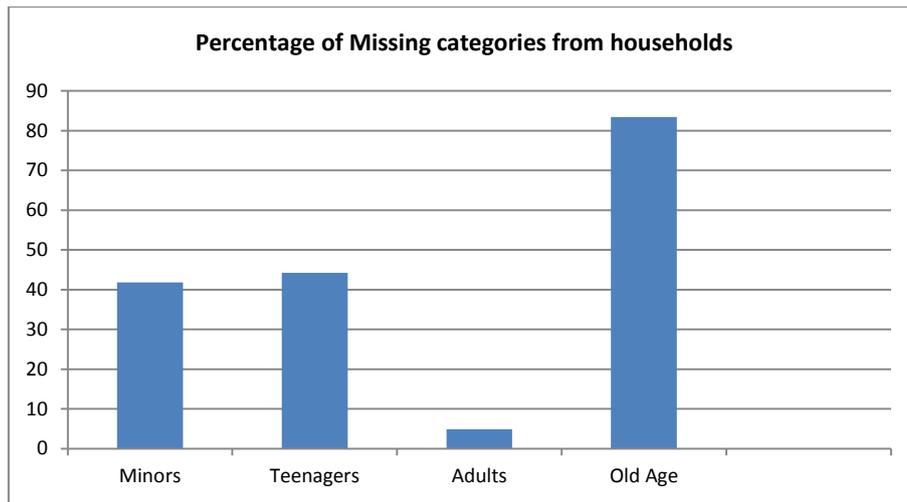


Figure 19: Percentage of missing categories from households (N=595; mode = Old age)

From the families that have adults living with them, about 47.7% of them have two adults. This group includes anyone who is not a teenager, a minor and/or form part of the old age category.

Adults

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	129	21.7	22.8	22.8
	2	270	45.4	47.7	70.5
	3	97	16.3	17.1	87.6
	4	44	7.4	7.8	95.4
	5	14	2.4	2.5	97.9
	6	6	1.0	1.1	98.9
	7	5	.8	.9	99.8
	8	1	.2	.2	100.0
	Total	566	95.1	100.0	
Missing	0	29	4.9		
Total		595	100.0		

Table 17: Adults (N= 595; Mode= 2; variation ratio = 0.52)

4.2.1.7 TYPE OF TENURE

The majority of the people (94.6%) are full title owners of their properties. Only 4.5% of the respondents are actually renting the properties and this count is similar (4.5%) to renting for respondents that have been living in Galeshewe for less than 5 years. This differs from the 8.8% from the household survey (Sol Plaatje Municipality, 2009a, p. 9).

Type of ownership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rent	26	4.4	4.5	4.5
	Full title	545	91.6	94.6	99.1
	Other	5	.8	.9	100.0
	Total	576	96.8	100.0	
Missing	0	19	3.2		
Total		595	100.0		

Table 18: Type of ownership (N=595; Mode = Full Title; Variation ratio = 0.45)

The household survey also has another category of those who are neither owning the property nor renting in it. It could be family properties that have not been legally transferred or people that are illegally occupying those properties. This matter could have been covered under “other” but that category only got 0.9% from the respondents. This may have something to do with those who work in Galeshewe and surrounding areas. Only 10 percent of the population has lived in Galeshewe for less than five years with half of those (5.3%) having been there for 2-5 years.

4.2.1.8 LANGUAGE

The majority of the people (71%) are Tswana speaking people, whereas the other cultures occupy the remaining 29%. With a variation ratio of 0.29 it is clear that the mode is the most typical response in this distribution (see table below). In South Africa, the language of the people is mostly associated with their culture. One can easily assume in this case that, the 71% of the people that are said to be SeTswana speaking are actually of the Sotho and Tswana tribes of Southern Africa.

Home Language

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SeTswana	411	69.1	71.0	71.0
	SeSotho	20	3.4	3.5	74.4
	IsiXhosa	47	7.9	8.1	82.6
	Afrikaans	99	16.6	17.1	99.7
	English	1	.2	.2	99.8
	6	1	.2	.2	100.0
	Total	579	97.3	100.0	
Missing	0	16	2.7		
Total		595	100.0		

Table 19: Home language (N = 595; mode: SeTswana; variation ratio: 0.29)

Culture is known to have an impact on sense of place and the way people see their everyday life and in turn their surrounding landscapes (Risbeth, 2001, p. 351); (McPherson & Simpson, 2002, p. 61).

4.3 GENERAL KNOWLEDGE ABOUT THE PURPOSE OF TOWNSHIP OPEN SPACES

From the conditions of establishments between 1981 and 2003, there is an interchange in the use of the following terms referring to urban open spaces, “Parks; Park erven; Open Space; Public Space; Public Open Space”. This indicates an inconsistency in the manner in which urban open space have been described in the plans for Galeshewe Township. However, when the respondents were asked to provide reasons why the municipality leaves out undeveloped open spaces, the majority of them did not know. The purpose of the question was to get an understanding of whether the respondents knew the purposes of open space provision and to understand how they view the open spaces from the municipality’s perspective. The response has a modal category of ‘no idea’ at 54.9% of those who responded to the question (see table below). This category represents more than half of the respondents showing that they have no idea why the open spaces are there. Whereas most of the respondents said they have ‘no idea’ why the municipality has left undeveloped urban open spaces, the remaining amount of respondents see open spaces as areas that are reserved for future development.

The variation ratio of 0.45 indicates moderate to strong modal category which means the mode is the most typical response in the distribution. If one combines the mode plus the fact that the rest of the answers do not give the correct purpose of open spaces in Galeshewe, it shows that 91.4% of the respondents do not know the purpose of open spaces. This is further supported by the meagre number of those who chose park (3.1%); social facility (4.3%) and sports facilities (1.2%). These three land-uses are the only urban open space functions that respondents brought up when asked to motivate why the municipality leaves out undeveloped open spaces.

Reasons why the municipality leaves out undeveloped open spaces

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No idea	321	53.9	54.9	54.9
	Housing	87	14.6	14.9	69.7
	Business	15	2.5	2.6	72.3
	Park	18	3.0	3.1	75.4
	Social Facility	25	4.2	4.3	79.7
	Future development (unspecified)	87	14.6	14.9	94.5
	Government and Municipal buildings	7	1.2	1.2	95.7
	Entertainment	9	1.5	1.5	97.3
	Sports Facilities	7	1.2	1.2	98.5
	Layout planning	8	1.3	1.4	99.8
	Municipality <u>has</u> no plans	1	.2	.2	100.0
	Total	585	98.3	100.0	
Missing	No answer	10	1.7		
Total		595	100.0		

Table 20: Reasons why the municipality leaves out undeveloped open spaces (Mode: =No idea; variation ratio= 0.45)

4.4 THE NEED FOR OPEN SPACES IN GALESHEWE

Maruani & Amit-Cohen (2007) believe that the allocation and supply of open spaces is based on supply and demand. Demand of open spaces is based on people’s knowledge and needs of urban open spaces. Some planning theories put the people at the centre of all planning efforts, i.e., theory of urbanities; incremental planning; trans active planning; radical activism, etc., (Hudson, 1979, p. 390). This means if people do not demand open spaces, then they won’t have a problem with open spaces being taken by other developments. Different communities differ in the way they value open spaces. In Minnesota (USA) it was proven that Minnesotans would even go to the extent of accepting a raise in taxes in order to acquire new lands for open spaces and even to preserve existing ones (Anton, 2005, p. 1). A study conducted in Roanoke and Virginia also came to a conclusion that the demand for urban park land did not change due to property price and household income, rather the size and proximity to the park was seen to be more important than their home living space (Poudyal, et al., 2009, p. 975).



Figure 20: An urban open space in Kimberly, serving as a dam that contributes to storm water management and runoff

Source: (Author, 2013)

In order to determine the need for additional open spaces in Galeshewe, respondents were asked whether there are enough open spaces in the township. The majority of the respondents (62.4%) felt that there are enough open spaces in Galeshewe (See Table 13).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	371	62.4	68.1	68.1
	No	174	29.2	31.9	100.0
	Total	545	91.6	100.0	
Missing	0	50	8.4		
Total		595	100.0		

Table 21: need for more open spaces for people living in the township

The reasons given that support this answer are seen in the table below which shows that 71.1% of those who responded to the question believe that, based on visibility of open spaces, there are lots of open spaces closer to where they stay. Only 27% of the respondents believe there are fewer open spaces in Galeshewe whereas the quality of available open spaces is not even questioned by the community.

Are there enough open spaces for people living in the township

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lots of open spaces in the vicinity	337	56.6	71.1	71.1
	Fewer open spaces in the vicinity	127	21.3	26.8	97.9
	Not used	8	1.3	1.7	99.6
	They lack infrastructure	1	.2	.2	99.8
	Inappropriate infrastructure	1	.2	.2	100.0
	Total	474	79.7	100.0	
Missing	0	121	20.3		
Total		595	100.0		

Table 22: Reasons for more/less open spaces in the township

4.4.1 THE QUALITY OF URBAN OPEN SPACES IN GALESHEWE

An observation checklist was designed in order to identify the use and quality of urban open spaces in Galeshwe (See Appendix C). A total of 274 urban open spaces, including surveyed parks, were identified in Galeshewe and the land use survey (observation checklist) was conducted just once, with the following results.

As shown in the results for the land use observation of urban open spaces in Galeshewe, the following can be said about their level of development:

1. The most widely played sport on Galeshewe Open Spaces is Soccer at 26 (9.2%) of the total open spaces that were identified.
2. Fruit and vegetable stalls were the most business uses (5.7%) identified on urban open spaces. These were followed by car wash and car repairs on 3.2% of those urban open spaces.
3. Unpaved pedestrian walkways such as footpaths were identified on 53.2% of the open spaces, with 14.5% of them being paved, i.e., along major routes.
4. More than half (56.7%) of the urban open spaces in Galeshewe had domestic refuse and signs of littering whereas 21.3% of the total number of urban open spaces observed had construction rubble.

5. In terms of development, 17.4% of the open spaces had fencing; 16% with notice advertisement boards and 14.5% were used for storm-water purposes.
6. 9.2% of the open spaces had lawns as a ground cover; whereas the majority (55%) had indigenous grasses.

As shown in the typologies of urban open spaces in Chapter 1, which lists different types of properties that can be classified under urban open spaces, Galeshewe has a few urban open spaces that can be belong to the following categories: Sports Grounds; Institutional open spaces; Heritage Sites; Parks; Aquatic Open Spaces and Incidental Open Spaces. When the people of Galeshewe were asked to mention their most favourite open spaces, 29.3% mentioned Hulana Park and this was followed by Kutlwanong Park at 7.5%. the other open spaces in Galeshewe received less than 6%.

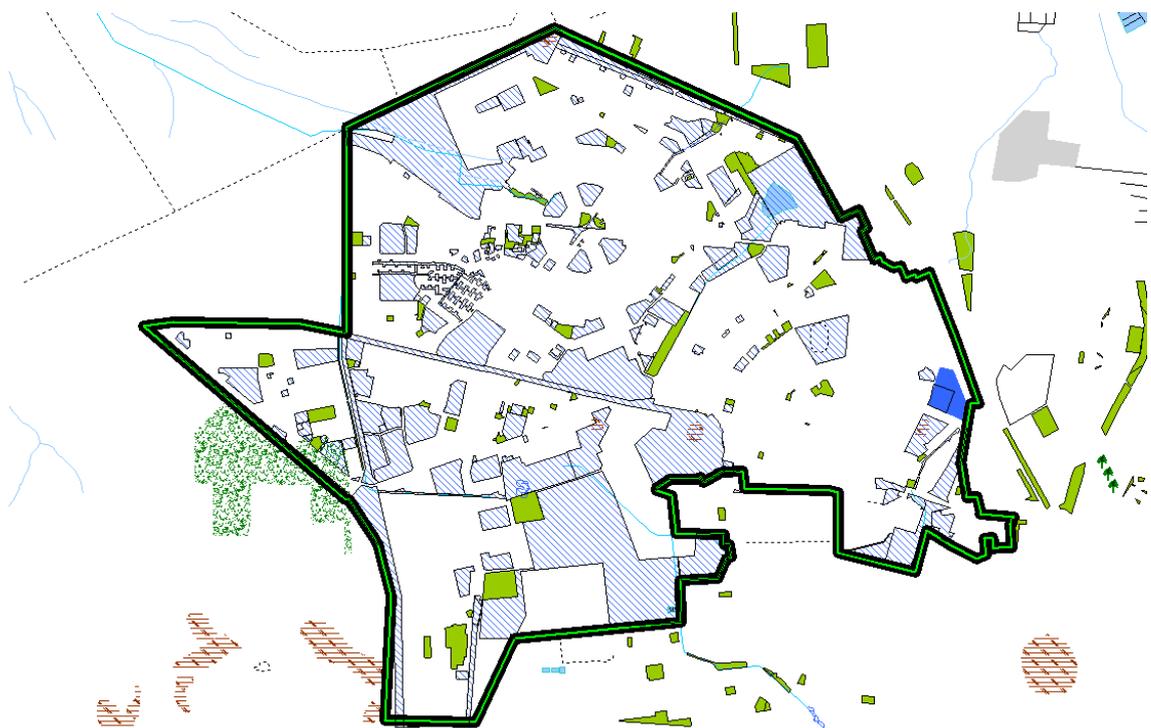


Figure 21: Land uses, blue/hatching represents different types of open spaces in the Galeshewe Township, including vacant land, low density erven such as schools, municipal sports grounds and cemeteries, green represents surveyed open spaces.

Source: (Author, 2013)

Below, are some of the areas that are worth mentioning as urban open spaces in Galeshewe

4.4.1.1 HULANA PARK

As shown in Chapter 4 Hulana Park, on Hulana Street in Galeshewe Township. Hulana Park is the most popular urban open space in Galeshewe. It is easily accessible via the minibus transport system and it is mostly used for recreational purposes by youth and young adults, especially on weekends



Figure 22: Hulana Park along Hulana Street in Galeshewe. This recreational park, based on the play infrastructure and braai facilities, was designed for people of different age groups and it is one of the most popular open spaces in Galeshewe. It is known for its role as a meeting place especially during weekends.

Source: (Author, 2013)

4.4.1.2 MAYIBUYE SILID OPEN SPACE

Amongst the urban renewal projects of Galeshewe (as discussed further down below), the most developed urban open spaces is the Mayibuye Hard open space situated on Royal Street at the entrance of Galeshewe. It is a historical park, which is aimed at restoring the political image of Galeshewe by using one of its political stalwarts in the fight against apartheid.



Figure 23: Mayibuye hard open space at the entrance of Galeshewe Township. This Open Space pays reference to some of the political leaders such as Robert Mangaliso Sobukwe who stayed and operated as a lawyer on the same property

Source: (Author, 2013)

4.4.2 COMMUNITY PERCEPTIONS ABOUT URBAN OPEN SPACES IN GALESHEWE TOWNSHIP

In 2009, the Sol Plaatje Municipality, as part of its urban renewal programme conducted a household survey with specific aim of discovering community values and needs (Sol Plaatje Municipality, 2009a). The methodology employed in the research did not allow respondents to prioritise their responses in terms of bulk services infrastructure, social infrastructure and environmental infrastructure. However, the researchers gave the three types of infrastructure and asked the respondents to prioritise the most important options out of these three. In that case, it is not clear whether the community actually values green infrastructure at all in their communities. With that in mind, the ecological value of open spaces was valued less as compared to other environmental priorities such as sports and recreation (Sol Plaatje Municipality, 2009a, p. 21).

4.5 TOWNSHIP ESTABLISHMENT AS A WAY OF ACQUIRING URBAN OPEN SPACE IN GALESHEWE

The normative approach to public open space planning during layout and development planning requires 10-17% of developable land to remain as public open space (CSIR, 2005, p. 5.4.7). There are however, no statutory regulations on the usability, position and size of these public open spaces as this is left to the professional interpretation of planners to decide on these issues once the layout has been approved. The modernist ideology and its emphasis on efficiency and technology led to the creation of fragmented and environmentally sterile townships which lack services and are highly inconveniencing in terms of transport costs; time and energy (CSIR, 2005, p. 2.0). This also results in a disjointed and fragment open space system as seen below.

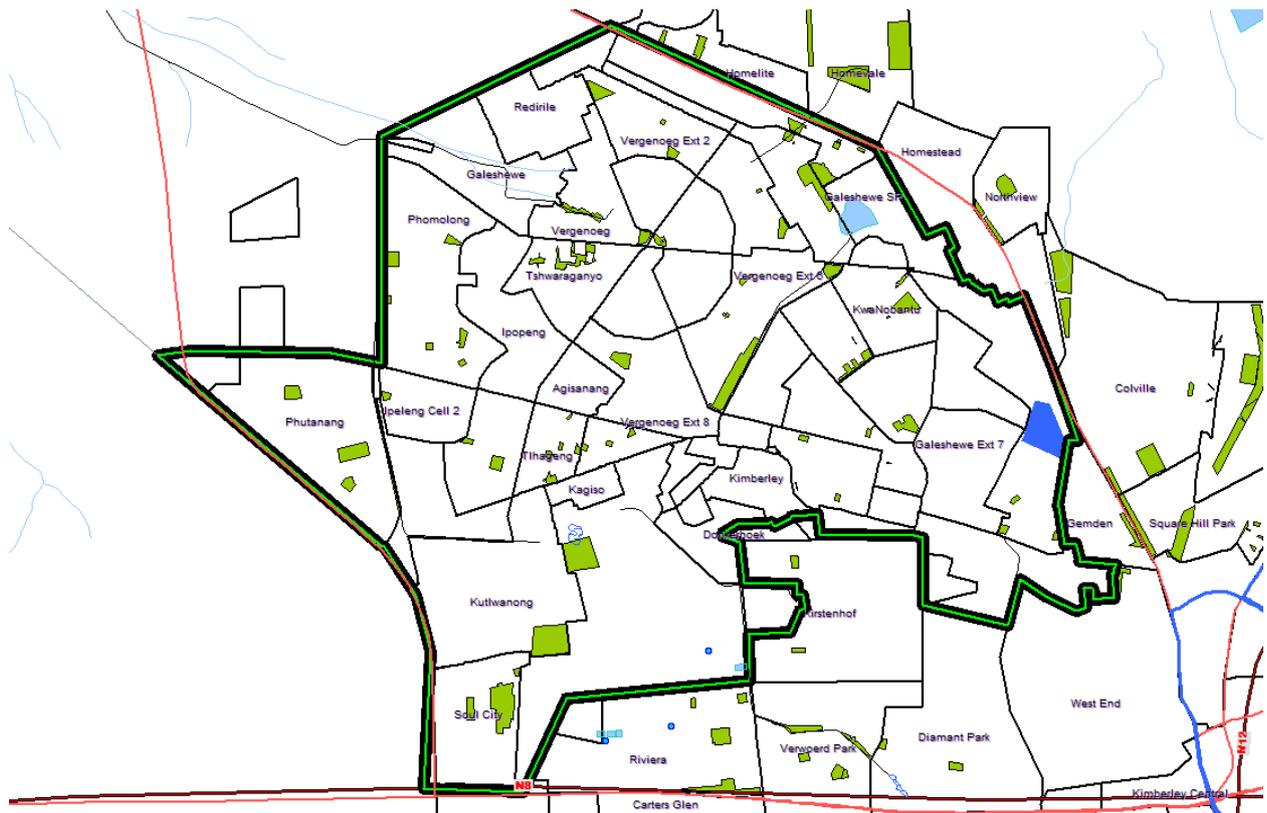


Figure 24: Distribution of surveyed parks in the different sub-areas of Galeshewe Township. The green polygons represent surveyed parks in the Galeshewe Township. Note that other types of open spaces such as cemeteries do not form part of surveyed parks.

Source: (Author, 2013)

In the case of Galeshewe, this type of planning has resulted in fragmentation of the urban open space system and it is rather improved by the presence of **land uses that complement public open space functions** as seen below.

4.5.1 LEGISLATION

Town and Regional Planning in South Africa has its roots in the Dutch and English legal system of the 17th and 18th Century (van Wyk, 2012, p. 1). However, land use; land occupation including land use planning was always different for Blacks than it was for Whites reflecting changing political ideologies (van Wyk, 2012, p. 25).

van Wyk (2012, p. 48-49) writes that even back in the 1900s areas for ‘Blacks’ were not considered urban and they were controlled by a separate legislation (The Blacks (Urban Areas) Act 21 of 1923) other than urban legislation of that time. After 1945, recognised townships for Blacks were established in terms of the Blacks Consolidation Act 25 of 1945; then the Black Communities Development Act 4 of 1984. Annexure F of this (Act 4 of 1984) is still applicable in some parts of the townships as a land use management tool.

The following table reflects a series of legislative pieces that have been used in the planning for townships.

Black Land Act 27 of 1913	Blacks to stay in scheduled areas, only go to urban areas for work purposes
Blacks (Urban Areas) Act 21 of 1923	Plan and create ‘locations’ which were later called townships
Black Administration Act 38 of 1927	Administration of land occupied by Blacks
Development Trust and Land Act 18 of 1936	Blacks could not purchase land in an urban areas
Blacks (Urban Areas) Consolidation Act 25 of 1945	Township Establishment
Black Laws Amendment Act 56 of 1949	Excluded the application of township ordinances on places that were deemed rural, i.e., townships
Group Areas Act 36 of 1966	Acquisition; alienation; and occupation of land for whites coloured and Indians. Only repealed by the Abolition of Racially Based Land Measures Act 108 of 1991.
Proclamation R293 of 1962	Township Establishments; management and regulations of townships
Black Communities Development Act 4 of 1984	Regulates land developments in townships, its regulations (still applicable)
Government Notice R1886 of 1990	Provides for township development procedures
Government Notice R1888 of 1990	Provides for procedures for structure plans and town planning schemes (still applicable)
Upgrading of Land Tenure Rights Act 112 of 1991	Security of tenure (still applicable)
Less formal township establishment Act 113 of 1991	Speedy approval of township development (Still applicable)

Table 23: Legislation for land use and development of township land

Source: (van Wyk, 2012)

Until the mid-1900s South Africa Planning was a mirror image of English planning system in almost all aspects (van Wyk, 2012, p. 23). The Post-World War 1 functionalist planning tradition was carried through into South Africa with challenges such as “land use separation, low density development, traffic separation, etc.,” (Todes, 2011, p. 117). From the 1950s, South African townships were formed using apartheid laws based on racial segregation and these townships still accommodate a large percentage of Black

urban poor in South Africa (Republic of South Africa, Co-operative Governance and Traditional Affairs, 2009); (CSIR, 2005, p. 2.0).

Due to the discriminatory laws of apartheid there had been no major infrastructure investments in the townships (Republic of South Africa, Co-operative Governance and Traditional Affairs, 2009). It is mentioned that at some point, progressive 'service organisations' emerged to fight against the ills of apartheid and what was surely a failure in urban development under the apartheid regime and together tried to bring forms of localised radical planning (Todes, 2011, p. 117). However, apartheid planning is not the only scapegoat, the current post-1994 planning system has also failed townships (especially in land use management), i.e., old apartheid legislation still exist running parallel with the new paradigms of integrated development planning; participation and integration policies (Todes, 2011, p. 120). The new forms of planning have also been weak in implementation, i.e., integration of sustainability into planning; participation; informality; with no focus on issues such as gender equality (Ibid.)

4.5.1.1 CURRENT LEGISLATION

Whereas there is not a single piece of legislation that specifically refers to the acquisition, maintenance and alienation of urban to urban open space, there are several statutes that can be used to acquire open spaces for various purposes. For example, all legislation that is used for township establishment can be used to designate a piece of land as an open space (see table below).

Non-statutory acquisition of open space	Statutory acquisition of open space	Management and alienation of open space
Municipal Systems Act 32 of 2000	Development Facilitation Act 67 of 1995 (Which has recently been declared unconstitutional save for its principles of land development)	Removal of restrictions Act 84 of 1967
National Environmental Management Act 107 of 1998	Less formal township establishment act 113 of 1991	National building Regulations and Building Standards Act 103 of 1977
	Physical Planning Act 125 of 1991	Northern Cape Planning and Development Act 7 of 1998
	National Environmental Management: Protected Areas Act 57 of 2003	Subdivision of Agricultural Land Act 70 of 1970
	National Environmental Management: Integrated Coastal Management Act 24 of 2008	Land Survey Act 8 of 1997
	Mountain Catchment Areas Act 63 of 1970	
	National Land Transport Act 5 of 2009	
	Northern Cape Planning and Development Act 7 of 1998	
	National Water Act 36 of 1998 (1/100year floodline)	
	National Forest Act 84 of 1998	
	National Heritage Resources Act 25 of 1999	
	Provincial Ordinances	

Table 24: List of Government statutes that are used for the acquisition of management of open space: Source (van Wyk, 2012, pp. 128-140)

These statutes actually force one to have a land use that, in the definition of an open space, would be classified as an open space. Non-statutory acquisition of open space is through plans or frameworks such as the Spatial Development Framework in terms of the Municipal Systems Act 32 of 2000 or an Environmental Management Framework in terms of the Environmental Management Act 32 of 2000. If it becomes necessary to develop on a piece of land that is designated as an open space, the statutory pieces of legislation together with those that are used in the management and alienation of urban open space, can be used to control such a development proposal to be in line with the principle of the legislation that governs land use on the property.

Besides open space acquisition through the physical planning processes, the other planning tools specific to open space planning include the

1. Spatial Development Framework as part of the Integrated Development Plans that every municipality compiles in terms of the Municipal System Act (Act 32 of 2000).
2. Town planning schemes: Used to manage land use on registered parcels of land. They are based on ordinances and/provincial legislation but these pieces of legislation are not yet applicable to all township land.
3. Municipal bylaws which provides for a set of policy regulations on how to govern urban open spaces (See Appendix F 1).
4. Environmental Management Frameworks: a policy framework on how to deal with the environment, under which urban open spaces are usually classified.
5. Open Space Frameworks: a policy framework on how to deal with the urban open spaces.



Figure 25: Public Open Space at the RC Elliot Node in Galeshewe. The Space is usually used by small business vendors who take opportunities from the pedestrian market that is attracted by the shopping centre

Source: (Author, 2013)

In South African townships, the **management of urban land** such as public open spaces and the different types of open spaces lies with the local municipality. The use of public open spaces in Galeshewe is seldom what it was intended for and that poses a threat to the sustainability of the space and planning process in general. Common uses include car wash business, informal settlements, and informal businesses, dumping areas and parking in those public open spaces that attract high volumes of traffic, i.e., church sites, business and schools (See appendix C5). Some of the open spaces such as the Mayibuye

Hard open space area designed in a manner that rules them out as normal open spaces; rather they provide parking and outdoor furniture in support of the business situated within the park.

4.5.2 GALESHEWE TOWNSHIP GENERAL PLANS

Several General Plans and conditions of establishment for Galeshewe were analysed in order to assess the percentage of land that was reserved for urban open spaces. The discussion specifies the general plan numbers together with the names of the areas that are affected in Galeshewe.

4.5.2.1 1981-1990

This research could not obtain any conditions of establishment for Galeshewe prior to 1981, but this does not mean there were no township establishments before year. There is something that is misleading when one studies the general plans and conditions of establishment for Galeshewe; it is the fact that most general plans are laid on an Erf rather than on farmland or a remainder of a farm. This creates confusion in the acquisition of urban open spaces because of the sizes of the erven that are referred to as 'parks' and then later subdivided to produce other residential erven.

1981 saw the approval of three general plans for Vergenoeg and Vergenoeg ext 2 in Galeshewe. General plans L661/1981; L662/1981 and L644/1981. Whereas L644/1989 was laid on Erf 2369, no public open space was reserved in this general plan. But in the case of L661/1981 and L662/1981, Park Erf 2032 which was reserved as a drainage line for storm-water purposes measures 9876.72 square meters whereas Park Erf 3052 measured 11950.5 square meters respectively. Considering that Galeshewe does not have any surveyed park, or surveyed public open space of this size, this is an indication that some of the early erven were used as a reserve for future development rather than conservation or park purposes.

Vergenoeg extensions 3; 4 and 8 together with parts of Phomolong and Kwa Nobantu were established in 1982. Like some of the General Plans of 1981, General Plan L384/1982 had Park Erf 10827 which measured 10900.9 square meters whereas General Plan L65/1982 produced the smallest public open spaces, Erf 5239 at 192.37 square meters, by that time's standards. In 1983, sees the introduction of small and narrow public open spaces (located in-between erven) that were solely intended for storm water drainage. One of these types of erven is Erf 5739 from the General Plan L419/1983 (see diagram below).



Figure 26: Small and narrow public open space located in-between erven and intended as connector for an above-ground storm-water drainage system

Source (Author, 2013)

ABC Cemetery in Vergenoeg Ext 8 is the only urban open space (Erf 11519) which is still the same size and shape as it was designed. This Erf, measuring 210240 square meters was not designed to be an open space in terms of the manner in which are categorized in the General Plans of Galeshewe. It was established and registered under the general plan L156/1985.



Figure 27: ABC Cemetery in Galeshewe, measuring 210240 square meters, remains intact in terms of size and shape since 1985

Source: (Author, 2013)

The 480 Ha piece of land close and to the Southern Side of John Mampe is the one that extends to the new location of the Northern Cape Provincial Legislature. It is registered under L1598/1986. Something strange happened with the General Plan L19/1986 which had 31 erven, 10 of which were open spaces (erven 10171-10180). But these erven were later rezoned in 1992 (L3515/1992) to provide for residential erven and interestingly Erf 10172 was 15571.4 square meters in size. Erf 12458 measuring 27904.3 square meters from the General Plan L256/1986 accommodated an electrical servitude that was passing through Galeshewe Township.

4.5.2.2 1991-2003

Along Thutlo Street in Boikhutsong, lies Park Erf E3290 measuring 6701.59 sm and this is one of the parks that have been renovated for urban renewal purposes established and registered under the General Plan L84731/1991. Several strips of land (Erven

13286; 13287; 13550 and 13551) along Barkly road on the side of Boikhutsong accommodate powerlines. Phutanang Park (Park Erf 14251) which measures 9869.3 square meters was registered in 1995 (L9406/1995). General Plan L9507 of 1995 introduces the use of public open space as a buffer between a major road, Peter Mokaba Road and Daniel Moncho Streets in Phutanang. It is not clear though whether storm-water drainage is the primary or secondary function of this long and linear strip of land which still exists in Phutanang. What is rather clearer in the establishment of residential erven between 1990 and 2003 is a trend in the diminishing number of urban open spaces from general plans, i.e. in 1995 the following general plans did not accommodate urban open spaces (L9726; 6150; 6529; 1812; 8238 and L8975/1995) producing 874 erven; in 1997 it was L1200; 1203; 1208; 4281; 7605; and L8688/1997 with a combined 1416 erven. This non-allocation of urban open spaces continued in 1998 which produced 418 erven and in 1999 with 153 erven and 2003 with only 109 erven but no urban open spaces.

It is not clear though whether the introduction of the 1997 environmental regulations, (R1181 and R1182) had any impact on this trend. But these regulations would have made it difficult for urban planners to subdivide an area that is reserved as an urban open space for new residential uses. These regulations were later repealed by the Minister of Environmental Affairs and Tourism, Marthinus van Schalkwyk on the 21st of April 2006. They were substituted by a set of regulations which no longer identified change of land use from an area zoned open space as something that needed environmental authorisation.

4.5.3 DENSITIES AND DISTRIBUTION OF URBAN OPEN SPACES IN GALESHWE

Due to the purpose for which the urban open spaces of Galeshewe were designed, the sizes of the existing urban open spaces in Galeshewe differ by a huge margin. The smallest identified urban open space is Erf 13218 showed in the diagrams above. It measures 32.5 square meters whereas the biggest erf is 49685.3 square meters in Park

Erf 17206. The longest park erven are the ones that accommodate power-line servitudes in Boikhutsong as identified in the paragraphs above.

Demographics	Size	%
Municipal Population	243 018	100
Municipal Area	1883.77 km ²	100
Galeshewe Population	119 151	49%
Galeshewe Area	1775 Ha	0.9%
Average Household Galeshewe	3.4	--
Population Density Galeshewe	67pp/Ha	-
Number of Surveyed Parks	78	-
Area of surveyed Parks	48.02Ha	2.7%
Number of Functional Open Spaces	196	-
Total area of functional open spaces	440.825 Ha	24.8%
Areas occupied by shanties/infill development	99.79Ha	5.45%
Total area of all open spaces	488.85Ha	27.5%
Open space density (surveyed parks)	2 481 pp/Ha	
Open space density (All open spaces)	244pp/Ha	
Household Density Galeshewe	2515 hh/km ²	-

Table 25: Demographic profile of Galeshewe

Source: (Author; 2013); (Sol Plaatje Municipality, 2009a, p. 7); (Statistics South Africa, 2007, p. 16).

The current density of surveyed parks which cover only 2.7% of the total area of Galeshewe, is 2481 pp/Ha. Out of 44 sub areas, Galeshewe Township has some areas that do not have urban open spaces at all (See map and Table below).

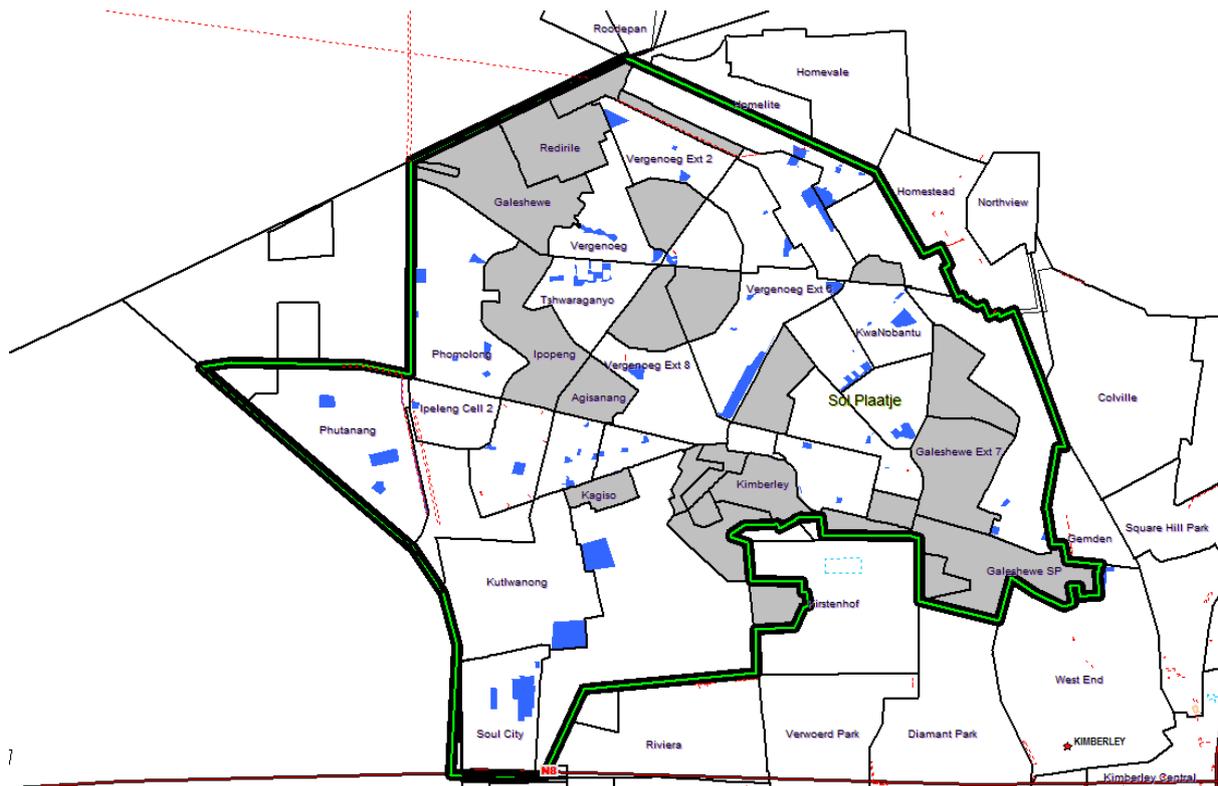


Figure 28: Map of Galeshewe Township showing sub-areas that do not have any urban open spaces, see table below for names. Source (Author, 2013)

Sub Place Code	Sub Place Name	Size (sm)	Comments about the sub-place
32101001	Agisanang	176373	No open spaces
32101010	Galeshewe Ext 5	74672	No open spaces but the shape of royal street suggests that this layout was formalised on an already existing settlement
32101011	Galeshewe Ext 6	270589	No open spaces, but adjacent to the greenbelt on the east
32101012	Galeshewe Ext 7	440997	No open spaces, but the size of Mthshaza Street suggest that this layout was formalised on an already existing settlement
32101016	Ipopeng	505923	No open spaces
32101017	John Mampe	69270.6	No open spaces
32101018	John Mampe 1	85705.3	No open spaces
32101020	Kagiso	100696	No open spaces
32101024	Mampe Ext 1	40001.8	No open spaces
32101027	Redirile	355932	No open spaces, excluding the part of the greenbelt on the western side
32101030	Thambo Square	79729	No open spaces
32101031	Thusano	116751	No open space, excluding the part of the greenbelt on the western side
32101035	Vergenoeg Ext 1	190924	No open spaces
32101036	Vergenoeg Ext 10	86561.7	No open spaces
32101040	Vergenoeg Ext 5	206638	No open spaces
32101042	Vergenoeg Ext 7	212056	No open spaces
32101045	Witdam	64374.9	No open spaces

Table 26: 41% of the 44 Sub areas that Galeshewe has, do not have urban open spaces in the form of surveyed parks. Source (Author, 2013)

4.6 KIMBERLY MUNICIPAL OPEN SPACE SYSTEM- 1999 (KIMOSS)

Major cities in South Africa embarked on the formulation of their open space systems even before 1994. Most of the major cities in South Africa have had a Municipal Open Space System (A framework or plan that would guide the preservation of natural open spaces within the municipal area), i.e., Johannesburg, 2002; Cape Town, 2000; Durban, 1999; Sandton, 1993; Bloemfontein (n.d.); City of Tshwane.

Kimberly, is one of the cities that compiled a Municipal Open Space System Plan in the 1990s. The document was approved on the 25th of October 1999 succeeding a policy (KIMOSS policy) that was based on a “Comprehensive Urban Plan” of Kimberly. This policy catered for the classification, alienation and management of urban open spaces in Kimberly. Judging from Appendix F.2, there was a major emphasis on the development of open spaces and setting out of a permanent open space system.

When the Durban Metropolitan Open Space System was established, its intention was the consolidation of open spaces in order to promote biological diversity. Challenges were experienced during the change of government in the 1990s whereby the open space system had to cater for all the citizens of the Metro, including the townships. Public participation, introduction of public amenities and urban agriculture were seen to be steps in the right direction (Bodenstein, 1995). However, since 1994, there has been more focus on compaction, urban infill and densification (Donaldson & van der Merwe, 2000). The current role of the metropolitan open space system as a non-statutory framework is not clear due to the replacement of these plans by the Spatial Development Frameworks that are compiled as part of the integrated development processes at local municipality levels.

4.7 GALESHEWE URBAN RENEWAL

Urban renewal in the New South Africa⁵ came as a need to speed up the development of previously marginalized human settlements, i.e., the townships. After the fall of apartheid, a programme of nation building and spatial reconfiguration was necessary. Since the beginning of South Africa's democracy in 1994, the government of South Africa introduced various development programmes and policies. The specific purpose of these programmes and policies was to expedite the reconstruction and development of the country, especially in the townships. Some of these development initiatives include Reconstruction and Development Programme (1994); Development Facilitation Act (1995); Growth, Employment and Redistribution macro-economic policy (1996); Special Integrated Projects (SIPs) (1994); Urban Renewal Programme (2001); Breaking New Ground (2004); Neighbourhood Development Grants (2007).

The focus of South Africa's urban renewal programme which started in 2001 is on alleviation of urban poverty through the provision and installation of public infrastructure such as improvement of roads, storm water drainage, fresh water, solid waste, sewer networks, and electricity (Republic of South Africa, Co-operative Governance and Traditional Affairs, 2009, p. 61).

The alignment of funding would be done through budget prioritisation and alignment of funding in order to address the poverty issues in these townships. This means all urban renewal initiatives that National Treasury is funding, should have an element of poverty alleviation and a potential to attract private sector investments. It is also a firm belief that public investment on infrastructure in the townships will attract private sector investments (Republic of South Africa, National Treasury, 2007, p. 6). It does not mean that there was no development at all in the townships prior to the Neighbourhood Partnership Grant (from National Treasury) and the Urban Renewal Programme of 2001, rather the development initiatives were not coordinated and they lacked central funding. What the National Development Partnership Grant brought was a consolidated source of funding, platform for innovative thinking and interactive solutions between

⁵ Republic of South Africa after the 1994 first non-racial and democratic elections.

locals and experts appointed by the National Treasury. It introduces direct funding to the municipalities for the following:

1. Technical funding for urban renewal planning
2. Capital expenditure for infrastructure development
3. Platform for private sector funding

Poverty alleviation as a focus does not mean that public open space is neglected as a land use. It rather means that whatever initiatives that comes from these community programmes, poverty alleviation should be the primary objective. This means public open space planning and development should have an element of poverty alleviation in order to meet the policy demands of the current urban renewal programme that is funded by the National Development Partnership Grant from National Treasury.

A conceptual plan for Galeshewe urban renewal was developed by the Provincial Government in 2002 with one of the project rationale being the definition of public open space as a focal point. Based on this, the concept of the Galeshewe Open Space and Landscape Plan came into effect (Northern Cape Provincial Government, 2002).



Figure 29: Public Open Space in Galeshewe funded by the Urban Renewal Programme of 2001. Shelter, footpaths, fencing, a few trees and maintenance are some of the features on this public open space

Source: (Author, 2013)



Figure 30: A municipal sports ground funded and developed by the department of sports, arts and culture with the management functions falling under the local municipality

Source: (Author, 2013)

The Galeshewe Open Space & Landscape Plan was then developed in order to provide a planning and decision making tool with regards to a potential open space system (Sol Plaatje Municipality, 2004). This plan was later followed by the Greenbelt Project which by 2011 was still awaiting implementation at a possible value of R250 Million (Sol Plaatje Local Municipality, 2009b, pp. 90-95). One interesting part regarding these projects is the community perceptions with regards to what the municipality plans to implement.



Figure 31: A board showing the purpose of the Urban Renewal Programme at Grootboom Park in Galeshewe

Source: (Author, 2013)

The improvement and re-design of public open spaces may have an impact on the provision of basic services such as storm-water drainage and recreational facilities. Except for sports fields, most urban open spaces as a land use do not generate any direct revenue as compared to other land-uses such as; commercial and industrial.

4.8 CONCLUSION

South Africa has a long history of planning. Such planning may have had impact on the planning and provisions of urban open spaces in the township. The purpose of this research is not to look for legislative culprits on urban open space planning over the

years. The stance taken by this research is that, such findings will not necessarily affect the objectives of this research.

It has been shown that the problems that are experience in South Africa and particularly the townships are not only unique to South Africa. Not all the benefits that have been agreed upon in literature are applicable to the township contexts. In Galeshewe though, most of the open spaces are un-kept and are poor in quality. The municipality has tried to develop some of the urban open spaces but the majority of them are not identified as urban open spaces, especially institutional grounds and vacant lands.

CHAPTER 5: QUANTITATIVE DATA ANALYSIS

5.1 INTRODUCTION TO CHAPTER 5

The purpose of this chapter is to report the findings of the research. These findings are then processed and interpreted in terms of meaning and consistency with existing literature. The chapter is structured in such a way that it follows the research questions and objectives in order to give a better understanding of how the research problem was solved.

The following data analysis methods are used to process the data, i.e.

1. Cross-tabulations: in order to discover patterns in the sample data.
2. Chi-square statistics: to assess whether patterns that are found in the sample data are strong enough to generalise on the population from which the sample data was drawn.
 - a. P value represents the measure of significance from 0-0.1 either at 0.05 or 0.01 cut off levels of significance.
 - b. The reader should note that, the chi-square test gives a minimum expected count at the bottom of the table. The number of cells that can be below the expected count must not exceed 20%, otherwise the chi-square test will be invalid.
 - c. Once the relationship between two variables is proved to be significant at an identified significance level, then the strength of such a relationship is measured using the following statistics:
 - i. Uncertainty Co-efficient, a directional measure which is reported as a proportional reduction in error
 - ii. Cramer's V tests, a symmetrical measure that is not affected by sample size. It is used when a statistically significant Pearson Chi-square value is suspected to have been due to a large sample size.
3. Spearman's Rank Order correlation is used to measure the strength and direction on variables of ordinal scales. It is a measure of significance in a relationship between two ordinal variables.

- a. Rs of 0.9-1 = very strong; 0.7-0.89= strong; 0.5-0.69=moderate; 0.3-0.49=moderate to low; 0.16-0.29=weak to low; less than 0.16=too low to be meaningful

The interpretation of the cross-tabulations lies with the percentage of frequency counts and the patterns they make, if any. Whereas, the interpretation of the chi-square is based on the significance level, degrees of freedom; the Pearson chi-square value and the level of significance. In terms of the strength of the relationship, the value ranges from 0 to 1 following serves as a guide:

1. .1 (perfect association)
2. More than .5 (strong association)
3. .3 to .5 (moderate)
4. .1 to .3 (Weak)
5. .0 (no association)

The purpose of the analysis is to answer the following question and sub-questions:

2. How can town and regional planners maximise the impact of public open space in the revitalisation of previously neglected townships?
 - a. What is the contextual meaning of the Public Open Space concept in the townships?
 - b. What are the perceptions of the Galeshewe community regarding Public Open Space usage in their township?
 - c. What are those 'Township Public Open Space' attributes that town and regional planners need to improve for the success of urban renewal programmes in the townships?

The analysis begins with analysing the demographic profile of the Galeshewe community, which gives the urban context with which the research needs to be viewed. It is clear from this profile that Galeshewe is an impoverished community; hence the focus of the urban renewal programme is the alleviation of urban poverty. A brief profile is then discussed, in terms of the perceptions that people have about the way open spaces are used in Galeshewe, e.g., women are seen as the ones that use open

spaces more than any other identified group. The satisfaction and frequency of open space use is also discussed in order to supplement the community's perception of open space users. Lastly, the factors that affect the functionality of urban open spaces in Galeshewe are categories in terms of ecological; social and economic development value they have for the community.

5.2 THE USE OF EXISTING URBAN OPEN SPACES IN GALESHEWE

The first aspect this section is trying to understand the categories of open spaces users. People's preferences differ from one community to the other and against many variables such as age; gender; time and objective of the use. It is important for the planner to measure the successful use of an urban open space against a set criterion. In this research, the following aspects of open spaces use were measured:

1. Frequency of open space use
2. Open space user satisfaction



Figure 32: Women walking through an open space. The luggage shows that they are travelling from one place to the other and not using available public transport. The nature of this path shows that it is constantly used.

Source: (Author, 2013)

The relationship amongst these three aspects is also discussed in order to ascertain that the status of their association or whether they are dependent or independent of each other. In order to understand the factors that affect these three critical determinants of open space use, further statistical tests are done to test the relationship with other variables.

5.1.1 TOWNSHIP OPEN SPACE USER PROFILING

When open space planning (with the provision of parks) began in the 20th Century, it focused on a specific group and for a social problem that existed at that time, i.e., physical fitness for workers and sport for youth (Turner, 1998, p. 114). In the 1960s, this focus changed in London, in order to focus on the different needs of the people that time. User groups differed in terms of age and gender; needs for sports and recreation and willingness to travel for a particular type of activity (Turner, 1992, p. 372); Payne, Mowen, & Orsega-Smith (2002); (Chen & Jim, 2008, p. 298).

Even in Galeshewe, different needs have been registered for different age groups and for gender. Respondents were asked to choose from a given set of options the most important open space uses for the following categories of open space users:

1. Children (between 6 and 12)
2. Teenagers and young adults
3. Elderly people
4. Women
5. Disabled people
6. Homeless people and
7. Workers

The following table represents the percentages of open space users for each open space use that was identified. The percentages represent the number of respondents who found an identified open space use as the most important aspect under a certain category of open space user. For example, 76.5% of the respondents believed that sport

is the most important aspect for children between the ages of 6 and 12 (see table 25 below).

Open space user profiling

	% Children (6- 12)	% Teenagers & Young Adults	% Elderly	% Women	% Disabled	% Homeless	% Workers	% Av
Sports	76.5	77.5	23.3	47.4	20.1	13.2	47.5	43.6
Entertainment	39.2	50.5	29	55.5	20.7	9.3	49	36.2
Relaxation	40.4	48.9	48.7	64.5	35.4	14.5	67.6	45.7
Eating place	24.2	33.7	29.4	37.8	18.8	21.9	46.9	30.4
Meetings	10.1	33.9	40.9	44	21.6	3.3	58.5	30.3
Hangout/Lingering	31.3	52.4	29	55.3	11.4	4	55	34.1
Religious Activities	16.8	38.7	23.1	41.8	8.6	3.5	36	24.1
Cultural activities	26.3	41.6	26.6	41.8	12.4	2.8	27.4	25.6
Health activities	30.8	46.7	36.9	47.7	36.4	5.4	29.7	33.4
Movement functions	65.3	74.3	68.1	76.1	60.3	32	74.2	64.3
Average	36.1	49.8	35.5	51.2	24.6	11.0	49.2	36.8

Table 27: Open space User profiling, N=595

It must be borne in mind that, for people to use an urban opens space, the particular space must be usable for the purpose they want to use it for. It must be safe and attractive and it must have benefits for the user (Beer and Higgins, 2000); (Beer, Delshammar, & Schildwacht, 2003, p. 133); (Arbedeen City Council, 2010, p. 15). Most of the open spaces in Galeshewe are of poor quality and therefore fail to attract different user groups. They are not developed for sporting purposes whereas more than 56% of the open spaces that were visited had signs of littering.

5.2.1.1 OPEN SPACE USER CATEGORIES

A list of open space users was identified in terms of age groups; gender and the use by vulnerable groups such as the disabled; and homeless people. This is a respondent's account of what should be important for the particular groups as identified (see table 25). The biggest percentage average (51.2%) of open space user is found with the 'women' category followed by 'teenagers and young adults (49.8%). In Cleveland and Ohio (USA), respondent age was found to be the strongest predictor of a need for urban open spaces (Payne, et al., 2002, p. 181) whereas in Zhuhai city (China), the majority of

residents (65.7%) frequently used public open spaces for leisure activities and young residents aged between 20 and 30 were least frequent users of all age groups (Chen & Jim, 2008, p. 298). This section should be read in conjunction with the demographic profile of Galeshewe Township.

5.2.1.1.1 CHILDREN (BETWEEN 6 AND 12)

According to the respondents, the three most important aspects of open spaces for children between the ages of 6 and 12 are sports (76.5%); movement functions (65.3%) and entertainment at (39.2%). Children tend to create their own play areas even if the existing open spaces are neither accessible nor usable, but children will improvise if there are no play areas (Lee, 2008, p. 207). Children at this stage are still at school; they are likely to have greater access of a better quality and better managed open space in schools rather than the township open spaces.



Figure 33: School children playing at Sam Bambini Park, Galeshewe Township. The Park also performs the function of a storm water drain, with a channelled drainage line

Source: (Author, 2013)

5.2.1.1.2 TEENAGERS AND YOUNG ADULTS

For teenagers and young adults category, the only difference is that entertainment is substituted by the category 'hangout/lingering' on open spaces with 52.4%. Otherwise the same top three categories include sports (77.5%); movement functions (74.3%) which are also enjoyed by teenagers and young adults. 55.8% of the families in Galeshewe do not have teenagers that live with them.



Figure 34: A Soccer Stadium in Galeshewe Township

Source (Author, 2013)

5.2.1.1.3 ELDERLY PEOPLE & WOMEN

The respondents believe that elderly people mostly use the open spaces for movement functions (68.1%); meetings (40.9%) and relaxation (48.7%) on open spaces. Women on the other hand are seen as the biggest users of urban open spaces with the following three uses being the most common uses amongst women, i.e. movement functions (76.1%); relaxation (64.5%) and entertainment (55.5%).

5.2.1.1.4 DISABLED & HOMELESS

Disabled people and the homeless people are the second least and the least open spaces user groups, respectively, in terms of percentages from respondents. The disabled are perceived to use open spaces for the following uses; movement functions (60.3%); health activities (36.4%) and relaxation 35.4%.

Homeless people are perceived to use open spaces the least by the respondents at 11%. Their three most common uses are; movement functions (32%); eating place (21.9%) and relaxation (14.5%). In American cities, the question of homelessness is affecting how the public space is used with more homeless people being displaced by laws that are discriminatory towards them (Mitchell, 1998, p. 6).

5.2.1.1.5 WORKERS

As mentioned in the paragraphs above, the workers are one of the categories that use open spaces the most. Respondents believe that workers use open spaces mostly for movement functions (74.2%), to hold meetings (58.5%) and to relax (67.6%). With only 1.9% of the people in Galeshewe being involved in business, it is therefore clear that there are no formal jobs in Galeshewe. This is supported by the source of income as discussed above.

5.2.1.2 OPEN SPACE USES

A list of open space uses which have a direct benefit for open spaces users were identified. Respondents had to choose whether a certain use is important for an identified user category. The three most commonly enjoyed uses are movement functions (64.3%); relaxation (45.7%) and sports activities (43.6%).

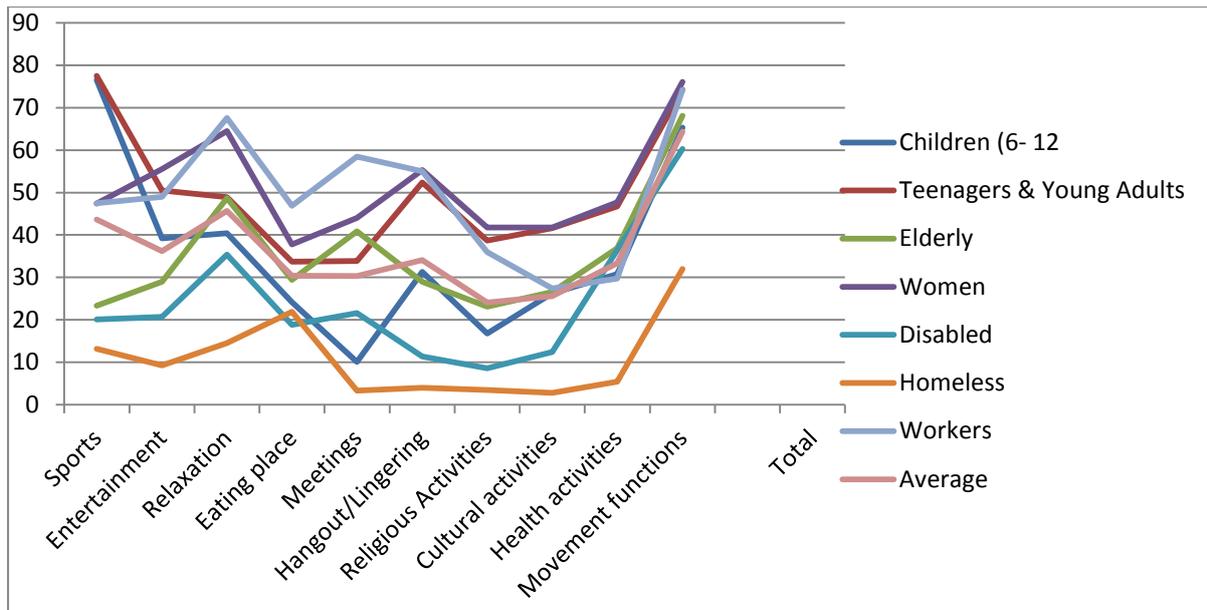


FIGURE 35: List of land use on open spaces as used by the different categories of open space users

Whereas the least enjoyed uses on Galeshewe open spaces were meetings (30.3%); religious activities (24.1%) and cultural activities (25.6%).

5.2.2 THE MOST FAVORITE TOWNSHIP OPEN SPACES

When asked to identify their favourite open spaces, the respondents identified 39 different open spaces of their choice. Hulana Park is the most typical response (29.3%) that is identified by the respondents, from there, there seems to be an even distribution of respondents with none of them enjoying even 10% favouritism from the community. The top mentioned open spaces are Hulana (29.3%); Kutlwanong (7.5%); Phillip Mpiwa (5.5%); Queens park (6.4%) and John Daka (4.9%). This means that the majority of respondents (53.6%) like only 12.8% (5 out of the 40) of open spaces that were identified. The remaining 87.2% of the open spaces do not fall within majority of the respondents' favourite open spaces.

Favourite public open space					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hulana	101	17.0	29.3	29.3
	Kutlwanoong Park	26	4.4	7.5	36.8
	Queens Park	22	3.7	6.4	43.2
	Phillip Mpiwa Park	19	3.2	5.5	48.7
	John Daka Park	17	2.9	4.9	53.6

TABLE 28



Figure 36: Hulana Park, on Hulana Street in Galeshewe Township. Hulana Park is the most popular urban open space in Galeshewe. It is easily accessible via the minibus transport system and it is mostly used for recreational purposes by youth and young adults, especially on weekends

Source (Author, 2013)

5.2.3 FREQUENCY OF OPEN SPACE USE

The distribution of the responses is fairly even with a modal category of 38.6% for 'never'. This means that the majority (38.6%) of the respondents 'never' use open spaces. This is similar to studies done in the UK that showed a decline in the quality of and use of open spaces over the last three decades (Williams & Thwaites, 2007, p. 59). The high variation ratio of 0.614 shows a significant dispersion of responses which shows that the modal category is not the most typical response.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Everyday	23	3.9	4.0	4.0
	More than once a week	124	20.8	21.4	25.4
	Once a week	129	21.7	22.2	47.6
	Once a month	80	13.4	13.8	61.4
	Never	224	37.6	38.6	100.0
	Total	580	97.5	100.0	
Missing	0	15	2.5		
Total		595	100.0		

Table 29 : Frequency of Open Space Use

Only 4% of the respondents use open spaces on a daily basis whereas the majority of them fall within two categories, i.e., more than once a week (21.4%) and once a week (22.2%). If the two frequencies of open space use were to be divided into two groups of frequent users (everyday-once a week) and least frequent users ('once a month' and 'never'), then the majority of the respondents (52.4%) would fall within the least frequent users. This shows that more than half of the respondents do not frequently use open spaces.

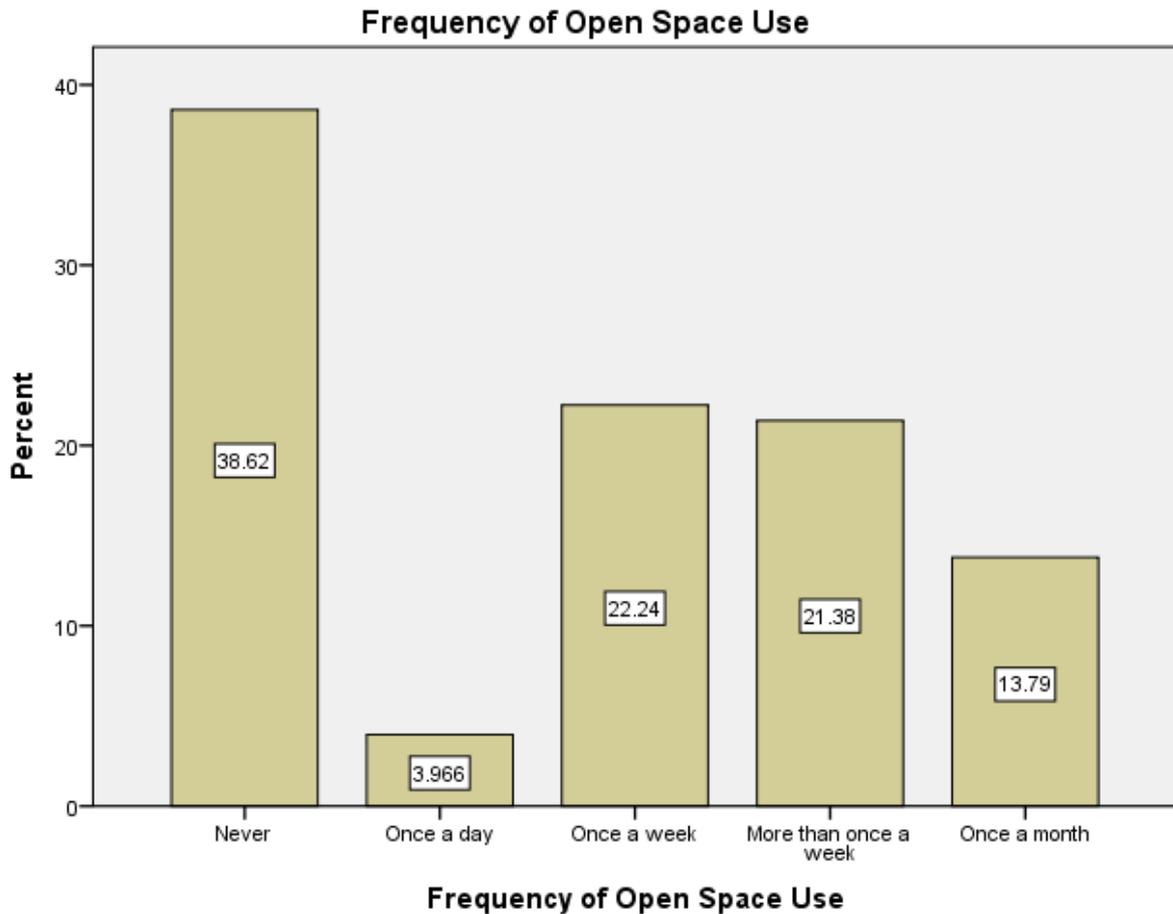


Figure 37: Histogram for the frequency of open space use (1: Never; 2: Once a month; 3: Once a week; 4: More than once a week; 5: everyday) Mode: (1: Never); variation ratio: 0.614

5.2.3.1 THE INFLUENCE OF GENDER ON THE FREQUENCY OF OPEN SPACE USE

Almost half of males (41.6%) never use open spaces as compared to only 37% of females that do not use open spaces. The percentage of males that use open spaces less frequently (i.e., 56.9% when combining the frequencies of “never” and “once a month”) contributes to more than those who use open spaces more frequently. This is only down by 6.9 percentage points as compared to the 50% of females that use open spaces less frequently.

The percentage of women (49.9%) that use open spaces more frequently (Daily-more than once a month) is higher than the percentage of males (43%). However this positive gradient drops by 10.4 percentage points on females from 23.4% for those

females who use open spaces more than once a month to the 13% that use them just once a month. The same drop is only 2.9% on males creating almost a plateau between males that visit open spaces just once a month and those that visit open spaces more than once a month.

There is a huge and similar increase in percentage points from both males (26.3 percentage points) and females (24 percentage points) from the category of once a month to the category of respondents who never visit open spaces. In both males and females, there is very little difference (5.6%) between the percentage point difference (38.3% in males and 32.7% in females) from those who never use open spaces and those that use them on a daily basis.

			Frequency of Open Space Use					Total
			Daily	Once a week	More than once a week	Once a month	Never	
Gender	Male	Count	7	45	38	32	87	209
		% within Gender	3.3%	21.5%	18.2%	15.3%	41.6%	100.0%
		% within Frequency of Open Space Use	30.4%	35.4%	30.6%	40.0%	39.0%	36.2%
	Female	Count	16	82	86	48	136	368
		% within Gender	4.3%	22.3%	23.4%	13.0%	37.0%	100.0%
		% within Frequency of Open Space Use	69.6%	64.6%	69.4%	60.0%	61.0%	63.8%
Total		Count	23	127	124	80	223	577
		% within Gender	4.0%	22.0%	21.5%	13.9%	38.6%	100.0%
		% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 30: Crosstab: Frequency of open space use with Gender as an independent variable

5.2.3.1.1 CHI-SQUARE TESTS

H_0 : There is not a significant difference between the gender and the frequency of open space use

H_a : There is a significant difference between the gender and the frequency of open space use
 Test : Chi-Square
 Confidence Level : 95%
 Significant Factor : .512 (Pearson Chi-Square)

The minimum expected count of 8.33 shown in table 51 below proves that it is safe to continue with the analysis of the Chi-Square result.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.284 ^a	4	.512
Likelihood Ratio	3.320	4	.506
Linear-by-Linear Association	.478	1	.489
N of Valid Cases	577		

Table 31: Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.33.)

The Pearson Chi-Square value for the association between gender and frequency of open space use was obtained as 3.284 with 4 degrees of freedom and a Significance Probability of .51 which is higher than .5. Based on this evidence, it is clear that there is no association between the two variables and therefore, there is evidence that the relationship experienced on the sample is due to chance. The test therefore fails to reject the null hypothesis.

5.2.3.2 THE INFLUENCE OF AGE ON THE FREQUENCY OF OPEN SPACE USE

There is an increase in respondents who never use open spaces from 3.6% for those who are under 20 to 26.9% for those who are between 31 and 40. This means that the older people get in Galeshewe, specifically up to the age of 40, the more they tend to never-use open spaces. Between the respondent age group of 31 to 60, the percentage of people who never use open spaces drops by 13.9 percentage points from 26.9% to

13% before it increases by 5.4 percentage points once the respondents reach the age of 60 and above. A similar pattern is also observed for those respondents that use open spaces on a daily basis. It begins with 4.5% of respondents who are less than 20 and increases to 31.8% for those respondents that fall within the 31 to 40 age group. However the percentage point difference of 4 is obtained between the 23.3 percentage point difference for “never” and the 27.3 percentage point difference for “daily” within the same age groups.

Most of the respondents (34.4%) who are less than 20 use open spaces more than once a week followed by the 25% of them who never use open spaces at all. In fact there are more (59.4%) respondents in this age group who fall within the daily to more than once a week category.

Between the ages of 20 and 30, most respondents (29.8%) never use open spaces. However, there are still more respondents (53.5%) who fall within the categories of more frequent use (i.e., daily to more than once a week) even though the percentage point difference as compared to those respondents that are under 20 is 5.9, which is not that big. A change is observed between the age group of 31-40 where the majority of respondents fall (55.3%) within the categories that use open spaces less frequently (Once a month and never). There is a huge percentage point gap of 16.1 between the age groups, 20-30 (29.8%) and 31-40 (45.5%), for those who never use open space. This change is also observed for the age groups, 41-50 (54.6%); 51-60 (52%) and the biggest margin is observed for those who are over 60 (57.9%).

			Frequency of Open Space Use					Total
			Daily	Once a week	More than once a week	Once a month	Never	
Respondent Age	Less than 20	Count	1	7	11	5	8	32
		% within Respondent Age	3.1%	21.9%	34.4%	15.6%	25.0%	100.0%
		% within Frequency of Open Space Use	4.5%	5.5%	8.9%	6.3%	3.6%	5.6%
	Between 20 and 30	Count	5	30	26	19	34	114
		% within Respondent Age	4.4%	26.3%	22.8%	16.7%	29.8%	100.0%
		% within Frequency of Open Space Use	22.7%	23.6%	21.0%	23.8%	15.2%	19.8%
	Between 31 and 40	Count	7	30	22	13	60	132
		% within Respondent Age	5.3%	22.7%	16.7%	9.8%	45.5%	100.0%
		% within Frequency of Open Space Use	31.8%	23.6%	17.7%	16.3%	26.9%	22.9%
	Between 41 and 50	Count	4	27	27	19	51	128
		% within Respondent Age	3.1%	21.1%	21.1%	14.8%	39.8%	100.0%
		% within Frequency of Open Space Use	18.2%	21.3%	21.8%	23.8%	22.9%	22.2%
	Between 51 and 60	Count	2	13	21	10	29	75
		% within Respondent Age	2.7%	17.3%	28.0%	13.3%	38.7%	100.0%
		% within Frequency of Open Space Use	9.1%	10.2%	16.9%	12.5%	13.0%	13.0%
	Over 60	Count	3	20	17	14	41	95
		% within Respondent Age	3.2%	21.1%	17.9%	14.7%	43.2%	100.0%
		% within Frequency of Open Space Use	13.6%	15.7%	13.7%	17.5%	18.4%	16.5%
Total		Count	22	127	124	80	223	576
		% within Respondent Age	3.8%	22.0%	21.5%	13.9%	38.7%	100.0%
		% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 32: Crosstab: Respondent Age * Frequency of Open Space Use

5.2.3.2.1 SPEARMAN'S RANK ORDER CORRELATION

H_0 : There is not a significant difference between respondent age and the frequency of open space use

H_a : There is a significant difference between respondent age and the frequency of open space use

Test : Spearman's Rank Order Correlation

Confidence Level : 95%

Significant Factor : .056 (Spearman's rho)

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 576 respondents' Frequency of open space use and Respondent Age. There was a moderate negative correlation between the two variables but it was also proven to be statistically insignificant ($r_s(8) = -.056, P = .177$).

		Frequency of Open Space Use	Respondent Age
Spearman's rho	Frequency of Open Space Use	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	580
	Respondent Age	Correlation Coefficient	-.056
		Sig. (2-tailed)	.177
		N	576

Table 33 Correlations: Spearman's rho

5.2.3.3 RELATIONSHIP BETWEEN HOUSEHOLD SIZE AND THE FREQUENCY OF OPEN SPACES

More than half (53.3%) of households with less than three members never use open spaces whereas only 2.5% of the same group use open spaces on a daily basis. The other two groups, (i.e., households between 3 and 5; and households with more than 5 members) average 34.4% and 34.7%, respectively, for never using open spaces. This margin of difference between smaller households (less than three members) and bigger households shows a difference of at least 18.9 percentage points.

Only 2.6% of bigger households (more than 5 members) and only 5.2% of medium sized households (between 3& 5) use open spaces on a daily basis. (See Annexure A: table 10)

			Frequency of Open Space Use					Total
			Never	Daily	Once a week	More than once a week	Once a month	
Household size	Less than 3	Count	65	3	13	32	9	122
		% within Household size	53.3%	2.5%	10.7%	26.2%	7.4%	100.0%
		% within Frequency of Open Space Use	29.7%	14.3%	10.4%	25.8%	11.3%	21.4%
	Between 3 and 5	Count	86	13	58	50	43	250
		% within Household size	34.4%	5.2%	23.2%	20.0%	17.2%	100.0%
		% within Frequency of Open Space Use	39.3%	61.9%	46.4%	40.3%	53.8%	43.9%
	More than 5	Count	68	5	53	42	28	196
		% within Household size	34.7%	2.6%	27.0%	21.4%	14.3%	100.0%
		% within Frequency of Open Space Use	31.1%	23.8%	42.4%	33.9%	35.0%	34.4%
	5	Count	0	0	1	0	0	1
		% within Household size	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
		% within Frequency of Open Space Use	0.0%	0.0%	.8%	0.0%	0.0%	.2%
	Total	Count	219	21	125	124	80	569
		% within Household size	38.5%	3.7%	22.0%	21.8%	14.1%	100.0%
		% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 34 CROSSTAB: Household size * Frequency of Open Space Use

5.2.3.3.1 SPEARMAN'S RANK ORDER CORRELATION

H_0 : There is not a significant difference between household size and the frequency of open space use

H_a : There is a significant difference between household size and the frequency of open space use

Test : Spearman's Rank Order Correlation

Confidence Level : 95%

Significant Factor : .035 (Spearman's rho)

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 576 respondents' Frequency of open space use and household size. There was a very weak negative correlation between the two variables and it was also proven to be statistically significant ($r_s(8) = -.088, P = .035$).

Correlations			Frequency of Open Space Use	Household size
Spearman's rho	Frequency of Open Space Use	Correlation Coefficient	1.000	.088*
		Sig. (2-tailed)	.	.035
		N	580	569
	Household size	Correlation Coefficient	.088*	1.000
		Sig. (2-tailed)	.035	.
		N	569	574

Table 35: Correlation between household size and the frequency of open space use (*. Correlation is significant at the 0.05 level (2-tailed).

5.2.3.4 LEVEL OF EDUCATION AND THE FREQUENCY OF OPEN SPACE USE

The majority (53.8%) of respondents with no education, never use open spaces. This is followed by 44.9% from those that have tertiary education. Respondents with either primary education or matric average between 33.3% and 35.6% respectively.

Of those that use open spaces on a daily basis, 68.2% have secondary education (matric). This percentage is followed by a drop of 50percentage points to 18.2% from those that left school at primary level. Only 1.7% of those with tertiary education use open spaces on a daily basis and the last 2.6% is occupied by respondents that have no education.

			Frequency of Open Space Use					Total
			Never	Daily	Once a week	More than once a week	Once a month	
Highest Level of Education	No education	Count	21	1	8	6	3	39
		% within Highest Level of Education	53.8%	2.6%	20.5%	15.4%	7.7%	100.0%
		% within Frequency of Open Space Use	9.5%	4.5%	6.3%	5.0%	3.8%	6.9%
	Primary School	Count	25	4	22	17	7	75
		% within Highest Level of Education	33.3%	5.3%	29.3%	22.7%	9.3%	100.0%
		% within Frequency of Open Space Use	11.4%	18.2%	17.5%	14.2%	8.9%	13.2%
	Matric	Count	118	15	66	76	56	331
		% within Highest Level of Education	35.6%	4.5%	19.9%	23.0%	16.9%	100.0%
		% within Frequency of Open Space Use	53.6%	68.2%	52.4%	63.3%	70.9%	58.4%
	Tertiary education	Count	53	2	30	21	12	118
		% within Highest Level of Education	44.9%	1.7%	25.4%	17.8%	10.2%	100.0%
		% within Frequency of Open Space Use	24.1%	9.1%	23.8%	17.5%	15.2%	20.8%
	5	Count	3	0	0	0	1	4
		% within Highest Level of Education	75.0%	0.0%	0.0%	0.0%	25.0%	100.0%
		% within Frequency of Open Space Use	1.4%	0.0%	0.0%	0.0%	1.3%	.7%
Total	Count	220	22	126	120	79	567	
	% within Highest Level of Education	38.8%	3.9%	22.2%	21.2%	13.9%	100.0%	
	% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Table 36 Crosstab: Highest Level of Education * Frequency of Open Space Use

5.2.3.4.1 SPEARMAN'S RANK ORDER CORRELATION

H_0 : There is not a significant difference between level of education and the frequency of open space use

H_a : There is a significant difference between level of education and the frequency of open space use

Test : Spearman's Rank Order Correlation

Confidence Level : 95%

Significant Factor : .712 (Spearman's rho)

Correlations

		Highest Level of Education	Frequency of Open Space Use
Spearman's rho	Correlation Coefficient	1.000	-.016
	Highest Level of Education		
	Sig. (2-tailed)	.	.712
	N	572	567
	Correlation Coefficient	-.016	1.000
	Frequency of Open Space Use		
	Sig. (2-tailed)	.712	.
	N	567	580

Table 37: Correlation between level of education and the frequency of open space use

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 572 respondents' Frequency of open space use and level of education in the township. There was a low and negative correlation between the two variables and it was also proven to be statistically insignificant ($r_s(8) = -.016, P = .712$).

5.2.3.5 CRIME AND FREQUENCY OF OPEN SPACE USE

The majority (37.9%) of people who believe there is more crime committed on open spaces than elsewhere in the township never use open spaces. The majority (43.8%) of people though fall within two modal categories of a weekly basis (i.e., More than once a week is 22% and once a week is 21.8%). This shows that even though people believe there is more crime committed on open spaces, they are continuing to use open spaces in any case. Only 4.2% of the people that believe there is more crime on open space, use open spaces on a daily basis.

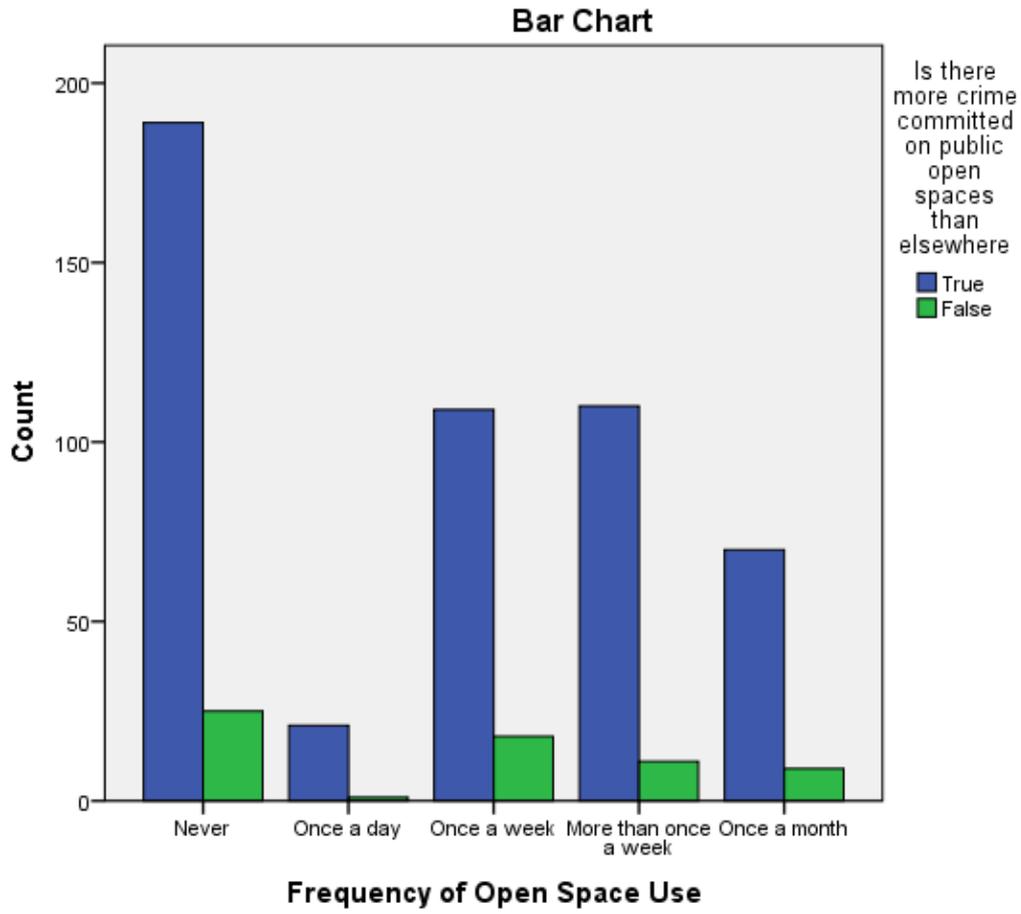


Figure 38: Bar Chart for frequency of open space use and crime

			Is there more crime committed on public open spaces than elsewhere		Total
			True	False	
Frequency of Open Space Use	Never	Count	189	25	214
		% within Frequency of Open Space Use	88.3%	11.7%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	37.9%	39.1%	38.0%
	Daily	% of Total	33.6%	4.4%	38.0%
		Count	21	1	22
		% within Frequency of Open Space Use	95.5%	4.5%	100.0%
	Once a week	% within Is there more crime committed on public open spaces than elsewhere	4.2%	1.6%	3.9%
		% of Total	3.7%	.2%	3.9%
		Count	109	18	127
	More than once a week	% within Frequency of Open Space Use	85.8%	14.2%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	21.8%	28.1%	22.6%
		% of Total	19.4%	3.2%	22.6%
	Once a month	Count	110	11	121
		% within Frequency of Open Space Use	90.9%	9.1%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	22.0%	17.2%	21.5%
Total	% of Total	19.5%	2.0%	21.5%	
	Count	70	9	79	
	% within Frequency of Open Space Use	88.6%	11.4%	100.0%	
	% within Is there more crime committed on public open spaces than elsewhere	14.0%	14.1%	14.0%	
	% of Total	12.4%	1.6%	14.0%	
	Count	499	64	563	
	% within Frequency of Open Space Use	88.6%	11.4%	100.0%	
	% within Is there more crime committed on public open spaces than elsewhere	100.0%	100.0%	100.0%	
	% of Total	88.6%	11.4%	100.0%	

Table 38 Crosstab: Frequency of Open Space Use * Is there more crime committed on public open spaces than elsewhere

5.2.3.5.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between crime and the frequency of open space use

H_a : There is a significant difference between crime and the frequency of open space use

Test : Chi-Square

Confidence Level : 95%

Significant Factor : .62 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.652 ^a	4	.618
Likelihood Ratio	2.894	4	.576
Linear-by-Linear Association	.051	1	.821
N of Valid Cases	563		

Table 39 Chi-Square Tests (a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 2.50.)

The Pearson Chi-Square value for the association between difference between crime and the frequency of open space use was obtained as 2.65 with 4 degrees of freedom and a Significance Probability of 0.618 which is an insignificant result at the conventional level of 5%. Based on this evidence, it is clear that there is definitely no association between the two variables. The test fails to reject the null hypothesis.

5.2.3.6 OPEN SPACE LITTERING AND THE FREQUENCY OF OPEN SPACE USE

The majority (39%) of respondents who have experienced and/or noticed dumping in township open spaces never use township and this is similar to the 37.2% for respondents who have not seen any littering on township open spaces. There is a small difference (39% and 37.2%) between respondents who have seen littering and 'never used open spaces and respondents that have not seen littering on open spaces.

There is a 16.8 percentage point difference between respondents who have experienced/noticed dumping in the township and use open spaces more than once a week (19.2%), and respondents who have not experienced/noticed any dumping and use open spaces more than once a week (36%).

If the percentages of the more frequently use categories are combined (Daily-4.4%; Once a week-22.2%; more than once a week-19.2%), it becomes clear that fewer respondents (45.8%) who have experienced or noticed dumping in the township use

open spaces more frequently than those who **have not** experienced or noticed dumping in the township (57%) under the same combined categories (Daily-1.3%; Once a week-20%; more than once a week-36%). This 11.2 percentage point difference between the two categories (as combined) indicates the impact of littering on the frequent use of open spaces.

		Frequency of Open Space Use					Total
		Never	Daily	Once a week	More than once a week	Once a month	
Environmental Risks that have been experienced or noticed in the township: Dumping	Count	195	22	111	96	76	500
	True						
	% within Environmental Risks that have been experienced or noticed in the township: Dumping	39.0%	4.4%	22.2%	19.2%	15.2%	100.0%
	% within Frequency of Open Space Use	87.4%	95.7%	88.1%	78.0%	95.0%	87.0%
	% of Total	33.9%	3.8%	19.3%	16.7%	13.2%	87.0%
	Count	28	1	15	27	4	75
	False						
	% within Environmental Risks that have been experienced or noticed in the township: Dumping	37.3%	1.3%	20.0%	36.0%	5.3%	100.0%
	% within Frequency of Open Space Use	12.6%	4.3%	11.9%	22.0%	5.0%	13.0%
	% of Total	4.9%	0.2%	2.6%	4.7%	0.7%	13.0%
Total	Count	223	23	126	123	80	575
	% within Environmental Risks that have been experienced or noticed in the township: Dumping	38.8%	4.0%	21.9%	21.4%	13.9%	100.0%
	% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	38.8%	4.0%	21.9%	21.4%	13.9%	100.0%

Table 40 Crosstab: Environmental Risks that have been experienced or noticed in the township: Dumping * Frequency of Open Space Use

5.2.3.6.1 CHI-SQUARE TESTS

H_0 : There is not a significant difference between open space littering and the frequency of open space use

H_a : There is a significant difference between open space littering and the frequency of open space use

Test : Chi-Square

Confidence Level : 99%

Significant Factor : .005 (Pearson Chi-Square)

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.892 ^a	4	.005
Likelihood Ratio	15.326	4	.004
Linear-by-Linear Association	.035	1	.852
N of Valid Cases	575		

Table 41 Chi-Square Tests (a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 3.00.)

The Pearson Chi-Square value for the association between difference between township open space littering and the frequency of open space use was obtained as 14.9 with 4 degrees of freedom and a Significance Probability of 0.005 which is a highly significant result at the conventional level of 99%. Based on this evidence, it is clear that there is definitely an association between the two variables. The null hypothesis is therefore rejected.

5.2.3.6.2 CRAMER'S V

The Cramer's V test value of 0.16 is close to 0 and it indicates a very weak association between the two variables, open space littering and the frequency of open space.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.161	.005
	Cramer's V	.161	.005
N of Valid Cases		575	

Table 42 Symmetric Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis)

5.2.3.7 TOWNSHIP ATMOSPHERE AND THE FREQUENCY OF OPEN SPACE USE

The majority (43.1%) of those who find the township atmosphere vibrant never use open spaces. Most (31.5%) of those respondents who found the township atmosphere rather calm never use open spaces. Both groups of respondents rarely use open spaces on a daily basis (4.5% for respondents who find the township open space vibrant/active and 2.6% for those who did not think the statement is true).

		Frequency of Open Space Use					Total
		Never	Once a day	Once a week	More than once a week	Once a month	
Township Atmosphere: Vibrant/Active	Count	143	15	64	84	26	332
	% within Township Atmosphere: Vibrant/Active	43.1%	4.5%	19.3%	25.3%	7.8%	100.0%
	% within Frequency of Open Space Use	65.6%	68.2%	50.0%	68.3%	32.9%	58.2%
	% of Total	25.1%	2.6%	11.2%	14.7%	4.6%	58.2%
	Count	75	7	64	39	53	238
	% within Township Atmosphere: Vibrant/Active	31.5%	2.9%	26.9%	16.4%	22.3%	100.0%
Total	% within Frequency of Open Space Use	34.4%	31.8%	50.0%	31.7%	67.1%	41.8%
	% of Total	13.2%	1.2%	11.2%	6.8%	9.3%	41.8%
	Count	218	22	128	123	79	570
	% within Township Atmosphere: Vibrant/Active	38.2%	3.9%	22.5%	21.6%	13.9%	100.0%
	% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	38.2%	3.9%	22.5%	21.6%	13.9%	100.0%

Table 43 Township Atmosphere: Vibrant/Active * Frequency of Open Space Use Crosstabulation

5.2.3.7.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between township atmosphere and the frequency of open space use

H_a : There is a significant difference between the township atmosphere and the frequency of open space use

Test : Chi-Square

Confidence Level : 99%

Significant Factor : .000 (Pearson Chi-Square)

The Pearson Chi-Square value for the association between difference between township atmosphere and the frequency of open space use was obtained as 35 with 4 degrees of freedom and a Significance Probability of 0.000 which is a highly significant result at the conventional level of 99%. Based on this evidence, it is clear that there is definitely an association between the two variables. The null hypothesis is therefore rejected.

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	35.269 ^a	4	.000	.000 ^b	.000	.000			
Likelihood Ratio	35.242	4	.000	.000 ^b	.000	.000			
Fisher's Exact Test	34.913			.000 ^b	.000	.000			
Linear-by-Linear Association	12.308 ^c	1	.000	.001 ^b	.000	.001	.001 ^b	.000	.001
N of Valid Cases	570								

Table 44 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.19. b. Based on 10000 sampled tables with starting seed 1384345843. c. The standardized statistic is 3.508.)

5.2.3.7.2 UNCERTAINTY COEFFICIENT

Directional Measures			Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Nominal by Nominal	Uncertainty Coefficient	Symmetric Township Atmosphere:	.029	.010	3.012	.000 ^c
		Vibrant/Active Dependent	.045	.015	3.012	.000 ^c
		Frequency of Open Space Use Dependent	.022	.007	3.012	.000 ^c

Table 45 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability.)

As shown above, the moderate value .045 that is obtained when 'township atmosphere' is known indicates that there is a 4.5% reduction in error in predicting the value of the 'frequency of open space use'.

5.2.3.8 QUALITY OF VEGETATION AND FREQUENCY OF OPEN SPACE USE

The majority of respondents (48.6%) who think that the quality of vegetation in the township is normal never use open spaces. This is 20.6 percentage points higher than those who think township vegetation is very bad (24%) and only 13.5 percentage points higher than the respondents who see township vegetation is being very good (35.1%). One would expect to have a higher percentage of respondents who never use open spaces from those respondents that think that township vegetation is very bad. Only 16.2% of those who 'never' use open space think that township vegetation is very bad.

		Frequency of Open Space Use					Total	
		Never	Daily	Once a week	More than once a week	Once a month		
The quality of vegetation in the township	Very bad	Count	35	5	44	46	16	146
		% within The quality of vegetation in the township	24.0%	3.4%	30.1%	31.5%	11.0%	100.0%
		% within Frequency of Open Space Use	16.2%	22.7%	34.1%	37.4%	20.3%	25.7%
	Bad	% of Total	6.2%	0.9%	7.7%	8.1%	2.8%	25.7%
		Count	54	7	28	15	17	121
		% within The quality of vegetation in the township	44.6%	5.8%	23.1%	12.4%	14.0%	100.0%
	Normal	% within Frequency of Open Space Use	25.0%	31.8%	21.7%	12.2%	21.5%	21.3%
		% of Total	9.5%	1.2%	4.9%	2.6%	3.0%	21.3%
		Count	90	6	33	35	21	185
	Good	% within The quality of vegetation in the township	48.6%	3.2%	17.8%	18.9%	11.4%	100.0%
		% within Frequency of Open Space Use	41.7%	27.3%	25.6%	28.5%	26.6%	32.5%
		% of Total	15.8%	1.1%	5.8%	6.2%	3.7%	32.5%
	Very good	Count	24	3	19	22	12	80
		% within The quality of vegetation in the township	30.0%	3.8%	23.8%	27.5%	15.0%	100.0%
		% within Frequency of Open Space Use	11.1%	13.6%	14.7%	17.9%	15.2%	14.1%
	Total	% of Total	4.2%	0.5%	3.3%	3.9%	2.1%	14.1%
		Count	13	1	5	5	13	37
		% within The quality of vegetation in the township	35.1%	2.7%	13.5%	13.5%	35.1%	100.0%
	Total	% within Frequency of Open Space Use	6.0%	4.5%	3.9%	4.1%	16.5%	6.5%
		% of Total	2.3%	0.2%	0.9%	0.9%	2.3%	6.5%
Count		216	22	129	123	79	569	
Total	% within The quality of vegetation in the township	38.0%	3.9%	22.7%	21.6%	13.9%	100.0%	
	% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	38.0%	3.9%	22.7%	21.6%	13.9%	100.0%	

Table 46 The quality of vegetation in the township * Frequency of Open Space Use Crosstabulation

5.2.3.8.1 SPEARMAN'S RANK ORDER CORRELATION

H_0 : There is not a significant difference between quality of vegetation and the frequency of open space use
 H_a : There is a significant difference between quality of vegetation and the frequency of open space use
 Test : Spearman's Rank Order Correlation
 Confidence Level : 95%
 Significant Factor : .574 (Spearman's rho)

		Frequency of Open Space Use	The quality of vegetation in the township
Spearman's rho	Frequency of Open Space Use	Correlation Coefficient	1.000
		Sig. (2-tailed)	.574
	The quality of vegetation in the township	N	580
		Correlation Coefficient	-.024
		Sig. (2-tailed)	.574
		N	569

Table 47: Correlation between the quality of vegetation in the township and the frequency of open space use

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 569 respondents' Frequency of open space use and the quality of vegetation in the township. There was a low and negative correlation between the two variables and it was also proven to be statistically insignificant ($r_s(8) = -.024, P = .574$).

5.2.3.9 RELATIONSHIP BETWEEN HOUSEHOLD INCOME AND THE FREQUENCY OF OPEN SPACE USE

The majority of respondents (61.9%) who use open spaces on a daily basis fall within the category of people earning less than R1200. This is followed by a 28.6% of people in category of those who earn between R1201 and R3000 whereas there is no one who earns above R5000 who uses open spaces on a daily basis. The majority (66.7%) of people who earn over R15000/pm never use open spaces whereas the rest of them use open spaces only once a month (33.3%).

The majority of respondents (40.1%) who never use open spaces earn less than R1200 and there is a steady 10 percentage points decline as the household income increases. This shows that in a largely pedestrian environment, the use of open spaces may be due to people walking from one part of the township to the other.

			Frequency of Open Space Use					Total
			Never	Daily	Once a week	More than once a week	Once a month	
Household Income per month	Less than R1200	Count	87	13	63	50	35	248
		% within Household Income per month	35.1%	5.2%	25.4%	20.2%	14.1%	100.0%
		% within Frequency of Open Space Use	40.1%	61.9%	49.6%	43.1%	44.9%	44.4%
	Between R1201 and R3000	Count	63	6	31	31	24	155
		% within Household Income per month	40.6%	3.9%	20.0%	20.0%	15.5%	100.0%
		% within Frequency of Open Space Use	29.0%	28.6%	24.4%	26.7%	30.8%	27.7%
	Between R3001 and R5000	Count	42	2	20	22	11	97
		% within Household Income per month	43.3%	2.1%	20.6%	22.7%	11.3%	100.0%
		% within Frequency of Open Space Use	19.4%	9.5%	15.7%	19.0%	14.1%	17.4%
	Between R5001 and R10000	Count	19	0	10	10	7	46
		% within Household Income per month	41.3%	0.0%	21.7%	21.7%	15.2%	100.0%
		% within Frequency of Open Space Use	8.8%	0.0%	7.9%	8.6%	9.0%	8.2%
	Between R10001 and R15000	Count	4	0	3	3	0	10
		% within Household Income per month	40.0%	0.0%	30.0%	30.0%	0.0%	100.0%
		% within Frequency of Open Space Use	1.8%	0.0%	2.4%	2.6%	0.0%	1.8%
	Over R15000	Count	2	0	0	0	1	3
		% within Household Income per month	66.7%	0.0%	0.0%	0.0%	33.3%	100.0%
		% within Frequency of Open Space Use	.9%	0.0%	0.0%	0.0%	1.3%	.5%
Total		Count	217	21	127	116	78	559
		% within Household Income per month	38.8%	3.8%	22.7%	20.8%	14.0%	100.0%
		% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 48 Crosstab: Household Income per month * Frequency of Open Space Use

5.2.3.9.1 SPEARMAN'S RANK ORDER CORRELATION

H_0 : There is not a significant difference between quality of vegetation and the frequency of open space use
 H_a : There is a significant difference between quality of vegetation and the frequency of open space use
 Test : Spearman's Rank Order Correlation
 Confidence Level : 95%
 Significant Factor : .401 (Spearman's rho)

Correlations			Frequency of Open Space Use	Household Income per month
Spearman's rho	Frequency of Open Space Use	Correlation Coefficient	1.000	-.036
		Sig. (2-tailed)	.	.401
	Household Income per month	Correlation Coefficient	-.036	1.000
		Sig. (2-tailed)	.401	.
		N	580	559
		N	559	564

TABLE 49: Correlation between household income per month and the frequency of open space use

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 569 respondents' Frequency of open space use and household income. There was a moderate and negative correlation between the two variables and it was also proven to be statistically insignificant ($r_s(8) = -.036, P = .401$).

5.2.3.10 STREET VENDORS AND THE FREQUENCY OF OPEN SPACE USE

The majority (35.1%) of respondents who have seen street vendors on open spaces never use open spaces whereas this percentage is 46.8% for those who have not seen street vendors on open spaces.



Figure 39: An Informal Business at a corner of an urban open space

Source (Author, 2013)

This difference suggests that the street vendors are not a pull factor for people to use open spaces more frequently as both groups do not use open spaces on a daily basis (i.e. 4.4 and 2.9% respectively).

		Frequency of Open Space Use					Total		
		Never	Once a day	Once a week	More than once a week	Once a month			
Economic Land uses observed on open spaces: Street vendors	Count	143	18	95	85	66	407		
	True	% within Economic Land uses observed on open spaces: Street vendors	35.1%	4.4%	23.3%	20.9%	16.2%	100.0%	
		% within Frequency of Open Space Use	63.8%	78.3%	73.6%	68.5%	82.5%	70.2%	
		% of Total	24.7%	3.1%	16.4%	14.7%	11.4%	70.2%	
	False	Count	81	5	34	39	14	173	
			% within Economic Land uses observed on open spaces: Street vendors	46.8%	2.9%	19.7%	22.5%	8.1%	100.0%
			% within Frequency of Open Space Use	36.2%	21.7%	26.4%	31.5%	17.5%	29.8%
			% of Total	14.0%	0.9%	5.9%	6.7%	2.4%	29.8%
		Total	Count	224	23	129	124	80	580
				% within Economic Land uses observed on open spaces: Street vendors	38.6%	4.0%	22.2%	21.4%	13.8%
			% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	38.6%	4.0%	22.2%	21.4%	13.8%	100.0%	

Table 50 Economic Land uses observed on open spaces: Street vendors * Frequency of Open Space Use Crosstabulation

5.2.3.10.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between economic land uses (Street Vendors) as observed on township open spaces and the frequency of open space use

H_a : There is a significant difference between economic land uses (Street Vendors) as observed on township open spaces and the frequency of open space use

Test : Chi-Square

Confidence Level : 95%

Significant Factor : .020 (Pearson Chi-Square)

Conclusion : Reject null hypothesis; there is a significant difference between economic land uses (Street Vendors) as observed on township open spaces and the frequency of open space use

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	11.719 ^a	4	.020	.020 ^b	.017	.024			
Likelihood Ratio	12.252	4	.016	.018 ^b	.014	.021			
Fisher's Exact Test	11.784			.019 ^b	.015	.022			
Linear-by-Linear Association	7.160 ^c	1	.007	.008 ^b	.006	.010	.004 ^b	.002	.006
N of Valid Cases	580								

Table 51 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.86. b. Based on 10000 sampled tables with starting seed 206112735. c. The standardized statistic is -2.676.)

5.2.3.10.2 UNCERTAINTY CO-EFFICIENT

The value 0.017 that is obtained when ‘Economic Land uses observed on open spaces: Street vendors’ is known indicates that there is a 1.7% reduction in error in predicting the value of the ‘frequency of open space use’. However, the symmetric value of 0.01 which is closer to 0 indicates a very small/weak reduction of 1% in row category (frequency of open space use) when the column category is known (Economic Land uses observed on open spaces: Street vendors’).

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.	Monte Carlo Sig.					
					Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
						Lower Bound	Upper Bound		Lower Bound	Upper Bound
Nominal by Nominal Uncertainty Coefficient	Symmetric	.010	.006	1.803	.016 ^c	.018 ^d	.014	.021	.021	
	Economic Land uses observed on open spaces: Street vendors	.017	.010	1.803	.016 ^c	.018 ^d	.014	.021	.021	
	Frequency of Open Space Use	.007	.004	1.803	.016 ^c	.018 ^d	.014	.021	.021	

Table 52 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability. d. Based on 10000 sampled tables with starting seed 206112735.)

5.2.4 OPEN SPACE USER SATISFACTION

The majority (75.4 %) of the respondents are not satisfied with the current state of open spaces in Galeshewe. The main reason given is the issue of safety on open spaces (44%) and to a lesser extent the quality of the open spaces in terms of cleanliness (23.6%). Lack of development in terms of facilities is not so much a problem to the majority of the respondents (93.6%).

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	140	23.5	24.6
	No	429	72.1	75.4
	Total	569	95.6	100.0
Missing	0	26	4.4	
Total	595	100.0		

Table 53: Satisfaction with current POS

It can be concluded therefore that based on this that planning matters are not so much the problem as compared to safety issues.

5.2.4.1 THE IMPACT OF GENDER ON OPEN SPACE USE USER SATISFACTION

Even though on average only 24.6% of respondents are satisfied with the current open spaces in Galeshewe, there are more females (63.5%) who are not satisfied than males (36.5%). This percentage of females who are not satisfied is almost two thirds (63.5%) as compared to males who are account for just over a third (36.5%). This percentage difference is huge and it is almost a third at 27 percentage points.

			Satisfaction with current POS		Total
			Yes	No	
Gender	Male	Count	46	155	201
		% within Gender	22.9%	77.1%	100.0%
		% within Satisfaction with current POS	33.1%	36.5%	35.6%
	Female	Count	93	270	363
		% within Gender	25.6%	74.4%	100.0%
		% within Satisfaction with current POS	66.9%	63.5%	64.4%
Total	Count	139	425	564	
	% within Gender	24.6%	75.4%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	

Table 54: Crosstabulation: Gender * Satisfaction with current POS

5.2.4.1.1 CHI-SQUARE TESTS

H ₀	: There is not a significant difference between gender and open space user satisfaction
H _a	: There is a significant difference between gender and open space user satisfaction
Test	: Chi-Square
Confidence Level	: 95%
Significant Factor	: .471 (Pearson Chi-Square)

The minimum expected count of 49.54 shown in table 56 below proves that it is safe to continue with the analysis of the Chi-Square result.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.521 ^a	1	.471
Likelihood Ratio	.525	1	.469
Linear-by-Linear Association	.520	1	.471
N of Valid Cases	564		

Table 55: Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 49.54. b. Computed only for a 2x2 table)

The Pearson Chi-Square value for the association between gender and open space user satisfaction was obtained as .521 with 1 degree of freedom and a Significance Probability of .47 which is higher than 0.1. Based on this evidence, it is clear that there is no association between the two variables and therefore, there is evidence that the relationship experienced on the sample is due to chance. The test therefore fails to reject the null hypothesis.

5.2.4.2 THE IMPACT OF AGE ON OPEN SPACE USER SATISFACTION

The group that is most satisfied (41.9%) about the current open spaces in Galeshewe is the one that of those who are less than 20. The least satisfied group falls between the ages of 31-40 at 16.4%. The satisfaction drops by a quarter (25.5 percentage points) from the most satisfied group to the least. In between these two groups, there is a group 20-30, whose satisfaction is only at 22.2%.

There is a steady positive gradient from the age of 31 to 60, with a rise in satisfaction from 16.4% (31-40) to 22.7% (41-50) and lastly to 32.9% (51-60). This gradient slightly drops with only 3.4 percentage points when it reaches the age group above 50.

		Respondent Age					Total		
		Less than 20	Between 20 and 30	Between 31 and 40	Between 41 and 50	Between 51 and 60		Over 60	
Satisfaction with current POS	Yes	Count	13	24	21	29	24	28	139
		% within Satisfaction with current POS	9.4%	17.3%	15.1%	20.9%	17.3%	20.1%	100.0%
		% within Respondent Age	41.9%	22.2%	16.4%	22.7%	32.9%	29.5%	24.7%
		% of Total	2.3%	4.3%	3.7%	5.2%	4.3%	5.0%	24.7%
No		Count	18	84	107	99	49	67	424
		% within Satisfaction with current POS	4.2%	19.8%	25.2%	23.3%	11.6%	15.8%	100.0%
		% within Respondent Age	58.1%	77.8%	83.6%	77.3%	67.1%	70.5%	75.3%
		% of Total	3.2%	14.9%	19.0%	17.6%	8.7%	11.9%	75.3%
Total		Count	31	108	128	128	73	95	563
		% within Satisfaction with current POS	5.5%	19.2%	22.7%	22.7%	13.0%	16.9%	100.0%
		% within Respondent Age	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	5.5%	19.2%	22.7%	22.7%	13.0%	16.9%	100.0%

Table 56 Crosstab: Satisfaction with current POS * Respondent Age Crosstabulation

5.2.4.2.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between respondent age and open space user satisfaction

H_a : There is a significant difference between respondent age open space user satisfaction

Test : Chi-Square

Confidence Level : 95%

Significant Factor : .02 (Pearson Chi-Square)

The Pearson Chi-Square value for the association between respondent age and satisfaction with current open spaces was obtained as 14.1 with 5 degrees of freedom and a Significance Probability of .02 which is a highly significant result at the

conventional level of 5%. This result therefore, rejects the null hypotheses that the two variables are independent.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.121 ^a	5	.015
Likelihood Ratio	13.820	5	.017
Linear-by-Linear Association	.970	1	.325
N of Valid Cases	563		

Table 57 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.65.)

This mean that at the confidence interval of 95 one can be sure that 95% of the time, there will be an association between respondent age and satisfaction with current open space. Based on this evidence, it is clear that there is an association between respondent age and satisfaction with current public open spaces in Galeshewe.

5.2.4.2.2 UNCERTAINTY CO-EFFICIENT

The uncertainty coefficient represents a reduction in error when the value of one variable, e.g., respondent age is used to predict the value of another variable, in this case that would be the satisfaction with the current public open spaces in Galeshewe.

			Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Nominal by Nominal	Lambda	Symmetric	.014	.012	1.133	.257
		Respondent Age Dependent	.018	.016	1.133	.257
Nominal	Goodman and Kruskal tau	Satisfaction with current POS Dependent	0.000	0.000	. ^c	. ^c
		Respondent Age Dependent	.004	.002		.030 ^d
Nominal	Uncertainty Coefficient	Symmetric	.011	.006	1.855	.017 ^e
		Respondent Age Dependent	.007	.004	1.855	.017 ^e
		Satisfaction with current POS Dependent	.022	.012	1.855	.017 ^e

Table 58 Directional Measures (a. Not assuming the null hypothesis. b. Using the c. Cannot be computed because the asymptotic standard error equals zero. Asymptotic standard error assuming the null hypothesis. d. Based on chi-square approximation e. Likelihood ratio chi-square probability.)

The value 0.007 that is obtained when 'respondent age' is known indicates that there is a 0.7% reduction in error in predicting the value of the 'satisfaction with current open space". However, the symmetric value of 0.01 which is closer to 0 indicates a very small/weak reduction of 1% in row category (satisfaction) when the column category is known (respondent age).

5.2.4.3 RELATIONSHIP BETWEEN HOUSEHOLD SIZE AND USER SATISFACTION

Only 24.4% of households are satisfied with the current state of open spaces in Galeshewe. Of those households who are satisfied, the majority (44.1%) falls within the category of families that have between 3-5 members, whereas small families (less than 3 members) account for only 19.1%.

			Satisfaction with current POS		Total
			Yes	No	
Household size	Less than 3	Count	26	93	119
		% within Household size	21.8%	78.2%	100.0%
		% within Satisfaction with current POS	19.1%	22.1%	21.4%
	Between 3 and 5	Count	60	186	246
		% within Household size	24.4%	75.6%	100.0%
		% within Satisfaction with current POS	44.1%	44.2%	44.2%
	More than 5	Count	50	141	191
		% within Household size	26.2%	73.8%	100.0%
		% within Satisfaction with current POS	36.8%	33.5%	34.3%
	5	Count	0	1	1
		% within Household size	0.0%	100.0%	100.0%
		% within Satisfaction with current POS	0.0%	.2%	.2%
Total	Count	136	421	557	
	% within Household size	24.4%	75.6%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	

Table 59: Crosstab: Household size * Satisfaction with current POS

5.2.4.3.1 CHI-SQUARE TESTS

The chi-square test is in this case invalid due to the fact that the maximum percentage of cells that can be below expected counts is more than 20%. Based on this, one can neither reject nor fail to reject the null hypothesis.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.069 ^a	3	.784
Likelihood Ratio	1.312	3	.726
Linear-by-Linear Association	.566	1	.452
N of Valid Cases	557		

Table 60 Chi-Square Tests (a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is .24.)

5.2.4.4 LEVEL OF EDUCATION AND OPEN SPACE USER SATISFACTION

Only 24.8% of the respondents are satisfied with the current state open spaces in Galeshewe. Of those who are satisfied, the majority (60.9%) is made of the group of respondents that have secondary education (matric) and the minority (7.2%) comes from people with no education at all.

			Satisfaction with current POS		Total
			Yes	No	
Highest Level of Education	No education	Count	10	28	38
		% within Highest Level of Education	26.3%	73.7%	100.0%
		% within Satisfaction with current POS	7.2%	6.7%	6.8%
	Primary School	Count	17	58	75
		% within Highest Level of Education	22.7%	77.3%	100.0%
		% within Satisfaction with current POS	12.3%	13.9%	13.5%
	Matric	Count	84	238	322
		% within Highest Level of Education	26.1%	73.9%	100.0%
		% within Satisfaction with current POS	60.9%	56.9%	57.9%
	Tertiary education	Count	26	91	117
		% within Highest Level of Education	22.2%	77.8%	100.0%
		% within Satisfaction with current POS	18.8%	21.8%	21.0%
5	Count	1	3	4	
	% within Highest Level of Education	25.0%	75.0%	100.0%	
	% within Satisfaction with current POS	.7%	.7%	.7%	
Total	Count	138	418	556	
	% within Highest Level of Education	24.8%	75.2%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	

Table 61 Crosstab: Highest Level of Education * Satisfaction with current POS

5.2.4.4.1 CHI-SQUARE TESTS

H_0 : There is not a significant difference between level of education and open space user satisfaction

H_a : There is a significant difference between level of education open space user satisfaction

Test : Chi-Square

Confidence Level : 95%

Significant Factor : .92 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.932 ^a	4	.920
Likelihood Ratio	.943	4	.918
Linear-by-Linear Association	.097	1	.756
N of Valid Cases	556		

Table 62 Chi-Square Tests (a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .99.)

The Pearson Chi-Square value for the association between level of education and satisfaction with current open spaces was obtained as 0.93 with 4 degrees of freedom and a Significance Probability of .092 which is insignificant result at the conventional level of 5%. This result therefore, fails to reject the null hypotheses that the two variables are independent.

5.2.4.5 CRIME AND USER SATISFACTION

Only 22.1% of respondents, who believe there is more crime committed on public open spaces, are satisfied about the current state of public open spaces in Galeshewe. Whereas 47.5% of those who believe the statement is false are satisfied about the current open spaces in Galeshewe.

			Is there more crime committed on public open spaces than elsewhere		Total
			True	False	
Satisfaction with current POS	Yes	Count	109	29	138
		% within Satisfaction with current POS	79.0%	21.0%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	22.1%	47.5%	24.9%
	No	% of Total	19.6%	5.2%	24.9%
		Count	385	32	417
		% within Satisfaction with current POS	92.3%	7.7%	100.0%
Total		% within Is there more crime committed on public open spaces than elsewhere	77.9%	52.5%	75.1%
		% of Total	69.4%	5.8%	75.1%
		Count	494	61	555
		% within Satisfaction with current POS	89.0%	11.0%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	100.0%	100.0%	100.0%
		% of Total	89.0%	11.0%	100.0%

Table 63 Crosstab: Satisfaction with current POS * Is there more crime committed on public open spaces than elsewhere

5.2.4.5.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between perceptions of crime on open spaces and open space user satisfaction

H_a : There is a significant difference between perceptions of crime on open spaces and open space user satisfaction

Test : Chi-Square

Confidence Level : 99%

Significant Factor : .001 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	18.863 ^a	1	.000		
Continuity Correction ^b	17.524	1	.000		
Likelihood Ratio	16.728	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	18.829	1	.000		
N of Valid Cases	555				

Table 64 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.17. b. Computed only for a 2x2 table)

The Pearson Chi-Square value for the association between difference between perceptions of crime on open spaces and open space user satisfaction was obtained as 18.9 with 1 degree of freedom and a Significance Probability of 0.001 which is a highly significant result at the conventional level of 99%. Based on this evidence, it is clear that there is definitely an association between the two variables. The null hypothesis is therefore rejected.

5.2.4.5.2 UNCERTAINTY CO-EFFICIENT

The value 0.04 that is obtained when ‘perception of crime’ is known indicates that there is a 4% reduction in error in predicting the value of the ‘satisfaction with current open space’. However, the symmetric value of 0.03 which is closer to 0 indicates a very small/weak reduction of 3% in row category (satisfaction) when the column category is known (perception of crime).

			Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Nominal by	Uncertainty	Symmetric	.033	.017	1.958	.000 ^c
Nominal	Coefficient	Satisfaction with current POS Dependent	.027	.014	1.958	.000 ^c
		Is there more crime committed on public open spaces than elsewhere Dependent	.044	.022	1.958	.000 ^c

Table 65 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability.)

5.2.4.6 OPEN SPACE LITTERING AND OPEN SPACE USER SATISFACTION

There is a small percentage point difference (0.9%) between the satisfaction of the respondents that have experienced or noticed littering in the township (24.5%) and those that have not (23.6%). The majority of respondents from both categories remain unsatisfied about the open spaces in Galeshewe.

		Satisfaction with current POS		Total	
		Yes	No		
Environmental Risks that have been experienced or noticed in the township: Dumping	True	Count	120	369	489
		% within Environmental Risks that have been experienced or noticed in the township: Dumping	24.5%	75.5%	100.0%
		% within Satisfaction with current POS	87.6%	87.0%	87.2%
		% of Total	21.4%	65.8%	87.2%
	False	Count	17	55	72
		% within Environmental Risks that have been experienced or noticed in the township: Dumping	23.6%	76.4%	100.0%
		% within Satisfaction with current POS	12.4%	13.0%	12.8%
		% of Total	3.0%	9.8%	12.8%
Total	Count	137	424	561	
	% within Environmental Risks that have been experienced or noticed in the township: Dumping	24.4%	75.6%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	
	% of Total	24.4%	75.6%	100.0%	

Table 66 Environmental Risks that have been experienced or noticed in the township: Dumping * Satisfaction with current POS Crosstabulation

5.2.4.6.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between littering on open spaces and open space user satisfaction

H_a : There is a significant difference between littering on open spaces and open space user satisfaction

Test : Chi-Square

Confidence Level : 95%

Significant Factor : .029 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.029 ^a	1	.864
Continuity Correction ^b	.001	1	.981
Likelihood Ratio	.030	1	.864
Fisher's Exact Test			
Linear-by-Linear Association	.029 ^d	1	.864
N of Valid Cases	561		

Table 67 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.58. b. Computed only for a 2x2 table c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results. d. The standardized statistic is .171.)

The Pearson Chi-Square value for the association between difference between littering on open spaces and open space user satisfaction was obtained as .029 with 1 degree of freedom and a Significance Probability of 0.9 which is less than .05 at the 95% confidence level. Based on this evidence, it is clear that there is an association between the two variables. The test therefore rejects the null hypothesis.

However the tests of strength, uncertainty co-efficient, below prove that there is no relationship between the two variables.

Directional Measures

			Value	Asymp. Std. Error ^a	Approx. T ^d	Approx. Sig.
Nominal by Nominal	Lambda	Symmetric	.000	.000	. ^b	. ^b
		Environmental Risks that have been experienced or noticed in the township: Dumping Dependent	.000	.000	. ^b	. ^b
		Satisfaction with current POS Dependent	.000	.000	. ^b	. ^b
	Goodman and Kruskal tau	Environmental Risks that have been experienced or noticed in the township: Dumping Dependent	.000	.001		.864 ^c
		Satisfaction with current POS Dependent	.000	.001		.864 ^c
		Symmetric	.000	.001	.086	.864 ^e
Uncertainty Coefficient	Environmental Risks that have been experienced or noticed in the township: Dumping Dependent	.000	.001	.086	.864 ^e	
	Satisfaction with current POS Dependent	.000	.001	.086	.864 ^e	

Table 68: **Directional Measures** a. Not assuming the null hypothesis. b. Cannot be computed because the asymptotic standard error equals zero. c. Based on chi-square approximation d. Using the asymptotic standard error assuming the null hypothesis. e. Likelihood ratio chi-square probability.

5.2.4.7 TOWNSHIP ATMOSPHERE AND USER SATISFACTION

Only 18% of respondents who found the township atmosphere to be active are satisfied with the current state of open spaces in Galeshewe and 32.8% of those who find the township atmosphere not to be active are satisfied. This 14.8 percentage point difference suggests that those who find the township to be active are less satisfied with township open spaces.

			Satisfaction with current POS		Total
			Yes	No	
Township Atmosphere: Vibrant/Active	True	Count	58	264	322
		% within Township Atmosphere: Vibrant/Active	18.0%	82.0%	100.0%
		% within Satisfaction with current POS	43.0%	62.6%	57.8%
	False	% of Total	10.4%	47.4%	57.8%
		Count	77	158	235
		% within Township Atmosphere: Vibrant/Active	32.8%	67.2%	100.0%
Total	% within Satisfaction with current POS	57.0%	37.4%	42.2%	
	% of Total	13.8%	28.4%	42.2%	
	Count	135	422	557	
	% within Township Atmosphere: Vibrant/Active	24.2%	75.8%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	
	% of Total	24.2%	75.8%	100.0%	

Table 69 Township Atmosphere: Vibrant/Active * Satisfaction with current POS Crosstabulation

5.2.4.7.1 CHI-SQUARE TESTS

- H₀ : There is not a significant difference between township atmosphere and open space user satisfaction
- H_a : There is a significant difference between township atmosphere and open space user satisfaction
- Test : Chi-Square
- Confidence Level : 99%
- Significant Factor : .000 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)	Point Probability
Pearson Chi-Square	16.104 ^a	1	.000	.000	.000	
Continuity Correction ^b	15.310	1	.000			
Likelihood Ratio	15.951	1	.000	.000	.000	
Fisher's Exact Test				.000	.000	
Linear-by-Linear Association	16.075 ^d	1	.000	.000	.000	.000
N of Valid Cases	557					

Table 70 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 56.96. b. Computed only for a 2x2 table c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results. d. The standardized statistic is -4.009.

The Pearson Chi-Square value for the association between difference between township atmosphere and open space user satisfaction was obtained as 16 with 1 degree of freedom and a Significance Probability of 0.000 which is a highly significant result at the conventional level of 99%. Based on this evidence, it is clear that there is definitely an association between the two variables. The null hypothesis is therefore rejected.

5.2.4.7.2 UNCERTAINTY CO-EFFICIENT

The value 0.021 that is obtained when 'township atmosphere' is known indicates that there is a 2.1% reduction in error in predicting the value of the 'satisfaction with current open space'. However, the symmetric value of 0.023 which is closer to 0 indicates a very small/weak reduction of 2.3% in row category (satisfaction) when the column category is known (township atmosphere).

		Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.	Monte Carlo Sig.		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Nominal by Nominal	Symmetric Township Atmosphere: Vibrant/Active	.023	.012	2.000	.000 ^c	.000 ^d	.000	.000
	Dependent Satisfaction with current POS	.021	.011	2.000	.000 ^c	.000 ^d	.000	.000
	Dependent	.026	.013	2.000	.000 ^c	.000 ^d	.000	.000

Table 71 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability. d. Based on 10000 sampled tables with starting seed 402218460.)

5.2.4.8 QUALITY OF OPEN SPACE AND USER SATISFACTION

47.1% (the majority) of those who are satisfied with the current open spaces think that the quality of township vegetation is very bad. Whereas only 5.8% of those who are satisfied think that township vegetation is very good. These two statements suggest that the satisfaction of the respondents has little to do with the quality of vegetation in the township.

			Satisfaction with current POS		Total
			Yes	No	
The quality of vegetation in the township	Very bad	Count	65	79	144
		% within The quality of vegetation in the township	45.1%	54.9%	100.0%
		% within Satisfaction with current POS	47.1%	18.9%	25.9%
		% of Total	11.7%	14.2%	25.9%
	Bad	Count	22	98	120
		% within The quality of vegetation in the township	18.3%	81.7%	100.0%
		% within Satisfaction with current POS	15.9%	23.4%	21.5%
		% of Total	3.9%	17.6%	21.5%
	Normal	Count	24	154	178
		% within The quality of vegetation in the township	13.5%	86.5%	100.0%
		% within Satisfaction with current POS	17.4%	36.8%	32.0%
		% of Total	4.3%	27.6%	32.0%
	Good	Count	19	59	78
		% within The quality of vegetation in the township	24.4%	75.6%	100.0%
		% within Satisfaction with current POS	13.8%	14.1%	14.0%
		% of Total	3.4%	10.6%	14.0%
	Very good	Count	8	29	37
		% within The quality of vegetation in the township	21.6%	78.4%	100.0%
% within Satisfaction with current POS		5.8%	6.9%	6.6%	
	% of Total	1.4%	5.2%	6.6%	
Total	Count	138	419	557	
	% within The quality of vegetation in the township	24.8%	75.2%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	
	% of Total	24.8%	75.2%	100.0%	

Table 72 The quality of vegetation in the township * Satisfaction with current POS Crosstabulation

5.2.4.8.1 CHI-SQUARE TESTS

- H_0 : There is not a significant difference between the quality of open space and open space user satisfaction
- H_a : There is a significant difference between the quality of open space and open space user satisfaction
- Test : Chi-Square
- Confidence Level : 95%
- Significant Factor : .000 (Linear-by-Linear Association)
- Conclusion : Reject null hypothesis; There is a significant difference between the quality of open space and open space user satisfaction

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	47.095 ^a	4	.000	.000 ^b	.000	.000			
Likelihood Ratio	45.049	4	.000	.000 ^b	.000	.000			
Fisher's Exact Test	44.588			.000 ^b	.000	.000			
Linear-by-Linear Association	19.112 ^c	1	.000	.000 ^b	.000	.000	.000 ^b	.000	.000
N of Valid Cases	557								

Table 73 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.17. b. Based on 10000 sampled tables with starting seed 84046155. c. The standardized statistic is 4.372.)

5.2.4.8.2 UNCERTAINTY CO-EFFICIENT

The value 0.027 that is obtained when ‘quality of vegetation’ is known indicates that there is a 2.7% reduction in error in predicting the value of the ‘satisfaction with current open space’. However, the symmetric value of 0.039 which is closer to 0 indicates a very small/weak reduction of 3.9% in row category (satisfaction) when the column category is known (quality of vegetation).

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.	Monte Carlo Sig.					
					Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
						Lower Bound	Upper Bound		Lower Bound	Upper Bound
Nominal by Nominal	Symmetric	.039	.012	3.354	.000 ^c	.000 ^d	.000	.000	.000	
	Uncertainty Coefficient	.027	.008	3.354	.000 ^c	.000 ^d	.000	.000	.000	
	Dependent	.072	.021	3.354	.000 ^c	.000 ^d	.000	.000	.000	

Table 74 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability. d. Based on 10000 sampled tables with starting seed 84046155.)

5.2.4.9 RELATIONSHIP BETWEEN HOUSEHOLD INCOME AND USER SATISFACTION

There is negative gradient in terms of the satisfaction levels as the household income increases from less than R1200/pm (31.3%) to 24.2% for the group with household income of R1201-R3000); 18.5% for household income of R3001-R5000); and 18.5% household income of R5001-R10000 before it increases by a 1.1 percentage point to 10% when it reaches (Household income of R10001-R15000). This shows that the more people earn, is the more they tend to be less satisfied with the current state of open spaces in the township.

			Satisfaction with current POS		Total
			Yes	No	
Household Income per month	Less than R1200	Count	76	167	243
		% within Household Income per month	31.3%	68.7%	100.0%
		% within Satisfaction with current POS	56.3%	40.6%	44.5%
	Between R1201 and R3000	Count	37	116	153
		% within Household Income per month	24.2%	75.8%	100.0%
		% within Satisfaction with current POS	27.4%	28.2%	28.0%
	Between R3001 and R5000	Count	17	75	92
		% within Household Income per month	18.5%	81.5%	100.0%
		% within Satisfaction with current POS	12.6%	18.2%	16.8%
	Between R5001 and R10000	Count	4	41	45
		% within Household Income per month	8.9%	91.1%	100.0%
		% within Satisfaction with current POS	3.0%	10.0%	8.2%
	Between R10001 and R15000	Count	1	9	10
		% within Household Income per month	10.0%	90.0%	100.0%
		% within Satisfaction with current POS	.7%	2.2%	1.8%
Over R15000	Count	0	3	3	
	% within Household Income per month	0.0%	100.0%	100.0%	
	% within Satisfaction with current POS	0.0%	.7%	.5%	
Total	Count	135	411	546	
	% within Household Income per month	24.7%	75.3%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	

Table 75 Crosstab: Household Income per month * Satisfaction with current POS

5.2.4.9.1 CHI-SQUARE TESTS

The chi-square test is in this case invalid due to the fact that the maximum percentage of cells that can be below expected counts is more than 20%. Based on this, one can neither reject nor fail to reject the null hypothesis.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.769 ^a	5	.008
Likelihood Ratio	17.978	5	.003
Linear-by-Linear Association	15.416	1	.000
N of Valid Cases	546		

Table 76 Chi-Square Tests a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is .74.

5.2.4.10 STREET VENDORS AND USER SATISFACTION

There is only a 7.8 percentage point difference in satisfaction between respondents that have observed street vendors on open spaces (26.8%) and those that have not seen them (19%).

		Satisfaction with current POS		Total
		Yes	No	
Economic Land uses observed on open spaces: Street vendors	Count	107	292	399
	True			
	% within Economic Land uses observed on open spaces: Street vendors	26.8%	73.2%	100.0%
	% within Satisfaction with current POS	77.0%	68.2%	70.4%
	% of Total	18.9%	51.5%	70.4%
	Count	32	136	168
False	% within Economic Land uses observed on open spaces: Street vendors	19.0%	81.0%	100.0%
	% within Satisfaction with current POS	23.0%	31.8%	29.6%
	% of Total	5.6%	24.0%	29.6%
	Count	139	428	567
Total	% within Economic Land uses observed on open spaces: Street vendors	24.5%	75.5%	100.0%
	% within Satisfaction with current POS	100.0%	100.0%	100.0%
	% of Total	24.5%	75.5%	100.0%

Table 77 Economic Land uses observed on open spaces: Street vendors * Satisfaction with current POS Crosstabulation

5.2.4.10.1 CHI-SQUARE TESTS

- H₀ : There is not a significant difference between economic land uses (Street Vendors) as observed on township open spaces and open space user satisfaction
- H_a : There is a significant difference between economic land uses (Street Vendors) as observed on township open spaces and open space user satisfaction
- Test : Chi-Square
- Confidence Level : 95%
- Significant Factor : .05 (Pearson Chi-Square)
- Conclusion : Reject null hypothesis; there is a significant difference between economic land uses (Street Vendors) as observed on township open spaces and open space user satisfaction

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	3.856 ^a	1	.050	.054	.030	
Continuity Correction ^b	3.448	1	.063			
Likelihood Ratio	3.990	1	.046	.054	.030	
Fisher's Exact Test				.054	.030	
Linear-by-Linear Association	3.850 ^d	1	.050	.054	.030	.012
N of Valid Cases	567					

Table 78 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 41.19. b. Computed only for a 2x2 table c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results. d. The standardized statistic is 1.962.)

5.2.4.10.2 UNCERTAINTY CO-EFFICIENT

The value 0.006 that is obtained when ‘Economic Land uses observed on open spaces: Street vendors Dependent is known indicates that there is a 0.6% reduction in error in predicting the value of the ‘satisfaction with current open space’. The symmetric value of 0.006 which is closer to 0 also indicates a very small/weak reduction of 0.6% in row category (satisfaction) when the column category is known (Economic Land uses observed on open spaces: Street vendors Dependent).

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.	Monte Carlo Sig.			
					Sig.	99% Confidence Interval		
						Lower Bound	Upper Bound	
Nominal by Nominal Uncertainty Coefficient	Symmetric	.006	.006	1.018	.046 ^c	.052 ^d	.046	.058
	Economic Land uses observed on open spaces: Street vendors Dependent	.006	.006	1.018	.046 ^c	.052 ^d	.046	.058
	Satisfaction with current POS Dependent	.006	.006	1.018	.046 ^c	.052 ^d	.046	.058

Table 79 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability. d. Based on 10000 sampled tables with starting seed 1993714141.)

5.2.6 SUMMARY OF FACTORS THAT AFFECT THE SATISFACTION AND THE FREQUENCY OF OPEN SPACE USE IN GALESHEWE

	Variable	Frequency of open space	Significance of relationship	Satisfaction with current open spaces	Significance of relationship
1.0	Gender	Females use open spaces more than males	Statistically Insignificant	There are more females (63.5%) who are not satisfied than males (36.5%).	Insignificant
2.0	Age	The older people get, the more they tend not to use open spaces	Statistically Insignificant	The group that is most satisfied (41.9%) about the current open spaces in Galeshewe is the one that of those who are less than 20. The least satisfied group falls between the ages of 31-40 at 16.4%.	Very weak but Significant at 95% CI
3.0	Household Size	Smaller families use open space less than bigger families	Very weak but Significant at 95% CI	the majority (44.1%) falls within the category of families that have between 3-5 members, whereas small families (less than 3 members) account for only 19.1%.	Invalid
4.0	Level of Education	The highest percentage of people that use open spaces on a daily basis, is 68.2% for people with Matric	Statistically Insignificant	a. Of those who are satisfied, the majority (60.9%) is made of the group of respondents that have secondary education (matric) and the minority (7.2%) comes from people with no education at all	Insignificant
5.0	Crime on urban open spaces	Even though people believe there is more crime committed on open spaces, they continuing to use open spaces in any case.	Statistically Insignificant	Only 22.1% of respondents, who believe there is more crime committed on public open spaces, are satisfied about the current state of public open spaces in Galeshewe.	Weak but Significant at 99% CI
6.0	Environmental Pollution	There is a small difference (39% and 37.2%) between respondents who have seen littering and 'never used open spaces and respondents that have not seen littering on open spaces.	Weak but Highly Significant at 99% CI	There is a small percentage point difference (0.9%) between the satisfaction of the respondents that have experienced or noticed littering in the township (24.5%) and those that have not (23.6%).	Insignificant
7.0	Township Atmosphere	The majority (43.1%) of those who find the township atmosphere vibrant never use open spaces.	Very weak but Highly Significant at 99% CI	Only 18% of respondents who found the township atmosphere to be active are satisfied with the current state of open spaces in Galeshewe and 32.8% of those who find the township atmosphere not to be active are satisfied.	Very weak but Highly Significant at 99% CI
8.0	Quality of vegetation	The majority of respondents (48.6%) who think that the quality of vegetation in the township is normal never use open spaces. This is 20.6 percentage points higher than those who think township vegetation is very bad (24%)	Statistically Insignificant	45.1% of those who think the quality of vegetation is good, are satisfied with the current open spaces.	Very weak but Highly Significant at 99% CI
9.0	Household income	The majority of respondents (61.9%) who use open spaces on a daily basis fall within the category of people earning less than R1200.	Statistically Insignificant	the more they tend to be less satisfied with the current state of open spaces in the township.	invalid
10.0	Business uses on Urban open spaces	The majority (35.1%) of respondents who have seen street vendors on open spaces never use open spaces whereas this percentage is 46.8% for those who have not seen street vendors on open spaces.	Very weak but Significant at 95% CI	There is only a 7.8 percentage point difference in satisfaction between respondents that have observed street vendors on open spaces (26.8%) and those that have not seen them (19%).	Very weak but Significant

Table 80: Summary of factors that affect the satisfaction and the frequency of open space use in Galeshewe. Source: (Author, 2013)

5.2.7 RELATIONSHIP BETWEEN OPEN SPACE USER SATISFACTION AND THE FREQUENCY OF OPEN SPACE USE

The majority of respondents 42.9% (182) who are not satisfied about the public open spaces in Galeshewe are those that never use public open spaces. This is followed by only 20.5% (87) of those who are not satisfied but still use open spaces at least more than once a week. Only 3.9% (22) of the respondents use public open spaces on an everyday basis.

The majority (32.4%) of those who are satisfied with the public open spaces in Galeshewe use public open spaces only once a week. On average, 61.1% of the respondents who are satisfied about the open spaces in Galeshewe actually use open spaces more than just 'once a month'. This shows that if people are satisfied, they are likely to use public open spaces more frequently. Only 15.7% of those who never use open spaces come from the group that is satisfied with the current of public open space in Galeshewe.

			Satisfaction with current POS		Total
			Yes	No	
Frequency of Open Space Use	Everyday	Count	7	15	22
		% within Frequency of Open Space Use	31.8%	68.2%	100.0%
		% within Satisfaction with current POS	5.0%	3.5%	3.9%
		% of Total	1.2%	2.7%	3.9%
	More than once a week	Count	33	87	120
		% within Frequency of Open Space Use	27.5%	72.5%	100.0%
		% within Satisfaction with current POS	23.7%	20.5%	21.3%
		% of Total	5.9%	15.5%	21.3%
	Once a week	Count	45	80	125
		% within Frequency of Open Space Use	36.0%	64.0%	100.0%
		% within Satisfaction with current POS	32.4%	18.9%	22.2%
		% of Total	8.0%	14.2%	22.2%
Once a month	Count	20	60	80	
	% within Frequency of Open Space Use	25.0%	75.0%	100.0%	
	% within Satisfaction with current POS	14.4%	14.2%	14.2%	
	% of Total	3.6%	10.7%	14.2%	
Never	Count	34	182	216	
	% within Frequency of Open Space Use	15.7%	84.3%	100.0%	
	% within Satisfaction with current POS	24.5%	42.9%	38.4%	
	% of Total	6.0%	32.3%	38.4%	
Total	Count	139	424	563	
	% within Frequency of Open Space Use	24.7%	75.3%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	
	% of Total	24.7%	75.3%	100.0%	

Table 81 Crosstabulation: Frequency of Open Space Use * Satisfaction with current POS

5.2.5.1 CHI SQUARE TESTS

H_0 : There is not a significant difference between open space user satisfaction and the frequency of open space use

H_a : There is a significant difference between open space user satisfaction and the frequency of open space use

Test : Chi-Square

Confidence Level : 99%

Significant Factor : .001 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.018 ^a	4	.001
Likelihood Ratio	19.236	4	.001
Linear-by-Linear Association	7.079	1	.008
N of Valid Cases	563		

Table 82: Chi-Square Tests, N=563 (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.43.)

The Pearson Chi-Square value for the association between frequency of open space use and satisfaction with current open spaces was obtained as 19 with 4 degrees of freedom and a Significance Probability of 0.001 which is a highly significant result at the conventional level of 0.1. This means that at the confidence interval of 99 one can be sure that 99% of the time, there will be an association between satisfaction and the frequency of open space use. Based on this evidence, it is clear that there is definitely an association between frequency of open space use and satisfaction with current public open spaces in Galeshewe. The null hypothesis is therefore rejected.

5.2.5.2 CRAMER'S V TESTS

The Cramer's V test value of 0.2 is close to 0 and it indicates a weak association between the two variables, frequency of open space use and satisfaction with the current open spaces in Galeshewe.

	Value	Approx. Sig.
Nominal by Nominal Phi	.184	.001
Cramer's V	.184	.001
Contingency Coefficient	.181	.001
N of Valid Cases	563	

Table 83 Symmetric Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis.)

5.3 FACTORS THAT AFFECT THE FUNCTIONALITY OF OPEN SPACES IN GALESHEWE

The functionality of urban open spaces in Galeshewe is hereby measured in terms of ecological; social; economic development benefits. The way the community relates to the open spaces is important in understanding the functionality of the space. Urban open spaces are known to have many benefits, including ecological benefits; social; economic development benefits and even planning and design benefits.

Under ecological benefits, the discussion is based on the ecological relationship the respondents have with their open spaces. Certain environmental factors were asked from the respondents and these factors are grouped together under one category in order to provide a better understanding. For example, the community's knowledge of environmental benefits; including the quality of vegetation and the fact that most of the respondents would not mind to cut down trees as long as it meant improving safety in the township.

The demographics; level of education; crime and open space symbolism are discussed as social benefits of urban open spaces in Galeshewe. Some of the issues that are discussed under the economic development benefits of open spaces include the way the community believe that open spaces are actually left out as a reserve for future development; the maintenance of urban open space; and property improvement and lastly the economic reasons for residing in closer proximity to urban open space.

5.3.1 ECOLOGICAL FACTORS

Urban open spaces are believed to promote biological diversity by providing ecosystems for fauna and flora (Morancho, 2003, p. 35). But what happens when a community does not know this function? When the respondents were asked what the main purpose of open spaces were, they could have given answers that are relevant to the environmental purposes of an open space, but those responses are rather mentioned but not discussed in this section.

Some of the questions that had environmental implications in the questionnaire include the following:

1. Lack of knowledge about the purpose of open space provision.
2. Urban open space environmental satisfaction
3. Ecological benefits of staying in close proximity to urban open space
4. The township atmosphere and the benefits of residing in close proximity to urban open space
5. Environmental aspects of open space symbolism
6. Environmental implications of removing vegetation for the purposes of safety
7. Quality of township vegetation and its implications on residential proximity
8. Environmental Pollution and its implications on residential proximity

This section of the research tries to measure the respondents' environmental awareness and responsibility towards urban open spaces as an integral land use in the renewal; planning and development of the township.

5.3.1.1 THE PRIMARY PURPOSE OF OPEN SPACES: ENVIRONMENTAL REASONS WHY THE MUNICIPALITY LEAVES OUT UNDEVELOPED OPEN SPACES

When asked to give reasons why the municipality leaves out undeveloped open spaces an opportunity as presented to the respondents to raise environmental concerns but only 3.1% of the respondents chose the land use "park" (see table 12 above). If one were to unpack the benefits of a park in an urban area, it would therefore be clear that a park is one of the types of open spaces and that a reason to provide such an open space was not provided. This means none of the reasons given above had anything to do with environmental issues. This reflects a lack of knowledge about the environmental benefits that open spaces have in an urban area.

5.3.1.2 URBAN OPEN SPACE ENVIRONMENTAL SATISFACTION

Respondents were asked to provide reasons why they are either satisfied or unsatisfied with the state of open spaces in Galeshewe. Amongst the many reasons that were identified by the respondents, some had to do with issues of environmental quality, i.e., dirty (23.6%); greenery (4.9%); waterlogged (0.6%); (See Table 17 below).

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Safety (Crime)	216	36.3	44.0	44.0
Dirty	116	19.5	23.6	67.6
Distance (too far)	11	1.8	2.2	69.9
Preference (I do like them)	14	2.4	2.9	72.7
Distance (close)	36	6.1	7.3	80.0
Size (small)	2	.3	.4	80.4
Greenery	24	4.0	4.9	85.3
Waterlogged	3	.5	.6	85.9
No facilities	38	6.4	7.7	93.7
Not mentioned	8	1.3	1.6	95.3
Not accessible	4	.7	.8	96.1
Pathways	5	.8	1.0	97.1
Underutilised	5	.8	1.0	98.2
Noise	3	.5	.6	98.8
Vandalism	3	.5	.6	99.4
Sign of development	1	.2	.2	99.6
Entertainment opportunities for kids	1	.2	.2	99.8
Too many	1	.2	.2	100.0
Total	491	82.5	100.0	
Missing	0	104	17.5	
Total	595	100.0		

Table 84 Reasons for non/satisfaction

In total, these environmental reasons amount only to 29.1% of the reasons cited by the respondents. This means environmental issues are not the main reasons why the respondents are either satisfied or not satisfied with the current open spaces in Galeshewe.

5.3.1.3 ECOLOGICAL BENEFITS OF STAYING IN CLOSE PROXIMITY TO URBAN OPEN SPACE

When respondents were asked to give reasons why they would choose to stay either in close proximity or far away from open spaces they gave reasons, some of which are based on environmental reasons.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Crime	201	33.8	38.7	38.7
Children	90	15.1	17.3	56.0
Dirty	44	7.4	8.5	64.4
Beauty/Clean/Greenery	16	2.7	3.1	67.5
Sports and Entertainment	42	7.1	8.1	75.6
Training (Walking/Jogging)	74	12.4	14.2	89.8
Business Opportunity	3	.5	.6	90.4
Noise	46	7.7	8.8	99.2
To save money and time	3	.5	.6	99.8
Monitor children	1	.2	.2	100.0
Total	520	87.4	100.0	
Missing	0			
Total	595	100.0		

Table 85: Reasons for staying close/far from a POS

As shown in table 18 above, the reasons that were given by the respondents include the following environmental reasons:

1. Dirty (8.5%)
2. Beauty/Clean/Greenery (3.1%)
3. Noise (8.8%)

Again, as it happened with the reasons for satisfaction/non-satisfaction, environmental reasons amount to 20.4% and therefore may not be regarded as a major determining factor for the choice of a place to stay in a residential neighbourhood.

5.3.1.4 THE TOWNSHIP ATMOSPHERE AND THE BENEFITS OF RESIDING IN CLOSE PROXIMITY TO URBAN OPEN SPACE

Public open space can be used in order to complement the township environment which the majority believe, is busy with a lot of active lifestyle. Based on the needs of the community, open spaces may also be used to calm excessive noise and the business of the township atmosphere, that is why this question is necessary.

58.4% of the respondents believe that the township is either vibrant or active, but 41.6% do not agree with this statement.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	True	335	56.3	58.4	58.4
	False	239	40.2	41.6	100.0
	Total	574	96.5	100.0	
Missing	0	21	3.5		
Total		595	100.0		

Table 86: Township Atmosphere: Vibrant/Active

More than half (50.5%) of the respondents that believe that the township atmosphere is vibrant/active would prefer to stay far away from open spaces as compared to the 36.9% of respondents who do not think the township atmosphere is vibrant/active. This may suggest that the atmosphere in the open spaces is a push factor, which contributes to people preferring to stay far from the open spaces. It also shows that the respondents who think the atmosphere is vibrant do not believe that open spaces can contribute in calming the environment.

Urban open spaces have a potential to cleanse reduce noise and cleanse the city's atmosphere (Lam, et al., 2005, p. 55); (City of Burlington, VT, 2000, pp. 8-14). Authors such as (Gomez, et al., 2004); (Gomez, et al., 2001) have studied the amount of greenery that is needed for a city to achieve comfortable levels. Climatic attributes need to be studied for different cities with different climatic conditions and there are no current existing standards that need to be met. This can have a significant influence on the way open spaces are provided in cities that are warmer as compared to colder ones (Gomez, et al., 2004, p. 99).

One of the benefits of urban open space is the reduction of noise. The design of open space must look at the acoustic value of these open spaces because urban open spaces are believed to have the potential to lower the noise produced in urban areas, thus one has to look at the land uses that need open spaces (Brown & Muhar, 2004, p. 827).

		Proximity to Urban Open Space				Total
		Far Away	Away	Close	Very Close	
Township Atmosphere: Vibrant/Active	Count	166	37	111	15	329
	% within Township Atmosphere: True Vibrant/Active	50.5%	11.2%	33.7%	4.6%	100.0%
	% within Proximity to Urban Open Space	65.6%	64.9%	56.9%	25.0%	58.2%
	% of Total	29.4%	6.5%	19.6%	2.7%	58.2%
	Count	87	20	84	45	236
	% within Township Atmosphere: False Vibrant/Active	36.9%	8.5%	35.6%	19.1%	100.0%
	% within Proximity to Urban Open Space	34.4%	35.1%	43.1%	75.0%	41.8%
	% of Total	15.4%	3.5%	14.9%	8.0%	41.8%
Total	Count	253	57	195	60	565
	% within Township Atmosphere: Vibrant/Active	44.8%	10.1%	34.5%	10.6%	100.0%
	% within Proximity to Urban Open Space	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	44.8%	10.1%	34.5%	10.6%	100.0%

Table 87 Township Atmosphere: Vibrant/Active * Proximity to Urban Open Space Crosstabulation

5.3.1.4.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between township atmosphere and willingness to stay in close proximity to open space

H_a : There is a significant difference between township atmosphere and willingness to stay in close proximity to open space

Test : Chi-Square
 Confidence Level : 95%
 Significant Factor : .000 (Pearson Chi-Square)
 Conclusion : Reject null hypothesis; there is a significant between township atmosphere and willingness to stay in close proximity to open space

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	34.092 ^a	3	.000	.000 ^b	.000	.000			
Likelihood Ratio	34.304	3	.000	.000 ^b	.000	.000			
Fisher's Exact Test	33.937			.000 ^b	.000	.000			
Linear-by-Linear Association	22.494 ^c	1	.000	.000 ^b	.000	.000	.000 ^b	.000	.000
N of Valid Cases	565								

Table 88 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 23.81. b. Based on 10000 sampled tables with starting seed 1291153757. c. The standardized statistic is 4.743.)

5.3.1.4.2 UNCERTAINTY CO-EFFICIENT

The value 0.045 that is obtained when 'township atmosphere' is known indicates that there is a 4.5% reduction in error in predicting the value of 'willingness to stay in close proximity to open space'. However, the symmetric value of 0.032 which is closer to 0 indicates a very small/weak reduction of 3.2% in row category (willingness to stay in close proximity to open space) when the column category is known (township atmosphere).

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.	Monte Carlo Sig.			
					Sig.	99% Confidence Interval		
						Lower Bound	Upper Bound	
Nominal by Nominal Uncertainty Coefficient	Symmetric Township Atmosphere: Vibrant/Active Dependent	.032	.011	3.011	.000 ^c	.000 ^d	.000	.000
	Proximity to Urban Open Space Dependent	.045	.015	3.011	.000 ^c	.000 ^d	.000	.000
		.025	.008	3.011	.000 ^c	.000 ^d	.000	.000

Table 89 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability. d. Based on 10000 sampled tables with starting seed 1291153757.)

5.3.1.5 ENVIRONMENTAL ASPECTS OF OPEN SPACE SYMBOLISM

As discussed under paragraph 4.2.3 (open space symbolism), there are some environmental aspects that the respondents have linked to open space symbolism. As shown in table 16, these include (threat/danger: 75.9%); health hazard (72.6%); and nature at (31.1%). The category of threat/danger is not necessarily specific to environmental threats but one cannot ignore the possibilities that respondents may be alluding to. The threat/danger category together with the health hazard are the ones that the most of the respondents have identified, and they can be linked to not wanting open spaces by the majority of the respondents.

The fact that only 31.1% of the respondents believe that open spaces in Galeshewe symbolize some form of nature, shows that either the quality of the open spaces is generally not good or that the people in Galeshewe do not associate open spaces with nature.

5.3.1.6 ENVIRONMENTAL IMPLICATIONS OF REMOVING VEGETATION FOR THE PURPOSES OF SAFETY

Cities need to grow to maintain vigorous local economies, but their ability to grow is influenced by environmental constraints and competition with other regions in terms of quality of life (McPherson & Simpson, 2002, p. 61). In Galeshewe, it seems that environmental infrastructure is less important than issues of safety and hence 62.8% of respondents believe that trees should be cut in order to minimize crime on open spaces (See table below). This shows the dominance of the fight against crime rather than the protection of green infrastructure

How to minimize crime on public open spaces: cutting the trees short

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	True	344	57.8	62.8	62.8
	False	204	34.3	37.2	100.0
	Total	548	92.1	100.0	
Missing	0	47	7.9		
Total		595	100.0		

Table 90: How to minimize crime on public open spaces: cutting the trees short

5.3.1.7 QUALITY OF TOWNSHIP VEGETATION AND ITS IMPLICATIONS ON RESIDENTIAL PROXIMITY

Only 25.7% of the people think that the quality of vegetation is very bad in Galeshewe.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very bad	148	24.9	25.7	25.7
	Bad	122	20.5	21.2	47.0
	Normal	187	31.4	32.5	79.5
	Good	81	13.6	14.1	93.6
	Very good	37	6.2	6.4	100.0
	Total	575	96.6	100.0	
Missing	0	20	3.4		
Total		595	100.0		

Table 91: The quality of vegetation in the township mode "normal"

The modal category “normal” translates to 32.5% of the respondents not having any particular problem with the quality of vegetation. If one adds the categories very bad (25.7%) and bad (21.2%), it leaves more than half (53.1%) of respondents who are satisfied with the quality of vegetation in the township. This again shows a lack of appreciation for the green environment by the majority respondents as it was clear during the surveys that the environmental quality of natural vegetation is not good in Galeshewe.

Trees have the capacity to control luminosity and radiation by preventing sunrays from reaching the paved surfaces (Gomez, et al., 2004). They absorb atmospheric pollutants; regulation of atmospheric; humidity and urban climate; and they also restrain soil erosion (Morancho, 2003, p. 35). Even in Galeshewe, most of the respondents who think that the quality of vegetation is very good (35.1%) would actually prefer to stay close to open spaces. The majority of respondents who think that the quality of vegetation is very bad (53.4%) in the township would prefer to reside close to open spaces. The majority (35.1%) of those who believe that the quality of township vegetation is good would like to stay very close to urban open spaces.

		Proximity to Urban Open Space				Total	
		Far Away	Away	Close	Very Close		
The quality of vegetation in the township	Very bad	Count	64	3	78	1	146
		% within The quality of vegetation in the township	43.8%	2.1%	53.4%	0.7%	100.0%
		% within Proximity to Urban Open Space	25.2%	5.4%	40.0%	1.7%	25.8%
	Bad	% of Total	11.3%	0.5%	13.8%	0.2%	25.8%
		Count	75	9	28	6	118
		% within The quality of vegetation in the township	63.6%	7.6%	23.7%	5.1%	100.0%
	Normal	% within Proximity to Urban Open Space	29.5%	16.1%	14.4%	10.0%	20.9%
		% of Total	13.3%	1.6%	5.0%	1.1%	20.9%
		Count	70	28	69	17	184
	Good	% within The quality of vegetation in the township	38.0%	15.2%	37.5%	9.2%	100.0%
		% within Proximity to Urban Open Space	27.6%	50.0%	35.4%	28.3%	32.6%
		% of Total	12.4%	5.0%	12.2%	3.0%	32.6%
	Very good	Count	34	13	10	23	80
		% within The quality of vegetation in the township	42.5%	16.2%	12.5%	28.8%	100.0%
		% within Proximity to Urban Open Space	13.4%	23.2%	5.1%	38.3%	14.2%
	Total	% of Total	6.0%	2.3%	1.8%	4.1%	14.2%
		Count	11	3	10	13	37
		% within The quality of vegetation in the township	29.7%	8.1%	27.0%	35.1%	100.0%
	Total	% within Proximity to Urban Open Space	4.3%	5.4%	5.1%	21.7%	6.5%
		% of Total	1.9%	0.5%	1.8%	2.3%	6.5%
Count		254	56	195	60	565	
Total	% within The quality of vegetation in the township	45.0%	9.9%	34.5%	10.6%	100.0%	
	% within Proximity to Urban Open Space	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	45.0%	9.9%	34.5%	10.6%	100.0%	

Table 92 The quality of vegetation in the township * Proximity to Urban Open Space Crosstabulation

5.3.1.7.1 SPEARMAN'S RANK ORDER CORRELATION

H_0 : There is not a significant difference between quality of vegetation and proximity to urban open space

H_a : There is a significant difference between quality of vegetation and proximity to urban open space

Test : Spearman's Rank Order Correlation

Confidence Level : 99%

Significant Factor : .036 (Spearman's rho)

Correlations

		Proximity to Urban Open Space	The quality of vegetation in the township	
Spearman's rho	Proximity to Urban Open Space	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.	
		N	575	
	The quality of vegetation in the township	Correlation Coefficient	.130**	1.000
		Sig. (2-tailed)	.002	.
		N	565	575

Table 93: Correlation between quality of vegetation and proximity to urban open space. **. Correlation is significant at the 0.01 level (2-tailed).

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 575 respondents' quality of township vegetation and proximity to urban open space. There was a positive correlation between the two variables and it was also proven to be statistically significant at the 0.01 level of significance, but at .13 the value is too low to be meaningful ($r_s(8) = -.130, P = .002$).

5.3.1.8 ENVIRONMENTAL POLLUTION AND ITS IMPLICATIONS ON RESIDENTIAL PROXIMITY

The respondents were asked to choose from a list of pre-identified environmental risks in the townships. The main problem as seen in the figure below, was littering/dumping (87%) by an 18.4 percentage point difference from air pollution (68.6%) which was the next highest problem identified.

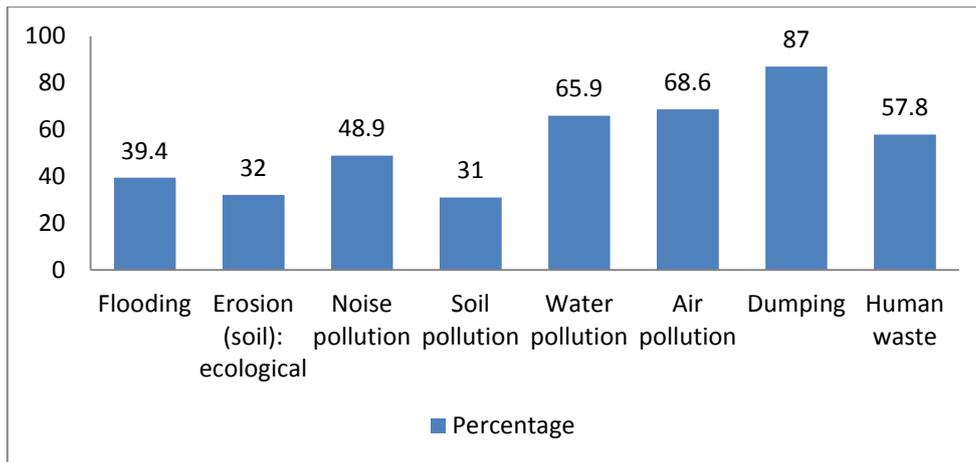


Figure 40: Environmental pollution in the township

It does not mean that the other identified problems are less important, rather the one that is the most problematic to the respondents was the issue of solid waste. This may reflect badly on the waste collection services from the municipality but it also means the community is also highly aware of their responsibility in creating the situation.

Almost half (46.8%) of those who have experienced/noticed littering (dumping) in open spaces would prefer to reside far away from open spaces as compared to 36.5% for those who have not experienced/noticed dumping in the township open spaces. The majority (48.6%) of those who have not experienced/noticed dumping in open spaces would actually prefer to stay in close proximity to open spaces.

		Proximity to Urban Open Space				Total	
		Far Away	Away	Close	Very Close		
Environmental Risks that have been experienced or noticed in the township: Dumping	True	Count	232	47	159	58	496
		% within Environmental Risks that have been experienced or noticed in the township: Dumping	46.8%	9.5%	32.1%	11.7%	100.0%
		% within Proximity to Urban Open Space	89.6%	83.9%	81.5%	96.7%	87.0%
		% of Total	40.7%	8.2%	27.9%	10.2%	87.0%
	False	Count	27	9	36	2	74
		% within Environmental Risks that have been experienced or noticed in the township: Dumping	36.5%	12.2%	48.6%	2.7%	100.0%
		% within Proximity to Urban Open Space	10.4%	16.1%	18.5%	3.3%	13.0%
		% of Total	4.7%	1.6%	6.3%	0.4%	13.0%
		Count	259	56	195	60	570
		% within Environmental Risks that have been experienced or noticed in the township: Dumping	45.4%	9.8%	34.2%	10.5%	100.0%
Total	% within Proximity to Urban Open Space	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	45.4%	9.8%	34.2%	10.5%	100.0%	

Table 94 Environmental Risks that have been experienced or noticed in the township: Dumping * Proximity to Urban Open Space Crosstabulation

5.3.1.8.1 CHI-SQUARE TESTS

- H_0 : There is not a significant difference between littering on open spaces and willingness to reside in close proximity to urban open spaces
- H_a : There is a significant difference between littering on open spaces and willingness to reside in close proximity to urban open spaces
- Test : Chi-Square
- Confidence Level : 95%
- Significant Factor : .007 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.100 ^a	3	.007
Likelihood Ratio	13.467	3	.004
Fisher's Exact Test	12.597		
Linear-by-Linear Association	.421 ^c	1	.516
N of Valid Cases	570		

Table 95 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.27.

The Pearson Chi-Square value for the association between difference between littering on open spaces and willingness to reside in close proximity to open spaces was obtained as 12.1 with 3 degrees of freedom and a Significance Probability of 0.007 which is a highly significant result at the conventional level of 5%. Based on this evidence, it is clear that there is definitely an association between the two variables. The null hypothesis is therefore rejected.

5.3.1.4.8.2 UNCERTAINTY CO-EFFICIENT

The value 0.01 that is obtained when 'open space littering/dumping' is known indicates that there is a 1% reduction in error in predicting the value of 'willingness to stay in close proximity to open space'. However, the symmetric value of 0.015 which is closer to 0 indicates a very small/weak reduction of 1, 5% in row category (willingness to stay in close proximity to open space) when the column category is known (open space littering/dumping').

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.	Monte Carlo Sig.			
					Sig.	99% Confidence Interval		
						Lower Bound	Upper Bound	
Nominal by Nominal Uncertainty Coefficient	Symmetric	.015	.007	1.998	.004 ^c	.004 ^d	.002	.006
	Environmental Risks that have been experienced or noticed in the township:	.031	.015	1.998	.004 ^c	.004 ^d	.002	.006
	Dumping Dependent Proximity to Urban Open Space Dependent	.010	.005	1.998	.004 ^c	.004 ^d	.002	.006

Table 96 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability. d. Based on 10000 sampled tables with starting seed 600629110.)

5.3.1.9 SUMMARY OF ECOLOGICAL FACTORS THAT AFFECT THE FUNCTIONALITY OF URBAN OPEN SPACES

	Variable	Type of analysis	Results	Significance of relationship	Strength of association
1.0	Lack of knowledge about the purpose of open space provision.	Frequency distribution	When asked to give reasons why the municipality leaves out undeveloped open spaces an opportunity as presented to the respondents to raise environmental concerns but only 3.1% of the respondents chose the land use "park"	N/A	N/A
2.0	Urban open space environmental satisfaction	Frequency distribution	In total, these environmental reasons amount only to 29.1% of the reasons cited by the respondents. This means environmental issues are not the main reasons why the respondents are either satisfied or not satisfied with the current open spaces in Galeshewe.	N/A	N/A
3.0	Ecological benefits of staying in close proximity to urban open space	Frequency distribution	Environmental reasons amount to 20.4% and therefore may not be regarded as a major determining factor for the choice of a place to stay in a residential neighbourhood.	N/A	N/A

4.0	The township atmosphere and the benefits of residing in close proximity to urban open space	Cross tabulation	More than half (50.5%) of the respondents that believe that the township atmosphere is vibrant/active would prefer to stay far away from open spaces as compared to the 36.9% of respondents who do not think the township atmosphere is vibrant/active.	Significant	Weak
5.0	Environmental aspects of open space symbolism	Frequency distribution	There are some environmental aspects that the respondents have linked to open space symbolism, these include (threat/danger: 75.9%); health hazard (72.6%); and nature at (31.1%).	N/A	N/A
6.0	Environmental implications of removing vegetation for the purpose of safety	Frequency distribution	37.2% of respondents believe that trees should be cut in order to minimize crime on open spaces (See table below). This shows the dominance of the fight against crime rather than the protection of green infrastructure	N/A	N/A
7.0	Quality of township vegetation and its implications on residential proximity	Frequency distribution	lack of appreciation for the green environment by the majority respondents as it was clear during the surveys that the environmental quality of natural vegetation is not good in Galeshewe.	Significant	Weak
8.0	Environmental Pollution and its implications on residential proximity	Frequency counts	Almost half (46.8%) of those who have experienced/noticed littering (dumping) in open spaces would prefer to reside far away from open spaces as compared to 36.5% for those who have not experienced/noticed dumping in the township open spaces.	Significant	Weak

Table 97: Summary of Ecological Factors that affect the functionality of urban open spaces

5.3.2 SOCIAL FACTORS

The meaning of public open space explores the relationship and understanding that the Galeshewe community has with their open spaces. It considers different questions that include their understanding of the purpose of the open spaces; what a typical open space symbolizes and whether there is a need for open spaces in the township.

The issue on the general knowledge of an open space is based on the assumption that someone who does not know what an open space is provided for, would not be in a position to object when the open space is taken away for other land uses and the person would also not use an open space for its intended use.

With regards to the need for open spaces, the respondents had to give reasons why they think there is either a need or no need for an open space. This was an open ended question with some of the respondents coming up with answers that relate to existing questions in the questionnaire, i.e., the question of crime and the use of open spaces.

There issue of open spaces symbolism has to deal with the meaning open spaces have to the community. People have different experiences while living in the townships and they have different views about the open spaces. A set of pre-determined answers was given to the respondents in order for them to choose the one that is closely related to what the open spaces mean to them.

Four demographic aspects, (gender; age; household size and education) are measured against the three critical factors for the use of open spaces, i.e., frequency of open space use; open space user satisfaction and proximity to open spaces. The analysis begins with cross-tabulations in order find patterns in the data distribution and chi-square tests are also done in order to measure the significance of the relationship between the two variables that are analysed. Once a significant relationship is established, then a test for the strength of the relationship between two variables is done using either by a symmetrical or a directional measure.

5.3.2.1 GENDER AND THE USE OF TOWNSHIP OPEN SPACES

The cross-tabulation shows that females use open spaces more frequently than males, and that more females are not satisfied with the current open spaces in Galeshewe. The relationship between gender and preference to stay far away from open spaces shows a very little margin between males and females in their preference to stay very far from open spaces. However the chi-square results for all gender tests revealed that there is no relationship between the two variables and therefore one cannot generalize over the entire population about the nature of the relationships that was analysed.

5.3.2.1.1 THE IMPACT OF GENDER ON THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE

More than half of both males (52%) and females (57%) prefer to reside far away and away from urban open spaces. However, there are more females (46.3%) than males (43.3%) who prefer to stay far away from urban open spaces in Galeshewe. Whereas on average, the percentages of respondents who prefer to stay far away from open spaces is about 45%. More males (13%) than females (9.3%) prefer to stay in very close proximity to open spaces.

Measuring the town extremes, there are 30.3 percentage points difference from those males who prefer to stay far away from open space (43.3%) as compared to those who prefer to stay very close to open spaces (13%). However, on females this percentage point difference is higher by almost 7 at 37 percentage points.

Between those males that would prefer to stay away (8.7) and those that want to stay in close proximity (35.1), the percentage point difference is 27. This is 4 more than the percentage point difference found for women (23) under the same categories.

			Proximity to Urban Open Space				Total
			Far Away	Away	Close	Very Close	
Gender	Male	Count	90	18	73	27	208
		% within Gender	43.3%	8.7%	35.1%	13.0%	100.0%
	Proximity to Urban Open Space	% within	34.7%	31.6%	37.2%	44.3%	36.3%
		Count	169	39	123	34	365
Total	Female	% within Gender	46.3%	10.7%	33.7%	9.3%	100.0%
		% within	65.3%	68.4%	62.8%	55.7%	63.7%
	Proximity to Urban Open Space	Count	259	57	196	61	573
		% within Gender	45.2%	9.9%	34.2%	10.6%	100.0%
Total	Proximity to Urban Open Space	% within	100.0%	100.0%	100.0%	100.0%	100.0%

Table 98: Crosstabulation: Gender * Proximity to Urban Open Space Crosstabulation

5.3.2.1.2 CHI-SQUARE TESTS

H₀ : There is not a significant difference between the gender and choice to Reside in close proximity to open space

H_a : There is a significant difference between the household size and the choice to Reside in close proximity to open space

Test : Chi-Square

Confidence Level : 95%

Significant Factor : .463 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.567 ^a	3	.463
Likelihood Ratio	2.537	3	.469
Linear-by-Linear Association	1.513	1	.219
N of Valid Cases	573		

Table 99: Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.69.)

The Pearson Chi-Square value for the association between gender and preference to stay in close proximity to open spaces was obtained as 2.567 with 3 degree of freedom and a Significance Probability of .46 which is higher than 0.1. The test therefore fails to reject the null hypothesis. Based on this evidence, it is clear that there is no association between the two variables and therefore, there is evidence that the relationship experienced on the sample is due to chance.

5.3.2.2 THE IMPACT OF AGE ON THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE

The majority (34.4%) of teenagers (less than 20) prefer to stay far away from urban open spaces. However, the combined number of teenagers (18) who prefer to stay either close and very close (56.3%) to urban open space exceeds the combined number of those (14) who would prefer to stay either away and far away (43.7%) from open spaces by 12.6 percentage points.

45.5% of those who fall within the 20-30 category prefer to stay in close proximity to open spaces and they are the only age group whose majority prefer to stay in close proximity to open spaces. The age group between 31 and 40 has the highest percentage group of respondents that prefer to stay far away from open spaces (55.3%) and this is closely followed by the over 60 category at 50.5%. Of those who prefer to stay very close to open spaces, teenagers have the highest percentage of 25%.

The combined percentages of respondents between 'less than 20' to 'between 20 and 30' for close and very close stand at 56.3% and 57.1% respectively. Note that the age groups between 20 and 30 have the highest combined percentage of those who prefer to stay close and very close to open spaces. This drops by a 20.8 percentage point margin from the 20-30 age group to the 31-40 age group (36.3%) which is similar to the combined percentage for the over 60 age group (36.8%).

The only age group that seems to be split in half about whether to stay in close proximity or further away from open spaces is the 51-60 age group.

			Proximity to Urban Open Space				Total
			Far Away	Away	Close	Very Close	
Respondent Age	Less than 20	Count	11	3	10	8	32
		% within Respondent Age	34.4%	9.4%	31.3%	25.0%	100.0%
		% within Proximity to Urban Open Space	4.2%	5.4%	5.1%	13.1%	5.6%
	Between 20 and 30	Count	38	10	51	13	112
		% within Respondent Age	33.9%	8.9%	45.5%	11.6%	100.0%
		% within Proximity to Urban Open Space	14.7%	17.9%	26.0%	21.3%	19.6%
	Between 31 and 40	Count	73	11	30	18	132
		% within Respondent Age	55.3%	8.3%	22.7%	13.6%	100.0%
		% within Proximity to Urban Open Space	28.2%	19.6%	15.3%	29.5%	23.1%
	Between 41 and 50	Count	56	16	45	10	127
		% within Respondent Age	44.1%	12.6%	35.4%	7.9%	100.0%
		% within Proximity to Urban Open Space	21.6%	28.6%	23.0%	16.4%	22.2%
	Between 51 and 60	Count	33	4	29	8	74
		% within Respondent Age	44.6%	5.4%	39.2%	10.8%	100.0%
		% within Proximity to Urban Open Space	12.7%	7.1%	14.8%	13.1%	12.9%
	Over 60	Count	48	12	31	4	95
		% within Respondent Age	50.5%	12.6%	32.6%	4.2%	100.0%
		% within Proximity to Urban Open Space	18.5%	21.4%	15.8%	6.6%	16.6%
Total		Count	259	56	196	61	572
		% within Respondent Age	45.3%	9.8%	34.3%	10.7%	100.0%
		% within Proximity to Urban Open Space	100.0%	100.0%	100.0%	100.0%	100.0%

Table 100 Crosstab: Respondent Age * Proximity to Urban Open Space

5.3.2.2.1 SPEARMAN'S RANK ORDER CORRELATION

H_0 : There is not a significant difference between respondent age and willingness to stay in close proximity to urban open space
 H_a : There is a significant difference between respondent age and willingness to stay in close proximity to urban open space
 Test : Spearman's rank order correlation
 Confidence Level : 95%
 Significant Factor : .011 (Spearman's rho)

			Proximity to Urban Open Space	Respondent Age
Spearman's rho	Proximity to Urban Open Space	Correlation Coefficient	1.000	-.106*
		Sig. (2-tailed)	.	.011
		N	575	572
	Respondent Age	Correlation Coefficient	-.106*	1.000
		Sig. (2-tailed)	.011	.
		N	572	581

Table 101: Correlations (*. Correlation is significant at the 0.05 level (2-tailed).

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 572 respondents' Respondent age and Proximity to urban open space. There was a very weak negative correlation between the two variables and it was also proven to be statistically significant at the 0.05 level of significance ($r_s(8) = -.106, P = .011$).

5.3.2.3 THE IMPACT OF HOUSEHOLD SIZE ON THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE

Urban liveability can be determined by an indication of the presence of couples with children in an area as they are the first to leave the area when living conditions are poor CUBE SPACE (2005); (Van Herzele & Wiedemann, 2003, p. 109). In Galeshewe, the

majority of households (45.4%) prefer to stay far away from open spaces. The majority of smaller households (60.7%) would prefer to stay far away from open spaces as compared to only 4.9% that want to stay very close to open spaces. The average of 60.7% for smaller households drops by 19.7 percentage points to 41% in medium sized households (between 3 and five) and by 19.5 percentage points in bigger households (more than 5 members), for those households that would prefer to stay far away from open spaces. There is also a 7.1 percentage point difference between small households (4.9%) and medium sized household (12%) for households who would prefer to reside very close to open spaces. A similar difference of 7.5 percentage points is also evident between smaller households (4.9%) and bigger households (12.4%).

		Proximity to Urban Open Space				Total	
		Far Away	Away	Close	Very Close		
Household size	Less than 3	Count	74	11	31	6	122
		% within Household size	60.7%	9.0%	25.4%	4.9%	100.0%
		% within Proximity to Urban Open Space	28.8%	19.6%	16.1%	10.0%	21.6%
		% of Total	13.1%	1.9%	5.5%	1.1%	21.6%
	Between 3 and 5	Count	102	28	89	30	249
		% within Household size	41.0%	11.2%	35.7%	12.0%	100.0%
		% within Proximity to Urban Open Space	39.7%	50.0%	46.1%	50.0%	44.0%
		% of Total	18.0%	4.9%	15.7%	5.3%	44.0%
	More than 5	Count	80	17	73	24	194
		% within Household size	41.2%	8.8%	37.6%	12.4%	100.0%
		% within Proximity to Urban Open Space	31.1%	30.4%	37.8%	40.0%	34.3%
		% of Total	14.1%	3.0%	12.9%	4.2%	34.3%
5	Count	1	0	0	0	1	
	% within Household size	100.0%	0.0%	0.0%	0.0%	100.0%	
	% within Proximity to Urban Open Space	0.4%	0.0%	0.0%	0.0%	0.2%	
	% of Total	0.2%	0.0%	0.0%	0.0%	0.2%	
Total	Count	257	56	193	60	566	
	% within Household size	45.4%	9.9%	34.1%	10.6%	100.0%	
	% within Proximity to Urban Open Space	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	45.4%	9.9%	34.1%	10.6%	100.0%	

Table 102: CROSSTAB (Household size * Proximity to Urban Open Space)

5.3.2.3.1 SPEARMAN'S RANK ORDER CORRELATION

H₀ : There is not a significant difference between household size and willingness to stay in close proximity to urban open space

H_a : There is a significant difference between household size and willingness to stay in close proximity to urban open space

Test : Spearman's Rank Order correlation

Confidence Level : 99%

Significant Factor : .002 (Spearman's rho)

Correlations			Proximity to Urban Open Space	Household size
Spearman's rho	Proximity to Urban Open Space	Correlation Coefficient	1.000	.132**
		Sig. (2-tailed)	.	.002
		N	575	566
	Household size	Correlation Coefficient	.132**	1.000
		Sig. (2-tailed)	.002	.
		N	566	574

Table 103: Spearman's rho coefficient for the correlation between 'proximity to urban open space and household size (**. Correlation is significant at the 0.01 level (2-tailed).

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 575 respondents' household size and Proximity to urban open space. There was a weak negative correlation between the two variables and it was also proven to be statistically significant at the 0.01 level of significance ($r_s(8) = -.132, P = .002$).

5.3.2.4 LEVEL OF EDUCATION AND THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE

In a study conducted in America, the level of education was found to be one of the significant reasons that affect the community support of land use policies that are

intended for the protection of natural resources, i.e., urban open space policies (Broussard, et al., 2008, p. 21). In Galeshewe the majority (71.1%) of people that have no education prefer to stay far away from open space, whereas none (0.0%) of them prefer to reside very close to open spaces. An illiterate society may not be aware of the implications and limitations of land use policies.

The percentage of respondents who prefer to stay far away from open spaces drops from 71.1% for respondents with no education to 56.6% for primary school leavers and to 36.6% for those that have matric before it increases to 54.8% for those with tertiary education.

The majority of respondents (75.4%) who would prefer to reside in close proximity to open spaces are from the Matric group and they only represent 13.9% of the same Matric group.

			Proximity to Urban Open Space				Total
			Far Away	Away	Close	Very Close	
Highest Level of Education	No education	Count	27	4	7	0	38
		% within Highest Level of Education	71.1%	10.5%	18.4%	0.0%	100.0%
		% within Proximity to Urban Open Space	10.5%	7.1%	3.7%	0.0%	6.7%
	Primary School	Count	43	3	25	5	76
		% within Highest Level of Education	56.6%	3.9%	32.9%	6.6%	100.0%
		% within Proximity to Urban Open Space	16.8%	5.4%	13.2%	8.2%	13.5%
	Matric	Count	121	35	129	46	331
		% within Highest Level of Education	36.6%	10.6%	39.0%	13.9%	100.0%
		% within Proximity to Urban Open Space	47.3%	62.5%	67.9%	75.4%	58.8%
	Tertiary education	Count	63	14	28	10	115
		% within Highest Level of Education	54.8%	12.2%	24.3%	8.7%	100.0%
		% within Proximity to Urban Open Space	24.6%	25.0%	14.7%	16.4%	20.4%
	5	Count	2	0	1	0	3
		% within Highest Level of Education	66.7%	0.0%	33.3%	0.0%	100.0%
		% within Proximity to Urban Open Space	.8%	0.0%	.5%	0.0%	.5%
Total		Count	256	56	190	61	563
		% within Highest Level of Education	45.5%	9.9%	33.7%	10.8%	100.0%
		% within Proximity to Urban Open Space	100.0%	100.0%	100.0%	100.0%	100.0%

Table 104 Crosstab: Highest Level of Education * Proximity to Urban Open Space

5.3.2.4.1 SPEARMAN’S RANK ORDER CORRELATION

H₀ : There is not a significant difference between level of education and willingness to stay in close proximity to urban open space

H_a : There is a significant difference between level of education and willingness to stay in close proximity to urban open space

Test : Spearman’s rank order correlation

Confidence Level : 95%

Significant Factor : .396(Spearman’s rho)

		Proximity to Urban Open Space	Highest Level of Education
Spearman's rho	Proximity to Urban Open Space	Correlation Coefficient	1.000
		Sig. (2-tailed)	.396
		N	575
	Highest Level of Education	Correlation Coefficient	.036
		Sig. (2-tailed)	.396
		N	563

TABLE 105: Spearman’s rho coefficient for the correlation between ‘proximity to urban open space and level of education

A Spearman’s Rank Order correlation was obtained in order to determine the relationship between 575 respondents’ level of education and Proximity to urban open space. There was a weak positive correlation between the two variables and it was also proven to be statistically insignificant at the 0.05 level of significance ($r_s(8) = -.036, P = .396$).

5.3.2.5 PERCEPTIONS OF CRIME ASSOCIATED WITH TOWNSHIP OPEN SPACES

The majority of the respondents (88.7%) believe that there is more crime that is committed in urban open spaces as compared to other land uses (see table 65 below)

Is there more crime committed on public open spaces than elsewhere

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	True	504	84.7	88.7	88.7
	False	64	10.8	11.3	100.0
	Total	568	95.5	100.0	
Missing	0	27	4.5		
Total		595	100.0		

Table 106: Crime committed on public open spaces than elsewhere

5.3.2.5.1 CRIME AND THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE

Crime is one of the major challenges that are experienced on city parks throughout Britain (Green Space, 2007, pp. 1-81); (Cabe Space, 2005, pp. 80-83). When asked if there is more crime committed on open space than elsewhere in Galeshewe, the majority (88.7%) of the respondents believed that is 'true'. The majority (44.8%) of those who responded with 'true' would also prefer to stay far away from open spaces, whereas only 10.9% of them would prefer to stay 'very close' to township open spaces. There is a small 0.2 percentage point difference between respondents who said true (10.9%) and those who responded with false (11.1%) in their preference to stay very close to open spaces. This may indicate that crime is not necessarily the main factor in deciding to stay very close to open spaces. Even in the category of staying far away from open spaces, only a 5.1 percentage point difference exist between those who said true (44.8%) and those who said false (39.7%).

			Is there more crime committed on public open spaces than elsewhere		Total
			True	False	
Proximity to Urban Open Space	Far Away	Count	222	25	247
		% within Proximity to Urban Open Space	89.9%	10.1%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	44.8%	39.7%	44.2%
		% of Total	39.7%	4.5%	44.2%
	Away	Count	53	3	56
		% within Proximity to Urban Open Space	94.6%	5.4%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	10.7%	4.8%	10.0%
		% of Total	9.5%	.5%	10.0%
	Close	Count	167	28	195
		% within Proximity to Urban Open Space	85.6%	14.4%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	33.7%	44.4%	34.9%
		% of Total	29.9%	5.0%	34.9%
	Very Close	Count	54	7	61
		% within Proximity to Urban Open Space	88.5%	11.5%	100.0%
		% within Is there more crime committed on public open spaces than elsewhere	10.9%	11.1%	10.9%
	% of Total	9.7%	1.3%	10.9%	
Total	Count	496	63	559	
	% within Proximity to Urban Open Space	88.7%	11.3%	100.0%	
	% within Is there more crime committed on public open spaces than elsewhere	100.0%	100.0%	100.0%	
	% of Total	88.7%	11.3%	100.0%	

Table 107 Crosstabulation: Proximity to Urban Open Space * Is there more crime committed on public open spaces than elsewhere

5.3.2.5.1.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between perceptions of crime on open spaces and willingness to reside in close proximity to open spaces

H_a : There is a significant difference between perceptions of crime on open spaces and willingness to reside in close proximity to open spaces

Test : Chi-Square

Confidence Level : 95%

Significant Factor : .246 (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.147 ^a	3	.246
Likelihood Ratio	4.445	3	.217
Linear-by-Linear Association	1.224	1	.269
N of Valid Cases	559		

Table 108 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.31.)

The Pearson Chi-Square value for the association between the difference between perceptions of crime on open spaces and willingness to reside in close proximity to open spaces was obtained as 4 with 3 degrees of freedom and a Significance Probability of 0.25 which is higher than 0.1. Based on this evidence, it is clear that there is no association between the two variables. The test therefore fails to reject the null hypothesis.

5.3.2.6 OPEN SPACE SYMBOLISM

In a study that was conducted in Britain for different ethnic groups, it was proven that landscapes have a symbolic dimension and that some aspects of landscapes can be recognized as ‘familiar or alien, welcoming or excluding’ (Risbeth, 2001, p. 351) and they can also contribute to a sense of place (McPherson & Simpson, 2002, p. 61); (Cabe Space, 2005, p. 11). However, this tends to differ from one community to the other (Home, et al., 2010, p. 494). In this research, the respondents were asked to choose whether urban open space symbolized any of the attributes listed in the table 16 below. The majority of the respondents (76.3%) feel that open spaces are an opportunity for development. This is contrary to the main reasons why urban open spaces are provided in the first place. For example, nature only got an approval of 31.1% and it is one of the primary functions and advantages of urban open spaces.

Open space symbolism	
Opportunity for development	76.3
Threat/Danger	75.9
Health Hazard	72.6
Underutilised land	66.6
Township Identity	45.8
Segregation of distinct neighbourhoods	37.5
Nature	31.1
Freedom	21.5
Culture	16.6

Table 109: open space symbolism

The fact that health hazard (72.6%) is also seen as the third highest in urban open space symbols also raises a question of whether open spaces are actually acceptable in this community. It also reflects the state and nature of current open spaces in the township, they could be filthy and un-kept. There is also an element of danger (75.9%) associated with the open spaces, which would make people not to want to visit urban open spaces for safety reasons.

The different variables can be classified according to the following categories

1. Sociological aspects of symbolism
 - a. Danger:
 - b. Identity
 - c. Segregation
 - d. Freedom
 - e. Culture
2. Environmental aspects of symbolism
 - a. Health hazard
 - b. Nature
3. Developmental aspects of symbolism
 - a. Opportunity for development
 - b. Underutilized land

When the respondents see open spaces they look at them and see a sign of under-development (66.6%) but they also see them as an opportunity for development (76.3%). This is the reason why the majority of them would not object to the change of land use or the development of an open space into any other land use. This powerful

tool called public participation and planning principles that state that any development should be in the interest of the people means that it would be difficult to stop a change of land use process for open space in a community with the same characteristics as Galeshewe. This should however not be interpreted as if open spaces are not necessary in those areas as there are other socio-economic factors that could be responsible for the way they view urban open spaces in the township.

5.3.2.7 SUMMARY OF SOCIAL FACTORS THAT AFFECT THE FUNCTIONALITY OF URBAN OPEN SPACES

	Variable	Results	Significance of relationship	Strength of association
1.0	THE IMPACT OF GENDER ON THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE	More than half of both males (52%) and females (57%) prefer to far away and away from urban open spaces.	Insignificant	
2.0	THE IMPACT OF AGE ON THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE	The age group between 31 and 40 has the highest percentage group of respondents that prefer to stay far away from open spaces (55.3%) and this is closely followed by the over 60 category at 50.5%.	Significant	Weak
3.0	THE IMPACT OF HOUSEHOLD SIZE ON THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE	The majority of smaller households (60.7%) would prefer to stay far away from open spaces as compare to only 4.9% that want to stay very close to open spaces.	Significant	Weak
4.0	LEVEL OF EDUCATION AND THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE	In Galeshewe the majority (71.1%) of people that have no education prefer to stay far away from open space, whereas none (0.0%) of them prefer to reside very close to open spaces.	Insignificant	
5.0	CRIME AND THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE	The majority (44.8%) of those would responded with 'true' would also prefer to stay far away from open spaces, whereas only 10.9% of them would prefer to stay 'very close' to township open spaces.	Insignificant	
6.0	OPEN SPACE SYMBOLISM	The majority of the respondents (76.3%) feel that open spaces are an opportunity for development.	N/A	

Table 110: Summary of Social Factors that affect the functionality of urban open spaces

5.3.3 ECONOMIC & DEVELOPMENT FACTORS

There are many economic factors that affect the planning and development of open spaces in residential areas. Some of these factors include the affordability of the land; availability of suitable land at a reasonable price; household income to plan for the affordable use of the open spaces and many others. The purpose of this part of the research is to identify those economic or development factors that have a potential to affect the provision and maintenance of suitable open spaces in the township.

The discussion begins with the way the respondents understand the role of the open space and how they view the current open spaces in Galeshewe. There is also a view from the respondents that there are more than enough open spaces in the township and this has to do with the amount rather than the quality of the open spaces provided.

One of the questions that were asked from the respondents is whether they are satisfied or not with the current open spaces in Galeshewe and the answers to that were supported by various reasons, some of which are developmental in nature and are discussed below. Another aspect that is discussed herein is the reasons for staying in close proximity or far away from open spaces. The reasons also include developmental aspects of open spaces.

Lastly, the integration of other land uses that have been identified on some of the open spaces in Galeshewe is also discussed and so is the willingness to contribute to the maintenance of open spaces in the township.

5.3.3.1 THE PRIMARY PURPOSE OF OPEN SPACES: REASONS WHY THE MUNICIPALITY LEAVES OUT UNDEVELOPED OPEN SPACES

One of the challenges with planning and management of open spaces is the lack of knowledge about the real benefits of the open space, more especially the economic benefits. As shown in paragraphs (above) that dealt with the general knowledge of the respondents, it was clear that the respondents do not know the actual reasons why the

municipality leaves out undeveloped open spaces. However, if one takes out the 54.9% of respondents who said they have no idea, the majority (37.9%) of what is left is comprised of land uses that mean the development of an open space into another type of a land use.

Land uses that were identified include the following:

1. Housing (14.9%)
2. Business (2.6%)
3. Social Facility (4.3%)
4. Future development (unspecified) (14.9%)
5. Government and municipal buildings (1.2%)

The fact that the respondents have no idea what the purpose of an open space is means that development proposals on open spaces are likely to be welcome. Furthermore, the 37.9% of respondents, who believe that open spaces are reserved for future development, gives an assurance that once such a development is proposed therefore a considerable number of people would accept it. In a study done in the city of Warsaw in Poland, it was shown that public space continues to be displaced by other lucrative investment and developments even after all the efforts have been made to develop and maintain them, to educate and let everyone know of the many benefits that public space has (Szulczewska & Kaliszek, nd, p. 155).

5.3.3.2 DEVELOPMENT ASPECTS OF OPEN SPACE SYMBOLISM

When asked if open spaces symbolize an ‘opportunity for development’, 76.3% of the respondents answered true. For the question on whether open spaces symbolize ‘underutilized land’ 66.6% of the respondents also answered this question as true.

It is also clear therefore that the majority of respondents in both questions would welcome the development of the open spaces into any other land use.

5.3.3.3 ECONOMIC LAND USES AS OBSERVED ON TOWNSHIP OPEN SPACES

Respondents were asked to choose land uses they have observed in open spaces. Street vendors (70.4%) and informal markets (64.2%) scored the highest percentages from respondents that have observed them on urban open spaces.

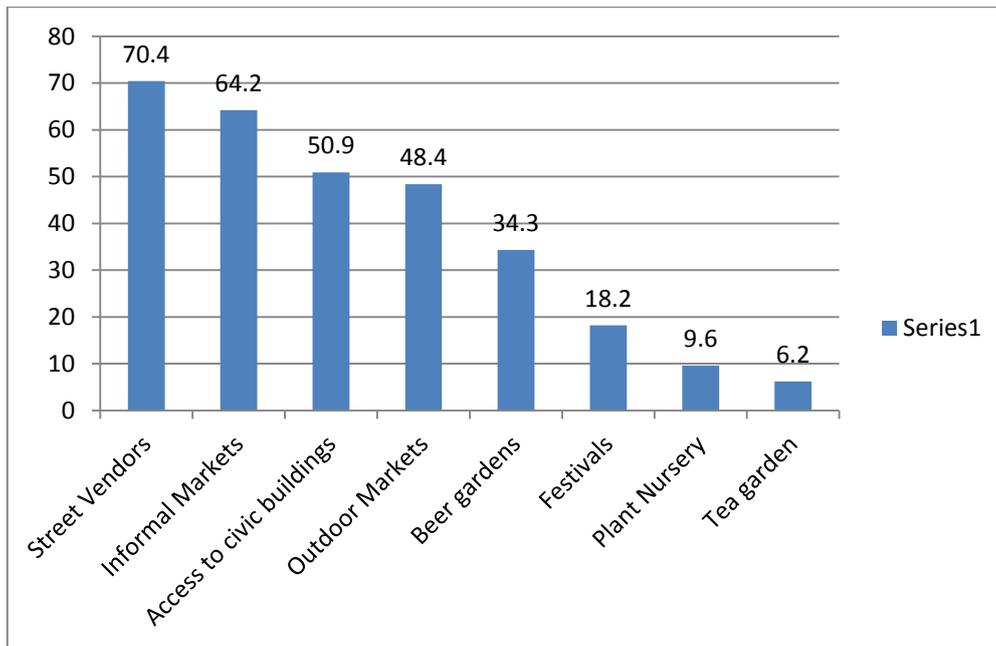


Figure 41: Economic land uses as observed on township open spaces

The issue of access as is also coming up at 50.9% and way above revenue generating open space land uses such as music festivals (18.2%), beer gardens (34.3%) and plant nurseries (9.6%). The challenge for planners is to understand how the community has used the open spaces and to see how to integrate those land uses as part of permitted land uses for open spaces.

5.3.3.4 FINANCIAL IMPLICATIONS FOR THE MAINTENANCE OF TOWNSHIP OPEN SPACES

The majority of the people in Galeshewe are poor but something has to be done about the maintenance of public open spaces. In some developed countries, such as Spain, people that reside in close proximity to urban open spaces are more willing to pay for urban open space provision than those who stay further away from urban open spaces

(Salazar & Menendez, 2007, p. 296). The majority of the respondents (68.9%) prefer that the maintenance of the open spaces should be a community responsibility and only 40.5% of the respondents are willing to pay for the maintenance of urban open space via municipal rates and taxes. The respondents were given three options to indicate the acceptability of each identified payment method.

Rates and taxes	40.5
Community responsibility	68.9
Private contractor	8.7

Table 111 Payment for the maintenance of urban open spaces

Privatization of the open spaces through a private contractor is also something that is not supported with only 8.7% support. Atkinson (2002, p.1830); Tang and Wong (2008) argue that financial deficiencies are the cause of the decline of public open space maintenance. In some cities, e.g., Missouri (USA), due to the lack of funding for maintenance public officials questioned the value that the community put on publicly owned trees.

5.3.3.5 PROPERTY IMPROVEMENT THROUGH GREENING

The contribution of each household in improving environmental quality by planting either flowers; trees or even vegetables was assessed based on what the respondents do with the spaces in both their backyards and/or front yards.

Use of space behind the house: Vegetable and Flower Garden

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid True	186	31.3	32.1	32.1
Valid False	393	66.1	67.9	100.0
Valid Total	579	97.3	100.0	
Missing 0	16	2.7		
Total	595	100.0		

Table 112: Use of space behind the house: Vegetable and Flower Garden

As seen in table 19 above, only 32.1% of the respondents have either vegetable or flower gardens behind their houses. A similar figure is also found with some (39.6%) of the households preferring to use the space in front of their houses to plant something.

Use of space in-front-of the house: Vegetable and Flower Garden					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	True	229	38.5	39.6	39.6
	False	349	58.7	60.4	100.0
	Total	578	97.1	100.0	
Missing	0	17	2.9		
Total		595	100.0		

Table 113: Use of space in-front of the house: Vegetable and Flower Garden

On average (combining the two percentages above), it means only 35.9% of the respondent's households do contribute to the township's environmental quality by planting either vegetables or flowers in their properties.

5.3.3.6 RELATIONSHIP BETWEEN HOUSEHOLD INCOME AND THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE

In all household income categories less than R10000pm, the majority (43.6% average) of respondents prefer to stay far away from open spaces but this figure almost doubles when it gets to the higher income categories at 80% for (Between R10001 and R15000pm) and 100% for over R15000pm. Cabe Space (2005, p. 11) believe that urban open spaces attract an economically active workforce and business; and thus promote inward investments. But in Galeshewe none of the respondents who earn above R10001 would prefer to stay close or even very close to open spaces. The highest percentage (14.3%) of respondents who would prefer to stay in very close proximity to open spaces is found within the group that earns less than R1200pm, whereas this percentage decreases as the household income increases.

			Proximity to Urban Open Space				Total
			Far Away	Away	Close	Very Close	
Household Income per month	Less than R1200	Count	106	22	81	35	244
		% within Household Income per month	43.4%	9.0%	33.2%	14.3%	100.0%
		% within Proximity to Urban Open Space	43.1%	40.0%	42.0%	57.4%	44.0%
	Between R1201 and R3000	Count	63	15	62	17	157
		% within Household Income per month	40.1%	9.6%	39.5%	10.8%	100.0%
		% within Proximity to Urban Open Space	25.6%	27.3%	32.1%	27.9%	28.3%
	Between R3001 and R5000	Count	47	10	31	7	95
		% within Household Income per month	49.5%	10.5%	32.6%	7.4%	100.0%
		% within Proximity to Urban Open Space	19.1%	18.2%	16.1%	11.5%	17.1%
	Between R5001 and R10000	Count	19	6	19	2	46
		% within Household Income per month	41.3%	13.0%	41.3%	4.3%	100.0%
		% within Proximity to Urban Open Space	7.7%	10.9%	9.8%	3.3%	8.3%
	Between R10001 and R15000	Count	8	2	0	0	10
		% within Household Income per month	80.0%	20.0%	0.0%	0.0%	100.0%
		% within Proximity to Urban Open Space	3.3%	3.6%	0.0%	0.0%	1.8%
	Over R15000	Count	3	0	0	0	3
		% within Household Income per month	100.0%	0.0%	0.0%	0.0%	100.0%
		% within Proximity to Urban Open Space	1.2%	0.0%	0.0%	0.0%	.5%
Total	Count	246	55	193	61	555	
	% within Household Income per month	44.3%	9.9%	34.8%	11.0%	100.0%	
	% within Proximity to Urban Open Space	100.0%	100.0%	100.0%	100.0%	100.0%	

Table 114 Household Income per month * Proximity to Urban Open Space

5.3.3.6.1 CHI-SQUARE TESTS

The chi-square test is in this case invalid due to the fact that the maximum percentage of cells that can be below expected counts is more than 20%. Based on this, one can neither reject nor fail to reject the null hypothesis.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.632 ^a	15	.118
Likelihood Ratio	26.908	15	.029
Linear-by-Linear Association	6.651	1	.010
N of Valid Cases	555		

Table 115 Chi-Square Tests (a. 9 cells (37.5%) have expected count less than 5. The minimum expected count is .30.)

5.3.3.7 STREET VENDORS AND RESIDING IN CLOSE PROXIMITY TO OPEN SPACE

Majority of respondents who have not seen street vendors on open spaces would prefer to stay far away (45.8%) and away (36.8%) from open spaces. These percentage figures are different for those who have seen street vendors on open spaces at 34.8% (far away) and 8.9% (away) respectively.

		Proximity to Urban Open Space				Total	
		Far Away	Away	Close	Very Close		
Economic Land uses observed on open spaces: Street vendors	True	Count	141	36	168	60	405
		% within Economic Land uses observed on open spaces: Street vendors	34.8%	8.9%	41.5%	14.8%	100.0%
		% within Proximity to Urban Open Space	54.2%	63.2%	85.3%	98.4%	70.4%
		% of Total	24.5%	6.3%	29.2%	10.4%	70.4%
	False	Count	119	21	29	1	170
		% within Economic Land uses observed on open spaces: Street vendors	70.0%	12.4%	17.1%	0.6%	100.0%
		% within Proximity to Urban Open Space	45.8%	36.8%	14.7%	1.6%	29.6%
		% of Total	20.7%	3.7%	5.0%	0.2%	29.6%
Total	Count	260	57	197	61	575	
	% within Economic Land uses observed on open spaces: Street vendors	45.2%	9.9%	34.3%	10.6%	100.0%	
	% within Proximity to Urban Open Space	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	45.2%	9.9%	34.3%	10.6%	100.0%	

Table 116: Economic Land uses observed on open spaces: Street vendors * Proximity to Urban Open Space Crosstabulation

5.3.3.7.1 CHI-SQUARE TESTS

H₀ : There is not a significant difference between economic land uses (Street Vendors) as observed on township open spaces and willingness to reside in close proximity to open space

H_a : There is a significant difference between economic land uses (Street Vendors) as observed on township open spaces and willingness to reside in close proximity to open space

Test : Chi-Square

Confidence Level : 95%

Significant Factor : .000 (Pearson Chi-Square)

Conclusion : Reject null hypothesis: There is a significant difference between economic land uses (Street Vendors) as observed on township open spaces and willingness to reside in close proximity to open space

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	77.923 ^a	3	.000	.000 ^b	.000	.000			
Likelihood Ratio	89.776	3	.000	.000 ^b	.000	.000			
Fisher's Exact Test	87.176			.000 ^b	.000	.000			
Linear-by-Linear Association	76.694 ^c	1	.000	.000 ^b	.000	.000	.000 ^b	.000	.000
N of Valid Cases	575								

Table 117 Chi-Square Tests (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 16.85. b. Based on 10000 sampled tables with starting seed 1875265688. c. The standardized statistic is -8.758.)

5.3.3.7.2 UNCERTAINTY CO-EFFICIENT

The value 0.129 that is obtained when ‘Economic Land uses observed on open spaces: Street vendors’ is known indicates that there is a 12.9% reduction in error in predicting the value of the ‘willingness to stay in close proximity to urban open space’. However, the symmetric value of 0.01 which is closer to 0 indicates a small/weak reduction of 1% in row category (willingness to stay in close proximity to urban open space) when the column category is known (Economic Land uses observed on open spaces: Street vendors).

		Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.	Monte Carlo Sig.		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Nominal by Nominal	Symmetric	.087	.015	5.542	.000 ^c	.000 ^d	.000	.000
	Economic Land uses observed on open spaces: Street vendors	.129	.023	5.542	.000 ^c	.000 ^d	.000	.000
	Dependent Economic Land uses observed on open spaces: Street vendors	.065	.012	5.542	.000 ^c	.000 ^d	.000	.000

Table 118 Directional Measures (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Likelihood ratio chi-square probability. d. Based on 10000 sampled tables with starting seed 1875265688.)

5.3.3.8 SUMMARY OF ECONOMIC AND DEVELOPMENT FACTORS THAT AFFECT THE FUNCTIONALITY OF URBAN OPEN SPACES

	Variable	Results	Significance of relationship	Strength of association	Test for significance
1.0	Lack of knowledge about the purpose of open space provision	if one takes out the 54.9% of respondents who said they have no idea, the majority (37.9%) of what is left is comprised of land uses that mean the development of an open space into another type of a land use	N/A	N/A	N/A
2.0	DEVELOPMENT ASPECTS OF OPEN SPACE SYMBOLISM	For the question on whether open spaces symbolize 'underutilized land' 66.6% of the respondents also answered this question as true.	N/A	N/A	N/A
3.0	ECONOMIC LAND USES AS OBSERVED ON TOWNSHIP OPEN SPACES	Street vendors (70.4%) and informal markets (64.2%) scored the highest percentages from respondents that have observed them on urban open spaces	N/A	N/A	N/A
4.0	FINANCIAL IMPLICATIONS FOR THE MAINTENANCE OF TOWNSHIP OPEN SPACES	only 40.5% of the people are willing to pay for this via municipal rates and taxes.	N/A	N/A	N/A
5.0	PROPERTY IMPROVEMENT THROUGH GREENING	only 35.9% of the respondent's households do contribute to the township's environmental quality by planting either vegetables or flowers in their properties	N/A	N/A	N/A
6.0	RELATIONSHIP BETWEEN HOUSEHOLD INCOME AND THE CHOICE TO RESIDE IN CLOSE PROXIMITY TO OPEN SPACE	In all household income categories less than R10000pm, the majority (43.6% average) of respondents prefer to stay far away from open spaces but this figure almost doubles when it gets to the higher income categories at 80% for (Between R10001 and R15000pm) and 100% for over R15000pm	Invalid	N/A	chi-square
7.0	STREET VENDORS AND RESIDING IN CLOSE PROXIMITY TO OPEN SPACE	Majority of respondents who have not seen street vendors on open spaces would prefer to stay far away (45.8%) and away (36.8%) from open spaces. These percentage figures are different for those who have seen street vendors on open spaces at 34.8% (far away) and 8.9% (away) respectively.	Significant	weak	chi-square

Table 119: Summary of Economic and development factors that affect the functionality of urban open spaces

5.4.4 PLANNING AND DESIGN ISSUES

Things have changed from the way open space planning was done in the early 1950s to the 1970s (open-space planning standards, i.e., Ha/1000 people) to environmentalism. (Beer, Delshammar, & Schildwacht, 2003, p. 132). Issues such as accessibility (Witten, et al., 2008, p. 299); (Lotfi & Koohsari, 2009, p. 133); functionality (Volker, n.d., p. 1) and usability (Giles-Corti, et al., 2005, p. 165), are receiving a lot of attention from

researchers. However, the physical planning standards are still mentioned by some, e.g., (Morancho, 2003, p. 40) wrote “...every 100m further away from a green area means a drop of 300,000pesetas approximately (1800) in the housing price.”

5.4.4.1 ACCESS AND PROXIMITY TO TOWNSHIP OPEN SPACE

The majority (64.2%) of the people use the open spaces in the township and they actually prefer those open spaces in the township than in Kimberly. The availability of easily accessible and aesthetically pleasing urban open spaces is important in improving urban liveability (Van Herzele & Wiedemann, 2003, pp. 109-126). However, this could mean that they have more attachment with the area than the neighbouring public open spaces in Kimberly. The remaining 35.8% is split between the meagre 13.8% people that prefer Kimberly open spaces and those that did not answer the question (22%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Town (Kimberly)	82	13.8	17.7	17.7
	Galeshewe	382	64.2	82.3	100.0
	Total	464	78.0	100.0	
Missing	0	131	22.0		
Total		595	100.0		

Table 120 Location of favourite open space

With about 75.4 % of respondents who are not satisfied with the current state of their open spaces and yet the research shows a 64.2% preference for township open spaces, there is a possibility of an antecedent variable that influences their choice.

The respondents were asked to choose whether they would prefer to stay in the categories ranging from ‘very far’ to ‘very close’ to open spaces. The modal category ‘far away’ (45.2%) represents the central tendency in the distribution. The second most percentage lies with the category ‘close’ which represents 34.3% of the respondents (see table 29 below).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Far Away	260	43.7	45.2	45.2
	Away	57	9.6	9.9	55.1
	Close	197	33.1	34.3	89.4
	Very Close	61	10.3	10.6	100.0
	Total	575	96.6	100.0	
Missing	0	20	3.4		
Total		595	100.0		

Table 121 : Proximity to Urban Open Space: Mode (far away); variation ratio (0.548)

5.4.4.2 RELATIONSHIP BETWEEN OPEN SPACE USER SATISFACTION AND WILLINGNESS TO STAY IN CLOSE PROXIMITY TO OPEN SPACES

The majority of the respondents (54.9%) do not want to stay in close proximity to urban open spaces and about 75.4% of the respondents are also not satisfied with the current public open spaces in Galeshewe. Only 15.3% of the people who are satisfied with open spaces are willing to stay very close to an urban open space in Galeshewe. This is a very small percentage as compare to the 48.2% of those not satisfied with public open spaces and who would prefer to stay far away from urban open spaces. The combined percentages (59.4%) of those who are not satisfied prefer to stay away (11.2%) and far away (48.2%) from public open spaces. This percentage is similar to the 59.1% of those who want to stay close (43.8%) and very close (15.3%) are those that are satisfied with the current open spaces. This shows a relationship between satisfaction and the willingness to stay in close proximity to open spaces. But what must be kept in mind is that only 24.6% of the respondents are satisfied with the current public open spaces in Galeshewe.

		Satisfaction with current POS		Total	
		Yes	No		
Proximity to Urban Open Space	Far Away	Count	48	203	251
		% within Proximity to Urban Open Space	19.1%	80.9%	100.0%
		% within Satisfaction with current POS	35.0%	48.2%	45.0%
		% of Total	8.6%	36.4%	45.0%
	Away	Count	8	47	55
		% within Proximity to Urban Open Space	14.5%	85.5%	100.0%
		% within Satisfaction with current POS	5.8%	11.2%	9.9%
		% of Total	1.4%	8.4%	9.9%
	Close	Count	60	132	192
		% within Proximity to Urban Open Space	31.2%	68.8%	100.0%
		% within Satisfaction with current POS	43.8%	31.4%	34.4%
		% of Total	10.8%	23.7%	34.4%
Very Close	Count	21	39	60	
	% within Proximity to Urban Open Space	35.0%	65.0%	100.0%	
	% within Satisfaction with current POS	15.3%	9.3%	10.8%	
	% of Total	3.8%	7.0%	10.8%	
Total	Count	137	421	558	
	% within Proximity to Urban Open Space	24.6%	75.4%	100.0%	
	% within Satisfaction with current POS	100.0%	100.0%	100.0%	
	% of Total	24.6%	75.4%	100.0%	

Table 122: Cross-tabulation: Proximity to Urban Open Space * Satisfaction with current POS

5.4.4.2.1 CHI-SQUARE TESTS

H ₀	: There is not a significant difference between open space user satisfaction and the willingness to stay in close proximity to urban open space
H _a	: There is a significant difference between open space user satisfaction and the willingness to stay in close proximity to urban open space
Test	: Chi-Square
Confidence Level	: 95%
Significant Factor	: .002 (Pearson Chi-Square)

The minimum expected count of 13.50 shown in table 50 proves that it is safe to continue with the analysis of the Chi-Square result. The Pearson Chi-Square value for the association between proximity to urban open space use and satisfaction with current open spaces was obtained as 15.2 with 3 degrees of freedom and a Significance Probability of 0.002 which is a highly significant result at the conventional level of 5%.

This mean that at the confidence interval of 95 we can be sure that 95% of the time, there will be an association between satisfaction and proximity to urban open space use. Based on this evidence, it is clear that there is a strong association between proximity to urban open space use and satisfaction with current public open spaces in Galeshewe. The null hypothesis is therefore rejected.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.152 ^a	3	.002
Likelihood Ratio	15.220	3	.002
Linear-by-Linear Association	12.133	1	.000
N of Valid Cases	558		

Table 123: N=558 (a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.50.)

5.4.4.2.2 CRAMER'S V TESTS

The Cramer's V test value of 0.2 is close to 0 and it indicates a weak association between the two variables, proximity to open spaces and satisfaction with the current open spaces in Galeshewe.

	Value	Approx. Sig.
Nominal by Nominal Phi	.165	.002
Cramer's V	.165	.002
Contingency Coefficient	.163	.002
N of Valid Cases	558	

Table 124: N=558 (a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis)

5.4.4.3 RELATIONSHIP BETWEEN FREQUENCY OF OPEN SPACE USE AND PROXIMITY TO OPEN SPACES

47.3% of people that prefer to stay 'far away' from open spaces never use urban open spaces in Galeshewe as compared to only 29.5% of people who want to stay very close

to open spaces. The majority of people (55.7%) who never use open spaces prefer to stay 'far away' from them as compared to the 8.1% that prefers to stay very close to urban open spaces. Of those who use open spaces on a daily basis, their majority of 9 (39.1%) prefer to stay far away from open spaces.

About 34 (60.7%) of the respondents that prefer to stay away from urban open spaces never use open spaces. Only 46 (20.8%) of those who never use open spaces prefer to stay close to urban open spaces in Galeshewe. Only 17.4% of those who use open spaces on a daily basis prefer to stay very close to urban open spaces in Galeshewe. These are the people who have better knowledge of the urban open space and who have experienced the use of urban open spaces in Galeshewe. This indicates a general preference to stay far away from urban open spaces by both groups that never use open spaces and those that use them on a daily basis.

		Frequency of Open Space Use					Total	
		Never	Daily	Once a week	More than once a week	Once a month		
Proximity to Urban Open Space	Far Away	Count	123	9	45	61	22	260
		% within Proximity to Urban Open Space	47.3%	3.5%	17.3%	23.5%	8.5%	100.0%
		% within Frequency of Open Space Use	55.7%	39.1%	36.0%	49.6%	27.5%	45.5%
		% of Total	21.5%	1.6%	7.9%	10.7%	3.8%	45.5%
	Away	Count	34	3	13	4	2	56
		% within Proximity to Urban Open Space	60.7%	5.4%	23.2%	7.1%	3.6%	100.0%
		% within Frequency of Open Space Use	15.4%	13.0%	10.4%	3.3%	2.5%	9.8%
		% of Total	5.9%	0.5%	2.3%	0.7%	0.3%	9.8%
	Close	Count	46	7	57	54	31	195
		% within Proximity to Urban Open Space	23.6%	3.6%	29.2%	27.7%	15.9%	100.0%
		% within Frequency of Open Space Use	20.8%	30.4%	45.6%	43.9%	38.8%	34.1%
		% of Total	8.0%	1.2%	10.0%	9.4%	5.4%	34.1%
	Very Close	Count	18	4	10	4	25	61
		% within Proximity to Urban Open Space	29.5%	6.6%	16.4%	6.6%	41.0%	100.0%
		% within Frequency of Open Space Use	8.1%	17.4%	8.0%	3.3%	31.2%	10.7%
% of Total		3.1%	0.7%	1.7%	0.7%	4.4%	10.7%	
Total	Count	221	23	125	123	80	572	
	% within Proximity to Urban Open Space	38.6%	4.0%	21.9%	21.5%	14.0%	100.0%	
	% within Frequency of Open Space Use	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	38.6%	4.0%	21.9%	21.5%	14.0%	100.0%	

Table 125: Crosstab: Proximity to Urban Open Space * Frequency of Open Space Use Crosstabulation

5.4.4.3.1 SPEARMAN'S RANK ORDER CORRELATION

A Spearman's Rank Order correlation was obtained in order to determine the relationship between 572 respondents' Frequency of open space use and Proximity to urban open space. There was very low positive correlation between the two variables and it was also proven to be statistically significant at the 0.01 level of significance ($r_s(8) = .217, P = .000$).

		Frequency of Open Space Use	Proximity to Urban Open Space
Spearman's rho	Frequency of Open Space Use	Correlation Coefficient	1.000
		Sig. (2-tailed)	.000
		N	572
	Proximity to Urban Open Space	Correlation Coefficient	.217**
	Sig. (2-tailed)	.000	1.000
	N	572	575

Table 126 Correlations (**. Correlation is significant at the 0.01 level (2-tailed).)

5.4.4.4 SUMMARY OF PLANNING FACTORS THAT AFFECT THE FUNCTIONALITY OF URBAN OPEN SPACES IN GALESHEWE

	Variable	Results	Significance of relationship	Strength of association	Test for significance
1.0	ACCESS and proximity to township Open space	The majority (64.2%) of the people uses the open spaces in the township and they actually prefer those open spaces in the township than in Kimberly	N/A		
2.0	Relationship between open space user satisfaction and willingness to stay in close proximity to open spaces	There is a significant difference between open space user satisfaction and the willingness to stay in close proximity to urban open space	Significant	Weak	Chi-square
3.0	Relationship between Frequency of open space use and proximity to open spaces	There was very low positive correlation between the two variables and it was also proven to be statistically significant at the 0.01 level of significance	Significant	Weak	Spearman's rank order correlation

Table 127: Summary of planning factors that affect the functionality of urban open spaces in Galeshewe

5.5 CONCLUSION

The aim of this chapter was to provide a quantitative data analysis for the data that was collected during the survey. Several methods of analysis are used in order to present the findings. Due to the nature of the data collected being nominal and ordinal variables, statistical analysis methods such as the mode; variance and cross-tabulations have been used to describe frequency distributions for certain variables including the manner in which different variables relate to one another.

For nominal variables, Chi-square statistics were used to assess whether patterns that are found in the sample data are strong enough to generalise on the population from which the sample data was drawn, i.e., tests of significance. Once the relationship between two variables was proved to be significant at an identified significance level, then the strength of such a relationship would be measured using the following statistics: Uncertainty Co-efficient, Contingency co-efficient and the Cramer's V statistic. Spearman's Rank Order correlation was used to measure the strength and direction on variables of ordinal scales.

None of the tests for the significance and strength of relationship between frequency of urban open space use and several variables that were identified, (i.e., gender; age; household size; level of education; crime on urban open spaces; environmental pollution; township atmosphere; quality of vegetation; household income; and business uses on urban open spaces) were strong enough to be of statistical significance. Whereas the same results were observed for the relationship between satisfaction with current urban open spaces and the variables mentioned above. For the factors that affect the functionality of urban open spaces in Galeshewe Township, all the relationships that were tested came out either insignificance or weak.

CHAPTER 6

DISCUSSION OF KEY FINDINGS

6.1 INTRODUCTION TO CHAPTER 6

The purpose of this chapter is to provide an evaluation of the implications of the data in relation to the research questions on how to maximise the impact of urban open space in the revitalisation of previously neglected townships. The data is divided into three major sections that answer the following research questions:

1. What is the contextual meaning of the urban open space concept in the townships?
2. What are the perceptions of the Galeshewe community regarding urban open space usage in their townships?
3. What are the most critical factors that affect the functionality of urban open spaces in Galeshewe?

The approach employed to answer the questions is the use of empirical evidence and interpretation of data against existing literature and the research hypothesis. In order to analyse the data further, the findings are grouped together in tables in order to simplify the findings before analysis. These tables serve as a synopsis of what was discovered in the previous two chapters.

6.2 CONTEXTUAL MEANING OF THE PUBLIC OPEN SPACE CONCEPT

During the 19th Century when open space planning began in its current form, there was a particular context, referred as 'city of dreadful night' (1880-1900), (Hall, 2002, p. 14), which was characterised by smoke, raw sewage, poverty, housing shortages and overcrowding. There was a short supply of greenery and open spaces during and after the industrial revolution (Daniels, 2009, p. 178). This era saw a need for the provision of public open spaces in order to improve the quality of life in cities.

The question that one has to ask at this stage is the context under which the very first urban open space provision in Galeshewe Township was provided? An urban planner will argue that there is no need to wait for similar problems to occur before introducing urban open spaces and the answer would also be based on the fact that urban open space is a community need. Is the answer not rather based on urban planning theories and the fact that planning is a profession with standards such as urban open spaces? This research does not answer that question; the focus is rather on the context.

Some of the authors that are calling for a change in the way planning is conducted, are doing so mostly because of the changing environment of urban areas, e.g., (Watson, 2009); (Campbell, 1996); (du Plessis, 2009); (UN Habitat, 2009a); (Todes, 2011, p. 117). Galeshewe resembles some of the issues identified by Watson (2009, p 2259) and UN Habitat (2009a, p. 1) i.e., “urban poverty; inequalities; informality; rapid urbanization and spatial fragmentation”. Other authors, have additional reasons why planning needs to respect the different contexts found in different cities, e.g., (Yokohari, et al., 2000, p. 159) also called for a planning approach that respects the historical landscape of Asian cities, arguing that the application of zoning and greenbelts concepts failed to control urban growth in Asian mega-cities mostly due to the fact that it was not the appropriate method for Asian cities.



Figure 42: A park designed and landscaped through the efforts of the urban renewal programme of Galeshewe Township.

Source (Author, 2013)

The context of this study needs to be defined in such a way that it reflects the urban landscape and how the community relates to it; the people and their level of

development. The average household in Galeshewe is relatively young and of a working age group of less than 65. However, the majority of people that tend to live in Galeshewe are relatively poor (i.e., at R40/day or 4.7USD/Day: Jan 2013 rates) and uneducated (i.e., only 20% has more than Grade 12 education) Tswana speaking people. If one is to believe those that are calling for a change in the way planning is done, therefore, for open space planning should reflect the needs of these people.

The planning context for urban open space planning in Galeshewe cannot be defined only in terms of only the demographic profile, the residents' general knowledge and what they perceive as needs. It is much more than that, it includes the existence of planning legislation; the will of the people and how they have grown to react to the existing urban open space that surrounds them is of paramount importance. To answer this difficult question, one has to look at the legislative framework for urban open space planning in Galeshewe; the culture of the people; poverty; illegal occupation of land and the economic benefits of urban open spaces. These issues are not exhaustive, but within this scope of work they provide a view of the township and the context within which this planning is taking place. The following table provides a summary of the findings which are not necessarily discussed in detail in this chapter.

	Variable	Type of analysis	Results	Strength/Weakness
1.0	Planning Framework	Literature Review	Planning Principles	Sets development principles, integration and sustainable development
1.1	Planning Legislation	Literature Review	National & Provincial Legislation	Not specific
1.2	Open space policies	Literature Review	Municipal policies and plans	Inconsistent
2.0	Demographic Profile	Survey		
2.1	Gender	Frequency counts	More females than males in the sample	Reflects the disparity in open space use by gender
2.2	Age group	Frequency counts	Relatively young community. 83% of the people are less than the age of 60	Majority of the people are of working age
2.3	Income levels	Frequency counts	44% of the people earn less than R40/day whereas only 2.3% of the people earn more than R333.33 per day	For a community of 3-5 people per household, that means an average of R10/day. Approximately \$1USD/Day
2.4	Source of income	Frequency counts	42% of the people live off social grants and/or pension, whereas only 37.9% have full time jobs	Biggest contributor is social grants
2.5	Education Profile	Frequency counts	58.2% have secondary school while only 21% have more than that	Shortage of skills to have a meaningful contribution to open space planning
2.6	Household Size	Frequency counts	43.5% between 3 and 5; 34.3% more than 5 members	Determines the number of people per hectare, i.e. Density
2.7	Land Tenure	Frequency counts	94.6% Full title	Survey excluded informal settlements
2.8	Culture	Frequency counts	Homogeneous. 71% are Tswana; Followed by Afrikaans at 18.1%	Limits variety of open space needs
3.0	Familiarity with urban open space policies	Frequency counts	91.4% of respondents do not know the exact purpose of urban open spaces	Detrimental in having a meaningful contribution to open space planning
4.0	Community needs for urban open space	Frequency counts	62.4% of respondents believe there are enough open spaces in Galeshewe, across all types	Do not see the need for variety of urban open spaces
5.0	Size of the area	Mapping	17.75 km ²	Small with an average of 5km walking radius

Table 128: The Analysis of contextual variables that shape the contextual meaning of urban open space planning in Galeshewe

Source (Author, 2013)

6.2.1 SOCIAL CONTEXT

The social context of Galeshewe, as seen from the table above, is discussed under the following variables, housing; legislation; urban poverty and the culture of the people. While there is a need for housing; the impact of planning and environmental legislation on the acquisition of urban open spaces cannot be overlooked. The type of housing that

is provided in Galeshewe is also for a certain income group with a specific culture and these issues are discussed below.

6.2.1.1 POPULATION DENSITY AND HOUSING

All these factors create the context and represent a combination of issues that make Galeshewe what it is. The planner faces a tough battle if the intention is to develop the land faster than one intends to develop the community in other contexts.

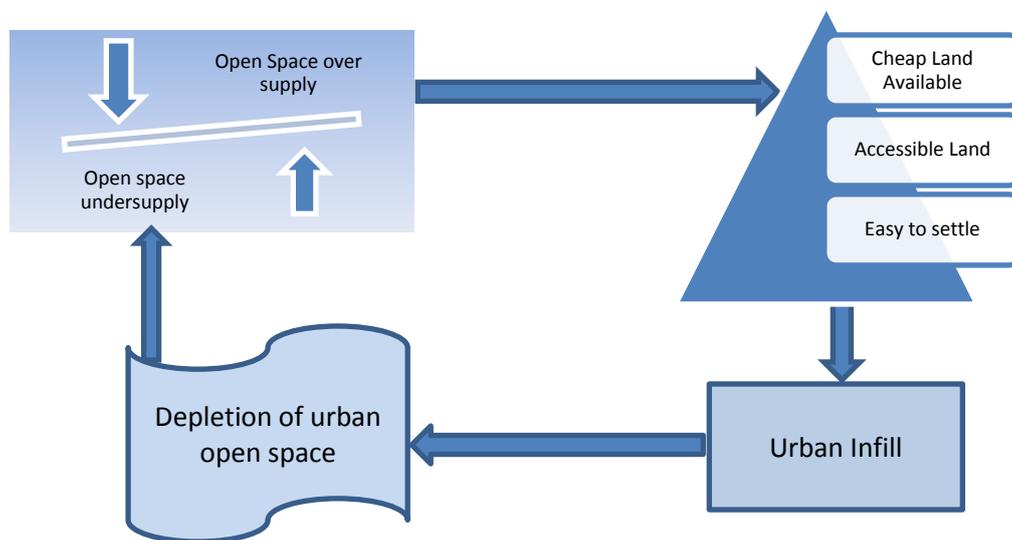


Figure 43: Demand and supply of urban open spaces in Galeshewe

Source: (Author, 2013)

The urban planner's job becomes even more difficult in a changing landscape that needs to be understood with its inhabitants as they change with time. The typologies of urban open spaces that have been observed in Galeshewe do not seem to have an immediate impact on the short term needs of the poor and destitute township dwellers. Their basic needs include negotiating a way of survival every-day and none of the urban open spaces are an immediate answer to this need. One of those needs is shelter and hence, urban open spaces are often taken over by illegal squatters and this has also been observed in Galeshewe (See Appendix A).

6.2.1.2 LEGISLATIVE FRAMEWORK

Firstly, the Republic of South Africa has an existing planning framework (albeit not specific) for urban open space planning. This planning framework sets the tone for a planning approach that reflects the political ideology that governs society (van Wyk, 2012, p. 25). This political ideology is that of democracy and inclusiveness in decision making. Urban open space planning in the township has to be in line with these views.

The principles that are set by the national planning framework are then translated into legislation. In Galeshewe, there is a problem with legislation. In the discussion of the history of the formation and establishment of the different general plans in Galeshewe, it was revealed that township establishments have been done over many decades using different pieces of legislation that had motives entrenched in racial segregation. This is further complicated by the fact that land use and land occupation by Black people was always something of an on-going experiment through various regimes and it revolved around the issue of land tenure. This research shows that 95% of the people in Galeshewe have full security of tenure on their properties and that almost 90% of them have lived in Galeshewe Township for over five years. But why are they not using urban open spaces effectively then?

		Time (in years) stayed			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 6months	14	2.4	2.5	2.5
	Between 6 and 12 months	5	.8	.9	3.3
	Between 1-2 yrs.	4	.7	.7	4.0
	Between 2-5 yrs.	30	5.0	5.3	9.3
	More than 5yrs	515	86.6	90.7	100.0
	Total	568	95.5	100.0	
Missing	0	27	4.5		
	Total	595	100.0		

Table 129: Respondent's Period of stay in Galeshewe

One point that is missing in this discussion is whether township development, with the historical focus of labour force provision, had an impact in the way Black people in the townships used urban open spaces, for the purposes which the open spaces were provided for. It is shown in the case of England that, originally parks were designed and used to manipulate labour force and later youth delinquency. In the pre-democratic

South Africa, was there trust between the municipal council; the planners; and the community? Secondly, does this (assumed lack of trust) have any ramifications in the way township dwellers used township open spaces?

Whereas this study has not gone in detail on the impact of the historical development of the Galeshewe Township and how people reacted to the changing landscape that has been engraved in the manner in which they view urban open spaces, it remains an important (and a missing) link in this analysis. Even though there is a change (Land Use Management Bill) in the way in which township land and land use will be governed in the future, it cannot be expected that due to a change in legislation, people will automatically change the way they react to township open spaces. This is bound to take a lot of time and training and a lot of negotiations and persuasive planning in order to deliver an urban open space product that has meaning to the community of Galeshewe.

6.2.1.3 URBAN POVERTY

The government of South Africa uses US\$2 (i.e., R17.18 on 10 Jan 2013) a day per person as the official poverty line (Republic of South Africa: National Planning Commission, 2013). This puts 48% of the people in South Africa below poverty line by 2008 and this figure is believed to be higher for women and it is also not stratified in terms of race and location. In Galeshewe, an average household size of 4 members, earns an amount of R10/person per day. This represents 44.1% of households (that earn below R1201 per month) and it is R7.18 below the poverty line. This category of families can be classified as being destitute. The next category of households with income of less than R3001 per month, are also not too far from the poverty line at R25/person per day. This represents 72.3% of the population living at a brink of poverty. The question planners need to ask themselves is how does the provision/planning of a park or any urban open space respond to the needs of a community of destitute people living under the poverty line? Can it be the same as a community that is more fortunate and wealthier? An educated guess is 'No', but is there

a separate piece of legislation that caters for this problem e.g., use of land for urban agriculture to supplement livelihoods?

6.2.1.4 CULTURE

If one combines the mode plus the fact that the rest of the answers do not give the correct purpose of open spaces in Galeshewe, it shows that 91.4% of the respondents do not know the purpose of open spaces. This is further supported by the meagre number of those who chose “park” (3.1%); social facility (4.3%) and sports facilities (1.2%). More than 90% of the people do not know why the municipality leaves out undeveloped open spaces. If one does not know something through education, which is low in Galeshewe, one learns that through experience and a way of living (i.e., culture). From the results of the survey, nothing is pointing to the side of open space use for cultural purposes.

In Britain for different ethnic groups, it was proven that landscapes have a symbolic dimension and that some aspects of landscapes can be recognized as ‘familiar or alien, welcoming or excluding’. This is in line with the notion that the physical environment may have positive or negative roles in people’s perceptions of everyday life (Risbeth, 2001, p. 351). Urban open spaces are also known to increase a sense of place in an area (McPherson & Simpson, 2002, p. 61). But when the respondents in Galeshewe were given a list of options to choose from, in order to answer a question on what urban open spaces symbolized to them, only 16.6% of the respondents thought that open spaces had anything to do with their culture.

Open space symbolism	
Opportunity for development	76.3
Threat/Danger	75.9
Health Hazard	72.6
Underutilised land	66.6
Township Identity	45.8
Segregation of distinct neighbourhoods	37.5
Nature	31.1
Freedom	21.5
Culture	16.6

Table 130: open space symbolism

CABE SPACE (2005, p. 9) believes that a good quality open space provides a **safe** area for people to meet and it also provides an opportunity for free association amongst people; cultural and historical integration with the past; promote a sense of place and identity (Home, et al., 2010, p. 494); whilst also increasing opportunities for **community events** (Lee, 2008, p. 9).

It is also believed there is a clear distinction between preferences of urban landscape for different cultural groups. More than two thirds of the community of Galeshewe are from the Tswana tribes of Southern Africa. As much as this can limit the variety of open space needs, it is not clear if the other groups in Galeshewe have different open space needs than BaTswana. What is also not clear in this discussion is the way of living that is passed from one generation to the other in African culture. It would be interesting to see how the BaTswana people in general, use open spaces and whether being 'urbanised' has shifted the cultural mindset of the township dwellers. This would provide a better understanding of the open space needs of the community based on their culture

6.2.2 ECOLOGIC CONTEXT: RELATIONSHIP BETWEEN MAN AND THE ECOLOGICAL ENVIRONMENT

There is a general belief that urban open spaces can improve the quality of city-life by reducing city noise and cleansing the city's atmosphere (Lam, et al., 2005, p. 55); (City of Burlington, VT, 2000, pp. 8-14); (Gomez, et al., 2004); (Gomez, et al., 2001). It is rather difficult therefore to argue against the ecological value of urban open spaces in Galeshewe. As mentioned before, ecological benefits of open spaces are those functions of open space that increase the biodiversity and conservation of natural resources that are necessary to sustain human life and the lives of all living organisms that occur naturally on earth.

Against the recommendations of Lofvenhaft, et al., (2002, p. 223), no biotopes were identified in the study of Galeshewe. Cornelis & Hermy (2004, p. 385) also recommends that the maintenance of different kinds of species and habitats should be studied in

order to measure the real ecological value of urban open spaces, but this research did not cater for these needs. It is also clear though from the work of (Bromilow, 2001), that not all vegetation is good for Galeshewe. Some plants are weeds, i.e., meaning they are nuisances and unwanted at a particular place and time, for whatever ecological reasons. This is important in understanding the underlying ecological principles of biodiversity and urban planning.

Nonetheless, there is enough evidence to suggest that city dwellers still need contact with nature (Home, et al., 2010, p. 494). Galeshewe is not a city and it is small enough to reach the outskirts of the urban area within a short period of time. Except for the eastern side of Galeshewe, on the way to Kimberly CBD, contact with nature is within 30 minute's walk from Galeshewe (i.e., the widest width of Galeshewe township averages 5km); see Appendix A. Contact with nature is therefore not so difficult to achieve from a distance point of view. However, the challenge is the accessibility and the quality of the natural environment that raises concerns.

Due to the history of discrimination in Galeshewe Township, one would assume that privately owned land is not legally accessible to the public and therefore there is a need for open spaces that satisfy public needs.

The majority of respondents (48.6%) who think that the quality of vegetation in the township is normal, 'never' use open spaces. This is 20.6 percentage points higher than respondents who think township vegetation is very bad (24%) and only 13.5 percentage points higher than the respondents who see township vegetation as being very good (35.1%). One would expect to have a higher percentage of respondents who never use open spaces from those respondents that think that township vegetation is very bad. Only 16.2% of those who 'never' use open space think that township vegetation is 'very bad'. This suggests that the quality of vegetation may not be the determining factor for their decision 'never' to use urban open space in Galeshewe.

On the other hand, 47.1% (the majority) of those who are satisfied with the current open spaces think that the quality of township vegetation is very bad. While only 5.8% of those who are satisfied think that township vegetation is very good. The question that

needs to be asked here is what exactly satisfies these people, when they themselves think that the vegetation quality is very bad? These two statements suggest that the satisfaction of the respondents has little to do with the quality of vegetation in the township.

In both these examples that have to do with frequency of open space use and satisfaction with current open spaces, it is clear that the relationship between the respondents and their vegetation is very weak. This is in-line with the results of the Galeshewe Household Survey of 2009. With that in mind, the ecological value of open spaces was valued less compared to other environmental priorities such as sports and recreation (Sol Plaatje Municipality, 2009a, p. 21).

6.2.3 ECONOMIC CONTEXT

The question that needs to be asked is, does urban open space increase property values in Galeshewe? This question is asked in order to reveal one of the worst assumptions about the value of urban open spaces when planned out of context.

It has been shown, that urban open spaces attract an economically active workforce. This work force can be classified as young people; employable and skilled. This is represented by people who are working and have full time jobs or are in business. Only 21% of the households were reported to have someone with some form of a tertiary education, anything beyond matric. The majority of the people (42%) live off social grants and/or pension whereas only 37.9% of the respondents have full time jobs. This does not look like a community that attracts top earners; the educated and most importantly it also does not look like a community that attracts an economically active workforce. Including the properties that are provided by the state, this brings the issue of property values and the fact that it depends on people's needs; values; and affordability. Only 2.3% of the people in Galeshewe earn more than R10, 000 per month. This salary level indicates that as soon as people can afford to stay elsewhere, they would leave the place.

CABE SPACE (2005, p. 12) reports a positive relationship between the amount of urban open space in the area and the average property price. When asked if there was enough open space in Galeshewe, 62% of the respondents said 'yes' based on visibility of urban open spaces without assessing the quality. A community that knows and believes the findings from CABE SPACE would have obviously opted for more open space as this would result in a financial gain for them, but in Galeshewe the open space represents something totally different.

Furthermore there is also a need to check the context of the area and the impact urban open spaces have on prices across the different types of housing. Galeshewe, has mostly low end price type of properties, but do they increase in value due to the presence of open spaces? Dehring & Dunse (2006 , p. 553) argued that in Aberdeen, Scotland, the price of higher density properties (flats) would increase with closer proximity to urban open space but this was not necessarily like that for other types of housing. If this finding is out of context, one has to look at Voicu & Been (2008, p. 241) who came to a conclusion that even a well-maintained community garden (as a type of an urban open space) will have a positive impact on the property values of a poorer neighbourhood. All these suggestions are pointing to one direction, open space is equal to more money and this is further supported by (Lee, 2008, p. 975); (Robert Wood Johnson Foundation,, 2010); (Eyuboglu, et al., 2007) (Hobden, et al., 2004); (Jim & Chen, 2006, p. 422) and (Molly & Owusu-Edusei, 2001).

Shively (2009, p. 6) identified two urban open space factors that can decrease the monetary value of property. These factors are loss of income from potential property development when buildable land is preserved as open space. Non-maintenance of open space also has a negative effect on property values. There are many un-developed and un-maintained open spaces in Galeshewe. In addition to Shively's finding in the Minnesotan case, several authors such as (Anton, 2005, p. 1); (Lee, 2008, p. 975); (Morancho, 2003, pp. 35-41), believe that the price of the properties that are closer to open spaces is a reflection of the way the community values urban open spaces. If one has to compare these above mentioned statements with responses from the sample, i.e., the responses in terms of willingness to stay in close proximity to urban open space indicate:

1. Need for open space: 62% of the respondents believe there are enough urban open spaces in Galeshewe
2. In all household income categories less than R10000pm, the majority (43.6% average) of respondents prefer to stay far away from open spaces but this figure almost doubles when it gets to the higher income categories at 80% for (between R10001 and R15000pm) and 100% for over R15000pm

Who is going to buy those properties if the people that 'can afford' are not willing to purchase properties in close proximity to urban open space? Even a planning approach that is based on community participation would struggle to come up with a plan for a community that does not see the need for it, i.e., 62% of the people do not think there is a need for any more open spaces. But, from observation it was clear that there is a need for a variety of functions of urban open spaces and improved quality of open spaces in Galeshewe, hence the urban greening programmes that the municipality has embarked on.

6.3 PERCEPTIONS OF URBAN OPEN SPACE USE IN GALESHEWE

In the 1960s London, user groups were categorised in terms of age and gender; needs for sports and recreation and willingness to travel for a particular type of open space activity (Turner, 1992, p. 372); Payne, Mowen, & Orsega-Smith (2002); (Chen & Jim, 2008, p. 298). CSIR (2005) listed the needs of different age groups and vulnerable groups, the summary of which is given in the table below.

The questions that were asked from the respondents were based on the above mentioned table and were analysed in terms of frequency distribution. The respondents were asked to choose from a pre-determined set of answers, the most important aspects of open space use for (children; teenagers and young adults; elderly; women; disabled people; homeless people and workers), the following average percentages were obtained and only those that received more than 50% from the respondents are discussed:

6.3.1. URBAN OPEN SPACE USER GROUPS IN GALESHEWE

It has been identified that women are the ones that use urban open spaces the most in Galeshewe Township. However, there are other users who may have a different interest than that shared by most women in Galeshewe.

CHILDREN

According to CSIR (2005), children need safety while using urban open space. They use urban open spaces mostly for sports and recreation from urban open spaces. According to the respondents from Galeshewe Townships, sports at 76.5% approval rate are the most important urban open space use for township children. The second biggest use was movement functions which include 'walking' from one place to the other through urban open spaces.



Figure 44: A child posing for a photograph on an unpaved street in Galeshewe Township. In Galeshewe, children often play on streets. Source (Author, 2013)

TEENAGERS AND YOUNG ADULTS

77.5% of the respondents believe that teenagers and young adults are the biggest users of urban open spaces for sports purposes and 74.3% of the respondents also think that this group uses open spaces for walking purposes. Another big use of open spaces by this group is “hanging out” at 52.4% and “entertainment” at 50.5%. These findings support the CSIR suggestion that the groups between ages ‘13 and 55’ need urban open spaces for ‘sports and recreation’ and “passive and active engagement”



Figure 45: Youth playing football on a grassless playground in Galeshewe Township

Source: (Author, 2013)

ELDERLY

The majority (68.1%) of the respondents believe that elderly people use urban open spaces for movement functions in Galeshewe Township. None of the other land uses

received more than 50% response for this group; the closest was 47.8% for relaxation (passive engagement in terms of CSIR, 2005).

WOMEN

The issue of gender in urban planning is aimed at empowering and increasing the voices of women in planning. It realizes that women have been marginalized in their own cities (Todes, 2011, p. 124). Watson (2009, p 2259) and UN Habitat (2009a, p. 1). Gender inequality is one of the inequalities that are found in urban characteristics of 21st Century. Gender inequality in terms of urban space use is most likely to happen in an urban space where the typical urban land user is most likely to be a woman because of the ratio of women over men (64% to 34% respectively).

The biggest percentage average (51.2%) of open space users in Galeshewe under the 'women' category followed by 'teenagers and young adults (49.8%)'. Women on the other hand were also seen as the biggest users of urban open spaces with the following three uses being the most common uses amongst women, i.e. movement functions (76.1%); relaxation (64.5%) and entertainment (55.5%).



Figure 46: Women walking through an open space in Galeshewe Township

Source (Author, 2013)

6.3.2 URBAN OPEN SPACE USES IN GALESHEWE

Movement functions, as the most important aspect of open space use across all user groups, was chosen by the majority of the respondents (64.3%) whereas none of the other uses received more than 50%. In fact, the second most important open space function is relaxation (passive engagement) chosen by 45.7% of the respondents. In general, the use of urban open spaces received 36.8% from the respondents.

Movement functions can be linked to the fact that the biggest user group of urban open spaces in Galeshewe are women and less women are employed as compared to men and therefore, due to lack of money for transport, women may tend to 'walk' more than their male counterparts. Furthermore, in South Africa women tend to be marginalized in

terms of work opportunities and they earn less than men (StatsSA 2001). It is logical therefore, that the cheapest form of transportation would be walking as compared to other forms of transport. But what if women prefer to walk in Galeshewe, for whatever reason? The data does not answer this question, but it remains a possibility and one cannot conclude outright that earning less implies the preference to walk more. If one has to look for clues from the data, 88.7% of the respondents believe there is more crime committed on urban open spaces than elsewhere. It is therefore difficult to think that a person who believes that more crime is committed on urban open spaces, would in their right mind, choose to walk in urban open spaces.

Furthermore, several authors believe that the ecological value of an open space is the most important aspect of continuity in urban open spaces (Conway, 2006, p. 218); (Jim & Chen, 2003, p. 95); (Sodhi, et al., 1999, p. 123). However, in the case of Galeshewe this seems to be surpassed by the need for walking. To support this finding even further, there is also the issue that was ruled out in the analysis (i.e., relationship between man and his environment) about the poor relationship between the people of Galeshewe and their natural environment. This relationship also rules out the possibility that women in Galeshewe walked more because of a beautiful environment.

PASSIVE ENGAGEMENT: RELAXATION

The second most important open space function for the people of Galeshewe is relaxation (passive engagement) chosen by 45.7% of the respondents. Looking at the most favourite open space in Galeshewe as shown in Chapter 5, Hulana Park is mostly used by youth, and mostly for drinking and just hanging out. In Hulana Park, there is an integration of age groups in terms of the design and play equipment that is provided. However, motor cars are usually parked along the less busy streets than 'Hulana Street' with people listening to loud music and just relaxing, without necessarily using the park equipment.

This is not an environment that is conducive for the well-being of elderly people. According to the sample, it is expected that more children will use open spaces more

frequently than other age groups. Most of the respondents (34.4%) who are under 20 use open spaces more than once a week followed by the 25% of them who never use open spaces at all. In fact there are more (59.4%) respondents in this age group who fall within the daily to more than once a week category.

Different communities have different views of urban open space and they, in turn, use urban open spaces differently. In Zhuhai city (China), the majority of residents (65.7%) frequently used public open spaces for leisure activities. However, young residents aged between 20 and 30 were least frequent users of all age groups (Chen & Jim, 2008, p. 298). In a study conducted in Cleveland and Ohio (USA), respondent age was found to be the strongest predictor of a need for urban open spaces as compared to race and residential location, whereas race was the strongest predictor of the type urban open space use. The research discovered that in Cleveland and Ohio, older adults and Blacks preferred recreation rather than the conservation use of public open spaces as compared to younger adults and Whites. With regards to the frequency of open space use, older adults and Blacks were the least frequent as visitors on open spaces. (Payne, et al., 2002, p. 181).

6.2.4 FACTORS THAT AFFECT THE FUNCTIONALITY OF URBAN OPEN SPACES IN GALESHEWE

In trying to understand the factors that affect the frequency of open space use, the following variables were studied and found to be statistically insignificant in terms of the relationship they have with the 'frequency of open space use' in Galeshewe Township; (Gender; age; level of education; and the perception of crime on urban open spaces; quality of vegetation and household income). The analysis of the relationship between the frequency of open space and the following variables proved to be statistically significant but weak, i.e. household size; environmental pollution; township atmosphere; and business uses on open spaces).

6.2.4.1 LACK OF KNOWLEDGE ABOUT OPEN SPACE BENEFITS

Urban open spaces existed even during the ancient times, but they were known according to their functions, e.g., ceremonial avenues and markets (Haverfield, 1913, p. 47); (Turner, 2006, p. 243); (van Wyk, 2012, p. 26). People back then did not have to know that an open space is an open space for them to know the function and purpose of an open space as a land use. But, when it comes to urban development policies, it is essential that the community knows what the land is intended for. In a study conducted in America, the level of education appeared to be one of the significant reasons that affected community support of land use policies that are intended for the protection of natural resources, i.e., urban open space policies (Broussard, et al., 2008, p. 21). This raises a question regarding the level of education in Galeshewe and the knowledge people have about public policies on urban open space planning. Only 21% of the respondents in Galeshewe have tertiary education. But this 21% also have a limitation because it does not identify the level of that tertiary education. It only means post matriculation education which may include education that has nothing to do with land use education.

When the level of education was assessed on whether it has an impact on the frequency of open space use and even 'satisfaction' with the current urban open spaces in Galeshewe, the result was found to be statistically insignificant on both the frequency of open space use and satisfaction. For example, there was a weak positive correlation between education and frequency of open space use but it was also proven to be statistically insignificant at the 0.05 level of significance ($r_s(8) = -.036, P = .396$).

When the respondents were given an open ended question to give reasons why the municipality leaves out undeveloped open spaces, an opportunity was presented to demonstrate knowledge of urban open spaces and 91.4% of the respondents did not know the purpose of urban open spaces in the township.

The issue of lack of knowledge is further supported by the frequency distribution that was obtained when the respondents were asked to give reasons why they are either satisfied or not satisfied with the current open spaces in Galeshewe Township. Amongst

the many reasons that were identified by the respondents, a few of the response had to do with environmental quality, i.e., dirty (23.6%); greenery (4.9%); waterlogged (0.6%). In total, these environmental reasons amount only to 29.1% of the reasons cited by the respondents. This means environmental issues are not the main reasons why the respondents are either satisfied or not satisfied with the current open spaces in Galeshewe.

The respondents were also asked to give reasons why they would prefer to stay in close proximity or further away from open spaces. As it happened with the reasons for satisfaction/non-satisfaction, environmental reasons amount to 20.4% and therefore may not be regarded as a major determining factor for the choice of a place to stay in close proximity or far away from urban open spaces. The responses that were given by the respondents include the following environmental reasons, Dirty (8.5%); Beauty/Clean/Greenery (3.1%); Noise (8.8%). There are some known ecological benefits in staying in close proximity to urban open space such as environmental comfortability and improved liveability. This means a person would be staying in an area of reduced noise and cleansed atmosphere (Lam, et al., 2005, p. 55); (City of Burlington, VT, 2000, pp. 8-14). However, the respondents are not aware of these.

In a study done in the city of Warsaw in Poland, it was shown that public space continues to be displaced by other more lucrative investment and developments even after all the efforts have been made to develop and maintain them, to educate and let everyone know of the many benefits that public space has (Szulczewska & Kaliszuk, nd, p. 155). This shows that, even if people know the purpose and advantages of open spaces, it does not necessarily imply that they will value open space accordingly.

6.2.4.2 FREQUENCY OF OPEN SPACE USE

Even though the average quality of urban open space in Galeshewe is poor, the majority (64.2%) of the people prefer the open spaces in the township to those in Kimberly. The availability of easily accessible and aesthetically pleasing urban open spaces is important in improving urban liveability (Van Herzele & Wiedemann, 2003, pp. 109-

126). Accessibility refers to the ease with which a public open space is reached and it is not only limited to physical contact with the open space, but it may extend to mental; economic and financial factors around the open space that needs to be accessed (Eyuboglu, et al., 2007, p. 134).

Studies from a health perspective show that easy access to an attractive and large open space increases the usability (by walking) of urban open spaces (Giles-Corti, et al., 2005, p. 165). Contrary to this finding though is that, in New Zealand, Witten, Hiscock, Pearce, & Blakely (2008) concluded that there is not enough evidence that suggests a connection between locational access to an open space and physical activity (Witten, et al., 2008, p. 299). In this study, the relationship between the frequency of open space use and locational access (proximity to urban open space) was analysed using Spearman's Rank Order Correlation and the result was proven to be statistically significant at the 99% Confidence Interval , i.e. ($r_s(8) = .217, P = .000$). This finding explains away the study by (Witten, et al., 2008, p. 299) and it is in support with those (Giles-Corti, et al., 2005, p. 165) that believe locational access can improve the usability of urban open space.

However, only 17.4% of respondents who use open spaces on a daily basis prefer to stay very close to urban open spaces in Galeshewe. These are the people who have better knowledge of the urban open space and who have experienced the use of urban open spaces in Galeshewe. This indicates a general preference to stay far away from urban open spaces by both groups that never use open spaces and those that use them on a daily basis.

RELATIONSHIP BETWEEN SATISFACTION WITH CURRENT URBAN OPEN SPACES AND THE FREQUENCY OF OPEN SPACE USE

In order to understand the relationship between locational access and the frequency of open space use, one has to take a special look at the relationship between satisfaction with current urban open spaces and the frequency of open space use. The relationship between the frequency of open space use and satisfaction with the current open spaces

was found to be significant at the 0.01 confidence level. This means that 99% of the time, one can be sure that if the community of Galeshewe is satisfied with their current urban open spaces, they would be likely to use public open spaces more frequently. However, a Cramer's V test value of 0.2 which is close to 0 also meant that the association between the two variables is very weak/low. The majority (75.4 %) of the respondents were not satisfied with the current state of open spaces in Galeshewe. The main reasons given were the issue of safety on open spaces (44%) and to a lesser extent the quality of the open spaces in terms of cleanliness (23.6%). Lack of development in terms of facilities was not seen as much a problem by the majority of the respondents (93.6%). However, the sample data does not provide for comparison of the use of Galeshewe open spaces open space use over a longer time and there is also no data that is specific to Galeshewe on the matter. By looking at the lack of open space use, this data seems to be similar to studies done in the UK that showed a decline in the quality and use of open spaces over the last three decades (Williams & Thwaites, 2007, p. 59).

RELATIONSHIP BETWEEN OPEN SPACE USER SATISFACTION AND WILLINGNESS TO STAY IN CLOSE PROXIMITY TO OPEN SPACES

The issue of locational access and the use of urban open spaces is further complicated by the relationship between user satisfaction and the locational access (i.e., staying in close proximity to urban open space). The majority of the respondents (54.9%) do not want to stay in close proximity to urban open spaces and about 75.4% of the respondents are also not satisfied with the current public open spaces in Galeshewe. Only 15.3% of the people who are satisfied with open spaces are willing to stay very close to an urban open space in Galeshewe. There was a significant difference between open space user satisfaction and the willingness to stay in close proximity to urban open space. The Cramer's V test value of 0.2 is close to 0 and it indicates a weak association between the two variables, proximity to open spaces and satisfaction with the current open spaces in Galeshewe.

AGE GROUP AND THE USE OF URBAN OPEN SPACES IN GALESHEWE

The relationship between age and the frequency of urban open space was found to be statistically insignificant. This means that the patterns that were obtained using cross tabulations that alluded to a suggestion that “the older people get in Galeshewe, specifically up to the age of 40, the less they tend to use open spaces” are actually statistically insignificant at the 0.05 level of significance ($r_s(8) = -.106, P = .011$).

The majority (34.4%) of teenagers (younger than 20 years old) prefer to stay far away from urban open spaces. However, the combined number of teenagers (18) who prefer to stay either close and very close (56.3%) to urban open space exceeds the combined number of those (14) who would prefer to stay either away and far away (43.7%) from open spaces by 12.6 percentage points. 45.5% of those who fall within the 20-30 category prefer to stay in close proximity to open spaces and they are the only age group whose majority prefer to stay in close proximity to open spaces. The age group between 31 and 40 has the highest percentage group of respondents that prefer to stay far away from open spaces (55.3%) and this is closely followed by the over 60 category at 50.5%. Of those who prefer to stay very close to open spaces, teenagers have the highest percentage of 25%.

HOUSEHOLD SIZE AND THE USE OF URBAN OPEN SPACES

More than half (53.3%) of households with less than three members never use open spaces whereas only 2.5% of the same group use open spaces on a daily basis. There was a very weak negative correlation between the two variables and it was also proven to be statistically significant ($r_s(8) = -.088, P = .035$). This means that households with fewer members use open spaces the least.

The number of people per household determines the density of an area. This density is relatively low at 67, 13 people per hectare in Galeshewe Township. In Galeshewe, the majority of households (45.4%) prefer to stay far away from open spaces. The majority of smaller households (60.7%) would prefer to stay far away from open spaces as

compared to only 4.9% that want to stay very close to open spaces. The average of 60.7% for smaller households drops by 19.7 percentage points to 41% in medium sized households (between 3 and five) and by 19.5 percentage points in bigger households (more than 5 members), for those households that would prefer to stay far away from open spaces. There is a significant difference between household size and willingness to stay in close proximity to urban open space

This result means for one to maximise the frequency of open space use, the urban planner must make sure that households are bigger. But this is impossible for a planner to do, as urban and regional planners do not have control of the number of people each household should have in the township. However, a different approach would be to increase the housing densities in the township or at least place higher density residential areas in close proximity to open spaces for a better probability of use. This idea is in line with Poudyal, et al., (2009, p. 975) who believe that increasing urban population would contribute to the congestion of urban open spaces. However, in the township of Galeshewe more than 50% of township dwellers are not using urban open spaces.

A balance is needed though, between ecological integrity of urban open spaces that are meant for conservation and the density of adjacent land uses. In the city of Boulder (Colorado, USA) that was experiencing rapid urban growth, whilst managing one of the largest open space systems in America, a change in the grassland habitat landscape of the open space system led to a change in the bird count and species that used to inhabit the grassland open space (Jones & Bock, 2002, p. 643). A different study in Phoenix (Arizona, USA) proved that the increased intensity of land uses adjacent to the open space preserve was likely to reduce the value of the habitat and that also results in a decline in urban ecological integrity (Esbah, et al., 2009, p. 846).

6.2.4.3 TOWNSHIP ATMOSPHERE

This vibrancy in the atmosphere in the township can be linked to the outdoor lifestyles and the level of activity within the township. The data does not include the type of activities that lead to the vibrancy but from experience within Galeshewe one of the issues that can be associated with township life and especially Hulana Park, is noise.

In Galeshewe, more than half (50.5%) of the respondents that believe the township atmosphere is vibrant/active would prefer to stay far away from open spaces as compared to the 36.9% of respondents who do not think the township atmosphere is vibrant/active and this relationship was found to be weak but statistically significant.

The relationship between the township atmosphere and the frequency of open space use was proven to be very weak but statistically significant. The majority (43.1%) of those who found the township atmosphere vibrant 'never' use open spaces as compared to 31.5% of those respondents who found the township atmosphere rather calm.

This indicates a level of vibrancy that would make people not to want to use urban open spaces. Urban open spaces are known to have the ability to reduce noise (Brown & Muhar, 2004, p. 827). But it is not clear whether they can reduce the noise that is generated within the open space. Not everyone is convinced though about the impact of public open spaces in cities. A study that was conducted in Hong Kong (China) proved that some of the claims that have been made about urban open spaces are not necessarily consistent in all urban open spaces, i.e. noise levels and air quality; (Lam, et al., 2005, p. 55). The author calls for a re-examination of those claims in improving the urban liveability.

6.2.4.4 OPEN SPACE SYMBOLISM

Open space symbolism refers to the psychological image that a person has when they think of an urban open space. It is measured in terms of the value people have of open spaces. Urban open spaces tend to define communities by improving neighbourhood

identity and a sense of belonging (Cabe Space, 2005, p. 11). Home, et al., (2010, p. 494) believes there is also a clear distinction between preferences of urban landscape for different cultural groups and Risbeth (2001, p. 351) also believes that physical environment affects people's perceptions of everyday life.

The majority of the respondents (76.3%) in Galeshewe see urban open spaces as an opportunity for development. This is contrary to the main reasons why urban open spaces are provided in the first place. For example, nature only received an approval of 31.1% from the respondents and it is one of the main functions and advantages of urban open spaces. This means the people of Galeshewe see urban open spaces more as an opportunity for development rather than for conservation purposes. It is also clear therefore that the majority of respondents in both questions would welcome the development of the open spaces into any other land use.

6.2.4.5 CRIME AND SAFETY ON URBAN OPEN SPACES

In Galeshewe, it seems that environmental infrastructure is less important than issues of safety and hence 62.8% of respondents believe that trees should be cut in order to minimize crime on open spaces. This shows the dominance of the fight against crime rather than the protection of green infrastructure.

In the UK, Green Space identified crime and antisocial behaviour as one of the major challenges that are experienced on city parks throughout Britain (Green Space, 2007, pp. 1-81). In Galeshewe, the relationship between frequency of open space use and crime on urban open spaces was found to be statistically insignificant. This means that the dominant (88.7%) perception that there is more crime on urban open spaces is still not a strong enough reason to affect the frequency of open space use. This finding on the perception of crime shows that even though people believe there is more crime committed on open spaces, they continue to use open spaces (i.e., probably out of necessity).

The issue of crime on urban open spaces was further analysed using a chi-square analysis and again, the relationship between crime and the willingness to reside in close proximity to open spaces was found to be insignificant. This means that, for those that have a choice of buying their properties, the perceived crime on urban open spaces is not the determining factor when one decides on a place to stay in Galeshewe. Perhaps there is not much of a choice for someone who is a beneficiary of a housing programme.

The relationship between crime and satisfaction with current urban open space was found to be highly significant at the conventional level of 99%. Only 22.1% of respondents, who believe there is more crime committed on public open spaces, are satisfied with the current state of public open spaces in Galeshewe. This means that the majority of respondents, who believe there is more crime committed on urban open space, are not satisfied with the current urban open spaces in Galeshewe. But this finding does not say anything about the fact that crime is not the determining factor for the frequency of urban open space use. It has been proven that that there is a significant relationship between satisfaction and frequency of open space use; significant relationship between crime and urban open space; but insignificant relationship between crime and frequency of open space use. This indicates the presence of an antecedent variable between crime and the frequency of urban open space use. Could this be the lack of a relationship between the respondents and urban open spaces?

6.2.4.6 THE QUALITY OF URBAN OPEN SPACES

The respondents were also asked to rate the quality of vegetation in Galeshewe Township from Very Bad to Very Good. The majority (79%) of the respondents believe that the quality of vegetation in the township falls between the categories 'normal' to 'very bad'.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very bad	148	24.9	25.7	25.7
	Bad	122	20.5	21.2	47.0
	Normal	187	31.4	32.5	79.5
	Good	81	13.6	14.1	93.6
	Very good	37	6.2	6.4	100.0
	Total	575	96.6	100.0	
Missing	0	20	3.4		
Total		595	100.0		

TABLE 131: The quality of vegetation in the township

This shows that the majority of respondents in Galeshewe do not like the quality of the natural green environment in Galeshewe. Even though the people of Galeshewe are not satisfied with the quality of the township vegetation, very few of them actually make an effort in greening their own households. When the respondents were asked to indicate what they do in both their frontyards and backyards, only 32.1% of the respondents have either vegetable or flower gardens behind their houses. A similar figure was also obtained with only (39.6%) of the households preferring to use the space in front of their houses for plants. In developed countries, affluent people with higher incomes tend to demand more environmental quality. It is believed they would rather buy a smaller property in a neighbourhood that gives environmental quality rather than to have a bigger property in a neighbourhood with poor environmental quality (Brasington & Hite, 2005, p. 78).

It is known that trees have the capacity to control luminosity and radiation by preventing sunrays from reaching the paved surfaces (Gomez, et al., 2004). They absorb atmospheric pollutants; regulation of atmospheric; humidity and urban climate; and they also restraining soil erosion (Morancho, 2003, p. 35). It is also believed that poor quality urban open spaces promote anti-social behaviour and the takeover (land grabbing) of neglected spaces by the homeless including those who immigrate to the cities in search of a better quality of life (Green Space, 2007, pp. 1-81).



Figure 47: A picture of a boy wondering in an open space in Galeshewe Township. Picture taken during the observation of urban open spaces in Galeshewe

Source (Author, 2013)

Even in Galeshewe, most of the respondents (35.1%) who think that the quality of vegetation is very good would actually prefer to stay close to open spaces. The majority of respondents (53.4%) who think that the quality of vegetation is very bad in the township would also prefer to reside close to open spaces. There was a positive correlation between the two variables and it was also proven to be statistically significant at the 0.01 level of significance, but at .13 the value is too low to be meaningful ($r_s(8) = -.130, P = .002$). This means that one cannot read too much into the relationship between the community of Galeshewe and their assessment of the quality of vegetation in Galeshewe.

The household Survey of Galeshewe in 2009 provides further clarity on the relationship between the community of Galeshewe and their natural environment. In 2009, the Sol Plaatje Municipality, as part of its urban renewal programme conducted a household survey with specific aim of discovering community values and needs (Sol Plaatje Municipality, 2009a). The methodology employed in the research did not allow respondents to prioritise their responses in terms of bulk services infrastructure, social

infrastructure and environmental infrastructure. However, the researchers gave the three types of infrastructure and asked the respondents to prioritise the most important options out of these three. In that case, it is not clear whether the community actually values green infrastructure at all. With that in mind, the ecological value of open spaces was valued less compared to other environmental priorities such as sports and recreation (Sol Plaatje Municipality, 2009a, p. 21).

The ecological value of open space remains important; the fact that the community's relationship with the natural environment is poor does not mean the ecological value of an open space is insignificant. This means therefore, the continuity of urban open spaces in Galeshewe should still be based on these two principles, i.e., the movement of people; and ecological reasons.

6.2.4.6.1 MAINTENANCE OF PUBLIC OPEN SPACE

The majority (75.4 %) of the respondents were not satisfied with the current state of open spaces in Galeshewe. The main reasons given were the issue of safety on open spaces (44%) and to a lesser extent the quality of the open spaces in terms of cleanliness (23.6%). Lack of development in terms of facilities was not seen as much a problem by the majority of the respondents (93.6%). However, the sample data does not provide for comparison of the use of Galeshewe open spaces open space use over a longer time and there is also no data that is specific to Galeshewe on the matter.

There is an opportunity in Galeshewe in that, the majority of the respondents (68.9%) feel that the maintenance of urban open spaces should be a community responsibility. This makes sense because of the majority of them being poor and unable to afford rates and taxes. In some developed countries, such as Spain, people that reside in close proximity to urban open spaces are more willing to pay for urban open space provision than those who stay further away from urban open spaces (Salazar & Menendez, 2007, p. 296). Privatization of the open spaces through a private contractor is not an option with only 8.7% support. Atkinson (2002, p.1830); Tang and Wong (2008) argue that financial deficiencies are the cause of the decline of public open space maintenance.

Some of the maintenance problems that are experienced in Galeshewe include littering and dumping of domestic waste on urban open spaces. The respondents were given a set of variables to indicate whether they have been experienced in the township. The variable that received the majority of the points was 'dumping' which 87% of the respondents stated that they had experienced on urban open spaces. This experience was also proven to have an impact on the frequency of urban open space use and the willingness to stay in close proximity to urban open spaces.



Figure 48: A sign on an open space showing that the property is private, and therefore it is not a public open space and people should not dump on it. This makes one wonder whether according to the owner, it would have been proper to dump on public land rather than on his/her land.

Source (Author, 2013)

6.2.4.7 UNRELATED USES ON URBAN OPEN SPACES

The respondents were asked to indicate from a set of pre-determined answers which business land uses had been observed on urban open spaces in the township. Street vendors (70.4%) and informal markets (64.2%) scored the highest percentages from respondents that have observed them on urban open spaces.



Figure 49: A fruit and vegetable business on an urban open space in Galeshewe Township. Behind the structure, there is also evidence of littering which is not necessarily linked to this informal business. There are different types of these structures serving various purposes such as retailers, tyre and exhaust repairs; car washes; hair salons that are normally found on urban open spaces in the township.

Source (Author, 2013)

6.2.4.7.1 STREET VENDORS AND RESIDING IN CLOSE PROXIMITY TO OPEN SPACE

The majority of respondents that have not seen street vendors on open spaces would prefer to stay far away (45.8%) and away (36.8%) from open spaces. These percentage figures are different for those who have seen street vendors on open spaces at 34.8% (far away) and 8.9% (away) respectively.

The relationship between economic land-uses (Street Vendors) as observed on township open spaces and residents' willingness to reside in close proximity to open space was proven to be relatively weak yet statistically significant. The majority (56.3%) of the respondents that have observed street vendors on urban open spaces

would not mind staying in close proximity to urban open spaces whereas this figure is only 17.7% for those that have not seen street vendors on urban open spaces. This relationship indicates support for these businesses even though they are illegal on urban open spaces. They provide a service that is acceptable to the township dwellers.

6.3.1 FUTURE DIRECTIONS OF THIS RESEARCH

The statistically insignificant findings in this research do not mean that the relationship between the mentioned variables and the frequency of open space is not important. It means that whatever patterns that were identified or observed may be due to chance and therefore cannot be generalised for the entire population from which the sample was drawn. The findings may also be due to a Type II error whereby the statistical measure that was used may not have been powerful enough. These findings should therefore be further investigated using elaboration models. In an elaboration model, a control variable is introduced in order to get more details about the initial finding (de Vos, Strydom, Fouche, & Delport, 2011, p. 269).

6.3.2 WEAKNESSES OF THIS RESEARCH

The use of the measurement scales “True” or “False” could only measure the absence or presence of the existence of a certain variable from the respondents. Even though it was necessary to determine this information, it limited the type of statistical analysis that could be performed in the research. It is difficult to find causal relationships in a social context, due to the presence of many other variables that could have an impact on the finding.

It would be have been of particular interest to assess whether there is a difference between respondents who stay in close proximity to certain urban open spaces and those that stay far away from certain urban open spaces. Perhaps this is still possible with the data that was collected, but not necessary for the questions that were posed.

Longitudinal data could have provided an idea on whether there was a change in the answers from the communities over time, as they get to know about urban open spaces. Lastly, the study was a closed system, without comparing with other townships and therefore it makes it difficult to generalise for all different cultures and socio-economic groups living in similar circumstances.

6.4 CONCLUSIONS

This discussion started by unpacking the contextual issues of urban open space planning in the townships. The need for housing and the legislative history of open space provisions were discussed. The impact of urban poverty on the needs of the community was presented, i.e., with over 70% of the population surviving close to the poverty line. The discussion on the weak linkages between urban open spaces and the culture of the people; the low value of ecology and the lack of economic benefits of urban open spaces were also discussed. This shows a different context for urban open space planning and of which the meaning is discussed in the next chapter.

As much as children use open spaces for sports purposes, the biggest users of urban open spaces were found to be women and with the main purpose being movement functions whereas none of the identified variables were found to have any strong relationships with urban open spaces, i.e., social; economic' ecological and even planning aspects.

CHAPTER 7:

RESEARCH CONCLUSIONS AND RECOMMENDATIONS

“The contextuality of planning and the need to develop locally appropriate systems of planning is an important point of departure...” (Todes, 2011, p. 117)

7.1 INTRODUCTION TO CHAPTER 7

The focus of this research was on the urban open spaces of Galeshewe Township, and how the community makes meaning and interact with them. It provided insight into community perceptions with implications on the provision; planning and development of urban open space in the revitalisation of Galeshewe. The study does not compare the Galeshewe Township to any other township that has successfully rolled out an urban renewal programme using urban open spaces. It focuses on understanding human perceptions of public open spaces, the history of the township and constructs theoretical and practical propositions based on available data from the Galeshewe Township.

In trying to answer the question, how can town and regional planners maximise the impact of urban open space in the revitalisation of previously neglected townships, the contextual meaning of urban open space; the perceptions of the community and the functionality of urban open spaces in Galeshewe were investigated.

7.2 RESEARCH HIGHLIGHTS

The following highlights of the research are presented under the questions that were asked at the beginning of the project. These highlights are then combined in order to come up with the research conclusions.

7.2.1 CONTEXTUAL MEANING OF THE PUBLIC OPEN SPACE CONCEPT

The social context of Galeshewe Township was discussed under the following variables, housing; legislation; urban poverty and the culture of the people. While there is a need for housing; the impact of planning and environmental legislation on the acquisition of urban open spaces cannot be overlooked. The types of urban open spaces that were observed in Galeshewe do not seem to have an immediate impact on the short term

needs of the poor and destitute township dwellers (72.3% of the population living at a brink of poverty). One of those needs is shelter and hence, urban open spaces are often taken over by illegal squatters and this has also been observed in Galeshewe.

It is also believed there is a clear distinction between preferences of urban landscape for different cultural groups. More than two thirds of the community of Galeshewe are from the Tswana tribes of Southern Africa. As much as this can limit the variety of open space needs, it is not clear if the other ethnic groups in Galeshewe have different open space needs than BaTswana. When the respondents in Galeshewe were asked what urban open spaces symbolized to them, only 16.6% of the respondents thought that open spaces had anything to do with their culture.

For both the frequency of urban open space use and satisfaction with current urban open spaces, it is clear that the relationship between the respondents and the quality of vegetation is very weak. This is in-line with the results of the Galeshewe Household Survey of 2009 whereby the ecological value of open spaces was valued less compared to other environmental priorities such as sports and recreation (Sol Plaatje Municipality, 2009a, p. 21).

When the respondents were asked if there were enough urban open spaces in Galeshewe, 62% of the respondents said 'yes' based on visibility of urban open spaces and without assessing the quality of those urban open spaces. A community that knows and believes that urban open spaces can increase an area's average property price would have most likely opted for more open space as this would have meant a financial gain for them. Maybe it is due to the lack of property investment market in the township.

Loss of income from potential property development when buildable land is preserved as open space, and non-maintenance of open space have a negative effect on property values. There are many undeveloped and unmaintained open spaces in Galeshewe. In addition to this, the price of the properties that are closer to open spaces is determined by the way the community values urban open spaces. If one has to compare these above

mentioned statements with responses from the sample, i.e., the responses in terms of willingness to stay in close proximity to urban open space, the indication is that:

1. In all household income categories less than R10000pm, the majority (43.6% average) of respondents prefer to stay far away from open spaces but this figure almost doubles when it gets to the higher income categories at 80% (for between R10001 and R15000pm) and 100% for over R15000pm.

Internationally, it has been shown, that urban open spaces attract an economically active workforce but in Galeshewe only 2.3% of the people earn more than R10, 000 per month. This salary level indicates that as soon as people can afford to stay elsewhere, they would leave the place.

7.2.2 PERCEPTIONS OF URBAN OPEN SPACE USE IN GALESHEWE

More than any other user group, 51.2% of the respondents believe that women are the biggest users of urban open spaces with the following three uses being the most common uses amongst women, i.e. movement functions (76.1%) ; relaxation (64.5%) and entertainment (55.5%).

According to the respondents from Galeshewe Township, sports at 76.5% approval rate, is the most important urban open space use for township children.

Respondents believe that teenagers and young adults are the biggest users of urban open spaces for sports purposes (77.5%) and 74.3% of the respondents also think that this group uses open spaces for walking purposes. Another big use of open spaces by this group is “hanging out” at 52.4% and “entertainment” at 50.5%. These findings support the CSIR suggestion that the groups between ages ‘13 and 55’ need urban open spaces for ‘sports and recreation’ and “passive and active engagement”

7.2.3 FACTORS THAT AFFECT THE FUNCTIONALITY OF URBAN OPEN SPACES

For the factors that affect the functionality of urban open spaces in Galeshewe Township, all the relationships that were tested came out either insignificant or weak (i.e., gender; age; household size; level of education; crime on urban open spaces; environmental pollution; township atmosphere; quality of vegetation; household income; and business uses on urban open spaces).

Some of the findings can be summarised as follows:

There is a general preference from the Galeshewe community to stay far away from urban open spaces. Lack of knowledge about the purpose of urban open spaces was, not a determining factor for locational access to urban open spaces and in turn locational access to urban open spaces was found to have nothing to do with the frequency of open space use. It has also been proven that there is a weak but significant relationship between urban open space satisfaction and frequency of open space use; significant relationship between crime and urban open space; but insignificant relationship between crime and the frequency of urban open space use. The relationship between the frequency of open space use and satisfaction with the current open spaces was also found to be significant but weak.

Some of the quality problems that are experienced in Galeshewe include littering and dumping of domestic waste on urban open spaces. The respondents were given a set of variables to indicate whether they have been experienced in the township. The variable that received the majority of the points was 'dumping' which 87% of the respondents stated that they had experienced on urban open spaces. This experience was proven to have a significant impact on the frequency of urban open space use and the willingness to stay in close proximity to urban open spaces.

People of Galeshewe see urban open spaces more as an opportunity for development rather than for conservation purposes, however, the ecological value of urban open

space remains important. The fact that the community's relationship with their natural environment is poor does not mean the ecological value of an open space is insignificant. This means therefore, the continuity of urban open spaces in Galeshewe should still be based on these two principles, i.e., the movement of people; and ecological reasons.

Due to the significant but weak relationship between household size and locational access to urban open space (i.e., proximity), it was suggested that a different approach would be to increase the housing densities in the township or at least place higher density residential areas in close proximity to open spaces for a better potential of use. This relationship indicates support for these businesses even though they are illegal on urban open spaces. They provide a service that is acceptable to the township dwellers.

The relationship between the township atmosphere and the frequency of open space use was proven to be very weak but statistically significant.

7.3.2 TO WHAT EXTENT WERE THESE GOALS ACHIEVED?

The hypothesis of this research was that “by understanding the contextual meaning of the urban open space concept in Galeshewe; the perceptions of the Galeshewe community and the most important factors that affect the functionality of urban open spaces in Galeshewe, town and regional planners can improve the outcomes of the revitalisation of previously neglected townships”.

The first question on understanding the contextual meaning of urban open spaces in Galeshewe has to do with the planning context within which planning is conducted. One has to understand the value people put on urban open space; the history of urban open spaces and the general theoretical basis of providing urban open spaces in the townships. From the work of (Watson, 2009); (Campbell, 1996); (du Plessis, 2009); (UN Habitat, 2009a); (Todes, 2011, p. 115) and their calls for planning to change; the scepticism of (Yokohari, et al., 2000, p. 159) and (Lam, et al., 2005, p. 55), there is

enough reason to believe that the current approach to urban open space planning in Galeshewe is out of context.

The hypothesis for the second question on community perceptions is based on the outcomes of the Galeshewe household survey which found that in all respects, the community of Galeshewe does not place much value on urban open spaces. This hypothesis was proved to be true in this research and that movement functions, out of necessity, were the real reasons why the community used urban open spaces in Galeshewe.

Lastly, known benefits of urban open space may not necessarily apply to the conditions of the urban poor in the townships. The results are showing something that is contrary to existing literature about the benefits of urban open spaces in urban areas, i.e., the value of urban open spaces. It raises a question regarding the current practices for urban open spaces in townships.

7.3.3 RESEARCH IMPLICATIONS

This research has both theoretical and practical implications. As it was mentioned in chapter 2, the past urban planning theories desired to achieve “aesthetics (order; harmony; formality and symmetry); efficiency and modernity (removal of slums; skyscraper buildings; connectivity; and abundance of open spaces)” (Watson, 2009, p. 2261). The current planning theorists, as mentioned in chapter 2, are calling for planning theories that recognise local conditions and are also questioning the applicability of theories that are based on the experiences of the global north. The results of this research makes one wonder if the use of urban open spaces in planning is appropriate for small and relatively poor neighbourhoods like Galeshewe Township.

7.4 RECOMMENDATIONS

The challenges that planners face concerning urban open spaces emanate from the history of the townships to the current planning, development and administration of urban space. The revitalisation of townships is essential for the development and advancement of South Africa's urban life systems.

7.4.1 RECOMMENDATIONS FOR FUTURE RESEARCH

There is a need to compare the results from this research with other residential neighbourhoods to see if there will be a difference in the responses coming from for different cultural groups. The functionality of the different types of urban open spaces accommodated in the townships also needs to be studied. Other relevant recommendations include:

1. An investigation on how to integrate other institutional urban open spaces as part of the urban open space system.
2. Township liveability: why is the economically active work-force living Galeshewe Township? Is it because of the greenery on the other side?
3. There is a need to develop indicators for efficient urban open space use.
4. Is there a difference between open spaces for the poor and those of the upper middle class?
5. The profiling of trends for the changing urban landscape, e.g., car wash businesses and informal fruit and vegetable stalls found on urban open spaces?

7.4.2 RECOMMENDATIONS FOR URBAN REVITALISATION IN GALESHEWE TOWNSHIP

The context of this study needs to be defined in such a way that it reflects the urban landscape and how the community relates to it; the people and their level of

development. The average household in Galeshewe is relatively young and of a working age group of less than 65. However, the majority of people that tend to live in Galeshewe are relatively poor (i.e., at R40/day or 4.7USD/Day: Jan 2013 rates) and uneducated (i.e., only 20% has more than Grade 12 education) Tswana speaking people. If one is to believe those that are calling for a change in the way planning is done, therefore, for open space planning should reflect the needs of these people.

7.4.2.1 OPEN SPACE POLICY

In light of the research findings, the following policy agenda is proposed:

1. Develop a vision for urban open spaces and link that vision with existing strategic documents such as the Integrated Development Plan and the Spatial Development Framework.
 - a. Development and conservation priorities (vision)
 - b. Implementation of open space projects
 - c. Monitoring and analysis
2. Multi-purpose planning
 - a. Urban open spaces should have a known specialist use and general use
 - b. One can take some of the needs identified in the IDP and see which ones could be implemented on urban open spaces that are not functional.
3. Conventional types of open spaces
 - a. There should be a distinction between the different typologies of urban open spaces found in Galeshewe, with the purposes being made clear for the community.
 - b. Provide facilities that respond to the needs of the current community
 - c. There must be flexibility in the manner in which an urban open space can be used.
4. Investigate whether community organisations would be interested in managing and adopting an urban open space for their own needs, i.e., Stokvel management; political ward committees.

5. Urban planners at the municipality should systematically monitor and observe the use of urban open spaces in the township. In addition to this they should:
 - a. Monitor the image of the township and look for signs of neglect and vandalism on urban open spaces.
 - b. Market urban open spaces. There is a need for urban open space education; marketing of urban open space can achieve this.
 - c. Look for business opportunities for the maintenance of urban open spaces, e.g., plant nurseries; crazy golf/putt putt are some of businesses that can use urban open spaces.
 - d. Security, which park is the most dangerous to use?

7.4.2.2 PEDESTRIANISATION OF GALESHEWE TOWNSHIP

Continuing from the policy propositions above, there is a need to use urban open spaces for pedestrian movement. The following is therefore proposed:

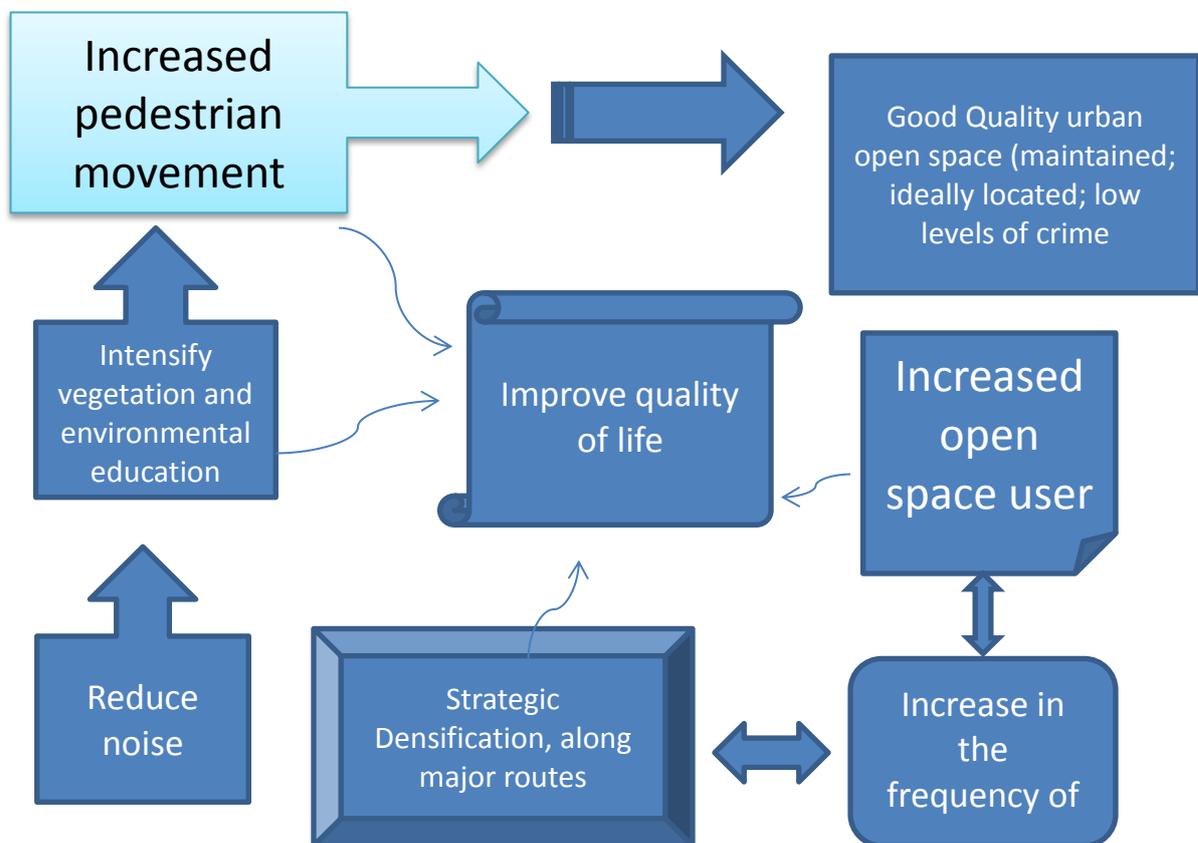


FIGURE 50: PROPOSAL FOR PEDESTRIANISATION OF GALESHEWE

1. Identify urban open spaces in close proximity to major arteries and collector roads within the street system. Schools, government sites; developed urban open spaces; businesses
2. The community will use a road or a convenient urban open space as a road if it is convenient to do so. If the open space provides such an opportunity therefore motorists may also start using it as such. The same applies to the movement of storm-water on residential and other erven.
 - a. Planning priorities; design principles; identity challenges; social aspect and ecological advantages
 - b. Position of the public open spaces from the residential blocks
 - c. Size and length of the POS in relation to the rest of the block
 - d. Dimensions of the POS in relation to the road networks
 - e. Entrance to the POS
 - f. Fencing of the POS
 - g. Identify and alienate urban open spaces that are not functional including urban open spaces that are used for other purposes.
 - h. Identify and integrate land uses that seem to replace the function of urban open spaces
3. Is it worth it to locate open spaces along internal roads? What is the difference between open spaces along internal roads and those that are along major roads
 - a. Urban open spaces on major roads are the aesthetic gateways to the township. They give the character of the township. They are the ones that people from outside will most probably remember.
 - b. In terms of aesthetic gateways, should there be a difference between different housing zones or different sub-areas?

7.5 RESEARCH CONCLUSIONS

Throughout this study, there is nothing that indicates that urban open spaces have any social; ecological or even economic value to the people of Galeshewe. Based on these

findings; and the development of urban open spaces via the township establishment process as discussed in chapter 5; the community's understanding of urban open spaces as land that is reserved for development and lastly; the way the community symbolises urban open spaces; it is therefore easier to conclude that, urban open spaces in Galeshewe Township, are perceived to be spaces that are awaiting development. Even though they still perform their ecological functions, the community does not recognise any significant association or relationship with the ecological benefits of those urban open spaces.

The fact that women are perceived as the group that uses urban open spaces the most, is associated with movement functions, such as walking. The second most widely recognised urban open space use is the community's' passive engagement with the open spaces, followed by sporting activities mainly for the youth.

The last question had to do with the functionality of urban open spaces. Firstly, the majority of urban open spaces, as observed during the research, are poor in quality and they are undeveloped. It was in the research that the frequency of urban open space use and the satisfaction were found to have a weak relationship, but statistically significant. This meant that prediction of urban open space satisfaction cannot guarantee more frequent use of urban open spaces. The following variables have no significant relationship (95% confidence interval) with the frequency of urban open space use (Gender; Age; Level of education; perception of crime on urban open spaces; quality of vegetation; household income) whereas the following variables have a significant but weak relationship with the frequency of open space use (Household size; environmental pollution; township atmosphere; and business uses on urban open spaces). For satisfaction with urban open spaces, the relationship with the following variables was proven to be insignificant at the 95% confidence interval, gender; level of education and environment pollution). All the following variables were found to have a very weak relationship with satisfaction with current urban open spaces (age; perception of crime on urban open spaces; township atmosphere; quality of vegetation and business uses on urban open spaces).

The following variables also have a significant, but weak relationship with locational access to urban open spaces (i.e. proximity) age; household size; township atmosphere; quality of township vegetation and business uses on urban open spaces.

All the above mentioned variables provide confirmation that the combination of the quality of the available urban open spaces and the community profile has little in common. Urban open spaces in Galeshewe Township do not have any significant role in the community's quality of life. Even though the women are believed to use urban open spaces more than any other group, it is entirely out of necessity rather than choice. To answer the question on how planners can maximise the impact of urban open spaces in previously disadvantaged township, one would have to understand the contextual conditions of the township and the fact that the community of Galeshewe does not have any strong relationships with their urban open spaces. The development of urban open spaces will not increase their usability and it will not increase the satisfaction of the community. The only function and principle of urban open spaces that seems to be applicable is that of continuity because urban open spaces are used for movement functions, out of necessity. The majority of the people are poor and therefore will tend to walk more.

In conclusion, the purpose of township revitalisation is to improve the quality of life and to decrease urban poverty. The provision of unsuitable types of urban open spaces in previously neglected townships will not lead to the improvement of the quality of life for township dwellers, mainly due to the low value that is associated with the main benefits of urban open spaces, i.e., ecological; social and economic benefits. In order to improve urban poverty, the first objective should be the improvement of urban liveability. Urban open spaces in the townships are mainly used for pedestrian movements. The creation of urban greenways that are connected to unavoidable types urban open spaces (e.g., heritage sites; aquatic; and geological open spaces) and institutional open spaces is one way that will bring success to the use of urban open spaces in the revitalisation of previously neglected townships. The preferences of smaller households to stay far away from urban open spaces suggest that strategic densification can increase the usability of the urban open space. This study does not dispute the ecological value of urban open spaces. Therefore, to reduce noise

(associated with the vibrancy of the township atmosphere); improvement of vegetation will increase open space user satisfaction. Open space user satisfaction will then increase the frequency of urban open space use.

APPENDICES

APPENDIX A

APPENDIX A.2: MAP 2 (MAP OF GALESHEWE URBAN OPEN SPACES)

APPENDIX A.3: MAP 3 (1/50000 MAP OF GALESHEWE)

APPENDIX A.4: MAP 4 (SURVEYED PARKS OF GALESHEWE)

APPENDIX A.5: MAP 5 (GALESHEWE FUNCTIONAL URBAN OPEN SPACES)

APPENDIX B

APPENDIX B.2: 1/20000 SAMPLE MAPS

APPENDIX C

APPENDIX C.1: SAMPLE QUESTIONNAIRE

APPENDIX C.2: CODE LIST

APPENDIX C.3: OBSERVATION CHECKLIST

APPENDIX C.4: OBSERVATION RESULTS

APPENDIX D

APPENDIX D.1: LIST OF SURVEYED PARKS IN GALESHEWE

APPENDIX D.2: GALESHEWE SUB-AREAS

APPENDIX D.3: INVENTORY OF GALESHEWE URBAN OPEN SPACES

APPENDIX E

ADDENDUM E.1: MANGAUNG LOCAL MUNICIPALITY, BY-LAWS FOR URBAN
OPEN SPACES

ADDENDUM E.2: COUNCIL RESOLUTION ON KIMBERLY OPEN SPACE SYSTEM

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