URBAN RESILIENCE DETERMINANTS WITH SPECIFIC REFERENCE TO THE BUFFALO CITY METROPOLITAN MUNICIPALITY, EAST LONDON

KHULULEKANI NTAKANA

URBAN RESILIENCE DETERMINANTS WITH SPECIFIC REFERENCE TO THE BUFFALO CITY METROPOLITAN MUNICIPALITY, EAST LONDON

BY

KHULULEKANI NTAKANA

(STUDENT NUMBER: 212 315 137)

A treatise submitted in partial fulfilment of the requirements for the degree of Magister Scientiae in the Built Environment (specialising in the field of Property Economics and Valuations) in the Faculty of Engineering, Built Environment and Information Technology at the Nelson Mandela Metropolitan University.

SUPERVISOR:

PROFESSOR SIJEKULA MBANGA

APRIL 2017

DECLARATION

I, the undersigned, hereby declare that the attached work entitled:

"URBAN RESILIENCE DETERMINANTS WITH SPECIFIC REFERENCE TO THE BUFFALO CITY METROPOLITAN MUNICIPALITY, EAST LONDON."

is in all respects my own original work, except to the extent indicated in the acknowledgements and references and by the comments indicated in the body of the study. No part thereof has been copied and all resources used or referred to has been documented and recognised.

Furthermore, I declare that this study has not been submitted by me to any other university for degree purposes.

K. Ntakana

Date

DECLARATION

I, the undersigned, hereby declare that the attached work entitled:

"URBAN RESILIENCE DETERMINANTS WITH SPECIFIC REFERENCE TO THE BUFFALO CITY METROPOLITAN MUNICIPALITY, EAST LONDON."

is in all respects my own original work, except to the extent indicated in the acknowledgements and references and by the comments indicated in the body of the study. No part thereof has been copied and all resources used or referred to has been documented and recognised.

Furthermore, I declare that this study has not been submitted by me to any other university for degree purposes.

| K. Ntakana | Date |
|------------|------|

ACKNOWLEDGEMENTS

Firstly, I wish to thank God for giving me the health, strength and opportunity to complete this task.

Secondly, I would like to acknowledge the Nelson Mandela Metropolitan University for the grant that made it possible for me to do the Master's Degree in Property Economics and Valuations.

Thirdly, I would also like to thank my employer for granting me one day of study leave every week throughout the whole period of my studies, and my colleagues, whom I will not mention by name, for all their support and assistance.

A special, sincere gratitude and appreciation go to my supervisor, Professor Sijekula Mbanga, who took time out of his busy schedule to assist whenever needed, for his professional guidance, his patience and a continued dosage of encouragement in the course of my research project.

Then, I would like to sincerely thank my friends for their patience, understanding and support in the completion of this task.

Lastly but not the least, I would like to thank my parents, siblings and cousins to whom I owe so much, for their encouragement and support and for the time that I stole from them while working on this project.

ABSTRACT

The year 1994 marked the dawn of the new democratic South Africa, bringing its own set of challenges to the country. Currently urban areas cover only one and a half percent of South Africa's surface area. However, sixty one percent of South Africans live in urban areas. Furthermore, the average growth rate for urban areas has been consistently higher than the population growth rate during the period from 1998 to 2008. This resulted in larger towns and cities, growing at the expense of rural areas, with metropolitan areas experiencing the highest influx, followed by secondary cities. However, urban areas consume more water, food, energy, and durable goods, and have an impact far beyond the urban boundaries. This directly relates to urban decline. The rapid influx of people into urban areas that are already overcrowded with large service delivery backlogs, has led to the formation of informal settlements in exposed locations. Many of the informal dwellings in South Africa are subjected to environmental factors. The absence of basic services in overcrowded areas is linked to negative health outcomes and enhanced environmental degradation.

This study is a critical review of a phenomenon named urban resilience. The report seeks to highlight the current status in cities and the transformation that cities need to undergo to enable them to become the cities of tomorrow. Indeed, "sustainable future cities and human settlements begin today". The paper raises arguments on urban resilience by different theorists, philosophers, academics and scholars. The study proceeds to unpack the urban resilience determinants. Furthermore, the challenges cites will experience in responding to rapid urbanisation and their denial attitude to informal settlement and environmental degradation, which include how cities respond to climate change, are under investigation. The purpose of the study is to share the theoretical framework relative to the urban resilience determinants, with the intention to solicit criticism on gaps and blind spots. This is done with specific reference to Buffalo City Municipality.

This study aims to contribute to the goals of municipalities by improving understanding of the drivers of urban resilience. This will, in turn, enable a city system to withstand and recover quickly from multiple and diverse shocks and stresses, and improve its performance over time. However, this study was conducted within a qualitative paradigm. The study followed a non-probability sampling technique. Categories of data sources were identified based on their probability to hold information that is crucial to the study. For each category, this study followed a 50 + 1 rule for sampling size when the population of the data sources were identified and access gained.

The statistical software (SPSS) supported by a qualified statistician was used to analyse data qualitatively in attempt to answer the research question. The following variables were identified to be the urban resilience determinants that can be incorporated in a city planning process in order for city to be able to withstand and recover quickly from its stresses and shocks:-

- Urban Transformation;
- Urban Policies and Regulations;
- Urban Safety and Security;
- Urban Planning and Development;
- Informal Settlements; and
- Environmental Degradation.

In conclusion, the study broke new grounds relative to the new urban phenomenon named urban resilience in introducing a conceptual framework that cities can use to determine urban resilience

Key words:

Resilience; Informal Settlements; Environmental Degradation; Decentralisation; Conceptual Framework; Migration; Urban Safety; Urban Planning; Spatial Planning; Urban Design; Urban Sprawl.

LIST OF ABBREVIATIONS AND ACRONYMS

AEC : Architecture, Engineering and Construction

ABTs : Alternative Building Technologies

BCMM : Buffalo City Metropolitan Municipality

BIFM : British Institute of Facilities Management

CCT : City of Cape Town

COJ : City of Johannesburg

CSVR : The Centre for Study of Violence and Reconciliation

DOSD : Department of Social Development

DRJ : Durban Resilience Journey

ECSECC : Eastern Cape Socio-Economic Consultative Council

FAO : Food and Agriculture Organisation

FM : Facilities Management

GDS : Growth Development Strategy

GHG : Green House Gases

HSDC : Human Settlements and Development Conference

IDP : Integrated Development Plan

IEM : Integrated Environmental Management

IFMA : International Facilities Management Association

IPCC : Intergovernmental Panel on Climate Change

IUDF : Integrated Urban Development Framework

JGDS : Johannesburg Growth and Development Strategy

KPA : Key Performance Areas

MDG : Millennium Development Goals

MEC : Member of the Executive Council

NDP : National Development Plan

NGO : Non-Governmental Organisations

PAR : Participatory or Action Research

RDP : Reconstruction and Development Programme

SACN : South African Cities Network

SADEA : South African Department of Environmental Affairs

SAFMA : South African Facilities Management Association

SANDP : South African National Development Plan

SDF : Spatial Development Framework

SOCR : State of South African Cities Report

SPLUMA : Spatial Planning and Land Use Management Act

STATS SA: Statistics South Africa

UDF : Urban Development Framework

UN-Habitat : United Nations Habitat

WGEA : Working Group on Environmental Auditing

LIST OF TABLES

Table 1: Urban shocks and stresses

Table 2: Employing institutions

Table 3: Gender

Table 4: Age

Table 5: Home language

Table 6: Nationality

Table 7: Highest Qualifications

Table 8: Positions occupied at work

Table 9: Number of years in the work position

Table 10: Number of years of experience in the professional field

Table 11: Number of years staying in East London

Table 12: Gardening practice

Table 13: Choice of place of stay

Table 14: Model by-laws as measures for the management of the

environment

Table 15: Environmental Management Instruments

Table 16: BCMM's Environmental Management Strategy

Table 17: Sustainable Developments

Table 18: Disturbance of Ecosystems and loss of Biodiversity

Table 19: Pollution and Degradation of the Environment

Table 20: Disturbance of Landscapes and Heritage Sites

Table 21: Waste Management

| Table 22: | The use and Exploitation of Non-renewable Natural Resources | | | |
|-----------|---|--|--|--|
| Table 23: | The Development, Use and Exploitation of Renewable Resources | | | |
| Table 24: | Risk-averse and Cautious Approach | | | |
| Table 25: | Negative Impacts on the Environment and on people's rights | | | |
| Table 26: | Environmental Justice | | | |
| Table 27: | Equitable Access to Environmental Resources, Benefits and | | | |
| Services | | | | |
| Table 28: | Community Wellbeing and Empowerment | | | |
| Table 29: | Social, Economic and Environmental Impacts | | | |
| Table 30: | Land Audit | | | |
| Table 31: | Spatial Development Framework | | | |
| Table 32: | Five year spatial development plan in the SDF | | | |
| Table 33: | Population growth estimates in the SDF | | | |
| Table 34: | Estimates of housing demand in the SDF | | | |
| Table 35: | National or provincial inclusionary housing policy in the SDF | | | |
| Table 36: | Assessment of the environmental pressures in the SDF | | | |
| Table 37: | Policies that prevent illegal occupation of land | | | |
| Table 38: | Principles, norms, and standards that must guide spatial planning | | | |
| Table 39: | Land Use Schemes | | | |
| Table 40: | Inclusion of affordable housing in residential land development | | | |
| Table 41: | Land Use and Development Incentives | | | |
| Table 42: | By-laws aimed at enforcing its land use scheme | | | |
| Table 43: | Land Development Applications | | | |
| Table 44: | The Compilation, Approval, and Review of the Components of an | | | |
| IDP | | | | |
| Table 45: | Redressing of Past Spatial and other Development Imbalances | | | |
| Table 46: | Inclusion of Persons and Areas that were Previously Excluded | | | |
| Table 47: | Spatial Planning Mechanisms | | | |
| Table 48: | BCMM Land Use Management Systems | | | |
| Table 49: | BCMM Land Development Procedures | | | |
| Table 50: | BCMM Spatial Planning vs Land Use Management Systems | | | |
| Table 51: | Protection of Prime and Unique Agricultural Land | | | |
| Table 52: | Consistency of Land Use Measures | | | |
| Table 53: | Effective and Equitable Functioning of Land Markets | | | |

| Table 54: | Land Development in Sustainable Locations and Limited Urban | |
|-----------|---|--|
| Sprawl | | |
| Table 55: | Density, Diversity and mix of Uses, Users, and Building Types | |
| Table 56: | Walking as the preferred mode of travel | |
| Table 57: | Transit Supportive Development | |
| Table 58: | BCMM's Energy and Resources | |
| Table 59: | Needs of Daily Living | |
| Table 60: | Climate Change in BCMM | |
| Table 61: | Technical and Industrial Systems and Processes | |
| Table 62: | Renewable Resources | |
| Table 63: | Participation of Community Members | |
| Table 64: | Redundancy and Durability of Safety and Critical Infrastructure | |
| | Systems | |
| Table 65: | Building types and urban forms with reduced servicing costs | |
| Table 66: | A Comprehensive Security and Rule of Law | |
| Table 67: | Financial Management, Revenue Streams, Business Investments | |
| Table 68: | Reduced Exposure and Fragility | |
| Table 69: | Effective Provision of Critical Services | |
| Table 70: | Reliable Communication System and Mobility | |
| Table 71: | Effective Leadership and Management | |
| Table 72: | Empowered Stakeholders | |
| Table 73: | Integrated Development Plan (IDP) | |

LIST OF FIGURES

Figure: 1: Conceptual Urban Resilience Framework

Figure 2: Geographic location of East London in Buffalo City Municipality

TABLE OF CONTENTS

| DECLAR | ATION | II |
|---------|---|-----|
| ACKNO\ | WLEDGEMENTS | III |
| ABSTRA | CT | IV |
| LIST OF | ABBREVIATIONS AND ACRONYMS | VI |
| LIST OF | TABLES | VII |
| LIST OF | FIGURES | X |
| | TER 1: | |
| | GROUND TO THE STUDY AND ITS SETTINGS | |
| 1.1 | INTRODUCTION | |
| 1.2 | STATEMENT OF THE PROBLEM | |
| 1.3 | STATEMENT OF THE SUB-PROBLEMS | |
| 1.4 | THE RESEARCH QUESTIONS | |
| 1.5 | IMPORTANCE OF THE STUDY | |
| 1.6 | AIM OF THE STUDY | |
| 1.7 | RESEARCH OBJECTIVES | 8 |
| 1.8 | DELIMITATION OF THE STUDY | 8 |
| 1.9 | ASSUMPTIONS OF THE STUDY | 8 |
| 1.12 | DEFINITION OF FUNDAMENTAL CONCEPTS | 10 |
| 1.13 | STRUCTURE OF THE TREATISE | 12 |
| 1.14 | CONCLUSION | 13 |
| СНАРТ | TER 2: | 14 |
| THE UI | RBAN RESILIENCE FRAMEWORK | 14 |
| 2.1 | INTRODUCTION | 14 |
| 2.2 | CURRENT STATUS IN CITIES | 15 |
| 2.3 | BCMM CURRENT STATUS | 17 |
| 2.4 | BUFFALO CITY METROPOLITAN MUNICIPALITY STRATEGIC ENDEAVOURS | |
| 2.5 | RESILIENCE STRATEGIES OF MAJOR CITIES IN SOUTH AFRICA | 19 |
| 2.6 | CONCEPTUAL URBAN RESILIENCE FRAMEWORK | 24 |
| 2.6 | .1 Transformation of Cities | 26 |
| 2.6 | .2 Urban Policies and Regulations: | 32 |
| 2.6 | .3 Urban Safety and Security | 37 |

| 2.6. | .4 | Urban Planning and Development | 41 | | |
|-------|------|--|-----|--|--|
| 2.6. | .5 | Informal Settlements | 48 | | |
| 2.6. | 5.4 | Environmental Degradation | 56 | | |
| 2.7 | COI | NCLUSION | 63 | | |
| CHAPT | ER 3 | 3: | 64 | | |
| RESEA | RCH | I DESIGN AND METHODOLOGY | 64 | | |
| 3.1 | INT | RODUCTION | 64 | | |
| 3.2 | SEL | ECTION OF CASES | 65 | | |
| 3.3 | TAF | RGET POPULATION | 66 | | |
| 3.4 | SAN | MPLING SIZE | 67 | | |
| 3.5 | DA | TA COLLECTION TECHNIQUES | 67 | | |
| 3.6 | QU | ESTIONNAIRES | 67 | | |
| 3.7 | THE | E USE OF DOCUMENTS | 68 | | |
| 3.8 | INT | ERVIEWS | 68 | | |
| 3.9 | COI | NFERENCE PAPER REVIEW FEEDBACK | 68 | | |
| 3.10 | DA | TA PRESENTATION | 69 | | |
| 3.11 | DA | TA ANALYSIS | 69 | | |
| 3.12 | PRI | MARY DATA | 70 | | |
| 3.13 | SEC | SECONDARY DATA | | | |
| 3.14 | ETH | HICAL CONSIDERATIONS | 70 | | |
| 3.15 | DIS | SEMINATION OF FINDINGS | 71 | | |
| 3.16 | COI | NCLUSION | 72 | | |
| CHAPT | ER 4 | 4: | 73 | | |
| RESUL | TS, | ANALYSIS AND INTERPRETATION | 73 | | |
| 4.1 | INT | RODUCTION | 73 | | |
| 4.2 | RES | SULTS | 74 | | |
| 4.2. | .1 | Demographic Information | 74 | | |
| 4.2. | .2 | Environmental Degradation | 80 | | |
| 4.2. | .3 | Spatial Planning and Land-Use Management | | | |
| 4.2. | .4 | Urban Resilience Principles in the City planning | | | |
| 4.3 | INT | ERVIEWS | | | |
| | | SPONDING TO RESEARCH QUESTIONS | | | |
| 4.4. | | Question One | | | |
| 4.4. | 2 | Question Two | 121 | | |

| 4.4 | .3 Question Three | 123 |
|-------|---|-----|
| 4.4 | .4 Question Four | 125 |
| 4.5 | CONCLUSION | 126 |
| CHAPT | ER 5: | 127 |
| SUMMA | ARY, CONCLUSIONS AND RECOMMENDATIONS | 127 |
| 5.1 | INTRODUCTION | 127 |
| 5.2 | SUMMARY | 127 |
| 5.3 | CONCLUSIONS | 129 |
| 5.4 | RECOMMENDATIONS OF THE STUDY | 131 |
| 5.5 | RECOMMENDATIONS FOR FURTHER RESEARCH | 132 |
| 5.6 | CONCLUSION | 132 |
| APPEN | IDIX I: THE QUESTIONNAIRE | 142 |
| APPEN | IDIX II: SUPPORT TO CONDUCT RESEARCH | 155 |
| APPEN | IDIX III: REQUEST TO CONDUCT RESEARCH | 156 |
| APPEN | IDIX IV: PERMISSION TO CONDUCT RESEARCH | 158 |
| APPEN | IDIX V: CERTIFICATE OF PROOFREADING | 159 |

CHAPTER 1:

BACKGROUND TO THE STUDY AND ITS SETTINGS

1.1 INTRODUCTION

The National Climate Change Response: White Paper (2011: 21) reveals that urban areas only cover one and a half percent of South Africa's surface area. However, sixty one percent of South Africans live in urban areas. Furthermore, the White Paper discloses that the average growth rate for urban areas has been consistently higher than the population growth rate during the period from 1998 to 2008. This resulted in larger towns and cities growing at the expense of rural areas, with metropolitan areas experiencing the highest influx, followed by secondary cities. In the White Paper it is also stated that urban areas benefit in terms of sustainability, for example, a concentration of people limits the need for land and makes the provision of basic services more valuable. However, urban areas consume more water, food, energy, and durable goods, and have an impact far beyond the urban boundaries, thus causing urban decline (White Paper, 2011: 21). This is, unless a city is resilient.

The urban decline is furthermore related to the loss of biodiversity and the pollution of land, water, and air. The rapid influx of people into urban areas that are already overcrowded with large service delivery backlogs, has led to the formation of informal settlements in exposed locations. Many of the informal dwellings in South Africa are subjected to environmental factors. The absence of basic services in overcrowded areas is linked to negative health outcomes and enhanced environmental degradation, mostly as a consequence of the collection of local resources for energy, and localised pollution. According to the constitution of the Republic of South Africa, Act 108 of 1996 (South Africa 1996: sec 21:3), people have a right to choose a place of residence anywhere in the republic. However, urban authorities need to identify urban resilience determinants.

The more people and assets are concentrated in cities, the more complex the array of shocks and stresses can influence, negatively or positively, resilience (Habitat 2015:2). The problems caused by urbanisation vary from city to city in South Africa. For this study the focus is on East London, Buffalo City Metropolitan Municipality (BCMM) in the Eastern Cape, wherein most critical shocks and stresses result from the formation of informal settlements in low and middle income areas. The city authorities are often unable to keep up and formally meet new housing demands. From the city's perspective key problems include the following (Hamann 2012:28):

- Stresses of pressure on land;
- Environmental decline;
- Difficulty in waste management;
- Scarcity of resources;
- Access to basic services;
- Urban crime and violence;
- Natural and human-made disasters;
- Traffic congestion;
- Inadequate, deteriorating, and aging infrastructure;
- Housing shortages, resulting in formation of informal settlements; and
- Poverty and unemployment.

This situation primarily dates back to the 1970s and 1980s era when there was a confluence of de-industrialisation, a take-off of the migration of black people from rural areas to the cities and towns, and a withdrawal of the state from the segregated public housing provision. This resulted in large scale unemployment, proliferation of informal settlements in urban centres, dilapidating environmental infrastructure that could not withstand the rapid urban population growth, a deteriorating public health profile and a phenomenal decline in the education system (HSD Conference Call 2016:2).

Taking cognisance of the above, the question is: how do urban authorities remedy, manage, or plan to overcome the stresses and shocks that are evident in their local municipalities? South Africa's National Development Plan (Vision 2030:56) asserts that the main challenge in planning for urban areas into the future is to ensure the design and implementation of job creation-linked development programmes and the establishment of well-performing human settlements. South Africa's Integrated Urban Development Framework (IUDF 2014:39) notes that job creation should be linked to sustainable livelihoods, with due consideration of rural-urban linkages while addressing urban deficiencies.

Within the rising social frustration and anger fuelled by consequential poverty and economic marginalisation, a human development centred-approach to development management should be at the heart of what municipalities do and how they function. However, a number of municipalities lack possession of correct remedial measures to fulfil this task. The local government sphere will require an intelligent and well-grounded leadership, administrative professionalism, a capable workforce, predictable and productive social compacts, coherent functions and fiscal autonomy. It is increasingly evident that without economic leadership by large metropolitan economies, South Africa as an economy itself will not grow. Cities are increasingly the engine rooms of the national economy. Cities also provide the surest, quickest route to poverty reduction (Jonas 2015:1).

1.2 STATEMENT OF THE PROBLEM

The rapid influx of people in urban areas, which can be attributed to rural-urban migration and international migration, results in urban sprawl and urban decline.

1.3 STATEMENT OF THE SUB-PROBLEMS

Sub-problem One:

Formation of informal settlements in vulnerable areas.

Sub-problem Two:

Larger towns or cities are generally growing, resulting in a shortage of land in urban areas for development of low income housing.

Sub-problem Three:

Lack of urban resilience thinking in the city planning processes which result in urban decline.

1.4 THE RESEARCH QUESTIONS

Question 1:

What are the solutions to environmental degradation?

Question 2:

How can local municipalities manage space for the development of low income housing for new city entrants?

Question 3:

How can urban resilience thinking help local municipalities to withstand and recover quickly from diverse shocks and stresses?

Question 4:

What framework should a city use in order to deal with the totality of its stresses and shocks?

1.5 IMPORTANCE OF THE STUDY

Habitat III (2015:1) states that resilience appears to be the central theme of urban development serving as the basis for a wide range of strategic interventions and investments among the world's leading development institutions and within the humanitarian community. Resilience thinking will help the East London local government, communities and businesses to think about the interconnected nature of urban planning on social, economic and environmental levels. Urban resilience focuses on how individuals, communities and businesses not only cope in the face of multiple shocks and stresses, but also realise opportunities for transformational development (Habitat III 2015:1).

A resilient individual is able to withstand and adapt to stress and adversity. However, a resilient municipality, like a resilient individual, should have a strong learning capacity and be well connected to a variety of external support systems (Harrison 2014:10). Thus it can be said that resilience is a quality of sustainable urban development, as much as a driver of development itself. Urban resilience identifies the urban area as a dynamic and complex system that must continually adapt to various challenges in an integrated and holistic manner (Habitat III 2015:1). This same paper further states that transformed attention to urban resilience has brought a number of significant advances.

It encourages attention to a broader range of shocks and stresses and seeks to understand the effect of these on urban systems. It also seeks to leverage knowledge of risk, exposure and vulnerability in order to identify opportunities for transformational development (Habitat III 2015:3). The external environment can 'positively or negatively' affect the performance of businesses. However, businesses need to analyse the environments in which they trade (Johnson 2011:15). Resilience assists in making the linkages between how urbanisation that results in sprawl not only disconnects residential areas from sources of livelihoods, but can also prolong reliance on high-emission, fossil fuel-generated energy and transport systems. Awareness of the inter-connected nature of risk and opportunities for transformation help municipal leaders and investors make more informed and sustainable policy and investment decisions (Habitat III: 2015:5).

A resilient approach to development can also improve governance challenges by highlighting the link between the breakdown of regulatory functions in urban areas and the creation of vulnerabilities to natural and other hazards. Resilience is playing a more important role in finance decisions that ultimately affect the form and function of the city. It also assists investors to focus on climate change risks when it comes to investment decisions. Habitat III write this in a consistent format every time you refer to this source. Habitat III (2015:4) also reveals that without good urban planning, poor and counterproductive investments may replace otherwise profitable and sustainable ones. Many national policies address resilience through managing disaster risk and are increasingly integrated with climate change policies. Harmonising these with related policies that consider resilience in the context of other stressors remains a gap (Habitat III: 2015:7).

1.6 AIM OF THE STUDY

This study aims to assess whether urban resilience principles are included in the city planning processes in order to contribute to the goals of local municipalities by improving understanding of the drivers of urban resilience, enabling a city system to withstand and recover quickly from multiple and diverse shocks and stresses, and improving its performance over time. According to Habitat III (2015:1), resilience provides a principal framework to address the risks and realise the opportunities associated with the rising incidence and costs of urban disasters. In addition to the current and anticipated impacts of climate change, the protection of critical ecosystem services and natural resources is also of pertinence. Furthermore, this study strives to provide a conceptual framework which East London and / or any other city can utilise to determine urban resilience.

1.7 RESEARCH OBJECTIVES

The main objectives of this study are:

- To investigate solutions to environmental degradation;
- To examine methods or approaches that a municipality can follow to optimise on the available space or land (land use management);
- To explore the manner in which urban resilience principles can be incorporated in city planning; and
- To provide a conceptual framework which cities can use to determine urban resilience.

1.8 DELIMITATION OF THE STUDY

Firstly, the study is about generating a conceptual framework for inclusion of urban resilience principles in the planning processes of Buffalo City Metropolitan Municipality (BCMM). Secondly, the study strives to sift through all the elements of urban resilience rather than going into it in a detailed manner. Thirdly, the study will focus only on East London (BCMM).

1.9 ASSUMPTIONS OF THE STUDY

Assumptions of the study are things that are somewhat out of the researcher's control, but if they disappear the study would become irrelevant (Simon 2011:1). Leedy and Ormrod (2010:59) postulated that assumptions "... are so basic that, without them, the research problem itself could not exist." According to Simon (2011:1), "The assumptions must be valid or else the research is meaningless". The same author further states that the choice regarding which paradigm (qualitative or quantitative) one chooses to inform their studies comes with assumptions that affect the study.

This section sets out the key assumptions that the researcher will follow during the investigation. Considering the problem and sub-problems the following assumptions were made:

- Poverty and hunger result in rural-urban migration;
- Backlog of low cost housing delivery and lack of a strategy by BCMM to receive new city entrants result in the formation of informal settlements;
- Lack of resilient thinking by the BCMM result in environmental degradation;
- The study intended to survey the top managers of the BCMM. However, it was assumed that not all of them will be reached and not all of them will have time to participate in the research;
- It was also assumed that access to the BCMM to be able to conduct surveys will not be easily gained;
- The population used in the study are at the managerial levels of their organisations and are well informed of the urban resilience determinants;
- It was further assumed that NGO's and private businesses that operate in the human settlement sphere will be reached and surveyed;
- The qualitative research paradigm was also assumed suitable for purposes of this study; and
- It was assumed that data was divulged in an honest and reliable manner.

However, during the time of field work the researcher experienced difficulties (at least three months) in gaining access to BCMM to be able to conduct research. The researcher managed to get hold of all the heads of the departments relative to urban resilience within BCMM, except for the acting head of the Department of Infrastructure who did not want anything to do with research (students). Most of the private businesses did not participate in the study. Throughout all the dynamics in the field work, a mixed-methods paradigm had to be adopted due to a snowball technique chosen in the methodology and design chapter.

1.12 DEFINITION OF FUNDAMENTAL CONCEPTS

Resilience:

"The speed with which a system returns to equilibrium after displacement, irrespective of how many oscillations are required" (Bodin 2004:35).

"The ability of communities to withstand external shocks to their social infrastructure" (Adger 2000:347).

Informal Settlements:

"Are residential areas where 1) inhabitants have no security of tenure vis-à-vis the land or dwellings they inhabit, with modalities ranging from squatting to informal rental housing, 2) the neighbourhoods usually lack, or are cut off from basic services and city infrastructure and, 3) the housing may not comply with current planning and building regulations, and is often situated in geographically and environmentally hazardous areas" (Habitat III 2015:1).

Environmental Degradation:

"Environmental degradation is defined as actions taken by people that cause the planet Earth or its systems (air, water, etc.) to become damaged or harmed in some way" (Your Dictionary definition 2015).

Decentralisation:

"Process of reorganisation of the State involving a gradual transfer of responsibilities originally concentrated in central government towards other spheres of government (federal, regional, provincial or municipal)" (Habitat III 2015:1).

Conceptual Framework:

"A group of concepts which are broadly defined and systematically organised to provide a focus, a rationale, and a tool for the integration and interpretation of information. Usually expressed abstractly through word models, a conceptual framework is the conceptual basis for many theories, such as communication theory and general systems theory" (Mosby's Medical Dictionary 2009: Elsevier).

Migration:

"Migration can be defined as a change in a person's permanent or usual place of residence" (Census 2011:25).

Urban Safety:

"Urban safety also includes the enhancement of individual rights including the physical, social and psychological integrity of a person" (Habitat III 2015:2)

Urban Planning:

"A decision-making process aimed at realising economic, social, cultural and environmental goals through the development of spatial visions, strategies and plans and the application of a set of policy principles, tools, institutional and participatory mechanisms and regulatory procedures" (Habitat III 2015:1).

Spatial Planning:

"Covers a large spectrum of scales ranging from neighbourhood, city/municipality, city region/ metropolis to national and supra-national/Trans-boundary. It aims at facilitating and articulating political decisions and actions that will transform the physical and social space and affect the distribution and flows of people, goods and activities" (Habitat III 2015:1).

Urban Design:

"Is the multi-disciplinary process of shaping the physical setting for life in cities, towns and villages; it involves the design of spaces, landscapes, building and groups of buildings and the establishment of frameworks and processes that facilitate successful development" (Habitat III 2015:1).

Urban Sprawl:

"It is the physical expansion of the city's built environment, which usually uses up surrounding rural areas. It is generally characterised by low-density settlements that are car dependent and often lack access to public infrastructure and services" (Habitat III 2015:1).

1.13 STRUCTURE OF THE TREATISE

Chapter 1 serves as an introduction and general orientation to the study of urban resilience determinants. It presents the problem statement, the purpose of the study, its objectives and research questions. Assumptions, ethical considerations followed by the delimitations of the study are, also discussed. Key terms that underpin the study are defined, and an overview of the main research activities, timeframes and resource implications are unveiled.

Chapter 2 discusses the phenomenon of urban resilience. This chapter seeks to highlight the current status in cities and the transformation that cities need to undergo to enable them to become the cities of tomorrow. It raises arguments on urban resilience by different theorists, philosophers, academics and scholars. Furthermore, it seeks to unpack the urban resilience determinants. The challenges cities will experience to respond to urbanisation and their denial attitude to informal settlement and environmental degradation which include how cities respond to climate change are explored.

Chapter 3 describes the research design and methodology of the study. It further details the nature of the sample, the measurement instrument, and the statistical analysis that was performed in the analysis of data.

Chapter 4 presents the empirical results of the field study that was conducted, utilising a pre-determined measurement instrument. It shows the nexus between the theoretical framework and data collected on various urban resilience determinants in contemporary cities. The results are interpreted and the findings of the study are unpacked.

Chapter 5 summarises the research effort. It offers conclusions in the light of primary findings and certain limitations of the study. It presents managerial recommendations, which, if considered, should ensure implementation of sound urban resilience practice, and yield sustainable cities and communities.

1.14 CONCLUSION

This chapter presented the background of the study and its settings. Several sources of information were consulted in order to provide insight and direction of what exactly the study is about. Data was gathered as a holistic introduction and general orientation to the study, which later on led to the development of the statement of the problem. Sub-problems and research questions were formulated to give direction to all following chapters. For the purpose of this study, and because "Urban Resilience" is a new phenomenon in the research space, it was obligatory for the researcher to formulate research questions instead of a hypothesis. Having done so, it is believed that research questions will yield the desired findings of the study rather than a hypothesis.

In the next chapter, the discussions of this new urban phenomenon are presented. Arguments on urban resilience by different scholars, academics, theorists, and philosophers are raised. Urban resilience determinants are unpacked. The challenges that cities will experience to respond to urbanisation and their denial attitude to informal settlement and environmental degradation, which include how cities respond to climate change, are also explored.

CHAPTER 2:

THE URBAN RESILIENCE FRAMEWORK

2.1 INTRODUCTION

Chapter 1 served as a holistic introduction and general orientation to the study of urban resilience determinants with specific reference to East London in BCMM. This chapter discusses the phenomenon of urban resilience. The chapter further seeks to highlight the current status in cities and the transformation that cities need to undergo to enable them to become the cities of tomorrow. It raises arguments on urban resilience by different theorists, philosophers, academics and scholars. Furthermore, the chapter seeks to unpack the urban resilience determinants. The challenges cities will experience to respond to urbanisation and their denial attitude to informal settlement and environmental degradation, which include how cities respond to climate change, are discussed.

Ensuring livable conditions within the context of such rapid urban population growth in the cities requires a deeper understanding of the urban resilience concept. The urgency around these challenges prompt many cities around the world to find smarter ways to manage them and thus, label them "smart cities" (Chourabi 2012:1). One way to conceptualise a resilient city is as an icon of a sustainable and livable city. Although the phrase 'urban resilience' is used most frequently, there is still not a clear and consistent understanding of the concept among municipalities. Only a limited number of studies investigated and systematically considered questions related to this new urban phenomenon called resilient cities.

The chapter attempts to start filling this gap by identifying important trends about cities as they invest in new ways to become resilient. By exploring an extensive array of literature from various fields such as the current status in cities, transformation of cities and arguments by scholars of the urban resilience determinants, valuable background is gathered. Identifying and discussing challenges, success factors, the impacts of urbanisation and, a denial attitude to informal settlements, are discovered. The impact of climate change on a city striving to become resilient is also further studied.

This chapter covers various headings related to sub-problems namely:

- BCMM current situation;
- BCMM strategic endeavours;
- Current status and urban resilient strategies of the three major cities in South Africa (i.e. City of Cape Town, City of Johannesburg, and Durban);
- Urban Transformation;
- Urban Policies and Regulations;
- Urban Safety and Security;
- Urban Planning and Development;
- Informal Settlement; and
- Environmental Degradation.

2.2 CURRENT STATUS IN CITIES

According to the IUDF (2016:22), South Africa's urban areas continue to be disadvantaged by a legacy of racial discrimination, poverty and exclusion from social and economic opportunities. The spatial legacy is one of urban sprawl, low densities, functional segregation between home and work, and overlapping racial and class separations. As a result, high levels of inefficiency and wasteful use of scarce resources characterise the South African cities and towns. Despite significant service delivery and development gains since 1994, the IUDF (2016:22) states that Apartheid spatial patterns have not been reversed. The cumulative effect is that it is more difficult to reverse Apartheid geographies today than in 1994.

The economic output and job opportunities are largely concentrated in South Africa's largest cities. This resulted in a rapid movement of individuals and households into these areas of relative opportunity. This process is arguably positive, as it brings the population into a stronger alignment with jobs, livelihood opportunities and services. However, South African cities and towns are unfortunately experiencing the downward pressures of urbanisation.

The potential of urban areas is maximised with the alignment and integration of investments in:

- transportation (public modes and roads);
- Human settlements;
- Infrastructure networks comprising social, economic and ecological infrastructure; and
- Various land-use regulations and effective governance that underpin all of the above (IUDF 2016:20).

In brief, the State of South African Cities Report (SoCR) (full title? Always full title with abbreviation in brackets with first instance. Thereafter the abbreviation can be used) (2016:10) tells a story that cities are well-positioned to take a leading role in South Africa's economic recovery and development. However, there are issues of exclusion to be concerned about. This same paper reveals that cities are associated with promise and opportunity, but also exclude many people from participating in the economy and accessing opportunities in various ways. Yet they continue to attract many from rural areas and less prosperous cities, towns and villages in South Africa. Few arrive with the skills and resources to compete for jobs in the city, and these formal employment opportunities are becoming increasingly scarce. The result is increased poverty, unemployment, overcrowding and social tension (SoCR 2016:10).

A phenomena, such as collective violence and the vulnerability of populations (e.g. youth and foreign migrants), may be associated with this inability of cities to meet their inhabitants' rights and expectations to access urban resources, services and opportunities. SoCR (2016:10) further states that many of the issues and solutions are not exclusively within the mandate of local government and the activation of communities become important, such as in the case of education, health and social development. Spatial transformation is critical for cities to become more productive, inclusive and sustainable.

2.3 BCMM CURRENT STATUS

Habitat III (2015:3) classifies urban shocks and stresses as indicated in Table 1 below. Most of these, which are interrelated to East London as a city, will be discussed in the next chapters of the study report.

Table 1: Urban shocks and stresses

Socio-economic-political-Natural Technological cultural Crises • Epidemic and Pandemic · Chemical Spill · Housing Crisis Insect Infestation Collapse • Energy Crisis Drought Explosion Food Crisis • Extreme Temperature • Fire Water Crisis Wildfire Gas Leak Terrorism • Earthquake Oil Spill Massacre Mass Movement Poisoning Social Conflict Volcano Radiation · Economic Crisis Flood Transport Accident · Business Discontinuity • Storm • Systems breakdown • Excessive Unemployment (e.g., Water, Energy, ICT, War Health, Education, etc.) Political Conflict Corruption

Source: Habitat III (2015:3)

According to the BCMM Integrated Development Plan (2012/13:31), the stresses and shocks facing the municipality have been categorised into five Key Performance Areas (KPA's) as strategic focus areas leading to urban resilience. These include:

- KPA1: Municipal transformation and development;
- KPA2: Basic service delivery and infrastructure development;
- KPA3: Local economic development;
- KPA4: Municipal financial viability and management; and
- KPA5: Good governance and public participation

2.4 BUFFALO CITY METROPOLITAN MUNICIPALITY STRATEGIC ENDEAVOURS

According to the Housing Act, Act 107 of 1997: sec 9), every municipality must take all reasonable and necessary steps to set housing delivery goals, identify and designate land for housing development, initiate, co-ordinate, facilitate, promote and enable appropriate housing development. The BCMM Annual Report (2014:100) reveals that the Metro has lacked a coherent strategy for land acquisition apart from the fact that public land is vested in the State. However, the municipality emphasised that there is simply no land available for housing development in the Metro. Thus, there is a need for further land acquisition.

According to Census (2011:14), BCMM has 223 468 households, with a population density of 400 people per hectare. There are approximately 50 386 informal settlement structures located in 154 informal settlements within the BCMM Urban Edge (Census 2011:49). The highest density and number of informal settlement structures is located in Duncan Village (BCMM Integrated Development Plan 2014:101). There are a further 28 000 backyard shacks located in BCMM, with the highest numbers being in the greater East London area, Mdantsane and Potsdam area. According to the BCMM Integrated Development Plan (IDP) (2014:101) the Housing Sector Plan records a total housing need of 121 000 units. This represents 75 000 units, including all levels of income and housing types, within the urban edge, and 46 000 units in rural areas (BCMM IDP 2014:101).

The BCMM Draft Annual Report (2013/14:9) further points out that there is a backlog on road networks in the Metro. However, in order to eliminate this road network backlog within the Metro, an amount of R600 million will be required for a period of three years in the capital budget. In terms of bio-diversity and landscape, BCMM commits to its stakeholders the following:

- To ensure a healthy environment and protect its environmental assets;
- To ensure that the unique environment of the Metro is conserved, protected and enhanced for current and future generation; and
- To prioritise environmental education initiatives within the Metro.

BCMM concluded that climate change has become one of the threats to the development of the Metro. However, a solution will require the Metro to carefully consider its vulnerability. The BCMM Draft Annual Report (2013/14:163) reveals that the Metro has a strategy in place for climate change, but it is awaiting Council approval. The strategy aims at analysing situations, which includes a vulnerability assessment and developing key response strategies and actions necessary to adapt, mitigate and reduce the impact of climate change in the Metro.

BCMM furthermore publicly announces that natural ecosystems in the Metro are now coming under ever-increasing pressure from development and other urbanisation and land use related pressures. The need for the bio-diversity sector plan becomes a priority for the municipality in order to ensure that decisions regarding the natural ecosystems and green open spaces are more adequately integrated into land use planning decisions (BCMM Draft Annual Report 2014:164).

2.5 RESILIENCE STRATEGIES OF MAJOR CITIES IN SOUTH AFRICA

Managing informal settlements involves, inter alia:

- Planning and controlling where they are located;
- How and where they grow;
- Improving the social, economic, and basic health conditions in them; and
- Ensuring that residents in these settlements and neighbouring communities enjoy social justice.

Land tenure security is important in many improvement strategies because it provides the much needed stability for these strategies to succeed. Globally, the management of informal settlements poses one of the most serious development challenges and increasing the level of land tenure security is a key factor in improving the residents' quality of life (Barry 2005:43).

City of Cape Town Stresses and Shocks:

Cape Town faces a number of challenges including:

- a high carbon footprint compared to other similar cities;
- poor energy security;
- rapid urbanisation and associated energy poverty;
- urban sprawl; and
- vulnerability to the impacts of climate change (Cape Town's Action Plan for Energy and Climate Change 2011:3)

Action Plan Objectives:

- Citywide: 10% reduction in electricity consumption by 2012, off a 'business-asusual' baseline;
- Council (local authority) operations: 10% reduction in energy consumption by 2012;
- 10% renewable and cleaner energy supply by 2020. Meet growth in electricity demand with cleaner/renewable supply, among other sources;
- Build a more compact, resource-efficient city;
- Develop a more sustainable transport system;
- Adapt to and build resilience to climate change;
- Improve the resilience of vulnerable communities;
- Enable local economic development in the energy sector;
- Access climate finance; and
- Raise awareness and promote behaviour change through communication and education.

'Facing an uncertain climate future, Cape Town aims to be a low-carbon city – a city that is resilient, adapting well and always acting for the common good, with social justice as our guiding principle.' (Cape Town's Action Plan for Energy and Climate Change 2011:3)

Durban Stresses and Shocks:

Clearly, in the Durban context it is the 'slow-build' issues that are of most concern when thinking about preparing the city for change. The provision of basic services, building social cohesion and trustworthy leadership, securing multiple revenue streams for the municipality and developing human resourcefulness in the face of a future where government will find it increasingly difficult to provide, are all seen as foundational components in thinking about how to prepare the city for future change. (Durban Resilience Journey, 2014:1).

Action Plan Objectives:

- Rebuilding the 'societal fabric' that allows the city to stand stronger in the face
 of change: a society built on warmth and generosity;
- Ensuring the provision of key services (water and housing);
- Planning an economy that enhances human wellbeing, equality and ecological infrastructure;
- Planning differently to incorporate ecosystems as key ecological infrastructure;
- Enhancing transport infrastructure;
- Energy infrastructure for a low-carbon future and preparing for climate change;
- Building human resourcefulness and supporting existing creativity;
- Promoting adaptive governance that incorporates critical reflection and learning into processes;
- Strengthening partnerships between government, business and communities;
 and
- Facilitating 'platforms for conversation' to inspire new thinking and innovation etc. (DRJ 2014:1).

Johannesburg Stresses and Shocks:

Successful global cities such as Beijing have been carrying out long-term planning for centuries, with modern planning reflected within defined city strategies (City Of Johannesburg 2011:6). These serve to define a chosen development path, providing a foundation for:

- Pragmatically confronting complex challenges and defining long-term strategic choices;
- Framing medium-term operational plans;
- Allowing for the timeous conceptualisation and initiation of projects that require extensive lead times and long-term development;
- Linking long-term citywide outcomes with operational outputs; and
- Stimulating public interest in and action towards agreed and commonly held future outcomes.

Worldwide, cities are confronted by an ever-increasing complexity of challenges. With the future of cities becoming more unpredictable and uncertain, the development paradigm in relation to cities has changed. In this context, city strategies must navigate the uncomfortable tension between defining a chosen development growth path, and accommodating uncertainty (COJ 2011:6). The current context reinforces the notion that city development is not a linear process – and that change itself is never linear. As such, it is important to develop an open ended and holistic city strategy that provides a 'rough consensus' of strategic choices, to guide future development. Strategies of this nature can then meaningfully inform a range of long-term strategic plans and programmes. As an illustration of the changing paradigm in cities, some of the contributors to uncertainty include (COJ 2011:6):

- Increasing migration: A shifting population: While a global phenomenon, South Africa and Johannesburg in particular continues to attract migrants seeking economic opportunity, access to services, political asylum and refuge. The pace and scale of migration between and within provinces, rural areas, towns and cities is complex, with significant movement between secondary towns and primary cities, between homes in rural areas and places of work in the city, and between the urban core and its peripheries.
- Globalisation: There are benefits and risks associated with an interconnected world. Cities serve as engine rooms of regional and national economies, while also operating as connective nodes through which global capital circulates. This interconnectedness simultaneously promotes growth and opportunity, while making cities vulnerable to global change.

- Climate change: Climate change is driving widespread temperature increases
 across the globe, with shifts in the global weather system creating conditions
 for high temperature variability and unpredictability. The impact of climate
 change will challenge the adaptive capacity and resilience of cities especially
 with respect to city infrastructure systems.
- <u>Natural resource scarcity:</u> Increased resource exploitation, pollution and waste production have resulted in multi-dimensional social, political, economic and environmental difficulties.
- Technological innovation: Technological innovation is driving fast, unexpected and unpredictable changes in society, the economy, politics and nature. Knowledge and information are at the centre of this change, as new modes of production and consumption transform the old way of doing business. Cities are driving this new revolution in information, communication and technologies, and therefore hold a responsibility to ensure effective technology transfer to the rest of the economy.
- Inequality: Inequality often manifests itself within cities. Growing inequality represents a major challenge to the social and economic sustainability of cities. Continued inequalities have led to the establishment of the Millennium Development Goals (MDGs), which focus on a number of objectives: eradicating extreme poverty and hunger; achieving universal primary education; promoting gender equality and empowering women; reducing child mortality; improving maternal health: combatting HIV/AIDS, malaria and other diseases; ensuring environmental sustainability; and developing a Global Partnership for Development (Johannesburg Growth and Development Strategy 2011:8).

City of Johannesburg Resilient Strategy:

Migration, globalisation, climate change, natural resource scarcity, technological innovation and inequality are just some of the major drivers of uncertainty. These drivers of uncertainty are hard to plan for and equally hard to predict. The changing paradigm means that the City of Johannesburg has no choice but to embrace uncertainty. To cope with these drivers of change, the city must build its adaptive capacity, ensuring it is more resilient to change and more adept at seizing opportunities as they arise according to the Johannesburg Growth and Development Strategy (JGDS) (2011:9).

Within the growing future uncertainty, the city must continue to focus on the important 2006 Growth and Development Strategy (GDS) principles that seek to transform the unjust Apartheid city of the past into a just, equitable, multi-cultural, multi-racial city of the future. The city cannot allow current challenges to derail the tremendous progress made in tackling poverty and overcoming the legacy of Apartheid (COJ 2011:8).

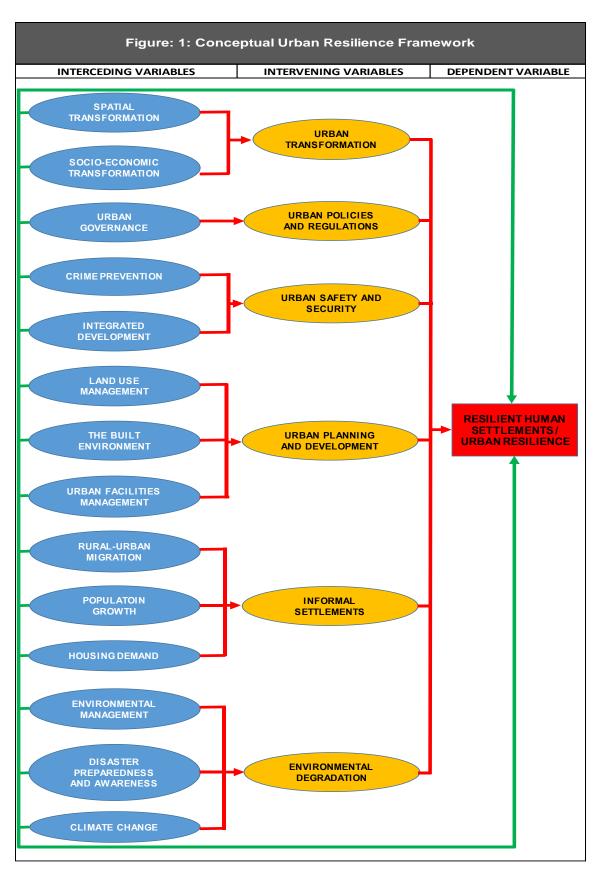
2.6 CONCEPTUAL URBAN RESILIENCE FRAMEWORK

While conducting research relative to urban resilience determinants, the researcher identified the dependent variable as 'urban resilience'. The review of the related literature presented in Chapter 1 furthermore clearly identified the following six fundamental variables as urban resilience determinants:

- Urban Transformation;
- Urban Policies and Regulations;
- Urban Safety and Security;
- Urban Planning and Development;
- Informal Settlements; and
- Environmental Degradation.

The aforementioned conceptualised interrelationships are depicted in figure 1 below:

Figure: 1: Conceptual Urban Resilience Framework



Source: Ntakana (2016)

2.6.1 Transformation of Cities

In this study transformation is discussed as a multi-dimensional concept to effect social change in South Africa's society in the post-Apartheid era. The policy implications of such a multi-coloured understanding of social change are examined with special reference to planning principles such as holism, capacity building, self-reliance, community integration, participatory democracy and so forth. It is argued that transformation is a multi-dimensional process, and whilst on the basis of provisional evidence there appears to be emerging forms of socio-spatial change, structurally, such apparent change is shot through by a number of contradictions, tensions and potential conflicts (Williams 2000:167).

Ongoing urbanisation and the growth of our cities should provide us with both an economic and social dividend. But we have to deliberately make the connection between urbanisation and industrialisation. Resource exports drive urbanisation, with surplus national income creating "consumption cities", where most economic activity is in non-tradable services. SA cities risk falling into this category, becoming slum cities, and not production cities (Williams 2000:171). This same author postulated that production cities have a large proportion of workers in the tradable sectors, and city-based productive enterprises grow on the basis of conducive urban conditions. The challenge therefore, is how to evolve consumption cities into production cities, necessarily through a process of capital accumulation.

Cities can provide enabling conditions for Africa's industrialisation. Given SA's relatively strong existing industrial base and relatively well-developed network of cities, we must aim to remain at the forefront of Africa's industrialisation. However, our cities are not playing the catalytic role they should be to drive industrialisation. To overcome the legacy of Apartheid, cities in South Africa must spatially transform and restructure. The National Development Plan (NDP) outlines the principles: spatial justice, spatial sustainability, spatial resilience, spatial quality and spatial efficiency. But what is the meaning of this at the city level? Spatial transformation of our cities is not only about public investment but also the dynamics of private developments. Mobility in the city is also important, as the ability of the urban population to navigate the city for work and social activities contribute towards overall growth and development says the South African Cities Network (SACN 2014:33).

According to Yang (2010:17), academically, there is no agreed definition for sustainable urban transformation (meaning there is no agreement on how these changes should be implemented or achieved). As in practice, there is no normative definition for sustainable urban transformation. Some cities have planned transitions towards sustainability in their city development strategies, whilst others have even initiated transformation processes. Still, the outcomes are usually not satisfying. Yang (2010:17) reveals that policy makers rarely display understandings of the social, economic and environmental complexities of urban transformation. Nevertheless, urban transformation has become a conventional statement within many governments (governmental statements), in addition to transformation policies such as economic reform, urban renewal and regeneration of urban space.

Cities are undergoing unprecedented social-cultural, economic, environmental and institutional transformations as their sizes, structures, functions and roles change. In this context, it is of crucial importance to focus on the cities, and investigate their dynamic changes in economic, social and environmental interrelations and the underlying mechanisms (Yang 2010:17).

2.6.1.1 Spatial Transformation

BCMM's urban structure is characterised by the dominant physical patterns which include:

- low-density urban sprawl;
- separation; and
- spatial and structural fragmentation.

In order for the metro to be resilient, it has to spatially transform and restructure. The notion of urban spatial restructuring, and the idea of 'compacting' and 'integrating' the city spatially, has been an important part of South African post-Apartheid urban policy (Todes 2007:50). South Africa's National Development Plan 2030 makes a strong statement about the need to "address the challenge of Apartheid geography" in our cities which is defined in terms of living (inclusive), working, and environmental sustainability.

In this section one would ask: what does the inclusive, productive, and sustainable city look like? It is argued that these types of questions emanate from the legacy of Apartheid. To answer this question is very simple as indicated earlier on by SACN (2014:33), that in order to overcome the legacy of Apartheid, cities in South Africa must spatially transform and physically restructure. Cities must drive this transformation and it has to be included in the city's Spatial Development Framework (SDF). The transformation's objectives must meet the need for inclusivity, mobility and access, productivity, economic development that drives local and national growth prospects, and transforms space in a manner that is socially and environmentally sustainable.

With the introduction of Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA), the act is set to aid the effective and efficient planning and land use management in South Africa. In the context of the spatial transformation agenda, SPLUMA has been proposed as a possible tool to effect spatial transformation. The following are some, but not limited to as laid out in the act, the purposes of this act:

- To provide for the inclusive, developmental, equitable and efficient spatial planning at the different spheres of government; and
- To address past spatial and regulatory imbalances, etc.

For BCMM to spatially transform, the effective implementation of the SDF would yield to the physical restructure of the city. SACN (2015:5) reveals that the SDF is the lever which has the greatest potential as a planning tool to realise spatial transformation. It interprets the principles into a spatial future for the city. In terms of BCMM planning, stronger spatial guidance as part of the Integrated Development Plan (IDP) process could lead to more strategic investment and implementation in the municipal space. In order for the potential role of the SDF to be realised, the process issues and institutional arrangement of the planning process must not be disregarded. The SDF is a multidimensional tool that requires constant checks and balances to actively ensure that issues of spatial transformation are being addressed.

Local Government intervention in the spatial structure of cities in the form of environmental degradation, human settlement establishment, transport, as well as special measures such as special grants or interventions in the urban system, can contribute significantly to spatial transformation (SACN 2015:6). Furthermore, local government, and in particular cities, are increasingly being recognised as the sphere for effective intervention to spatially transform cities. This places substantial responsibility on cities to effectively plan and implement strategies that will both address the historical Apartheid spatial legacy and shape the future city.

It is acknowledged that cities are dependent on national government. However, government as a whole will have to consider the capacity requirements placed on cities even though SPLUMA allows municipalities to implement the act in terms of each municipality's needs and capacity. Effort is required to ensure that adequate resources such as human and financial resources be made available if local government is to fulfil its planning role. South African Cities Network: Inclusive cities (2015:7), is of the view that SPLUMA can contribute to spatial transformation in the country. SPLUMA's impact on transformation is dependent on the quality of mechanisms, processes and systems established by the various municipalities, and specifically the extent to which the development principles are translated into achievable, contextualised spatial outcomes in each spatial impact area.

It is within the context of this paper to investigate the implementation of this act together with the frameworks that exist within the Metro.

2.6.1.2 Socio-economic Transformation

In 1994, after black people have been granted the right of movement as laid out in the constitution of the Republic of South Africa, the new South African government inherited an urban system which was spatially segregated, socially fragmented and in which a large section of the population was economically marginalised from full economic participation in the cities (Laldaparsad 2013:37). In response to these inefficiencies, the state addressed these by implementing municipal planning mechanisms including Integrated Development Plans (IDPs), Spatial Development

Frameworks (SDFs) and Municipal Budgets under the Municipal Systems Act (Act 32 of 2000). These mechanisms were legislated to empower local municipalities to overcome the spatial legacy of Apartheid through the spatial redistribution of resources. Laldaparsad (2013:37) puts an emphasis on the fact that the intended goal of these mechanisms was to create a future inclusive and integrated society through shared, sustainable and equitable development. Yet, despite the implementation of these mechanisms, poverty, unemployment and inequality are still prevalent in our cities.

Poverty and inequality remain major challenges for the Buffalo City metro, the Eastern Cape and South Africa as whole. According to Eastern Cape Socio-Economic Consultative Council (ECSECC) (2014:3), the number of economically active people in Buffalo City in 2013 was 305 000, representing 45% of the region's population. Poverty in South Africa and the Eastern Cape is widespread and deep, and is hence the leading target of government policy. Numerous studies have been conducted on the characteristics and spread of poverty in the Eastern Cape to improve planning, programming and targeting of anti-poverty interventions. According to ECSECC (2014:28), the overwhelming finding of these studies is that more than two decades into democracy, the Eastern Cape Province remains trapped in structural poverty. This is displayed in all aspects of its demographic, health and socio-economic profiles.

In this section the question arises: How can poverty be eradicated in our cities? In the Eastern Cape, poverty eradication was a central part of the 2004-2014 Provincial Growth and Development Plan. The Department of Social Development (DoSD) was charged with coordinating the provincial "war on poverty" campaign from 2006 onwards. From 2007 a two-pronged approach was implemented, where focus in the short term was on integrating and coordinating existing poverty eradication initiatives in the 11 least developed local municipalities in the Eastern Cape. The medium to long term goals were to work towards a family-based social service model. In 2012 the province adopted an Anti-Poverty Strategy, championed by the Department of Social Development (ECSECC 2014:28).

ECSECC (2014:8) further states that the Anti-Poverty Strategy builds on the experience of government and civil society in the past two decades and aims to change how interventions are implemented. This will be done through joined-up implementation and better targeting of interventions. Amongst other things, one of the goals of the city's Poverty Strategy is to eradicate extreme poverty and hunger. Importantly, the strategy, and its implementation programme to date, emphasise that without the joint efforts of all spheres of government, NGOs, community and civil society organisations, trade unions, faith based organisations, traditional authorities, institutions of higher learning and the private sector, poverty eradication cannot be achieved (ECSECC 2014:29).

It can be argued that in Buffalo City, Eastern Cape specifically, and in South Africa at large, there are so many frameworks and / or instruments that can make it possible for our beloved cities to become resilient. However, the issue is implementation, accountability, evaluation and monitoring. The National Development Plan was launched as an overarching long term plan in 2011 and adopted by government in 2012. The National Development Plan aims to eliminate poverty and reduce inequality by 2030. The plan states that South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.

ECSECC (2014:29) reveals that to accelerate progress, develop democracy and build a more inclusive society, South Africa must translate political emancipation into economic wellbeing for all. It is up to all South Africans to fix the future, starting today. The NDP envisions a South Africa where everyone feels free, yet bound to others; where everyone embraces their full potential, a country where opportunity is determined not by birth, but by ability, education and hard work.

2.6.2 Urban Policies and Regulations:

According to Habitat III (2015:1), urban law is the collection of policies, laws, decisions and practices that govern the management and development of the urban environment. It is a broad and diverse field but one that justifies being considered collectively because of the interaction of its various elements within the single, inclusive but diverse space that is the urban environment. Habitat III (2015:1) indicates that urban law governs the key functions of towns and cities and reflects the rights and responsibilities of the residents and users of urban areas. However, the following functions are identified by Habitat as diverse:

- urban planning;
- municipal finance, urban land administration and management;
- infrastructure provision; and
- mobility and local economic development among others.

Furthermore, urban law exists at various levels from internationally recognised rights, such as the right to housing, to national legislation and to municipal rules or by-laws that often govern local issues such as the provision of services or the management of public space (Habitat III: 5 2015:1). Law that is locally relevant and enforceable in its context has the potential to connect the transformative potential of urbanisation. Urban legal frameworks are dominated by ambitious technical considerations and must be more informed by local needs and capacity (Habitat III: 5 2015:4). According to Habitat III: 5 (2015:4), physical planning can deliver a long term framework for development by concentrating on a limited number of binding elements, including the following:

- Locally appropriate systems for land management;
- The regulation of public space;
- A clear system for the identification of blocks and plots;
- A simple building code; and,
- Ideally, some means for public sharing in the profits of physical development to offset infrastructure costs.

Other mechanisms, such as zoning rules, can be introduced at a later stage as the necessary capacity and resources become available. Urban law should place more emphasis on institutional processes and be more reflective of the fact that public administration is the channel through which municipal and local governments interpret and pursue the objectives of sustainable development (Habitat III: 5 2015:4).

In many cities, significant proportions (often a majority) of the population are affected by informality in their employment, housing or tenure status. These informal sectors are characterised by an absence of legal licenses, titles, and regulatory supervision. Informal businesses operate without licenses and do not pay taxes (Habitat III: 5 2015:5). Legal and regulatory frameworks in most governments are designed for the formal economy and, too often, they fail to protect, support and recognise the contributions of informal workers, excluding them instead of including them within frameworks of rights and responsibilities (Habitat III: 5 2015:5). Furthermore, this same paper states that urban law often focuses on property rights and owners, leaving tenants and informal occupants invisible to many areas of policy and service provision and also creating structures that are not reflective of the actual social balance on the ground.

Instruments to encourage private development and investment and lower direct dependence on public financing are vital to accelerate sustainable urban development, but must be designed to ensure that the urban poor share in the benefits of development and are not excluded by it. The development of urban law continues to be under-resourced, particularly in terms of time. Habitat III: 5 (2015:4) suggests that laws with significant impact on people's lives and on the long-term fabric of urban areas should not be written and approved in days.

2.6.2.1 Urban Governance

Urban governance as defined in Habitat III: 6 (2015:1), is "the software that enables the urban hardware to function, the enabling environment requiring the adequate legal frameworks, efficient political, managerial and administrative processes, as well as strong and capable local institutions able to respond to the citizen's needs". It can be argued that in more than two decades under the new South African government the lack of adequate legal frameworks and institutional and financial capacity has prevented effective urban governance. According to Habitat III: 6 (2015:3), effective governance at the local, regional, provincial, national, and global levels representing the voices and interests of all is critical for advancing sustainable development.

Cities provide many opportunities to foster sustainable development, but also pose a number of challenges for equality with different levels of access to political representation and power, economic opportunities, basic services or security (Habitat III: 6 2015:3). It can be argued that these situations often degenerate into conflict as the rule of law and management systems are unable to cope with the increasing inequality gap. However, competition for control of cities and their resources mark the landscape of many fragile countries, unable to provide institutionalised mechanisms for political settlement and containing large-scale social exclusion, conflict and instability, often degenerating into radicalisation. Habitat III: 6 (2015:3) further indicates that the accelerated pace of urbanisation call for new governance frameworks to face new urban forms, megacities, urban corridors, metropoles, improve cities' management particularly in developing countries, and enhance urbanrural collaboration. The new transformative urban agenda requires for all relevant stakeholders, including women and their organisations, to find new understanding and work together in a more efficient way. Citizens need rapid and flexible responses to face urban challenges and to solve daily needs.

Governing without the citizen has become nearly impossible and many local governments are already experimenting with innovative experiences such as participatory budgeting, neighbourhood committees, youth councils, e-governance solutions, etc. (Habitat III: 6 2015:3). As urban forms and connections are becoming more complex and interdependent, effective governance requires strong and capable leadership from the public sector, which needs to be responsible for ensuring access for all to better living conditions, and to regulate and defend the common good.

Gedze (2012:11) reveals that, until 2004, the South African government focused only on strengthening the formal economic base, with little attention given to the informal sector. This same author further indicates that in a speech delivered by former president Thabo Mbeki in 2005, he alluded that there is a "second economy" which constitute the structural manifestation of poverty, underdevelopment and marginalisation. Gedze (2012:11) puts an emphasis on the fact that a critical element in assisting those in the second economy is provision of information, particularly regarding how they can access economic opportunities. Habitat III: 6 (2015:3) reveals that in many parts of the world, the informal provision of basic services and the tax evasion produced by the informal economy keep being one of the major threats to good governance.

Municipal finances need to recognise the importance of local revenue and the quality and accessibility of basic services need to be a public responsibility. Local corruption constitutes one of the big curses of the urbanising world. The redirecting of resources from the public domain removes the belief in the benefits of living together. Allowing for access to information and preventing conflict of interests are essential to maintain public trust and engaged citizenship (Habitat III: 6 2015:3). It is equally important to ensure transparency and accountability within the private sector, particularly among those doing business with the public sector. Hence, accountability and transparency are more than ever at the core of urban governance to ensure confidence in the capacity of the public to protect the common good and generate improved management of public finances and property.

Enhanced governing capacities also rely on improved data gathering. The processing and dissemination of data and indicators disaggregated by sex and age, needs a revolution to include territorial-based "disaggregation" to be readily available to support local planning and monitoring of urban development (Habitat III: 6 2015:5). How to improve urban good governance? This same publication explains: "Urban governance must ensure that facilitating security and development are part of the planning process. It means deliberate efforts at forging developmental political settlements (just as at national political level), empower citizen engagement, especially in informal areas, and link them to city institutions, facilitate social cohesion and create opportunities for social and economic mobility".

Sound urban governance is also needed to ensure environmental sustainability and resilience, combat climate change, preserve ecosystems and biodiversity, and build more local communities that are more resilient to natural and human threats (Habitat III: 6 2015:6). New governance processes adjusted and re-scaled to ecosystem scale should be promoted, as well as consideration of green infrastructure and ecosystem services as opportunities for the development of cities. Without sound urban governance, the short term gain of economic development will continue to trump goals of environmental sustainability, upon which economic and social sustainability ultimately depend. However, sound urban governance is gender responsive and requires the empowerment of women in local leadership and public affairs. Nationally women are grossly underrepresented in mayoral positions and local governance institutions (Habitat III: 6 2015:7).

Sound urban governance also facilitates the inclusion and participation of the youth and minorities. Use of social media and urban youth activism in the context of popular reforms has often taken roots in urban areas and regions improving social policies, citizen participation and accountability in deprived neighbourhoods where even formal mechanisms such as elections, institutional checks and balances have failed in the same areas (Habitat III: 6 2015:7).

2.6.3 Urban Safety and Security

In this section, city leadership is very important. Habitat III: 3 (2015:1) states that within the framework of national strategies and policies, all levels of government in a country should play a leadership role:

- in developing effective and compassionate crime prevention and community safety strategies; and
- in creating and maintaining institutional frameworks for their implementation and review.

This implies both 'government leadership' from all levels of government such as ministries, regional authorities and municipal authorities and also the role of major urban stakeholders, in particular business and community groups, in leading progressive urban safety efforts where governmental authorities are lagging behind or are limited in scope and resources. Approaching Urban Safety by 'city' leadership means thinking through the governance structures of the city as substances for collective and collaborative action centred on the responsibilities of government, but also the possibilities and capacity of key business and community actors (Habitat III: 3 2015:1).

Resilience focusses on how individuals, communities and business not only manage in the face of multiple shocks and stresses, but also creates new opportunities for transformational development. Resilience at city level identifies the urban area as a dynamic and complex system that must adapt to various challenges. However, creating resilience of local communities to factors that may lead to engagement in crime and violence, is key in order to reduce vulnerabilities, opportunities and rewards for offending (Habitat III: 3 2015:1). In addition to prevention of crime and violence, urban safety also comprises the enhancement of individual rights including the physical, social and psychological integrity of a person. As such, it can be argued that urban safety is a matching concept to crime prevention, as it starts from the observation that inadequate urban development and local governance, and social and territorial exclusion patterns, encourages crime and violence.

Thus, urban safety adopts a citywide and participatory process to address the risk factors, and above all, protection factors of insecurity in cities, creating the conditions of more sustainable, inclusive, cohesive and just cities (Habitat III: 3 2015:2). Some theorists argue that it is not the size of urban clusters that create criminal surroundings, but rather the poor planning, design and management of urbanisation. However, the functionality, layout and organisation of urban spaces influence people's level of security (Habitat III: 3 2015:2). When cities are well-planned, they become engines of economic growth and prosperity and offer access to services and contain a number of institutional frameworks. These generate social capital and new urban identities that can enhance social integration and cohesion and also help prevent urban crime and violence (Habitat III: 3 2015:1). Well-planned citywide community-based integrated and complete urban crime prevention and safety strategies, not only prevent crime and victimisation, but also contribute to sustainable urban development.

On the other hand, Habitat III: 3 (2015:4) indicates that urban sustainability can only be attained and preserved through effective urban safety. It can be argued that safety and crime prevention strategies and policies that have not addressed a multi-level coordinated governance approach, have produced unsustainable and short term actions and results. Habitat III: 3 (2015:5) concludes by saying that to ensure sustainability of crime prevention and urban safety actions at the local level, urban crime prevention or safety strategies have to be developed within the framework of national urban policies complementing the national crime prevention strategies. This requires all levels of government to play a leadership role in developing effective and kind crime prevention and urban safety strategies and in creating and maintaining institutional frameworks for their implementation and review.

2.6.3.1 Crime Prevention

The need for safety has always been one of the most profound needs of people, and the issue of crime occurrence is one of the most important issues for human beings. It can be argued that fulfilling this need and resolving this issue has become more complicated with the increase of urbanisation and complication of societies. High levels of crime are a concern in Buffalo City, Eastern Cape and in South Africa at large. According to ECSECC (2014:42), South Africa has an extraordinarily high rate of murders, assault, rape and other crimes compared to many other countries. The most commonly reported crimes in the Eastern Cape are robbery, theft and property related crimes, followed by assault and sexual crimes. Commercial crimes are also of concern and drug related crimes are on the increase.

Crime statistics indicate high levels of violent crime in the province of the Eastern Cape which are often illustrated through harrowing stories of gang rape, brutal attacks on children or elderly women. ECSECC (2014:42) indicates that these attacks are not isolated events of individual victimisation but are rather a socio-structural problem embedded in social relations. The Centre for Study of Violence and Reconciliation (CSVR) (2007: 173), in its reports on a project to study the violent nature of crime in South Africa, sets out factors that drive the high rates of violence. These include historical brutalisation and a culture of violence during the colonial and Apartheid period, particularly extraordinary levels of urban violence. Further, humiliating police harassment, a violent prison system and state sponsorship of township violence undermined the rule of law. These conditions, unique to South Africa, nurtured a culture of violence that has reproduced itself in the post-Apartheid period (CSVR 2007:173).

The psychological legacy of colonial racial oppression and institutionalised racial domination in the form of internalised feelings of low self-worth is also likely to be a contributing factor to the problem of violent crime in South Africa. Other structural economic factors closely linked to violence are high levels of poverty, structural unemployment, and social and political exclusion and marginalisation as set out in the foregoing sections. These factors are shaped by the legacy of Apartheid as well as by the global economic context and domestic economic policies in the post-Apartheid period.

This is further entrenched by easy availability of firearms and a culture of impunity in some townships (CSVR 2007:108). The crime prevention strategy for the Eastern Cape focuses on strengthening communities against crime, preventing violence, preventing corruption and strengthening the criminal justice system (ECSECC 2014:42). The Eastern Cape Department of Safety and Liaison reports that crimes of particular concern for the Eastern Cape are:

- Crimes involving fire-arms which have significantly increased the level of violence associated with crime;
- Organised crime, including the organised smuggling of narcotics and human trafficking;
- Gender Based Violence and crimes against women and children;
- Violence associated with inter-group conflict, such as political conflicts, taxi violence and land disputes;
- Vehicle theft and hijacking; and
- Corruption within the criminal justice system.

2.6.3.2 Integrated Development Plan

The arrival of democracy in South Africa in 1994 has resulted in a radical law reform process, new systems of governance, and significantly transformed planning and decision-making processes. At the same time, principles of sustainability, integration, participation, social and environmental justice have also been placed directly on the South African political agenda. Local government has become the intended focal point for addressing the socio-economic needs of local communities and sustainable service delivery, with the principal tool for achieving these developmental objectives being the Integrated Development Plan (IDP).

The BCMM IDP (2016:9) highlights that it is important to note that by design, local government was set to play a key role in the development of our local areas, as well as to facilitate the equitable redistribution and re-allocation of local government services. The BCMM IDP further states that local government was designed to address, as a priority, the inequalities in our cities, towns and villages which resulted from the policies of Apartheid. The promotion of the needs and interests of the disadvantaged sections of our communities were to become a major focus of local government activities. The IDP is a framework in place to address such city challenges (BCMM IDP 2016:9). It is believed that with effective implementation, monitoring and evaluation of the IDP, it may lead to the realisation of the city's resilience. This is also true with regard to the inclusion of the identified factor that would determine urban resilience.

2.6.4 Urban Planning and Development

According to UN-Habitat (2013:14), investment in risk reduction generally saves in terms of avoided losses and reconstruction costs. Involving civil society and local government in land use planning contributes to the building of social capital, raises awareness of risk, and strengthens local capacities to address a wider range of development issues. Growth in population combined with an increase in the number of people living in prone hazard areas will, over time, also increase exposure and risks to lives and livelihoods. UN-Habitat (2013:14) further states that the threat is not limited to large-scale events.

Combined, poor urban planning, environmental degradation, rural urban migration, poverty, and other factors mean that the cumulative impacts of re-current small-scale, 'localised' events can be equivalent to those of a larger disaster. Urban planning and design has a key role to play in defining the resilience of a city or urban area. While the planning process and design requires vision, participation, appropriate knowledge and information on current and future risks, the implementation and capacities to provide for safe land and basic services to all urban dwellers requires political leadership backed up by strong policy decisions and investments (UN-Habitat 2013:14).

Likewise, core urban infrastructure and systems are straining under the weight of mounting demand, and flagging concerns over safety, environmental degradation, poverty, and social unrest. In most cities, there is now an urgent need to upgrade and retrofit existing building stock and review, or implement anew, building codes and planning regulations. Ageing building stock is a problem in most cities at all development stages and is often cited by campaign cities as a major risk factor. At the same time, local governments are mindful that land needed to accommodate new housing and businesses, while necessary to support economic growth, is competing with the need to preserve natural spaces and protect vital ecosystem services (UN-Habitat 2013:14).

UN-Habitat (2013:14) concludes to say that sound urban planning practices and design can dually serve resilience and development efforts. Infrastructure that is fit-for-purpose and well maintained contributes to disaster risk reduction and is central to the smooth functioning of a city, its economy and people's wellbeing. Likewise, factoring disaster risk into land-use planning procedures can reduce exposure to natural hazards, and protect educational and health facilities, while introducing measures such as risk screening into building planning and design which can save lives and extend the longevity of critical infrastructure.

2.6.4.1 Land Use Management

It can be argued that it is not an overstatement to say that the economic, social and environmental future of any country depends on the wise use of land resources. Land is a natural resource. The Working Group on Environmental Auditing (2013:9) indicates that land is one of the most essential natural resources for the survival and prosperity of humankind. It is the platform on which human activities take place, and it is also the source of materials needed for these activities. If land includes all material components needed for human activity, and if land resources are to support and ensure continuity of human activity on a sustainable basis, land use must be managed and land be preserved.

SA Rural Development and Land Reforms (2014:16) suggests that if land resources are used for a variety of purposes which interact and may compete with one another, then it is desirable to plan and manage all uses in an integrated manner. Traditionally in South Africa, Land Use Management, its systems, devices, and regulations were used in the service of racial and spatial segregation (COJ 2007:12). The aims of the Apartheid system were mostly carried out through the terrible efficiencies of the planning legislation and its implementation, which maintained spatial segregation and entrenched a racial hierarchy through reserving the provision of rights and services for the white minority (COJ 2007:12).

Land use management is complex. However, in the past it referred to mainly farming and crop production, but currently, it includes many other uses such as housing, urban and industrial development, infrastructure and roads, recreation and leisure, mining, nature conservation, landscaping, etc. (Verhey 2006:2). The question is: "How is land use managed in South Africa?" With the introduction of SPLUMA, the act is set to aid the effective and efficient planning and land use management in South Africa. In the context of the land use management agenda, SPLUMA has been proposed as a possible tool to effect land use management. The following are a few, but not limited to as laid out in the act, purposes of this act:

- To provide for the sustainable and efficient use of land;
- To provide for development principles and norms and standards; and
- To provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic.

It is evident that the pressure on land and the overexploitation of land resources have resulted in many forms of degradation such as desertification, loss of biodiversity, deforestation, land degradation, water degradation, etc. (Working Group on Environmental Auditing, 2013:9). However, the SA Department of Rural Development and Land Reforms (2014:16) indicates that the functions of land use management in South Africa are that land-use management:

- Examines all uses of land in an integrated manner;
- Makes it possible to minimise conflicts
- Make the most efficient land trade-offs; and

 Link social and economic development with environmental protection and enhancement, thus helping to achieve the objectives of sustainable development.

In essence it can be argued that there are more problems facing land management and, at a far more practical level, there is a lack of capacity within municipalities to actually cope with land management systems in South Africa (COJ 2007:12). For example, in BCMM, the city's land use management is still administered by different legislations such as Land Use Planning Ordinance 15 of 1985, Development Facilitation Act 67of 1995, Less Formal Township Establishment Act 113 of 1991, and Black Communities Development Act 4 of 1984. However, BCMM is in the process of developing a Land Use Enforcement By-Law in order to deal more efficient and quicker with illegal land uses (BCMM IDP 2016:80).

In the city's IDP, the following are the challenges experienced by the Metro in terms of land use management:

- Lack of greater control over land use management to prevent the rise of illegal uses;
- Land developments that are not undertaken in accordance with an approved Layout Plan and / or Site Development Plan;
- Administration of Land Use Applications is complicated and confusing due to different legislation being applicable to different areas;
- Council does not have delegated authority to dispose of applications in certain areas, which must go the MEC for final approval resulting in delayed service delivery; and
- Unauthorised land uses are problematic due to staff constraints and lack of a dedicated unit to deal with such.

2.6.4.2 The Built Environment

In social science, the term built environment refers to the man-made surroundings that provide the setting for human activity. These include buildings and parks or greenspace to neighbourhoods and cities including supporting infrastructure, such as water supply or energy networks. The built environment is a material, spatial and cultural product of human labour that combines physical elements and energy in forms for living, working and playing. It has been defined as "the humanitarian-made space in which people live, work, and recreate on a day-to-day basis" (Roof 2008:24).

In practice, the term is typically used to describe the interdisciplinary field which addresses the design, construction, management and use of these man-made surroundings as an interrelated whole, as well as their relationship to human activities over time, rather than a particular element in isolation or at a single moment in time. The field is generally not regarded as a traditional profession or academic discipline in its own right, instead drawing upon areas such as economics, law, public policy, management, design, technology, and environmental sustainability (Adedeji 2007:5).

In recent years, there has been growing recognition that the construction industry and built environment professions have a significant role to play in contributing to a society's improved resilience. The vital role of the built environment in serving human endeavours means that when elements of it are damaged or destroyed, the ability of society to function economically and socially is severely disrupted (Haigh 2010:15). Tasks considered to be central to their work include the "planning, design, management, maintenance and monitoring of functional and aesthetic layouts of built environments" and "identifying and developing appropriate solutions regarding the quality and use of the built environment in urban, suburban and rural areas" (Haigh 2010:16).

However, it can be argued that the term 'built environment' can be used interchangeable with human settlements. Urban resilience means sustainable human settlements. However, if this field plays its part in determining sustainability in its content, then urban resilience would be realised. According to Adedeji (2007:12) tall buildings are an inevitable building form and part of the contemporary landscape.

Given the limitations of available land, there is a growing tendency for tall buildings to be developed. New design ideas are becoming common currency among progressive architects and developers. New buildings are increasingly user-friendly, offering a comfortable occupant-controlled environment all year. The creation of "internal greensky gardens" within buildings contributes to the natural environment. Another factor that contributes to urban resilience within the built environment is the clustering of buildings. The clustering of buildings in densely built-up spaces is widely regarded to be very efficient in transport terms (Adedeji 2007:12).

2.6.4.3 Urban Facilities' Management

As recently as forty years ago there was only fleeting mention of facilities management. Buildings were maintained, serviced and cleaned, and that was largely it. A united concept was far from broad acceptance in the real estate or property management sector. Few common procedures were in circulation and it was left to innovative organisations, many of them in the fast-growing banking. telecommunications and media sectors, to devise ways of effectively managing their buildings and growing portfolios. Since then facilities management has not only emerged as a service sector in its own right, it has also assisted in establishing a new professional discipline with its own codes, standards and technical vocabulary (Atkin 2009:2).

Facilities management has traditionally been regarded as the poor relation within the real estate, architecture, engineering and construction (AEC) sector. This is because it was regarded in the old-fashioned sense of caretaking, cleaning, repairs and maintenance. Nowadays, it covers real estate management, financial management, change management, human resources management, health and safety and contract management, in addition to building and engineering services maintenance, domestic services and utilities supplies (Atkin 2009:4). Facilities management can therefore be summarised as creating an environment that is conducive to carrying out the organisation's primary operations, taking an integrated view of the services infrastructure, and using this to deliver customer satisfaction and best value through support for and enhancement of the core business (Atkin, 2009:3).

The International Facility Management Association (IFMA) defines facility management as 'a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology'. This definition clearly illustrates the holistic nature of the discipline and interdependence of multiple factors in its success (www.ifma.org [sa]).

The South African Facilities Management Association (SAFMA) states that the definition of Facilities Management is always evolving and many people and organisations have different views. The SAFMA definition of Facilities Management is "Facilities Management is an enabler of sustainable enterprise performance through the whole life management of productive workplaces and effective business support services" (www.safma.co.za [sa]). The British Institute of Facilities Management's (BIFM) definition is "Facilities Management is the integration of multi-disciplinary activities within the built environment and the management of their impact upon people and the workplace". (http://www.bifm.org.uk/bifm/home [uk)

Atkin (2009:2) indicates that some educators define Facility Management (FM) as "a strategically integrated approach to maintaining, improving and adapting the buildings and supporting services of an organisation in order to create an environment that strongly supports the primary objectives of that organisation." However, a simple definition of Facilities Management by Atkin (2009:2) is "the integrated management of the work environment and supporting services of an organisation to provide an environment that enables the business to achieve its primary objective"

Roberts (2004:349) identifies urban FM as "a logical extension of the need to reinvest in community facilities and systems, and provide a flexible 'platform', in which agencies and private sector can come together in a new and innovative setting for the benefit of the community". Many authors have agreed with this initial idea of urban FM. For example, the suggestion of urban FM as a possible new service delivery model for managing public facilities operations for urban sustainability was also mentioned. Urban sustainability is required to ensure that future urban development can be retained regardless of the limited quantities of natural resources (Tobi 2011:2).

It is the process and development of a sustainable design that could help to retain what is left for future generations. Roberts (2004:350) also provides some examples that lead to a platform in which agencies and the private sector can come together in new and innovative settings (i.e. access to capital, difficulties in creating partnerships between community service organisations, etc.). However, there is no specific guideline on how this platform could work. This platform could be used as a new way of delivering public services, instead of having either the public or private sector as the sole service provider. The need to move away from the traditional service provider's approach is seen as a way of reducing running costs in facilities operations. This could bring about a new notion for developing a sustainable design to maintain public facilities for the benefit of the community.

2.6.5 Informal Settlements

A rapid increase in the urban population and the limited capacity of the government to meet the high demand for building plots has led to the mushrooming of informal settlements (Ali 2006:1). Urbanisation is one of the root causes for the spread of informal settlements. Ali (2006:1) indicates that the growth of informal settlements has resulted in many and complex socio-economic and environmental consequences. These include pollution, deforestation, flooding, waste of agricultural lands and the like. Habitat III: 22 (2015:1) defines informal settlements as residential areas where people have no security of tenure regarding the land or dwellings they reside in, with modalities ranging from squatting to informal rental housing.

The neighbourhoods usually lack, or are cut off from, basic services and city infrastructure and the housing may not comply with current planning and building regulations. It is furthermore often situated in geographically and environmentally hazardous areas. In addition, informal settlements can be a form of real estate speculation for all income levels of urban residents, affluent and poor. Shantytowns are the most deprived and an excluded form of informal settlements characterised by poverty and large clusters of dilapidated housing often located in the most hazardous urban land.

Adding to tenure insecurity, shantytown dwellers lack formal supply of basic infrastructure and services, public place and green areas, and are constantly exposed to expulsion, disease and violence (Habitat III: 22 2015:1). Informal settlements, shantytowns and other poor residential neighbourhoods are a global urban phenomenon. They exist in urban areas all over the world, in various forms and locations and by a range of names such as squatter settlements, shacks, etc. Habitat III: 22 (2015:2) indicates that informal settlements and shacks are caused by a range of interrelated factors, including population growth and rural-urban migration and lack of affordable housing for the urban poor. Weak governance such as, particularly in the areas of policy, planning, land and urban management resulting in land speculation and grabbing, also contribute largely to the cause of formation of informal settlements. Habitat III: 22 (2015:2) further states that economic vulnerability and underpaid work, discrimination and marginalisation, and displacement caused by conflict, natural disasters and climate change are the factors that determine the formation of informal settlements.

Many governments do not acknowledge the existence of informal settlements. The lack of recognition and subsequent response by national governments directly undermines city-wide sustainable development and prosperity to the detriment of millions of urban dwellers, and also results in forced evictions. Habitat III: 22 (2015:6) indicates that this lack of response combined with the lack of integration into the broader urban environment, perpetuates long term inequality and inter-generational disadvantage, especially for women and the youth.

Habitat III: 22 (2015:6) concludes to say urban authorities that address the needs and rights of people living in informal settlements and shacks through rights-based policy and integrated governance, create more prosperous and sustainable urban contexts than those that take no action. The urban poor need to be treated as equal to other urban dwellers and their contribution such as work, livelihood creation and taxes, recognised, just as their rights to infrastructure, basic services and adequate housing.

BCMM has a high population of informal settlements which are vandalising the electrical network by connecting themselves illegally. According to the BCMM IDP (2016:139) this excessive overloading has caused:

- Difficulty in safe and continuous supply of electricity to the legal consumers;
- Overloading and damaging of network; and
- Unsafe working conditions for the Electricity Department's staff.

2.6.5.1 Rural-Urban Migration

Migration is a phenomenon process that involves a move from one place to another, encompassing a move from the origin to a destination. Migration can occur in the same country and to different countries (Pepu 2006:26). Current migration trends need to be placed in a proper historical context. The legacy of Apartheid in South Africa will remain for some decades, and there is a need to understand that the inequities of the past, through discriminatory migration and urbanisation controls, cannot be driven out with the wave of a magic stick (Stats SA 2006:1). It can be further argued that South Africa has a sad history of racially based government interventions in the movement and settlement patterns of its own people and those from other countries in the region, with severe effects on the well-being of most of its population.

According to Stats SA (2006:1) the South African Apartheid system has historically aimed to restrict and control the population movement and settlement patterns of the population in the country. Certain laws were imposed such as the notorious and well-documented Influx Control and Group Areas Acts, and associated pass laws. This resulted in an enforced impermanence in the urbanisation process of the black population. Nokuthula Zuma (2013:3) supports this statement by saying this system forced black people to live in ethnically homogeneous homelands where limited access to land, inter alia, yielded a transition from a farm to a cash-based rural economy ready to provide large numbers of labour migrants. These clumsy regulations resulted in inadequate urban planning in urban areas as well as a diversion of urban settlements into sprawling peri-urban areas.

Pepu (2006:12) states that the genesis of the 21st century in South Africa marked the fast changing aspects of society and now post-Apartheid dispensation confronted by multiple challenges to restructure settlements and redress the imbalances of the past. According to Stats SA (2006:1) it is evident that the intense political changes that took place in the early 1990s did remove the cause of this pain for most, but not necessarily the lasting effects. Very poor rural people, trapped in the legacy of the Apartheid homeland policy, have probably found it difficult to escape from their situation. Nevertheless, the bulk of this population have managed to migrate to the nearer cities for the betterment of their livelihoods.

It can be argued that migration is often regarded as the consequence of ruptures, of environmental disaster, economic exploitation, or political or civil tensions and violence (Stats SA 2006:1). It is also often perceived to be a cause of problems, like environmental degradation, health problems, brain-drain, political and / or social instability, declining law and order, and unravelling social fabric and support systems. Talking about rural-urban migration, temporary labour migration, or the capability of a household to send a migrant to find employment, is a critical factor here. Households that can send a temporary migrant, or possess livestock assets, are the households that survive the legacy of the former 'homeland' system.

Generally, migration is driven by motives to improve livelihoods with notable evidence on changes in labour market status (Shimeles 2010:4). Various authors maintain that migrants are attracted by the combination of the availability of infrastructure and the possibility of a multiple livelihood strategy in the areas of destination. Fast growth of smaller urban centres and the resultant inadequate delivery of infrastructure, however, often serve as pitfalls to migration (Zuma 2013:10). Thus it can be argued that the problem here is not the movement of populations to big cities, but how cities plan to receive and manage these people. Look at it from this angle: being inactive and immobile seems to be regarded as the 'right thing to do'.

Often governments in urbanising countries want to slow down or reverse rural-urban migration, not taking into account the fact that migration is often central to households' livelihoods (Stats SA 2006:1). This is also evident in the effects or consequences of this rural-urban migration in the Buffalo City Metropolitan Municipality. The Metro has declared in the BCMM IDP (2015:56) that temporary migration and rapid uncontrolled urbanisation has implications for housing tenure options in the sense that not everybody residing in the Metro will be requiring permanent ownership accommodation, but some people might only be needing access to a rental unit during the working week before returning to their permanent peri-urban and rural villages for the weekend (BCMM IDP 2015:56).

The metro has consistently experienced high rates of all types of migration including inward and outward migration. Zuma (2013:3) confirms these statements by saying that population movement for the period 2001 to 2006, reveal that larger towns and cities are generally witnessing a net gain of people, while rural areas are experiencing a loss. Metropolitan areas are experiencing the highest influx rates, followed by secondary cities (Zuma 2013:9). However, the plans and implications for migration patterns should, amongst others, in the Metro include the following (BCMM IDP 2016:88):

- "The creation of affordable and well-located rental stock for rapidly growing, mobile (migrant) and urban population within inner city and other locations close to economic opportunities; and
- The need to initiate a comprehensive study into migration patterns in and out of Buffalo City, to the growth of our urban space and efficient housing provision to meet the trends".

2.6.5.2 Population Growth

Human population growth is perhaps the most significant cause of the complex problems the world faces: climate change, poverty and resource scarcity complete the list (Horizon 2009:1). Dasgupta (2013:1) is of the view that interactions between population growth, consumption and the use of natural products and services have created an unsustainable pressure on the environment. The general assumption is that population size impacts not only on the amount of natural goods consumed, but also the volumes of waste generated (Environmental Outlook SA 2013:30). According to Pillay (2008:111) urban growth has taken place extremely fast, with all evidence suggesting that urban populations will continue to grow much faster than rural populations even if the urban bias in development strategies were reversed.

Walker (2012:1) indicates that the impact of population growth on economic development is also a complex issue. Environmental Outlook SA (2013:28) supports Walker on the above statement. Their viewpoint is that population dynamics and economic development are the overarching drivers of environmental change. In contrast to the latter, Walker (2012:6) also indicates that the link between population growth and pollution, and environmental degradation, has not been clearly established. The most polluted areas of the world are not the most populated. The direct evidence of the effect of population growth on the environment is clearer for forest loss and soil degradation than for pollution. However, population is not the only factor affecting environmental degradation (Walker 2012:6).

Even if population growth can be accommodated now, what could be the cause of population growth? Dasgupta (2013:1), from his perspective, indicates that population growth can be driven by many different factors, including both reproductive decisions and social practices. An example is teenage pregnancies. This leads to population growth and externalities, such as urbanisation, poor sanitation and increased consumption. These, in turn, are costly to the environment because of pollution and ecosystem degradation (Dasgupta 2013:1). Most human settlements are therefore located in areas with abundant natural resources such as next to rivers, close to minerals or high potential agricultural land.

Returning to the effects of this population growth in relation to Buffalo City Metropolitan Municipality, it is indicated in the BCMM IDP (2016:239) that the overall population growth rate in BCMM is relatively low (0.69%), according to Stats SA (2016:15). Therefore densification should be pursued in areas where it makes best strategic sense to do so. BCMM proposes that the SDF continue to facilitate an increase in densities and the mix and intensity of land uses in specific focus areas or so-called "integration zones". The census (2011) conducted by Stats SA estimates that the total population of Buffalo City Metro is 755 200. In 2013 there were an estimated 785 330 people in the Buffalo City metro. This is a little more than a tenth (11.4%) of the Eastern Cape's population and represents 1.5% of South Africa's population (BCMM IDP 2016:43).

According to SoCR (2016:312) Buffalo City has the second lowest population density after Mangaung, and its population has grown more slowly than the other cities. However, Buffalo City has made good progress towards reducing poverty and improving livelihoods, but has the lowest matric level of the nine cities (SoCR 2016:312).

2.6.5.3 Housing Demand

Landlessness and lack of housing have been continuous and repetitive themes in South African history (Pillay 2010:17). Rust (2006:15) supports this by saying that about half of South African households live in accommodation that they own, including traditional dwellings, private dwellings, ex-council stock and subsidised housing. However, just over a third of South African households live in accommodation that they rent, including private rental, social housing, council rental and informal rental. Rust (2006:20) further indicates that even without a review of the data, a simple windshield survey of South Africa's cities, the dense and neglected inner cities, sprawling informal settlements, and overcrowded township areas, bear evidence that there is a housing crisis.

Be that as it may, the demand for housing is substantial and growing, as the population grows, as families migrate to urban areas, and as existing housing conditions deteriorate (Rust 2006:20). According to Pillay (2010:16) unfortunately, despite much effort, the Eastern Cape does have a range of service delivery and housing backlogs that need to be addressed. There is some uncertainty as to the scale and range of the existing backlogs, the perceptions of service delivery, and the province's ability to deliver. But, nevertheless, Rust (2006:4) is of the viewpoint that access to housing, and the interplay between demand (long housing waiting lists, burgeoning informal settlements, overcrowded inner city flats, and so forth), and supply (RDP delivery, social housing, and bonded housing), has been given significant attention by policy makers.

However, in the BCMM IDP the municipality promises to continuously assess its financial viability to ensure that it will be able to continue to provide affordable and sustainable services and at the same time meet the demand from expected future economic and population growth (BCMM IDP 2016:199). Also evident in the IDP is the fact that the municipality is concerned that the city's housing development is restricted by lack of infrastructure development across the city as well as the availability of land.

As much as we appreciate the need for RDP housing development, it is equally important for us to provide social housing as well as demarcated areas for high-income housing. Clearly, demand for housing is being expressed both within the subsidised and the starter or affordable housing market. It is useful to look at the profile of the population from the perspective of housing sub-markets, as a way of beginning to develop ideas about housing demand (Rust 2006:12).

2.6.5.4 Environmental Degradation

Tamazian (2008:5) says that there is a link between environmental degradation and economic growth. Far from being a threat to the environment, economic growth appears to be necessary to maintain and improve the environment's quality (Tamazian 2008:5). In addition to the above Dean (2007:51) indicates that, despite the extensive economic growth and increase in the quality of life, concerns remain that the era of industrialisation has had substantial negative effects on the natural environment and that the effects diminish the vitality and sustainability of the economic systems.

Raleigh (2007:675) points out that another factor that leads to environmental degradation is climate change. Climate change is expected to bring about a major change in the availability of fresh water, the productive capacity of soils, and in patterns of human settlements (Raleigh 2007:676). Furthermore, resource scarcity is caused by climate change. Scholars debate the effect of democracy on environmental degradation both theoretically and empirically. Li (2006:935) indicates that some theorists claim that democracy reduces environmental degradation whilst on the other hand some argue that democracy may not reduce environmental degradation or may even harm the environment. Urdal (2005:418) raises a concern that countries with rapidly growing populations will in the long run experience environmental degradation and the scarcity of natural resources.

2.6.5.5 Environmental Management

The natural environment is compared to the human or the built environment, which comprises the areas and components that are strongly influenced by humans. The human environment describes the evolution or 'creation' of humans, biologically and culturally (Adedeji 2007:3). Further to that Adedeji (2007:3) indicates that the term 'environment' became specialised, commencing round about the 1960s, to designate the context of human and animal groups, with a special emphasis on the natural world and its physical and vegetal components. It can be argued that environment can be described as the natural world of land, water, air, plants and animals that exist around humans. It forms the basis of human existence and development (Loubser 2011:8).

However, the Oxford dictionary meaning of the word 'environment' is the external conditions influencing development or growth of humans, animals or plants, living or working conditions, etc. The definition of the term 'environment', according to the SA Department of Environmental Affairs (SADEA) (2014:9), is generally accepted to include biological, physical, economic, political and cultural aspects and as reflected in recent South Africa legislation and policy. In terms of section 24 of the South African Constitution, everyone has the right to an environment that is not harmful to their health or well-being and to have this environment protected for future generations (Loubser 2011:8).

For this reason integrated environmental management became a concern. Having defined the term environment, a holistic definition of environmental management is necessary. Environmental management, according to the South African Department of Environmental Affairs (2014:9), is the management process to achieve the philosophy of Integrated Environmental Management. Integrated Environmental Management (IEM), according to Loubser (2011:65), is an approach to environmental management that takes society, economy and the natural environment into account.

However, integrated and adaptive environmental management is an approach to environmental management that takes changing circumstances into account, thus requiring a management approach to be adapted to these changing circumstances. It can be said that, for the purposes of this study, 'urban resilience determinants', integrated environmental management must be compulsory. According to the Food and Agriculture Organization (FAO) (2014:4), local management, resilience, and adaptation strategies of people may help design and implement improved management of natural resources and ecosystems. The South African Department of Environmental Affairs (SADEA 2014:65) indicates that the discipline of environmental management is relatively young. It started to emerge as a new profession during the 1960s when concerns about the impact of human activities on the environment became prevalent in the United States of America and Europe.

However, these concerns led to the development of the Environmental Impact Assessment (EIA) tool, which has subsequently been adopted as a legislated requirement by most countries in the world for activities expected to have detrimental impacts on the biophysical and socio-economic environments. SADEA (2014:65) further states that whilst the EIA tool has been widely adopted, there are many other tools and processes which have been developed to address environmental issues at different scales or for specific purposes. These tools include the following:

- Strategic Environmental Assessment (SEA);
- Environmental Management Frameworks (EMFs);
- Environmental Risk Assessment (ERA);
- Environmental Management Plans or Programmes (EMPs); and
- Environmental Monitoring and Auditing (EMA.

2.6.5.6 Disaster Preparedness, Response and Awareness

The definition of disaster preparedness, response and awareness in a city, according to UN-Habitat (2015:11), is the knowledge and capacities acquired to effectively anticipate, respond to, and recover from the impacts of hazard events. Urban resilience refers to the ability of an urban system to withstand and recover quickly from any disturbances. However, cities should build resilience for both stresses and shocks. The United Nations secretariat of the International Strategy for Disaster Reduction (UN/ISDR) and the United Nations Office for Coordination of Humanitarian Affairs (UN/OCHA) (2008:3) opted to split the three variables (disaster, preparedness, and response) and defined them separately as follows:

- Disaster is a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources;
- Preparedness is the capacities and knowledge developed by governments,
 professional response organisations, communities and individuals to anticipate

- and respond effectively to the impact of likely, imminent or current hazard events or conditions; and
- Response is the provision of assistance or intervention during or immediately
 after a disaster to meet the life preservation and basic subsistence needs of
 those people affected.

According to National Urban Search and Rescue Framework Government Gazette, (2014:3) South Africa faces increasing levels of disaster risk. This same Gazette indicates that South Africa is exposed to a wide range of weather hazards, including drought, cyclones and severe storms that can trigger widespread hardship and devastation. In addition, South Africa's extensive coastline and proximity to shipping routes present numerous marine and coastal threats. The nature of disasters places huge pressures on the resources available to deal with its effects. This statement is supported by the International Federation of Red Cross (IFRC) (2012:20) that South Africa is a water-stressed country and lack of sufficient water is the most significant resource constraint on development.

However, the Disaster Management Act, 200, Act No 57 of 2002 (DMA) (South Africa 2002: sec 20) is the cornerstone of disaster management in South Africa. It provides, inter alia, for an integrated and coordinated disaster management policy that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery (National Urban Search and Rescue Framework Government Gazette 2014:3)

Preparedness planning aims to establish a standing capacity to respond to a range of different situations that may affect a country or region by putting in place a broad set of preparedness measures. This includes, for example, early warning systems, ongoing risk and vulnerability assessment, capacity building, the creation and maintenance of stand-by capacities, and the stockpiling of humanitarian supplies. Sound preparedness planning should lead to an improved state of readiness that ultimately leads to safeguarding lives and livelihoods (UN/ISDR & UN/OCHA 2008:17).

Developing countries, such as South Africa, have often failed to implement disaster management strategies such as preparedness (Ngcamu 2010:2). However, the disaster management function became the responsibility of Buffalo City Municipality on acquiring Metropolitan status in May 2011. According to the BCMM IDP (2016:69) the disaster recovery site has been acquired and a storage area network has been implemented and currently replicates once per day. The applicable department is currently in the process to implement servers to improve the once a day replication, replicating every 30 minutes and allowing the immediate failover in the case of a disaster.

Disasters occur as a result of a complex inter-relationship of social, economic, spatial, structural and environmental vulnerabilities that expose people, their livelihoods and the environment to the hazards generated by trigger events and result in widespread human, economic and environmental losses. It is evident that disaster management is not mainstreamed in Buffalo City Metropolitan Municipality, and the necessary structures have not been established. This results in fragmented and outdated risk data, fragmented prevention and mitigation interventions, and fragmented and uncoordinated response and recovery.

It is clear from the projections that Buffalo city will experience heavy rains, and temperatures are projected to increase. Increased rainfall and the resulting floods will have implications for the municipality (livelihood). Preparedness in terms of disaster and risk management is essential (BCMM IDP 2016:179).

2.6.5.7 Climate Change

Climate change has become a very popular phenomenon in the research space of the modern science (Roux 2013:3). This phenomena known as climate change refers to an ongoing trend of changes in the earth's general weather conditions as a result of an average rise in the temperature of the earth's surface, often referred to as global warming (National Climate Change Response: White Paper 2011:8). This rise in the average global temperature is primarily due to the increased concentration of gases known as greenhouse gas (GHG) emissions by human activities in the atmosphere.

The Royal Society (2015:15) supports the above statement by saying that the earth's lower atmosphere is becoming warmer and moister as a result of human-emitted greenhouse gases. The Intergovernmental Panel on Climate Change (IPCC) (2007:1) suggests that human activities, primarily the burning of fossil fuels and clearing of forests, have greatly intensified the natural greenhouse effect, causing global warming. In addition to the above, the Royal Society (2015:2) reveals that the atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased significantly since the industrial revolution began.

Past climate changes led to the extinction of many species, population migrations, and pronounced changes in the land surface and ocean circulation. However, currently, the global climate is changing much more rapidly as a result of global warming, leading to, among others, the melting of polar and glacier ice, sea-level rise, ocean acidification, changes in rainfall and snowfall patterns, more frequent floods and droughts, and increased frequency and intensity of extreme weather events, such as tornadoes, hurricanes and cyclones (National Climate Change Response White paper 2011:8).

The speed of the current climate change is faster than most of the past events, making it more difficult for human societies and the natural world to adapt (Royal Society 2015:9). Satterthwaite (2009:560) is of the viewpoint that the impacts of climate change and environmental stress will also affect population movements, levels of urbanisation and the location and shape of urban centres. Further to that, Satterthwaite (2009:565) suggests that the need for action by city / municipal governments on climate change adaptation is very urgent. The reason for the latter is that scholars predict that climate change will degrade the environment considerably during this century (Reuveny 2007:656). In contrast to the above, Royal Society (2015:22) is of the viewpoints that even if emissions of greenhouse gases were to suddenly stop, the earth's surface temperature would not cool and return to the level of the pre-industrial era for thousands of years.

However, it can be argued that without adaptation, climate change is likely to bring ever-increasing numbers of accidental deaths and serious injuries and increasingly serious damages to people's livelihoods, property, environmental quality and future prosperity (Satterthwaite 2009:565). Other major consequences of climate change, according to Adedeji (2007:21), are as follows:

- Depletion of Ozone Layer: The stratosphere has a layer of ozone that protects
 us from the harmful ultraviolet (UV) rays of the sun. Exposure to these layers
 causes skin cancer and cataracts. Human activities causes this layer to deplete;
- Pollution: Industrialisation has been the hallmark of human progress.
 However, with industries have come a host of toxic gases that are being released into the atmosphere and liquid waste into the seas and rivers;
- Deforestation: Expanding population, industrialisation, and the need of land for development of expanding cities has led man to cut down forests selfishly.
 Agriculture is an important contributor to climate change with GHG emissions comparable in volume to the transport sector (Roux 2013:48);
- Extinction of Species: Man has been killing animals, right since the time he acquired the skill of hunting. Besides hunting, human activities like environmental pollution and deforestation has led to the extinction of a large number of animals and plants due to loss of habitat;
- Irrigation: The environmental impact of irrigation includes the changes in quantity and quality of soil and water as a result of irrigation and the ensuing effects on natural and social conditions at the tail end and downstream of the irrigation scheme. The impacts stem from the changed hydrological conditions owing to the installation and operation of the scheme;
- Electricity generation: The environmental impact of electricity generation is significant because modern society uses large amounts of electrical power.
 This power is normally generated at power plants that convert some or other kind of energy into electrical power. Each system has advantages and disadvantages, but many of them pose environmental concerns;
- Mining: The environmental impact of mining includes erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes;

- Transport: The environmental impact of transport is significant because it is a
 major user of energy, and burns most of the world's petroleum. This creates air
 pollution, including nitrous oxides and particulates, and is a significant
 contributor to global warming through emission of carbon dioxide, for which
 transport is the fastest-growing emission sector. By sub-sector, road transport
 is the largest contributor to global warming;
- Aviation: The environmental impact of aviation occurs because aircraft engines emit noise, particulates, and gases which contribute to climate change and global dimming;
- Roads: The environmental impact of roads includes the local effects of highways (public roads) such as noise, water pollution, habitat destruction/disturbance and local air quality, and the wider effects including climate change from vehicle emissions; and
- **Shipping:** The environmental impact of shipping includes greenhouse gas emissions and oil pollution.

2.7 CONCLUSION

This chapter presented a conceptual urban resilience framework that could be used in city planning principles to determine urban resilience. The conceptual framework was based on existing theoretical procedural models as well as literature based on the urban resilience determinants. For the purpose of this study, 14 interceding variables were identified affecting 6 intervening variables that ultimately affect the dependent variable identified as Resilient Human Settlements or Urban Resilience. In the next chapter, the research methodology will be presented. Specific attention will be given to the population studied and the sampling technique, the data collection method, the design, the reliability and validity of the measuring instrument, and the data analysis techniques employed.

CHAPTER 3:

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

Unlike experiments and surveys, in which the elements of research design, hypotheses formation, measurements, and sampling are specified prior to data collection, design elements in qualitative research are usually worked out during the course of the study (Mouton 2006:195). For the purpose of the present study, two methods of data collection have been chosen, viz. Microsoft Word designed questionnaire and the use of documents.

The study is about building resilience in a city, providing a conceptual framework that will enable a city to withstand and overcome its stresses and shocks, which means that the research participants are an integral part of the research design.

Mouton (2006:150) indicates that studies that involve research where participants are an integral part of the research design, are called participatory or action research (PAR). These studies use mainly qualitative methods in order to gain understanding and insight into life-worlds of research participants (Mouton 2006:150). Most types of PAR have a political commitment to the empowerment of participants and to changing the social conditions of participants.

Bouma and Atkinson (1995:155) posit that research through the qualitative method produced descriptive data such as people's spoken or written words or observable behaviour. On the other hand Antonius (2003:50) defines quantitative methodology as the procedure and techniques used to analyse data numerically. In a quantitative approach the experiences of participants or key informants on a particular question are expressed statistically to provide an overview of a particular matter by an x-number or percentage of respondents.

In view of the above background, this study followed a combination of the qualitative and quantitative approaches, called Mixed Method. Leedy and Ormrod (2015:3) assert that one of the strengths of the Mixed Method is complementarity wherein the quantitative aspects of the study compensate for weaknesses in the qualitative research, and vice-versa. It is also important to mention that data was collected through questionnaires (Multiple Choice and Likert Scale format type of questions) and qualitative individual interviews within the same general time-frame. As such, an Embedded Design of the Mixed Method approach was more dominant.

3.2 SELECTION OF CASES

Mouton (2006:195) strongly supports the use of the phrase 'Selection of Cases' rather than 'Sampling' as a heading for this section. It is much more appropriate in participatory or action research to refer to the selection of one's cases rather than using the term sampling. The sampling term pre-supposes a much more structured design (such as surveys and experiments) and probabilistic methods of selecting cases (Mouton 2006:195). For the present study, a non-probability sampling technique will be used to identify subjects. This method will be used particularly when administering questionnaires to the targeted population. The snowball sampling technique will also be used as an additional to the non-probability sampling technique where necessary.

Purposive or a convenience sampling technique will be used to select key informants who are believed to be resourceful by virtue of possessing information that is crucial to the achievement of the study objectives. This method will be employed particularly in the identification of the various interest groups for instance private businesses (town planning consultants, etc.) and relevant institutions such as Buffalo City Metropolitan Municipality, the Department of Human Settlements, and other Non-Governmental Organisations (NGO's) in the study area.

3.3 TARGET POPULATION

Buffalo City Metropolitan Municipality comprise of seven regions namely: East London, Kidd's Beach, Mdantsane, Bisho, King Williams Town, Zwelitsha and Berlin. However, the present study is limited only to East London. The target population of the study comprised BCMM officials, private businesses, human settlements enterprises, human settlement departments (provincial and regional) and non-governmental organisations. Figure 2 below presents a geographic location of East London, within the Buffalo City Metropolitan Municipality.



Figure 2: Geographic location of East London in Buffalo City Municipality

Source: AfricGIS, 2016

While East London, as a coastal city, is bordered by the Indian Ocean on the South, it is in close proximity with one of the largest townships in South Africa, Mdantsane. It also lies within the national government defined Southern Cape Coastal Condensation Areas, which on its own calls for clearer climate change mitigation and adaptation strategies.

3.4 SAMPLING SIZE

The study followed a non-probability sampling technique. Categories of data sources were identified based on their probability to hold information that is crucial to the study. For each category, this study followed a 50 + 1 rule for sampling size when the population of the data sources were identified and access gained. Questionnaires were, thus, distributed to fifteen (15) BCMM officials, six (6) human settlements department officials, nine (9) private businesses, and three (3) non-governmental organisations (NGOs). The sampling size totals thirty three (33) informants that were targeted for the purpose of this study.

3.5 DATA COLLECTION TECHNIQUES

The following data collection techniques were utilised:

3.6 QUESTIONNAIRES

BCMM officials, private businesses, human settlements enterprises, human settlement departments (provincial and regional) and non-governmental organisations and institutional questionnaires were used to collect data. The purpose of the questionnaires is to gather views on the participants' perceptions about the stresses and shocks that the city is facing in the study area and how these affect their livelihoods and businesses.

3.7THE USE OF DOCUMENTS

Documentation such as magazine articles, newspapers and media reports, and information available on the internet was collected and integrated with the data obtained, in an attempt to add any other nuances that might reside in these sources. The documentary sources were compared to data already gathered, and then added as new information to the present study where they can be used. The data from all the available sources that were utilised during the research process was then integrated and collected, to conclude the data collection stage.

3.8 INTERVIEWS

This study used qualitative interviews. The method of qualitative interviewing emphasises the active participation of the interviewer and the importance of giving the interviewee voice. Research questions and research objectives were used to develop an interview schedule. Research questions and elements highlighted in the preliminary literature review were used as section- or sub-themes in the interview schedules.

3.9 CONFERENCE PAPER REVIEW FEEDBACK

A conference paper that underwent a rigorous blind peer review was accepted and presented at a National Human Settlements Conference (2016) that was hosted by the Nelson Mandela Metropolitan University in Port Elizabeth, South Africa. This Conference was convened under the theme: "SUSTAINABLE FUTURE CITIES AND HUMAN SETTLEMENTS BEGIN TODAY." About 500 delegates participated in the Conference, with this multi-disciplinary audience drawn from scholars, politicians, postgraduate students, Non-Governmental Organisations, government officials and the private sector in South Africa, Germany, United States of America, Netherlands, Kenya, Nigeria, Cameroon and Ghana.

The paper was presented under a conference sub-theme: Urban Transformations. Data collected in this conference was used for the purpose of this study. Information gathered with, and including findings of the peer reviewed paper, was also included in this study.

3.10 DATA PRESENTATION

The sub-themes in the questionnaire and interview schedules were used to structure the presentation of data. The questionnaire had different sections from Sections A – E (demographic information, environmental degradation, spatial planning and landuse management, urban resilience principles in the city planning, and general comments). The interview questions were similarly presented. A Likert scale and multiple-choice type questions were used, following the research question sub-themes in order to collect primary data.

3.11 DATA ANALYSIS

According to Tihomola (2010:53), in quantitative research, data analysis is normally used to refer to the process of breaking down collected data into constituent parts in order to obtain answers to research questions. On the other hand, Roux (2005:134) explains that data analysis involves a process of reducing data into an understandable and interpretable form so that the relations of research problems can be studied and tested and conclusions drawn. For this study, a deductive approach to analyse data was followed. Research questions were used to group the data and then look for similarities and differences. The statistical software (SPSS) supported by a qualified statistician was used to analyse data qualitatively. It is also important to note that at the analysis stage results from both interviews and questionnaires were integrated to yield meaningful conclusions.

3.12 PRIMARY DATA

The primary data that makes up the empirical study comprises the information that is drawn from the questionnaires, through interviews and the recording and analysing of actual situations in the delimited areas. In order to enhance the reliability and validity of the primary data, the questionnaire was initially piloted on five people in the human settlement field of study to determine whether it is responding to the problem statement and adjustments were made. In addition, the individual interviews were utilised to extract information that would not have come out the questionnaire instrument.

3.13 SECONDARY DATA

The secondary data essentially comprised the review of all the related literature, referring to primary and secondary literature sources. According to Naoum (2004:5), after having identified the sources of information, the next step is to know how to find the material. The process involved various library searches and theses to locate the required information.

3.14 ETHICAL CONSIDERATIONS

The aim of the investigation was communicated to the informants as clearly as possible. The foreseeable repercussions of research and publication were reflected to the general population being studied. The anticipated consequences of research were communicated as fully as possible to the informants. The confidentiality and anonymity of the respondents was maintained at all times, by all means. No personal information was required from the respondents as they might have not have been confident enough to supply the actual and honest information needed to answer the research questions of this study.

A step by step guideline was used to keep responses anonymous to avoid any risks or discomfort, to explain the benefits, to avoid the possibility of quitting, to avoid mentioning the researcher's and supervisor's names, and the possibility of receiving the summary of the results. The following step by step guidelines provide a more detailed description of how informed consent was ensured:

- Approval for undertaking the research was obtained;
- The institution which the researcher represents was clearly stated;
- It was explained to the informants what the research is about, the benefits, and who will benefit; and
- The informant's participation was acknowledged and he/she was possibly offered a summary of the research results.

3.15 DISSEMINATION OF FINDINGS

The findings of this study will be disseminated using the following methods;

- Submission of the research report to the Nelson Mandela Metropolitan University, in partial fulfilment of the requirements for the completion of the degree of Magister Scientiae in the Built Environment (specialising in the field of Property Economics and Valuations) in the Faculty of Engineering, The Built Environment and Human Settlement;
- Publishing of research results in academic journals, jointly with the supervisor;
- Submission of the research report executive summary to the Buffalo City Metropolitan Municipality with prior approval of the Nelson Mandela Metropolitan University;
- Presentation of the empirical results of the study at scientific conferences; and
- Professional publication of the treatise with prior approval of the Nelson Mandela Metropolitan University.

3.16 CONCLUSION

This chapter presented the research design and methodology of the study. Specific attention was given to the population studied and the sampling technique, the data collection method, the design, the reliability and validity of the measuring instrument, and the data analysis techniques employed. A peer review conference paper which was presented at the National Human Settlement Conference (2016) was also used as one of the data collection techniques for the purpose of the study. In the next chapter, the empirical results of the field study that was conducted, utilising a predetermined measurement instrument, will be presented. The nexus between the theoretical framework and data collected on various urban resilience determinants in contemporary cities are evident. Results are interpreted and findings of the study unpacked.

CHAPTER 4:

RESULTS, ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This chapter presents and examines the data resulting from the scientific study described in the previous chapter. The chapter is divided into two sections viz.: results of the data collection, analysis, interpretation and discussion of results, and responding to research questions. The section on the results of the data collection examines the data firstly by exploring the demographic characteristics of the research participants. The demographics section is analysed qualitatively. The section pertaining to qualitative statistics examines the frequency scores of the different variables such as the type of institution, gender, age, home language, nationality, qualification, occupation, experience, and residence.

Secondly, the data for environmental degradation was examined through qualitative statistics. Thirdly, the data for spatial planning and land use management was also examined through qualitative analysis. Lastly, the data for urban resilience principles in the city planning is presented. The section pertaining to responding to research questions is divided into two sections. The first section is a discussion of the data pertaining to the identified sub- problems and the second section, integrated findings and observations, and making overall conclusions pertaining to the data in terms of the identified research questions.

4.2 RESULTS

The main purpose of data collection was to identify the key variables that would provide clarity relative to the sub-problems:

- Sub-problem one: Formation of informal settlements in vulnerable areas;
- Sub-problem two: Larger towns or cities are generally growing resulting in a shortage of land in urban areas for development of low income housing; and
- Sub-problem three: Lack of urban resilience thinking in the city planning processes.

The discussion surrounding the findings of the analysis of data is divided into the following categories:

- Demographic Information;
- Environmental Degradation;
- Spatial Planning and Land-Use Management, and
- Urban Resilience Principles in the City Planning.

4.2.1 Demographic Information

The demographic data is evaluated through general qualitative statistics to highlight the backgrounds of people who participated in this study.

4.2.1.1 Qualitative Statistics

Table 2: Employing institution

| | | | | | Cumulative |
|-------|---------------------------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Buffalo City Metropolitan | 12 | 52.2 | 52.2 | 56.5 |
| | Municipality | | | | |
| | Business | 7 | 30.4 | 30.4 | 87.0 |
| | Other | 3 | 13.0 | 13.0 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 2 above indicates that the majority of respondents were Buffalo City Metropolitan Municipal officials (52.2%), and another 30.4% allocated to private businesses. Those that fell under the third column were respondents from NGO's (Non-Governmental Organisations) and The Department of Human Settlements (Provincial and Regional Offices) with only 13% response rate. This is a reflection of the targeted informants that were within the BCMM for the purpose of the study.

Table 3: Gender

| | | | | | Cumulative |
|-------|--------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Male | 12 | 52.2 | 52.2 | 56.5 |
| | Female | 10 | 43.5 | 43.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 3 above indicates that out of all respondents 52.2% were male and 43.5% were female. The other 4.3% is unknown (these are the respondents who did not indicate their gender due to unknown reasons). This is a reflection of the distribution of the available gender sampling aspect in an environment that has been historically dominated by males (Moss 2009:60).

Table 4: Age

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | 25-34 | 8 | 34.8 | 34.8 | 39.1 |
| | 35-44 | 4 | 17.4 | 17.4 | 56.5 |
| | 45-54 | 10 | 43.5 | 43.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 4 above indicates that the greater percentage of respondents (43.5%) fell within the 45-54 age category, closely followed by the age group 25-34 (34.8%). It is notable that people in the age category 35-44 were represented by 17.4% and one respondent did not indicate the age showing a 4.3% in the table, thereby providing a normal distribution in the age category.

Table 5: Home language

| | | | | | Cumulative |
|-------|-----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Zulu | 1 | 4.3 | 4.3 | 8.7 |
| | IsiXhosa | 10 | 43.5 | 43.5 | 52.2 |
| | Afrikaans | 4 | 17.4 | 17.4 | 69.6 |
| | English | 7 | 30.4 | 30.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | _ |

Table 5 above indicates that the greater percentage of respondents were Xhosa speaking (43.5%), and thereafter 30.4% English, 17.4% Afrikaans and 4.3% Zulu. Again one respondent did not indicate. From the above statistics it is a clear indication that the BCMM officials are predominantly Xhosa speaking followed by English and thereafter Zulu.

Table 6: Nationality

| | | | | | Cumulative |
|-------|---------------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | South African | 22 | 95.7 | 95.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 6 above indicates that the majority of respondents were South African nationals (95.7%). It can be argued that even the one respondent that did not indicate his / her nationality is a South African. This is an indication of an independent city.

Table 7: Highest Qualifications

| | | | | | Cumulative |
|-------|-----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Diploma | 1 | 4.3 | 4.3 | 8.7 |
| | Degree | 9 | 39.1 | 39.1 | 47.8 |
| | Post Grad | 12 | 52.2 | 52.2 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 7 above indicates that the greater percentage (52.2%) of respondents had a post-graduate degree followed by those that had their first degree (39.1%), and thereafter one diploma (4.3%). Again one respondent did not indicate (4.3%). A large contributing factor to this is the fact that the majority of the respondents are either graduates or diplomats which is an indication that the targeted informants were those that hold top management positions in their organisations.

Table 8: Positions occupied at work

| | | | | | Cumulative |
|-------|----------------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Junior Manager | 4 | 17.4 | 17.4 | 21.7 |
| | Manager | 8 | 34.8 | 34.8 | 56.5 |
| | Director | 5 | 21.7 | 21.7 | 78.3 |
| | Other | 5 | 21.7 | 21.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 8 above indicate that the greater percentage (34.8%) of respondents were managers in their organisations followed by directors (21.7%). Those that fell under the 'Other' column (21.7%) were town planners from the department of Human Settlements (provincial and regional offices) which were not catered for in the questionnaire design. These are followed by junior managers (17.4%). Again one respondent did not indicate. This is an indication that not everyone within these organisations is knowledgeable about the urban resilience principles that must be included in the city planning or urban resilience determinants.

Table 9: Number of years in the work position

| | | | | | Cumulative |
|-------|-------------------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Less than 5 years | 6 | 26.1 | 26.1 | 30.4 |
| | 5 to 10 years | 7 | 30.4 | 30.4 | 60.9 |
| | 11 to 15 years | 4 | 17.4 | 17.4 | 78.3 |
| | 16+ years | 5 | 21.7 | 21.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 9 above indicates that the greater percentage (30.4%) of respondents fell in the category of 5 to 10 years serving in their positions, followed by those that fell in the category of less than 5 years (26.1%). It is evident that 21.7% of respondents fell in the category of 16 years plus which is an indication that these people are well experienced to know exactly what a city needs to be resilient. However, 17.4% fell in the category 11 to 15 years of experience in their positions. Again one respondent did not indicate. This is a clear indication of the authenticity of these results.

Table 10: Number of years of experience in the professional field

| | | | | | Cumulative |
|-------|----------------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | 5 to 10 years | 9 | 39.1 | 39.1 | 43.5 |
| | 11 to 15 years | 5 | 21.7 | 21.7 | 65.2 |
| | 16+ years | 8 | 34.8 | 34.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 10 above indicate that the greater percentage (39.1%) of respondents had a total experience (years in the workplace environment) that fell in the category of 5 to 10 years followed by those that fell in the category of 16 years plus (34.8%) and thereafter 11 to 15 years (21.7%). Again one respondent did not indicate (4.3%). This is a clear indication that these respondents have vast experience in their fields of study making their responses reliable.

Table 11: Number of years staying in East London

| | | | | | Cumulative |
|-------|-------------------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Less than 5 years | 4 | 17.4 | 17.4 | 21.7 |
| | 5 to 10 years | 3 | 13.0 | 13.0 | 34.8 |
| | 11 to 15 years | 8 | 34.8 | 34.8 | 69.6 |
| | 16+ years | 7 | 30.4 | 30.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 11 above indicates that the bulk of the respondents (34.8%) have lived in East London for a period of 11 to 15 years. These are followed by those that have lived there for 16 years plus (30.4%), which indicates that these respondents have lived in

East London ever since or even before the dawn of the new democratic South Africa in the early 1990s. Table 10 also indicates that 13% of respondents fell in the category of 5 to 10 years followed by those in the category of less than 5 years (17.4%). Again one respondent did not indicate.

Table 12: Gardening practice

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Yes | 11 | 47.8 | 47.8 | 52.2 |
| | No | 11 | 47.8 | 47.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 12 above indicates that if the one respondent that did not indicate could be disregarded, it would easy to say that 50% of the respondents do not practice gardening at home and 50% does. However, it can be argued that only 47.8% of the respondents practice gardening at home. This is an indication that the majority of respondents are aware of the environmental change.

Table 13: Choice of place of stay

| | | | | | Cumulative |
|-------|---------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Coastal | 15 | 65.2 | 65.2 | 69.6 |
| | City | 6 | 26.1 | 26.1 | 95.7 |
| | Rural | 1 | 4.3 | 4.3 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 13 above indicates that the greater percentage (65.2%) of respondents would choose to live coastal rather than rural or inland followed by those that would choose to live in a city (26.1%). Only one respondent indicated that he / she would choose to live in rural areas (4.3%). It can be argued that this one respondent could be running away from the overwhelming overcrowded urban environment. Again one respondent did not indicate (4.3%).

4.2.2 Environmental Degradation

The Environmental Degradation data was evaluated through qualitative analysis. However, it is noticeable that, because the questionnaire was designed in such a way that it covers all sub-problems, having it subdivided into sections, informants would skip some of the section and answer only what is applicable to them, which is understandable. The following data analysis is presented qualitatively as respondents were only expected to tick "Yes" or "No". Where there is not either yes or no ticked it is deemed to have been skipped purposely by the respondent hence the number zero is evident in the tables in this section.

Table 14: Model by-laws as measures for the management of environmental impacts of any development

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 13 | 56.5 | 56.5 | 82.6 |
| | No | 4 | 17.4 | 17.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 14 above indicates that the greater percentage (56.5%) of respondents is quite certain that model bylaws in the BCMM have been developed as measures for the management of environmental impacts on any development. However, 17.4% of respondents differ from the above. It can be said that these bylaws might be developed but not implemented. However, in the city's IDP and as alluded to in the literature review, that BCMM is in the process of reviewing existing city by-laws, policies and standard operating procedures to ensure that these are relevant to the changing environment. Furthermore, it is the intention of the SA Department of Environmental Affairs to publish regulations dealing with "controlled emitters" and these must be adopted by municipalities within their by-laws (BCMM IDP 2016:486). It can be argued that BCMM is still experiencing difficulties in adopting the existing bylaws and implementing them (evidence from the 17.4% of respondents who dispute the development of these bylaws). A total of 26.1% of respondents did not indicate whether or not the city has developed model bylaws; this group of people are deemed to have skipped this question.

Table 15: Environmental Management Instruments

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 14 | 60.9 | 60.9 | 87.0 |
| | No | 3 | 13.0 | 13.0 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 15 above indicates that the majority of respondents (60.9%) agree to it that the city has developed and adopted credible environmental management instruments such as environmental management frameworks, strategic environmental assessments, environmental impact assessments, environmental management programmes, etc. However, 13% are on the other side of the table (disagree). According to the National Environmental Management Act, Act 108 of 2008) (South Africa 2008: sec 24.5b), local municipalities must develop and adopt all these environmental management instruments as listed above. However, BCMM, according to the statistics indicated in the table above, has developed them. This is a clear indication that implementation and evaluation is still a challenge in many municipalities.

Table 16: BCMM's Environmental Management Strategy

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 7 | 30.4 | 30.4 | 56.5 |
| | No | 10 | 43.5 | 43.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 16 above indicates that the greater percentage (43.5%) of respondents were of the viewpoint that BCMM's environmental management does not place people and their needs at the forefront of its concerns, and serve their physical, psychological, developmental, cultural, and social interest equitably. But 30.4% of respondents say "Yes it does". This is a clear indication that people are not satisfied with the performance of the Metro. It is concerning, because, for a city to be resilient, urban authorities need to identify urban resilience determinants.

Habitat III (2015:2) indicates that the more people and assets are concentrated in cities, the more complex an array of shocks and stresses can impact, negatively or positively, on resilience. However, if BCMM does not prioritise people, where and how they live and what they need to survive, it would be hard for them to achieve city resilience.

Table 17: Sustainable Developments

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 6 | 26.1 | 26.1 | 52.2 |
| | No | 11 | 47.8 | 47.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

The issue of sustainability was evident amongst the questions posed to the respondents in the questionnaires. Table 17 above indicates that the greater percentage (47.8%) of the respondents are of the view that new developments within BCMM are not socially, environmentally, and economically sustainable. But 26.1% of them commit to say they are. To support those respondents who indicated that new developments in the city are not sustainable, the city has publically declared in the IDP (2016:174) that the lack of integrated planning in the city has contributed to disasters by allowing dangerous and unsustainable developments that are repeatedly exposed to disaster.

BCMM IDP (2016:174) further indicates that numerous existing developments in the city are repeatedly exposed because they were planned by under qualified people who were not aware of the vulnerability they were creating. Past policy and practices further contributed to this. Planning for development does not adequately address prevention, mitigation and preparedness, resulting in little or no risk reduction, leading to extensive loss that should be avoided. Response to incidents is unplanned and uncoordinated. This is a clear indication that developments within the Metro are unsustainable. Habitat III (2015:5) indicates that many governments do not acknowledge the existence of informal settlements. The lack of recognition and subsequent response by national, provincial, and local governments directly undermines the city's sustainable developments and prosperity.

Table 18: Disturbance of Ecosystems and loss of Biodiversity

| | | | 7 | | |
|-------|-------|-----------|---------|---------------|------------|
| | | | | | Cumulative |
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 7 | 30.4 | 30.4 | 56.5 |
| | No | 10 | 43.5 | 43.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

To support the above data analysis in Table 16, Table 18 above indicates that the greater percentage (43.5%) of the respondents say that in all the developments within BCMM, the disturbance of ecosystems and loss of biodiversity are not avoided, minimised and remedied. But 30.4% commit to say disturbance of ecosystem and loss of biodiversity are avoided, minimised and remedied. As alluded to in Habitat III (2015:6), sound urban governance is needed to ensure environmental sustainability and resilience, combat climate change, preserve ecosystems and loss of biodiversity, and build more local communities that are more resilient to natural and human threats. It can be said that BCMM's governance is lacking a vision that is sensitive to urban resilience principles in the city planning. Furthermore, this problem emanates from the discussion above, as indicated by the Metro in the IDP that existing developments were planned by under qualified people who were not aware of the vulnerability they were creating.

Table 19: Pollution and Degradation of the Environment

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 7 | 30.4 | 30.4 | 56.5 |
| | No | 10 | 43.5 | 43.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 19 above indicates that the majority of respondents (43.5%) are against the fact that in all the developments within BCMM, pollution and degradation of the environment is avoided, minimised and remedied. However, 30.4% supports it. According to the National Climate Change Response White Paper (2011:1) the urban decline is furthermore related to the loss of biodiversity and the pollution of land, water, and air.

Should, in BCMM, such environmental hazards not be avoided, minimised and remedied, urban resilience will stay a dream. It is evident in the IDP that pollution of water resources is a problem in the Metro, especially Buffalo River. The BCMM IDP (2016:86) states that freight traffic flow through the urban areas of the city creates unnecessary congestion and noise pollution on existing routes not designed for these types of vehicles. The transport of freight by road also has a significant negative impact on the environment compared with rail, contributing more to air pollution and the depletion of scarce fuel resources.

There is also significant pollution emanating from the storm water networks and runoff from the informal settlement areas. This is a clear indication of non-compliance by the BCMM to the environmental management bylaws. However, the Air Pollution Control section is contained in BCMM's Environmental Health Services department and, therefore, does not currently play a significant role in those actions associated with climate change.

Table 20: Disturbance of Landscapes and Heritage Sites

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 7 | 30.4 | 30.4 | 56.5 |
| | No | 10 | 43.5 | 43.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 20 above indicates that the greater percentage (43.5%) of respondents do not agree with the fact that in all the developments within BCMM, the disturbance of landscapes and sites that constitute the city's cultural heritage is avoided, minimised and remedied. But 30.4% commit to saying yes, they are. Landscape and the shape of the city and cultural heritage sites are very important for the identity and history of the city. Haigh (2010:15) indicates to support the above statement that the vital role of the built environment in serving human endeavours means that when elements of it are damaged or destroyed, the ability of society to function economically and socially is severely disrupted. When the majority of respondents are confident that the city does not avoid, reduce, and remedy disturbance of landscape and cultural heritage sites, it leaves a question mark about the city's significance and seriousness about the its people.

In the IDP they have indicated that the Integrated Environmental Management and Spatial Development Department has an overarching strategic responsibility for the protection and management of the natural environment in Buffalo City. Its main aim is to rehabilitate, conserve and manage the integrity of the city's ecological systems with a special focus on biological diversity, cultural and natural landscapes and processes within open spaces. But still people are not seeing this happening.

Table 21: Waste Management

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 8 | 34.8 | 34.8 | 60.9 |
| | No | 9 | 39.1 | 39.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

This data can be interpreted otherwise. Table 21 above indicates that the just below margin percentage (34.8%) of respondents say in all the developments within BCMM, the waste is avoided, or minimised and reused or recycled where possible and otherwise disposed of in a responsible manner. However, 39.1% of respondents do not agree with this statement. Waste management services are at the centre of environmental sustainability and cover all waste services within a city. It is clear in the table above that not a very big number that said either no neither yes to these questions. However, it can be argued that waste management in BCMM is done but not up to the desired standard.

According to the National Waste Management Strategy, all South African Municipalities are to present a long-term strategy or plan on how to handle general waste services. In the BCMM IDP (2016:432) it is indicated that BCMM embraces the concepts of reduce, re-use, recycle and recover. It is also responsible for the development of an Integrated Waste Management Plan, development of by-laws and development of a waste management strategy by ensuring that communities embark on clean-up campaigns and education and awareness programmes. But still top managers within the city are not aware of this.

Table 22: The use and Exploitation of Non-renewable Natural Resources

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 8 | 34.8 | 34.8 | 60.9 |
| | No | 9 | 39.1 | 39.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 22 above indicates that only 34.8% of respondents support the fact that in all the developments within BCMM, the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource. However, 39.1% of respondents do not support that. Natural resources are the most essential needs for the survival and prosperity of humankind. But they are very scarce. However, Tobi (2011:2) states that urban sustainability is needed to ensure that future urban development can be retained regardless of the limited quantities of natural resources.

Having said that, the majority of respondents indicate that BCMM does not take into account the consequences of the depletion of these resources, which is why the city always experiences shortages of water. In addition, the Food and Agriculture Organisation (2014:4) suggests that local management, resilience, and adaptation strategies of people may help design and implement improved management of natural resources and ecosystems. In this case, it can be said that if BCMM is ignorant about its people, city resilience will not be achieved.

Table 23: The Development, Use and Exploitation of Renewable Resources

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| - | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 8 | 34.8 | 34.8 | 60.9 |
| | No | 9 | 39.1 | 39.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 23 above indicates that the majority of respondents (39.1%) disputes the fact that in all the developments within BCMM, the development, use and exploitation of renewable resources and the ecosystem of which they are part of, do not exceed the level beyond which their integrity is jeopardised. However, a total of 34.8% agree with this statement. South Africa at large is in an energy crisis where Eskom generation is at the limit of its capacity and requires a major infrastructural upgrade to ensure that capacity is returned to normal. However, BCMM relies on finite fossil fuels, whether in terms of coal burned for electricity, or oil-based fuels. These results indicate that BCMM is still at the beginning stages of using renewable resources. This is supported by the fact that, as stated in the IDP, BCMM imports all energy from outside its borders. The majority of respondents indicate that the city does not jeopardise the integrity of the renewable resources. This is a positive reflection.

To support this, in the IDP it is indicated that BCMM, as one of the leading Metropolitan municipalities in climate change issues, can expect a decrease in the rate of future demand of electricity and increased energy security, reduction in greenhouse gas emissions, reduction in energy poverty, and increased employment opportunities. This is due to the fact that renewable energy and energy efficiency technologies have been shown to provide more employment than their fossil fuel counterparts. BCMM further indicates that the strategy has identified a number of potential projects such as landfill gas extraction, leachate drainage and other alternative renewable energy programmes, such as solar and wind energy, amongst others.

Table 24: Risk-averse and Cautious Approach

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 9 | 39.1 | 39.1 | 65.2 |
| | No | 8 | 34.8 | 34.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 24 above indicates that the majority of respondents (39.1%) supports the fact that in all the developments within BCMM, a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions.

However, 34.8% disputes the latter statement. This may be an indication of non-performance by the Metro. Risk assessments must be part of the feasibility studies of all new projects and developments, so that appropriate prevention and mitigation measures can be incorporated as development takes place. Prevention and mitigation measures must be developed to address the potential risks identified with the hosting of events in the city. So, to support the 34.8% of respondents who does not agree with the fact that risk-adversity is applied in all developments within BCMM, in the city's IDP it is indicated that the institutional memory relating to Disaster Risk Management in Buffalo City is often poor or non-existent.

Table 25: Negative Impacts on the Environment and on People's Environmental Rights

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 12 | 52.2 | 52.2 | 78.3 |
| | No | 5 | 21.7 | 21.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 25 above indicates that the greater percentage (52.2%) of respondents are confident that in all the developments within BCMM, negative impacts on the environment and on people's environmental rights are anticipated and prevented, minimised and remedied. However, a few (21.7%) do not agree with the latter statement. This table is indicating positive results regarding the Metro. It is also supported by the Metro's vision and mission. A long term Vision and Mission of BCMM, as stated in the IDP, is to be "a responsive, people centred and developmental City".

Participants have observed it and they are satisfied about what the city is doing. The physical shape, environmental character, and configuration of the municipality have an important role to play in influencing the way people have chosen to reside in the area. However, health and environmental problems linked to the absence of proper services in settlements can affect a whole city. The implementation of EIA instruments before any type of development within the city is an indication of commitment by the Metro. It can be said that in a long run the city will achieve its vision.

Table 26: Environmental Justice

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 12 | 52.2 | 52.2 | 78.3 |
| | No | 5 | 21.7 | 21.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 26 above indicates that the greater percentage (52.2%) of respondents agree with the fact that in BCMM, environmental justice is pursued in such a manner that adverse environmental impacts are not distributed so as to unfairly discriminate against any person, or community, particularly vulnerable and disadvantaged areas. However, 21.7% of the respondents dispute that and are not in agreement at all. This is also in pursuit of the vision by the metro by not discriminating against any community or person. In other words, there is environmental justice in BCMM as indicative from the table above.

Table 27: Equitable Access to Environmental Resources,
Benefits and Services

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 9 | 39.1 | 39.1 | 65.2 |
| | No | 8 | 34.8 | 34.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 27 above indicates that 39.1% of respondents say that in BCMM equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, is pursued. However, 34.8% of them dispute that. Even though there is still a long way to go before BCMM can be regarded as resilient in terms of basic services, at least in the table above it is indicated that they are pursuing it. UN-Habitat (2013:14) suggests that the implementation and capacities of local governments to provide for safe land and basic services to all urban dwellers requires political leadership backed up by strong policy decisions and investments. In this question it is evident that leadership is an imperative key.

Table 28: Community Wellbeing and Empowerment

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 11 | 47.8 | 47.8 | 73.9 |
| | No | 6 | 26.1 | 26.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 28 above indicates that the greater percentage (47.8%) of respondents strongly support the fact that in BCMM community wellbeing and empowerment is promoted through environmental education, the raising or environmental awareness, the sharing of knowledge and experience, and other appropriate means. Even though the remaining 26.1% of respondents do not support that, this is a clear indication that community wellbeing and empowerment in BCMM is promoted. Urban resilience is dependent on every urban dweller, and people must be responsible for the environment which they live in.

This will at least relieve the local government from carrying the burden alone. However, it is noticeable from the above table that BCMM have already embarked on awareness programmes in communities. This is supported by the BCMM IDP indicating that a need was identified that environmental awareness and education initiatives should form part of the activities to be conducted throughout the metro. To prioritise environmental education initiatives within the municipality, an environmental educator's course was done by BCMM officials.

Table 29: Social, Economic and Environmental Impacts

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 6 | 26.1 | 26.1 | 26.1 |
| | Yes | 11 | 47.8 | 47.8 | 73.9 |
| | No | 6 | 26.1 | 26.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

According to Table 29 above it is clearly indicated that the greater percentage (47.8%) of respondents agree that in BCMM the social, economic and environmental impacts of activities, including disadvantages and benefits, are considered, assessed, and evaluated. However, 26.1% of them disagree. Tables 24, 25, 26, and 27 above bear reference to this question in detail. However, the majority of respondents were most certain about positively agreeing with this question. It can be said that social, economic and environmental impacts are assessed and evaluated in all new developments in the BCMM, supported by the fact that EIA instruments are utilised.

4.2.3 Spatial Planning and Land-Use Management

This section was developed in response to sub-problem one (Formation of informal settlements in vulnerable areas) and sub-problem two (Larger towns or cities are generally growing resulting in a shortage of land in urban areas for development of low income housing). The qualitative statistics was used to analyse data collected.

Table 30: Land Audit

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 17 | 73.9 | 73.9 | 73.9 |
| | No | 6 | 26.1 | 26.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 30 above indicates that the greater percentage (73.9%) of respondents say that BCMM has undertaken land audits that determine land availability, current uses, land ownership, and the split between private and public land. However, 26.1% do not agree with this. In the BCMM IDP (2016:91) it is indicated that there is simply no land available for housing development in the Metro. Thus, a need for land acquisition exists. Another challenge for the Metro, as indicated in the IDP, is that there has been a lack of a coherent strategy for land acquisition in addition to the fact that public land is 'vested' in the State. This is a clear indication that the city land audit was undertaken by the Metro, but the municipality lacks a strategy to acquire private land to designate for the development of low-income housing.

Table 31: Spatial Development Framework

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 22 | 95.7 | 95.7 | 95.7 |
| | No | 1 | 4.3 | 4.3 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 31 above indicates that the greater percentage (95.7%) of respondents say the city has developed and adopted a credible Spatial Development Framework and guides resource allocation and investments in the city's integrated development plan. Only one respondent (4.3%) does not agree with this.

It can be argued that this is a clear indication that indeed the city has developed and adopted a credible SDF. As indicated earlier on by SACN (2014:33), in order to overcome the legacy of Apartheid, cities in South Africa must spatially transform and physically restructure. Cities must drive this transformation and it has to be included in the city's Spatial Development Framework (SDF). This is a clear indication that BCMM is on the go with spatial transformation but just needs to refine, evaluate, and implement it. The SDF is a multidimensional tool that requires constant checks and balances to actively ensure that issues of transformation are being addressed (SACN 2015:5).

Table 32: Five year spatial development plan in the SDF

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 22 | 95.7 | 95.7 | 95.7 |
| | No | 1 | 4.3 | 4.3 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 32 above indicates that the greater percentage (95.7%) of respondents agree that the municipal SDF includes a five year spatial development plan. Again, only one respondent (4.3%) disagrees with this statement. With the introduction of SPLUMA, the act is set to aid the effective and efficient planning and land use management in South Africa. In the context of the spatial transformation agenda, SPLUMA has been proposed as a possible tool to effect spatial transformation.

According to this act, a municipal spatial development framework must include a written and spatial representation of a five year spatial development plan for the spatial form of the municipality. With this data from the respondents it is clear that SPLUMA has been implemented in the BCMM.

Table 33: Population growth estimates in the SDF

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 22 | 95.7 | 95.7 | 95.7 |
| | No | 1 | 4.3 | 4.3 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 33 above indicates that the greater percentage (95.7%) of respondents say that the municipal spatial development framework includes population growth estimates for the next five years. However, only one respondent (4.3%) disagreed with this statement. According to Rust (2006:12) the demand for housing is substantial and ever-growing, as the population grows, as families migrate to urban areas, and as existing housing conditions deteriorate. It can be argued that if the BCMM SDF does include the population growth estimates for the five year period, it should not experience the housing delivery backlog as it is. Being guided by the SDF, they would also be able to acquire land in time and designate it for low-income housing.

Again human population growth is perhaps the most significant cause of the complex problems the world faces. Climate change, poverty, and resource scarcity complete the list (Horizon 2009:1). Environmental Outlook SA (2013:30) also supports the above statement, their viewpoint being that population dynamics and economic development are the overarching drivers of environmental change. However, BCMM, having done the five year population growth estimate, would not experience much of a challenge to control the environmental change. This is again an indication of lack of implementation processes.

Table 34: Estimates of housing demand in the SDF

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Yes | 20 | 87.0 | 87.0 | 91.3 |
| | No | 2 | 8.7 | 8.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 34 above indicates that the greater percentage (87%) of respondents agree that the municipal spatial development framework does include estimates of the demand for housing units across different socio-economic categories, the planned location, and density of future housing developments. Only two respondents (8.7%) disagreed. It can be argued that even if the BCMM SDF does include the estimates of housing demand, meeting those demands are not easy.

However, it is evident in the BCMM IDP (2016:199) that the municipality is concerned that the city's housing development is restricted by lack of infrastructure development across the city as well as the availability of land.

Table 35: National or provincial inclusionary housing policy in the SDF

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 17 | 73.9 | 73.9 | 73.9 |
| | No | 6 | 26.1 | 26.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 35 above indicates that the greater percentage (73.9%) of respondents strongly agree that the municipal spatial development framework does identify the designated areas where a national or provincial inclusionary housing policy may be applicable. However 26.1% of them do not agree. It becomes necessary to include housing policies in the SDF where the majority of the city's population or even the country as a whole live in informal settlements. Pillay (2010:17) indicates that landlessness and lack of housing have been continuous and repetitive themes in South African history. It can be argued that for a city to be resilient, this gap needs to be closed. However, access to housing and the interplay between demand and supply, has been given significant attention by policy makers. Hence, in the SPLUMA, it is indicated that a municipal SDF must include a national or provincial inclusionary housing policy. In this case it is clearly indicated that the BCMM SDF does include it, but that implementation remains a challenge.

Table 36: Assessment of the environmental pressures in the SDF

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 21 | 91.3 | 91.3 | 91.3 |
| | No | 2 | 8.7 | 8.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 36 above indicates that the greater percentage (91.3%) of respondents agree that the municipal SDF does include a strategic assessment of the environmental pressures and opportunities within the municipal area, including the spatial location of environmental sensitivities and high potential strips. But two respondents (8.7%) dispute that. According to SPLUMA a municipal SDF must include a strategic assessment of the environmental pressures and opportunities within the municipal area, including the spatial location of environmental sensitivities, high potential agricultural land, and coastal access strips, where applicable. This is a clear indication that BCMM has included the aforementioned in their SDF, for they are pursuing their vision of putting people first.

Table 37: Policies that prevent illegal occupation of land

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Yes | 18 | 78.3 | 78.3 | 82.6 |
| | No | 4 | 17.4 | 17.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 37 above indicates that the greater percentage (78.3%) of respondents agree that the city has developed policies that prevent illegal occupation of land. But 17.4% of them dispute that. However, it is evident that one of the respondents (4.3%) was unsure about this question. In South Africa, at large, there is a housing crisis in our cities. The dense and neglected inner cities, sprawling informal settlements, and overcrowded township areas, bear evidence that there is a housing crisis. People are anxious, and looking for ways to improve their livelihood. They migrate from rural to urban areas looking for job opportunities. It is evident in the literature that once they find vacant land they grab it and build squatter camps.

It is for this reason that cities must have policies in place for the prevention of such occurrences on vacant land. It is clear that the city does have this policy and nowhere does it say in the BCMM IDP (2016) that there is a problem of land grabbing in the city, which indicates the functionality of the policy.

Table 38: Principles, norms, and standards that must guide spatial planning, land use management and land development

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 21 | 91.3 | 91.3 | 91.3 |
| | No | 2 | 8.7 | 8.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 38 above indicates that the majority (91.3%) of respondents say that the city has developed principles, norms, and standards that must guide spatial planning, land use management, and land development. However, 8.7% of respondents disagree with that. In order for the metro to be resilient, it has to spatially transform and restructure. The notion of urban spatial restructuring, and the idea of 'compacting' and 'integrating' the city spatially, has been an important part of South African post-Apartheid urban policy (Todes 2007:50). How does the city plan to achieve this? In the SPLUMA it is indicated that municipalities must develop these principles, norms and standards to guide them in restructuring the cities. Here it is clear that in BCMM these norms exist.

Table 39: Land Use Schemes

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 18 | 78.3 | 78.3 | 78.3 |
| | No | 5 | 21.7 | 21.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 39 above indicates that the majority (78.3%) of respondents supports the statement that the city indeed has strategies in place for the management and facilitation of land use through the mechanism of land use schemes. However 21.7% of respondents disagree with this statement. A very powerful tool for a city to have, in terms of achieving spatial transformation. is the indication that involving civil society and local government in land use planning contributes to the building of social capital, raising awareness of risk, and strengthening local capacities to address a wider range of development issues (UN Habitat:14). SPLUMA requires every municipality to have land use schemes to regulate all land uses in our cities.

BCMM declared publicly in the IDP that there is absolutely no land available in the metro. However, in this case they were obliged to have this kind of instrument. Unfortunately it is of no use to just have the scheme and not teach / educate people about it. In certain locations people do not adhere to all these land use regulations, not because they do not want to, but because they do not know the significance of it. SPLUMA also indicates that a land use scheme must give effect to and be consistent with the municipal SDF and determine the use and development of land within the municipal area to which it relates in order to promote (a) economic growth, (b) social inclusion, and (c) efficient land development.

Table 40: Inclusion of affordable housing in residential land development

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Yes | 18 | 78.3 | 78.3 | 82.6 |
| | No | 4 | 17.4 | 17.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 40 above indicates that the greater percentage (78.3%) of respondents says that the municipality's land use scheme does include provisions to promote the inclusion of affordable housing in residential land development. However, 17.4% of respondents dispute this, followed by one participant who was unsure about this question. Habitat III (2015:2) is of the viewpoint that informal settlements and shacks are caused by a range of interrelated factors, including population growth, rural-urban migration, and lack of affordable housing for the urban poor.

One of the strategies for addressing the formation of informal settlements and poverty reduction is dealing with population growth, rural-urban migration, and mostly the availability of affordable houses in the metro. In the table above it is indicative that BCMM has a positive insight about the inclusion of affordable houses in residential areas.

Table 41: Land Use and Development Incentives

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Yes | 16 | 69.6 | 69.6 | 73.9 |
| | No | 6 | 26.1 | 26.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 41 above indicates that the majority (69.6%) of respondents agrees that the municipality's land use scheme does include land use and development incentives to promote the effective implementation of the spatial development framework and other development policies. However, 26.1% of them say it does not include incentives.

Again one respondent (4.3%) did not indicate an answer. SPLUMA requires that land use schemes must include land use and development incentives to promote the effective implementation of the SDF and other development policies. Spatial justice is an important principle. Its application should, however, be considered in view of the functioning of the private sector as an important role player in the development of land. Emphasis should be placed on, inter alia, financial development incentives to the private sector, especially in the CBD, to help revamp the deteriorating state of buildings in the city.

Table 42: By-laws aimed at enforcing its land use scheme

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Yes | 20 | 87.0 | 87.0 | 91.3 |
| | No | 2 | 8.7 | 8.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 42 above indicates that the greater percentage (87%) of respondents agree that the municipality does pass by-laws aimed at enforcing its land use scheme. But two respondents (8.7%) disagree. Again, one respondent did not indicate. BCMM is still experiencing difficulties in adopting the existing bylaws and implementing them (evidence from table 13).

The table above is supported by the statement in the IDP that BCMM is in the process to develop a Land Use Enforcement By-Law in order to deal more efficient and quicker with illegal land uses (BCMM IDP 2016:80). It is believed that the city should first educate the people before forcing them to adhere to these bylaws. Most of the metro's dwellers are those that live in informal settlements and medium-low income houses. However, the majority of these people are not educated in land use management. Awareness of these bylaws is paramount.

Table 43: Land Development Applications

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 20 | 87.0 | 87.0 | 87.0 |
| | No | 3 | 13.0 | 13.0 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 43 above indicates that the greater percentage (87%) of respondents strongly agree that the city follows procedures and processes for the preparation, submission. and consideration of land development applications. But 13% of respondents do not agree. According to SPLUMA, for a municipality to achieve spatial transformation, land development applications are very important. SPLUMA suggests that a municipality must follow procedures and processes for the preparation, submission, and consideration of land development applications.

The Development Applications and Approval Department of any municipality is responsible for the processing of building plan applications. The focus of this department is towards the scrutiny and assessment of building applications, submitted in terms of the National Building Regulations and Building Standards Act (Act 103 of 1977), in a reliable and efficient manner, to ensure compliance with applicable laws and standards. This will promote the safe and sustainable development of the built environment. Evidence, as above, indicates that BCMM has seen the importance of this department and is following every procedure and process.

Table 44: The Compilation, Approval, and Review of the Components of an IDP

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 21 | 91.3 | 91.3 | 91.3 |
| | No | 2 | 8.7 | 8.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 44 above clearly indicates that the greater percentage (91.3%) of respondents are quite certain that the municipality has undertaken the compilation, approval, and review of the components of an Integrated Development Plan (IDP) prescribed by legislation, and falling within the competence of a municipality, seriously. But 8.7% of them dispute that. It can be argued that BCMM have followed all the processes in developing the IDP. However, the issue here is implementation.

Table 45: Redressing of Past Spatial and other Development Imbalances

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 19 | 82.6 | 82.6 | 82.6 |
| | No | 4 | 17.4 | 17.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 45 above indicates that the greater percentage (82.6%) of respondents agree that the municipality has undertaken the redressing of past spatial and other development imbalances through improved access to land and use of land. However, 17.4% of them do not agree. With the introduction of SPLUMA, the act is set to aid the effective and efficient planning and land use management in South Africa. In the context of the spatial transformation agenda, SPLUMA has been proposed as a possible tool to, amongst others, address past spatial and regulatory imbalances. This is a positive start to a long journey to urban resilience.

Table 46: Inclusion of Persons and Areas that were Previously Excluded

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 17 | 73.9 | 73.9 | 73.9 |
| | No | 6 | 26.1 | 26.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 46 above indicates that the majority (73.9%) of respondents are of the opinion that the city's spatial development framework and policies address the inclusion of persons and areas that were previously excluded with an emphasis on informal settlements, former homelands, and areas characterised by poverty. However, 26.1% disagree. It is easy to address these issues in an SDF, but to redress them is another matter. Social inclusion is an issue in South Africa. The opinion of the author is that social inclusion will not be as effective as local governments developing and revitalising the areas that were previously excluded.

Decentralisation of all state resources will ensure that previously disadvantaged persons benefit. It can be argued that every time black people migrate from the previously excluded areas to the well-developed, which are assumed to be areas of the white minority, white people will migrate too. For how long will our municipalities implement this social inclusion? Economic inclusion is supported by the author, but not social inclusion.

Table 47: Spatial Planning Mechanisms

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 15 | 65.2 | 65.2 | 65.2 |
| | No | 8 | 34.8 | 34.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 47 above indicates that the majority (65.2%) of respondents agree that the city's spatial planning mechanisms, including land use schemes, incorporate provisions that enable redress in access to land by disadvantaged communities and persons. However, 34.8% does not agree with the statement. The positive indication in the table above is heartening, but implementation is key.

Redress in access to land by disadvantaged communities and persons are a big issue in BCMM. There is still no land available for only the development of low income houses (BCMM IDP 2016:9).

Table 48: BCMM Land Use Management Systems

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 16 | 69.6 | 69.6 | 69.6 |
| | No | 7 | 30.4 | 30.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 48 above indicates that the majority (69.6%) of respondents are of the viewpoint that the city's land use management systems include all areas of the municipality and specifically provisions that are flexible and appropriate for the management of disadvantaged areas, informal settlements, and former homelands. However, 30.4% of the respondents disagree with this viewpoint. Land use management is complex. However, SPLUMA has been proposed as a possible tool to effect land use management in the country. Amongst others, the purpose of this act is to provide for a uniform, effective, and comprehensive system of spatial planning and land use management. BCMM's land use management is still administered by different legislations such as Land Use Planning Ordinance 15 of 1985, the Development Facilitation Act (Act 67 of 1995), the Less Formal Township Establishment Act (Act 113 of 1991), and the Black Communities Development Act (Act 4 of 1984).

However, the following are the challenges experienced by the Metro in terms of land use management:

- Lack of greater control over land use management to prevent the rise of illegal uses;
- Land developments that are not undertaken in accordance with an approved
 Layout Plan and / or Site Development Plan;
- Administration of Land Use Applications is complicated and confusing due to different legislation being applicable to different areas;
- Council does not have delegated authority to dispose of applications in certain areas, which must go to the Member of the Executive Council for final approval resulting in delayed service delivery; and

 Unauthorised land uses are problematic due to staff constraints and lack of a dedicated unit to deal with such.

Table 49: BCMM Land Development Procedures

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 21 | 91.3 | 91.3 | 91.3 |
| | No | 2 | 8.7 | 8.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 49 above indicates that the greater percentage (91.3%) of respondents agree that the city's land development procedures include provisions that accommodate access to secure tenure and the incremental upgrading of informal areas. However, 8.7% disagree with this statement. According to Barry (2005:43) land tenure security is important in many improvement strategies because it provides the much needed stability for these strategies to succeed. Further to that, globally, the management of informal settlements poses one of the most serious development challenges.

Increasing the level of land tenure security is a key factor in improving the residents' quality of life. If BCMM, in its land developments, include security of land tenure, urban resilience should be attained. Land tenure reform is the most complex area of land reform and it aims to bring all people occupying land under a unitary legally validated system of landholding. It will provide for secure forms of land tenure, help resolve tenure disputes and make awards to provide people with secure tenure (BCMM IDP 2016:89). As indicated by the statistics in the table above, BCMM does include provisions that accommodate access to secure tenure, supported by the statement in the IDP. The land tenure reform has been implemented in BCMM areas such as Mdantsane (Midland) and Duncan Village (coastal).

Table 50: BCMM Spatial Planning vs Land Use Management Systems

| | _ | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 19 | 82.6 | 82.6 | 82.6 |
| | No | 4 | 17.4 | 17.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 50 above indicates that the greater percentage (82.6%) of respondents are certain that the city's spatial planning and land use management systems promote land development that is within the fiscal, institutional, and administrative means of the Republic. However, 17.4% dispute this statement. Very positive results are indicated by the table above.

Table 51: Protection of Prime and Unique Agricultural Land

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 20 | 87.0 | 87.0 | 87.0 |
| | No | 3 | 13.0 | 13.0 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 51 above indicates that the greater percentage (87%) of respondents agree that the city's spatial planning and land use management systems ensure that special consideration is given to the protection of prime and unique agricultural land. However, 13% opposes this statement. It is very important for a city to protect agricultural land. Ali (2006:1) indicates that the growth of informal settlements has resulted in many, and complex, socio-economic and environmental consequences. These include pollution, deforestation, flooding, waste of agricultural lands, and so forth. Waste of agricultural land could lead to environmental degradation.

However, as indicated by the table above, BCMM definitely protects such land. The BCMM IDP (2016:189) indicates that land ownership and transfer is still a challenge within BCMM as a lot of agricultural land is owned by the state. The other challenge is that of agricultural land being rezoned for residential purposes. This is caused by the lack of land availability for residential developments.

Table 52: Consistency of Land Use Measures

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 22 | 95.7 | 95.7 | 95.7 |
| | No | 1 | 4.3 | 4.3 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 52 above indicates that the greater percentage (95.7%) of respondents agree that the city's spatial planning and land use management systems uphold consistency of land use measures in accordance with environmental management instruments. Only one respondent (4.3%) disagree with this very positive statement, as indicated by the table above. If BCMM continue doing this, city resilience will be attained.

Table 53: Effective and Equitable Functioning of Land
Markets

| | | | | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Yes | 17 | 73.9 | 73.9 | 78.3 |
| | No | 5 | 21.7 | 21.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 53 above indicates that the greater percentage (73.9%) of respondents are certain that the city's spatial planning and land use management systems promote and stimulate the effective and equitable functioning of land markets. A total of 21.7% disagree with this statement. In land markets, land prices play an important role in ensuring that land is efficiently used. If urban land markets are competitive they will operate efficiently. Land is unlike other commodities that can be bought and sold; it is immoveable. Land markets exist when and wherever it is possible to exchange rights in land for agreed amounts of money or services rendered.

The ability and capacity of banks and other financial institutions to lend money is underpinned by an efficient land market, which in turn requires an efficient land administration system. In the case of BCMM, respondents are quite certain that land markets are promoted. The efficiency of the land market varies across the world together with its openness to public scrutiny and support for the concepts of sustainable development. In less economically developed societies, and in particular where informal settlements exist, it has not always been possible to develop an effective land market leading to under-capitalisation.

Table 54: Land Development in Sustainable Locations and Limit Urban Sprawl

| | | | - | | Cumulative |
|-------|-------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | Yes | 21 | 91.3 | 91.3 | 91.3 |
| | No | 2 | 8.7 | 8.7 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 54 above indicates that the greater percentage (91.3%) of respondents agree that the city's spatial planning and land use management systems promote land development in locations that are sustainable and limit urban sprawl. However, 8.7% disagrees with this statement. It could be that BCMM promotes development in locations that are sustainable only and does not limit urban sprawl. BCMM is characterised by low-density, urban sprawl, separation and spatial and structural fragmentation (Todes 2007:50). However, the majority of respondents are confident that urban sprawl is limited in the city.

4.2.4 Urban Resilience Principles in the City planning

This section was developed in response to sub-problem one (Formation of informal settlements in vulnerable areas) and sub-problem three (Lack of urban resilience thinking in the city planning processes.). The qualitative statistics was used to analyse data collected.

Table 55: Density, Diversity and mix of uses, Users, Building Types, and Public Spaces.

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 19 | 82.6 | 82.6 | 87.0 |
| | Disagree | 3 | 13.0 | 13.0 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 55 above indicates that the greater percentage of respondents (82.6%) strongly agree that BCMM in its East London neighbourhoods embraces density, diversity and mix of uses, users, building types, and public spaces. However, 13% disagrees with the former statement. This is a positive indication that BCMM really has embarked on adding urban resilience principles in their city planning. It can be argued that density is embraced within the city, evident by high rise buildings. Public parks in the metro are embraced too, which in turn discourages deforestation.

Table 56: Walking as the preferred mode of travel, and as a defining component of a healthy quality of life.

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 4 | 17.4 | 17.4 | 21.7 |
| | Disagree | 18 | 78.3 | 78.3 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 56 above indicates that the greater percentage (78.3%) of respondents disagree that BCMM in its East London neighbourhoods prioritises walking as the preferred mode of travel, and as a defining component of a healthy quality of life. Only 17.4% of respondents agree with this statement. This is where BCMM is lacking in terms of the principles leading to urban resilience. Walking is healthy and people need to be educated about the benefits of walking. The impact of walking on congestion and pollution that increased car use can cause, is something we are all aware of. When this is added to the concerns expressed over road safety on routes to schools and work, and poor health in children as a result of more inactive lifestyles, it is clear that improvements are needed to ensure a positive future for young people.

Table 57: BCMM in its East London neighbourhoods develops in a way that is transit supportive.

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 13 | 56.5 | 56.5 | 60.9 |
| | Disagree | 9 | 39.1 | 39.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Transit Supportive Development

Table 57 above indicates that a fair percentage (56.5%) of respondents agree that BCMM in its East London neighbourhoods develops in a way that is transit supportive. However, 39.1% of respondents disagree with this statement. In BCMM public busses provided by the metro reduce the number of cars on the roads and railway line transport systems are available. However, a large percentage of Buffalo City Metropolitan Municipality's road infrastructure is old, rapidly deteriorating, and has passed its design life (BCMM IDP 2016:108).

The road network is one of the key components of the transportation system enabling mobility. A road network builds the economy. According to the BCMM IDP (2016:142) very few formal scheduled public transport services currently exist in Buffalo City. The municipal bus service offers very limited services in the East London suburbs and is hampered by a fleet that has now exceeded its useful life.

Table 58: BCMM's Energy and Resources

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 9 | 39.1 | 39.1 | 43.5 |
| | Disagree | 13 | 56.5 | 56.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 58 above indicates that a fair percentage (56.5%) of respondents totally disagree with the fact that BCMM in its East London neighbourhoods focuses energy and resources on conserving, enhancing, and creating strong and vibrant places, which are a significant component of the neighbourhood's structure and of the community's identity. However, 39.1% of them agree to it followed by one respondent (4.3%) who did not indicate an answer.

This question was added in this study because urban areas consume more water, food, energy, and durable goods, and have an impact far beyond the urban boundaries, causing urban decline (National Climate Change Response White Paper 2011:1). The majority of respondents reflected that BCMM does not focus energy and resources on conserving its neighbourhood. BCMM imports all its energy from outside its borders and sometime might find out that this will not be enough to service all of its residents.

Table 59: East London neighbourhoods provide the needs of daily living, within walking distance (a 500 m radius).

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 9 | 39.1 | 39.1 | 43.5 |
| | Disagree | 13 | 56.5 | 56.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Needs of Daily Living

Table 59 above indicates that a fair percentage (56.5%) of respondents do not think that BCMM, in its East London neighbourhoods, provide the needs of daily living within walking distance (a 500 m radius). However, 39.1% of respondents agree that BCMM indeed provides for daily living within walking distance. One respondent (4.3%) did not provide an indication. Efforts to address past and current social inequalities should focus on people, not places.

As alluded in the literature review, the absence of basic services in overcrowded areas is linked to negative health outcomes and enhanced environmental degradation, mostly as a consequence of the collection of local resources for energy, and localised pollution. For this reason, BCMM needs to provide these basic services as close as possible to the people, especially to those who live in informal settlements. Municipal finances need to recognise the importance of local revenue and the quality and accessibility of basic services being a public responsibility.

Table 60: Climate Change in BCMM.

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 8 | 34.8 | 34.8 | 39.1 |
| | Disagree | 14 | 60.9 | 60.9 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 60 above indicates that the majority (60.9%) of respondents totally disagree that BCMM, in its East London neighbourhoods, conserves and enhances the health of natural systems (including climate), areas of environmental significance, and managing the impacts of climate change. Only 34.8% of respondents agree to this statement followed by one respondent (4.3%) who did not indicate. These results support what is evident in the BCMM IDP, viz. that the city has identified that climate change has become one of the threats to the development of the metro.

However, the IDP of the city indicates that the metro has a strategy in place for climate change but it is awaiting council approval. The impact of climate change must be addressed in all new developments. Even though the results reflect otherwise, BCMM claims to be one of the leading Metropolitan municipalities in climate change issues and can expect a decrease in the rate of future demand of electricity and increased energy security, reduction in greenhouse gas emissions; reduction in energy poverty, and increased employment opportunities.

Table 61: Technical and Industrial Systems and Processes, Manufacturing, Transportation, Communications and Construction Infrastructure and Systems.

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 2 | 8.7 | 8.7 | 8.7 |
| | Agree | 13 | 56.5 | 56.5 | 65.2 |
| | Disagree | 8 | 34.8 | 34.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Technical and Industrial Systems and Processes

Table 61 above indicates that a fair percentage (56.5%) of respondents agree that BCMM, in its East London neighbourhoods, enhances the effectiveness, efficiency and safety of their technical and industrial systems and processes in addition to their manufacturing, transportation, communications, and construction infrastructure and systems. A total of 34.8% of respondents disagree, followed by two respondents (8.7%) that did not indicate. In terms of transportation, currently very few formal scheduled public transport services exist in BCMM. However, the potential of urban areas is maximised with the alignment and integration of investments in transportation.

BCMM needs to improve its transportation services to achieve resilience. In terms of manufacturing, Buffalo City has a large and potentially rapidly growing manufacturing sector, which relies on an efficient and reliable freight transport system (BCMM IDP 2016:146). In terms of Information, Communication and Technology (ICT), the municipality has gone through major initiatives with the intention of enhancing Information and Communication Technologies services that are delivered to support its delivery objectives.

Table 62: BCMM in its East London neighbourhoods grows and produces the resources it needs, in close proximity (200 kilometre radius).

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 7 | 30.4 | 30.4 | 34.8 |
| | Disagree | 15 | 65.2 | 65.2 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Renewable Resources

Table 62 above indicates that the majority of respondents (65.2%) disagree that BCMM, in its East London neighbourhoods, grows and produces the resources it needs in close proximity (200 km radius). However, 30.4% of respondents are of the opinion that BCMM is an independent city. One respondent (4.3%) did not provide an indication.

Table 63: Participation of Community Members

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 19 | 82.6 | 82.6 | 87.0 |
| | Disagree | 3 | 13.0 | 13.0 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 63 above indicates that the greater percentage (82.6%) of respondents agree to the fact that indeed BCMM, in its East London neighbourhoods, promote active participation of community members, in all development programmes, and at all scales. Only 3% of respondents disagree, followed by one respondent (4.3%) that did not indicate.

Table 64: Redundancy and Durability of Safety and Critical Infrastructure Systems.

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 3 | 13.0 | 13.0 | 13.0 |
| | Agree | 13 | 56.5 | 56.5 | 69.6 |
| | Disagree | 7 | 30.4 | 30.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 64 above indicates that a fair percentage (56.5%) of respondents agree that BCMM includes in its neighbourhood plans and designs for redundancy and durability of their life safety and critical infrastructure systems. Only 30.4% of them disagree, followed by three respondents (13%) who did not indicate.

Table 65: Building types and urban forms with reduced servicing costs, and reduced environmental footprints.

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 11 | 47.8 | 47.8 | 52.2 |
| | Disagree | 11 | 47.8 | 47.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 65 above indicates an even percentage (47.8%) of respondents that agree with those that disagree followed by one respondent (4.3%) who did not indicate whether BCMM, in its East London neighbourhoods, does develop building types and urban forms with reduced servicing costs, and reduced environmental footprints. It can be argued that it would not be easy to interpret such results.

Table 66: A Comprehensive Security and Rule of Law

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 3 | 13.0 | 13.0 | 13.0 |
| | Agree | 11 | 47.8 | 47.8 | 60.9 |
| | Disagree | 9 | 39.1 | 39.1 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 66 above indicates that the majority of respondents (47.8%) agree that BCMM, in its East London neighbourhoods, maintains a comprehensive security and rule of law (including law enforcement, crime prevention, justice, and emergency management). However, 39.1% disagrees, followed by three respondents (13%) who did not indicate.

Table 67: Financial Management, Revenue Streams, Business Investments, and Emergency Funds.

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 14 | 60.9 | 60.9 | 65.2 |
| | Disagree | 8 | 34.8 | 34.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 67 above indicates that a fair percentage (60.9%) of respondents agree that BCMM, in its East London neighbourhoods, has sound financial management, diverse revenue streams, and the ability to attract business investments, adequate investments, and emergency funds. However, 34.8% of respondents disagree with this statement followed by one respondent (4.3%) who did not indicate.

Table 68: Reduced Exposure and Fragility

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 15 | 65.2 | 65.2 | 69.6 |
| | Disagree | 7 | 30.4 | 30.4 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 68 above indicates that the majority of respondents (65.2%) agree that BCMM, in its East London neighbourhoods, has a reduced exposure and fragility, indicated by environmental stewardship, appropriate infrastructure, effective land use planning, and enforcement of planning regulations. However, 30.4% of disagrees followed by one respondent (4.3%) who did not indicate.

Table 69: Effective Provision of Critical Services

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 3 | 13.0 | 13.0 | 13.0 |
| | Agree | 12 | 52.2 | 52.2 | 65.2 |
| | Disagree | 8 | 34.8 | 34.8 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 69 above indicates that the majority of respondents (52.2%) agree that BCMM in its East London neighbourhoods has an effective provision of critical services, indicated by diverse provision and active management, maintenance of ecosystems and infrastructure, and contingency planning. A total of 34.8% of respondents disagree, followed by three respondents (13%) who did not indicate.

Table 70: Reliable Communication System and Mobility

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 3 | 13.0 | 13.0 | 13.0 |
| | Agree | 8 | 34.8 | 34.8 | 47.8 |
| | Disagree | 12 | 52.2 | 52.2 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 70 above indicates that a fair percentage (52.2%) of respondents disagree that BCMM, in its East London neighbourhoods, has a reliable communication system and mobility, indicated by diverse and affordable multi-modal transport systems, information and communication technology (ICT) networks, and contingency planning. A total of 34.8% of respondents agree, followed by three respondents who did not indicate.

Table 71: Effective Leadership and Management

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 3 | 13.0 | 13.0 | 13.0 |
| | Agree | 7 | 30.4 | 30.4 | 43.5 |
| | Disagree | 13 | 56.5 | 56.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 71 above indicates that a fair percentage (56.5%) of respondents disagree with the fact that BCMM, in its East London neighbourhoods, provides effective leadership and management, involving government, business and civil society, as indicated by trusted individuals, multi-stakeholder consultation, and evidence based decision-making. A total of 30.4% of respondents agreed, followed by three respondents (13%) who did not indicate.

Table 72: Empowered Stakeholders

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 3 | 13.0 | 13.0 | 13.0 |
| | Agree | 10 | 43.5 | 43.5 | 56.5 |
| | Disagree | 10 | 43.5 | 43.5 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 72 above indicates an even percentage (43.5%) of respondents who agrees with those who disagree, followed by three respondents (13%) who did not indicate. Therefore it can be argued that it is not easy to interpret the significance of it.

Table 73: Integrated Development Plan (IDP)

| | | | | | Cumulative |
|-------|----------|-----------|---------|---------------|------------|
| | | Frequency | Percent | Valid Percent | Percent |
| Valid | 0 | 1 | 4.3 | 4.3 | 4.3 |
| | Agree | 21 | 91.3 | 91.3 | 95.7 |
| | Disagree | 1 | 4.3 | 4.3 | 100.0 |
| | Total | 23 | 100.0 | 100.0 | |

Table 73 above indicates that the greater percentage (91.3%) of respondents agree that BCMM and its East London neighbourhoods has an Integrated Development Plan (IDP), guided by the presence of a city vision, an integrated development strategy, and plans that are regularly reviewed and updated by cross-departmental working groups. Only one respondent (4.3%) disagreed followed by one (4.3%) who did not indicate.

4.3 INTERVIEWS

To support the data in the above section, the researcher opted to include one-on-one interviews with three more managers in different departments from the Human Settlements regional offices in East London. An interview schedule was structured and the following is a brief summary of the findings pertinent to the study:

- In terms of resilience, BCMM is not resilient at all. In fact, not a single municipality in South Africa is resilient. There are a lot of pull factors in the Metro, the city is still growing and it is not yet ready to be resilient. For example, electricity is a problem in the metro (i.e. power outage), BCMM is not approving any sub-division applications at the moment, property prices are ridiculously high, and schools are not enough;
- In terms of issues to be addressed for the metro to be resilient, it was revealed
 that the city needs strong leadership. There is a need for the municipality to
 look at economic opportunities and exploit them. The metro is not coping as it
 lacks a strategy for receiving new city entrants and catering for them in terms
 of housing and basic services they need for a living. The city has to master its
 public transport system;
- In terms of urban transformation in BCMM, there are strategies in place but the
 problem is implementation. Urban areas have to transform, especially in the
 low-cost housing sector, closing the gap between rich and poor. We have to
 accept informality in our cities. It was revealed that SPLUMA is one piece of
 legislation that will redress urban transformation;
- In terms of urban safety and security, BCMM is not safe at all. The city must revisit its safety bylaws. For example, there are private businesses that left the metro because of safety issues and individuals are also relocating. There are no strategies in place and city planners are not pro-active enough. The metro is growing but supersedes the safety issues;
- In terms of land use management, this is a big challenge in the metro. It was
 evident that interviewees were not sure whether land use management bylaws
 exist in the metro or not, but if they do then people are not aware of them, and
 if they are, they do not adhere to them. If these bylaws do exist, there has to be
 enforcement policies in place. Previously disadvantaged residents need

- education and awareness regarding these bylaws. For example, there is an issue of illegal land occupation in the metro (land grabs);
- In terms of the role of the built environment towards urban resilience, environmental impact assessments are conducted for any type of project within the metro. Green buildings are promoted in order to mitigate challenges of climate change. Also Alternative Building Technologies (ABTs) are promoted to address climate change;
- In terms of urban facilities management, it was revealed that these people are
 not involved in the town planning or human settlement development. Urban
 facilities managers need to be also involved in the municipal integrated
 development plan (IDP); and
- In terms of housing demand, migration patterns, and population growth in the metro, there is a high housing delivery backlog and the demand is ever increasing. Growth is evident in the informal settlements. The Department of Human Settlements have been trying, through all possible means, to address this issue, but not winning. Institutions of higher learning are also contributing towards the population growth.

4.4 RESPONDING TO RESEARCH QUESTIONS

The review of the literature and the findings emanating from the study were used to respond to research questions. In this section each research question will be discussed qualitatively. The following are research questions (RQ) for the study:

- RQ 1: What are solutions to environmental degradation?
- RQ 2: How can local municipalities manage space for development of low income housing for new city entrants?
- RQ 3: How can urban resilience thinking help local municipalities to withstand and recover quickly from diverse shocks and stresses? and
- RQ 4: What framework should a city use in order to deal with the totality of its stresses and shocks?

4.4.1 Question One

In this question, "What are solutions to environmental degradation?", the study aimed to find solutions to environmental degradation. In the literature review and from the findings of the results the following was ascertained:

- The city must develop model bylaws aimed at establishing measures for the management of environmental impacts of any development;
- The city must develop and adopt credible environmental management instruments such as environmental management frameworks, strategic environmental assessments, environmental impact assessments, environmental management programmes, environmental risk assessments, and environmental feasibility assessments;
- The city's environmental management section must place people and their needs at the forefront of its concerns, and serve their physical, psychological, developmental, cultural, and social interests equitably;
- All the developments within a city must be socially, environmentally, and economically sustainable;
- All the developments within a city, the disturbance of ecosystems and loss of biodiversity, pollution and degradation of the environment, the disturbance of landscapes and sites that constitute the city's cultural heritage, must be avoided, minimised and remedied;
- All the developments within a city must ensure that waste is avoided, or minimised and reused or recycled where possible, or otherwise disposed of in a responsible manner;
- All the developments within a city, where the use and exploitation of nonrenewable natural resources occur, must be responsible and equitable, and must take into account the consequences of the depletion of the resource;
- In all the developments within a city, the development, use and exploitation of renewable resources and the ecosystem of which they form part, must not exceed the level beyond which their integrity is jeopardised;
- In all the developments within a city, a risk-adverse and cautious approach must be applied, which takes into account the limits of current knowledge about the consequences of decisions and actions;

- In all the developments within a city, negative impacts on the environment and on people's environmental rights must be anticipated and prevented, minimised and remedied:
- Environmental justice must be pursued in such a manner that adverse environmental impacts are not distributed so as to unfairly discriminate against any person, or community, particularly vulnerable and disadvantaged areas;
- Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued;
- Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience, and other appropriate means; and
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed, and evaluated.

4.4.2 Question Two

In this question, "How can local municipalities manage space for development of low income housing for new city entrants?", the study aimed to find spatial planning and land use management strategies. From the literature review and the following findings were attained:

- A city must undertake a land audit that determine land availability, current uses, land ownership, and split between private and public land;
- A city must develop and adopt a credible Spatial Development Framework (SDF) which guides resource allocation and investments in the city's integrated development plan;
- The municipal SDF must include a five year spatial development plan, population growth estimates for the next five years, estimates of the demand for housing units across different socio-economic categories, and the planned location and density of future housing developments;
- The municipal SDF must identify the designated areas where a national or provincial inclusionary housing policy may be applicable;

- The municipal SDF must include a strategic assessment of the environmental pressures and opportunities within the municipal area, including the spatial location of environmental sensitivities, high potential agricultural land, and coastal access strips;
- A city must develop policies that prevent illegal occupation of land;
- A city must develop principles, norms, and standards that should guide spatial planning, land use management and land development;
- A city must have strategies in place for the management and facilitation of land use through the mechanism of land use schemes;
- The municipality's land use scheme must include provisions to promote the inclusion of affordable housing in residential land development;
- The municipality's land use scheme must include land use and development incentives to promote the effective implementation of the SDF and other development policies;
- The municipality must pass by-laws aimed at enforcing its land use scheme;
- The city must follow procedures and processes for the preparation, submission and consideration of land development applications;
- The municipality must undertake the compilation, approval, and review of the components of an IDP prescribed by legislation and falling within the competence of a municipality;
- The municipality must undertake the redressing of past spatial and other development imbalances through improved access to and use of land;
- The city's SDF and policies must address the inclusion of persons and areas that were previously excluded, with an emphasis on informal settlements, former homeland areas and areas characterised by widespread poverty and deprivation;
- The city's spatial planning mechanisms, including land use schemes, must incorporate provisions that enable redress in access to land by disadvantaged communities and persons;
- The city's land use management systems must include all areas of the municipality and specifically provisions that are flexible and appropriate for the management of disadvantaged areas, informal settlements and former homeland areas:

- The city's land development procedures must include provisions that accommodate access to secure tenure and the incremental upgrading of informal areas;
- The city's spatial planning and land use management systems must promote land development that is within the fiscal, institutional and administrative means of the Republic;
- The city's spatial planning and land use management systems must ensure that special consideration is given to the protection of prime and unique agricultural land;
- The city's spatial planning and land use management systems must uphold consistency of land use measures in accordance with environmental management instruments;
- The city's spatial planning and land use management systems must promote and stimulate the effective and equitable functioning of land markets, and
- The city's spatial planning and land use management systems must promote land development in locations that are sustainable and limit urban sprawl.

4.4.3 Question Three

In this question, "How can urban resilience thinking help local municipalities to withstand and recover quickly from diverse shocks and stresses?", the study aimed to find urban resilience principles that must be included in the city planning. The literature review and findings of the results yielded the following:

- The city must embrace density, diversity and mix of uses, users, building types, and public spaces;
- The city must prioritise walking as the preferred mode of travel, and as a defining component of a healthy quality of life, and developed in a way that is transit supportive;
- The city must focus energy and resources on conserving, enhancing, and creating strong, vibrant places, which are a significant component of the neighbourhood's structure and of the community's identity;

- The city must provide the needs of daily living, within walking distance (a 500 m radius);
- The city must conserve and enhance the health of natural systems (including climate) and areas of environmental significance, and manage the impacts of climate change;
- The city must enhance the effectiveness, efficiency and safety of their technical and industrial systems and processes, including their manufacturing, transportation, communications and construction infrastructure and systems to increase their energy efficiency, and reduce their environmental footprint;
- The city must grow and produce the resources it needs, in close proximity (200 km radius);
- The city must promote active participation of community members, in all development programmes, and at all scales, for the empowerment of the community;
- The city must plan and design for redundancy and durability of their life safety and critical infrastructure systems;
- The city must develop building types and urban forms with reduced servicing costs, and reduced environmental footprints;
- The city must maintain a comprehensive security and rule of law (including law enforcement, crime prevention, justice, and emergency management);
- A city must have sound financial management, diverse revenue streams, and the ability to attract business investments, adequate investments, and emergency funds;
- A city must have a reduced exposure and fragility, indicated by environmental stewardship, appropriate infrastructure, effective land use planning, and enforcement of planning regulations;
- A city must have an effective provision of critical services, indicated by diverse provision and active management, maintenance of ecosystems and infrastructure, and contingency planning;
- A city must have a reliable communication system and mobility, indicated by diverse and affordable multi-modal transport systems and information and communication technology (ICT) networks and contingency planning;

- A city must provide effective leadership and management, involving government, business and civil society, and indicated by trusted individuals, multi-stakeholder consultation, and evidence based decision-making; and
- A city must have empowered stakeholders, indicated by education for all, and access to up-to-date information and knowledge to enable people and organisations to take appropriate actions.

4.4.4 Question Four

In this question, "What framework should a city use in order to deal with the totality of its stresses and shocks?" The study aimed to find an urban resilience framework that could be utilised to deal with the totality of its stresses and shocks. For the purpose of this study, 14 interceding variables were identified affecting 6 intervening variables that ultimately affect the dependent variable identified as Resilient Human Settlements or Urban Resilience. The following are the fundamental variables identified in a conceptual urban resilience framework:-

<u>Interceding Variables:</u>

- Spatial Transformation;
- Socio-Economic Transformation;
- Urban Governance;
- Crime Prevention:
- Integrated Development Planning;
- Land use Management;
- The Built Environment;
- Urban Facilities Management;
- Rural-urban Migration;
- Population Growth;
- Housing Demands;
- Environmental Management;
- Disaster Preparedness and Awareness; and
- Climate Change.

Intervening Variables:

- Urban Transformation;
- Urban Policies and Regulations;
- Urban Safety and Security;
- Urban Planning and Development;
- Informal Settlements; and
- Environmental Degradation.

Dependent Variable:

Resilient Human Settlements or Urban Resilience.

4.5 CONCLUSION

This chapter presented the empirical results of the field study that was conducted. The nexus between the theoretical framework and data collected on various urban resilience determinants in contemporary cities were discussed. Results were interpreted and findings of the study unpacked. Resilience can no longer be regarded only through the environmental lens. It has grown to demonstrate its economic and social relevance. The results are indicative that there is still a long road ahead for BCMM to be regarded as a resilient city. Resilience is a journey that must be anchored in the city's long-term growth and development strategies. The journey towards resilience is difficult and challenging, and will require building long term sustainability and spatial transformation that supports development and improved quality of life.

After having examined the nexus between the theoretical framework and data collected on various urban resilience determinants in contemporary cities, it transpired that some of the variables in the framework already existed and were implemented by the metro effectively. However, there are still quite a number of factors that the city needs to improve on. The next chapter summarises the research effort. It offers conclusions in the light of the main findings from the review of the related literature, main findings from the field work, and certain limitations of the study. It presents managerial recommendations, which, if considered, should ensure the implementation of sound urban resilience practice, and yield a sustainable East London or cities and communities.

CHAPTER 5:

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter provides an overview of the research study. The most significant findings are highlighted, based on the empirical results presented in Chapter 4. These scientific findings are evaluated in conjunction with the review of the literature. Finally, the contributions of this study are highlighted, the limitations addressed, recommendations of issues that BCMM must implement in order to ensure a resilient East London are highlighted, and recommendations for further research are suggested.

5.2 SUMMARY

This research is deducted from the rapid influx of people into urban areas that are already overcrowded with large service backlogs due to rural-urban migration and international migration. This rapid influx results in urban sprawl and urban decline, the formation of informal settlements in vulnerable areas, and larger towns or cities generally growing resulting in shortage of land in urban areas for development of low income housing. The primary objectives of this research was to investigate solutions to environmental degradation, to examine methods or approaches that a municipality can follow to optimise on the available space or land (land use management), to explore the manner in which urban resilience principles can be incorporated in the city planning, and to provide a conceptual framework that cities can use to determine urban resilience.

To address these objectives the following research questions had to be developed:

- What are solutions to environmental degradation?
- How can local municipalities manage space for the development of low income housing for new city entrants?
- How can urban resilience thinking help local municipalities to withstand and recover quickly from diverse stresses and shocks? and
- What framework should a city use in order to deal with the totality of its stresses and shocks?

The aim of this research is to contribute to the goals of the local municipalities by improving an understanding of the drivers of urban resilience, enabling a city system to withstand and recover quickly from multiple and diverse shocks and stresses, and improving its performance over time. Furthermore, the goal is to provide a conceptual framework that East London and / or any other city can utilise to determine urban resilience. The delimitation of this research was firstly about generating a conceptual framework for inclusion of urban resilience principles in planning processes of Buffalo City Metropolitan Municipality (BCMM). Secondly, all the elements of urban resilience are investigated, but not in detail. Thirdly, the focus was only on East London, BCMM.

A comprehensive survey of the literature was conducted in order to identify as many factors as possible that would determine urban resilience. Based on secondary sources from the literature review a theoretical framework that would determine urban resilience was constructed. Six intervening factors viz. urban transformation, urban policies and regulations, urban safety and security, urban planning and development, informal settlements, and environmental degradation were identified. Fourteen interceding factors viz. spatial transformation, socio-economic transformation, urban governance, crime prevention, integrated development plan, land use management, the built environment, urban facilities management, rural-urban migration, population growth, housing demand, environmental management, disaster preparedness and awareness, and climate change were also identified.

Given the nature of the problem statement and the research objectives posed in this study, the qualitative research paradigm was adopted. After the adjustments revealed by the preliminary evaluation had been made to the measuring instrument, structured questionnaires were made available to respondents identifying them by means of the convenience snowball sampling technique. The return of 23 usable questionnaires, which were used for the statistical analysis of the data, confirmed the attainment of the third secondary objective. The latter theoretical results were presented, reported, and discussed in Chapter 4. Based on these results, various recommendations are presented as to how these influencing factors can be managed in such a way as to determine urban resilience.

5.3 CONCLUSIONS

South Africa's urban areas continue to be disadvantaged by a legacy of racial discrimination, poverty and exclusion from social and economic opportunities. The spatial legacy is one of urban sprawl, low densities, functional segregation between home and work, and overlapping racial and class separations. As a result, high levels of inefficiency and wasteful use of scarce resources characterise the South African cities and towns. A phenomena, such as collective violence and the vulnerability of populations (e.g. youth and foreign migrants), may be associated with this inability of cities to meet their inhabitants' rights and expectations to access urban resources, services and opportunities.

The problems caused by rural-urban migration vary from city to city in South Africa. In East London, Buffalo City Metro Municipality in the Eastern Cape, the most critical shocks and stresses result from the formation of informal settlements in low and middle income areas, with city authorities often unable to keep up and formally meet new housing demands. The focus of the study was to address this issue. While conducting research relative to urban resilience determinants, the researcher identified the dependent variable as 'urban resilience'. The review of the related literature presented in Chapter 2, furthermore clearly identified the following six fundamental variables as urban resilience determinants:

- Urban Transformation;
- Urban Policies and Regulations;
- Urban Safety and Security;
- Urban Planning and Development;
- Informal Settlements; and
- Environmental Degradation.

After having examined the literature in Chapter 2 as per the conceptual urban resilience framework, and the analysis of the questionnaire feedback, it transpired that some of the variables in the framework already existed and were implemented by the metro effectively. During the course of this study it was evident that the main challenge in planning for BCMM or any urban area into the future is to ensure the design and implementation of job creation linked development programmes and establishment of well performing human settlements. Job creation should be linked to sustainable livelihoods, with due consideration of rural-urban linkages while addressing urban deficiencies.

Within the rising social frustration and anger fuelled by enduring poverty and economic marginalisation, a human development centred approach to development management should be at the heart of what BCMM does and how they function. The study revealed that Buffalo City Metropolitan Municipality is in possession of the correct remedial measures to fulfil this task. However, the city requires an intelligent and well-grounded leadership, administrative professionalism, a capable workforce, predictable and productive social compacts, coherent functions, and fiscal autonomy. It is also evident that mobility in the city is important.

The following section named 'Recommendations' highlights the areas where BCMM need to improve in order for the city to be resilient.

5.4 RECOMMENDATIONS OF THE STUDY

This section can be divided into three sub-sections, i.e. environmental degradation, spatial planning and land use management, and urban resilience principles in the city planning. The findings of the study revealed the following:

With regards to Environmental Degradation, the following recommendations can be made:

- BCMM is still experiencing difficulties in adopting the existing bylaws and implementing them. However, the city should review the existing City By-Laws, policies and standard operating procedures to ensure that these are relevant to the changing environment;
- BCMM should prioritise people, where and how they live, and what they need to survive in order to achieve city resilience;
- In terms of sustainable developments, integrated planning is imperative.
 Responses to incidents should be planned and coordinated;
- BCMM should take into account the consequences of the depletion of natural resources; and
- Risk assessments must form part of the feasibility studies of all new projects and developments, so that appropriate prevention and mitigation measures can be incorporated as development takes place.

With regards to spatial planning and land use management the following recommendations can be made:

- BCMM should develop a coherent strategy for land acquisition apart from the fact that public land is 'vested' in the State;
- The city should conduct awareness programmes to educate people about the importance of land use schemes;
- BCMM should develop and revitalise the areas that were previously excluded.
 Decentralising all state resources will ensure that previously disadvantaged persons benefit instead of social inclusion; and
- The city should develop bylaws ensuring that special consideration is given to the protection of prime and unique agricultural land.

With regards to urban resilience principles in the city planning the following recommendations can be made:

- BCMM does not prioritise walking as the preferred mode of travel, and as a
 defining component of a healthy quality of life. Walking is healthy and BCMM
 should educate its people about the benefits of walking (i.e. traffic congestion
 and pollution that increased car use can cause);
- BCMM should focus energy and resources on conserving, enhancing, and creating strong and vibrant places;
- BCMM should provide basic services as close as possible to the people especially to those who live in informal settlements; and
- Municipal finances need to recognise the importance of local revenue and the quality and accessibility of basic services to be a public responsibility.

5.5 RECOMMENDATIONS FOR FURTHER RESEARCH

The findings of this study may be used for further research for a doctoral study investigating, much more in detail, each of the identified variables in the urban resilience framework which is evident in the review of the related literature.

5.6 CONCLUSION

This chapter presented the research effort in summary. It offered conclusions in the light of main findings emanating from the nexus between the theoretical framework and data collected on various urban resilience determinants in contemporary cities holistically as well as certain limitations of the study. It presented managerial recommendations, which, if considered by BCMM, should ensure the implementation of sound urban resilience practice, and yield sustainable cities and communities. Urban resilience is a journey which every city should embark on in order to attain sustainable human settlements.

LIST OF REFERENCES

Abebe, S. 2010. *Migration Patterns, Trends and Policy Issues in Africa*. Working Papers Series No 119, African Development Bank. Tuni: Tunisia.

Adedeji, O.H. 2007. *Human Environment (EMT 421)*. Lecture notes. College of Environmental Resources Management. Federal University of Agriculture Abeokuta, Department of Environmental Management and Toxicology

Adger, W.N. 2000. Social and ecological resilience: are they related? School of Environmental Sciences and CSERGE. University of East Anglia. Norwich NR4 7TJ: UK.

Alexander, K. 2006. "A strategy for facilities management". Facilities 21(Iss): 269 – 274.

Ali, M.H. & Sulaiman, M.S. 2006. *The Causes and Consequences of the Informal Settlements in Zanzibar*. Tanzania: Department of Surveys and Urban Planning.

Antonius, R. 2003. *Interpreting Quantitative Data with SPSS*. London: Sage Publishing.

Atkin, B. 2009. *Total Facilities Management*. 3rd Edition. Adrian Brooks. Blackwell Publishing Ltd.

Barry, M. & Rüther, H. 2005. Data Collection Techniques for Informal Settlement Upgrades in Cape Town. URISA (17), South Africa.

Bodin, N., Burgeot, T. Minier, C. & Cherel, Y. 2004. Seasonal variations of a battery of biomarkers and physiological indices for the mussel mytilus galloprovincialis transplanted into the northwest Mediterranean Sea. IFREMER, Chemical Pollutants, Laboratoire d'e 'cotoxicologie, BP 21105, 44311. France: Nantes.

Bouma, G. D. & Atkinson, G.B.J. 1995. *A Handbook of Social Science Research:* Comprehensive and Practical Guide for Students. New York: Oxford University Press.

Buffalo City Metropolitan Municipality. 2013. Buffalo City Metropolitan Municipality Annual Report, 2012 / 2013.

Buffalo City Metropolitan Municipality. 2013. Draft Integrated Development Plan, Annexure A, 2012 / 2013 review: Buffalo City Metropolitan Municipality, "a city growing with you".

Buffalo City Metropolitan Municipality. 2014. Buffalo City Metropolitan Municipality Annual Report, 2013 / 2014.

Buffalo City Metropolitan Municipality. 2014. Buffalo City Metropolitan Municipality Draft Annual Report, 2013 / 2014.

Buffalo City Metropolitan Municipality. 2016. Buffalo City Metropolitan Municipality IDP Final report 2015 / 2016.

Census. 2011. Statistical Release (Revised) – P0301.4. Pretoria: Statistics South Africa.

Centre for Study of Violence and Reconciliation. 2007. The Centre for the Study of Violence and Reconciliation. *The Violent Nature of Crime in South Africa: A concept paper for the Justice, Crime Prevention and Security Cluster.* South Africa.

Chourabi, H. 2012. *Understanding Smart Cities: An Integrative Framework*. 45th Hawaii International Conference on System Sciences. IEEE DOI 10.1109/HICSS.2012.615.

City of Cape Town. 2011. *Moving Mountains, Cape Town's Action Plan for Energy and Climate Change*. 1st Edition. City of Cape Town: ISBN 978-0-9802784-9-1.

City of Johannesburg. 2007. Land Management and Democratic Governance in the City of Johannesburg. South Africa: Central Strategy Unit Office of the Executive Mayor City of Johannesburg.

Constitutional Law. 1996. Constitution of the Republic of South Africa, Chapter 2: Bill of rights (ss 21) freedom of movement and residence (3). South Africa.

Dasgupta, P.S. & Ehrlich, P.R. 2013. Pervasive Externalities at the Population, Consumption, and Environment Nexus. Science 340:324-328.

Dean, T. & McMullen, J.S. 2007. Toward a Theory of Sustainable Entrepreneurship: Reducing Environmental Degradation through Sustainable Action. University of

Colorado at Boulder. United States: Leeds School of Business, CB 419 Boulder, CO 80309-0419.

Durban Resilience Journey. 2014. *Durban's 100 Resilient Cities Journey*. South Africa: Ethekwini Municipality.

Earn the must-have credential for facility professionals. International Facilities Management Association. 2015. Facility Management Professional. [O]. Available: www.ifma.org. Accessed on 2015/12/05.

Eastern Cape Socio-Economic Consultative Council. 2014. *Buffalo City Metropolitan Municipality, Eastern Cape, Socio-economic Profile Report.* University of Fort Hare: Department of Economics, ISBN: 978-1-77593-018-1.

Food and Agriculture Organisation. 2014. *Natural Resources Management and Environment in SIDS*. United Nations Conference in Small Island Developing States (SIDS).

Gedze, N. 2012. *Government–Sponsored Community Development Projects as poverty alleviation tools*? Evidence from Mdantsane, East London. Municipalities. Department of Sociology. South Africa: University of Fort Hare.

Government Gazette. 2014. *National Urban Search and Rescue Framework - General Notice 26 February 2014.* South Africa: Department of Cooperative Governance.

Habitat II. 2015. *United Nations Conference on Housing and Sustainable Urban Development, Issue Paper 22 – Informal Settlements*. New York.

Habitat III. 2015. *United Nations Conference on Housing and Sustainable Urban Development, Issue* Paper 3 – Safer Cities. New York.

Habitat III. 2015. United Nations Conference on Housing and Sustainable Urban Development, Issue Paper 5 – Urban Rules and Legislation. New York.

Habitat III. 2015. *United Nations Conference on Housing and Sustainable Urban Development, Issue Paper 6 – Urban Governance*. New York.

Habitat III. 2015. United Nations Conference on Housing and Sustainable Urban Development, Issue Paper 8 – Urban and Spatial Planning and Design. New York.

Habitat III. 2016. United Nations Conference on Housing and Sustainable Urban Development, Issue Paper 15 – Urban Resilience. New York.

Haigh, R. 2010. An integrative review of the built environment discipline's role in the development of society's resilience to disasters. Centre for Disaster Resilience, School of the Built Environment, University of Salford, Salford. UK: Emerald Group Publishing Limited.

Hamann, M. & Tuinder, V. 2012. *Introducing the Eastern Cape: A quick guide to its history, diversity and future challenges. 'Governance of Ecosystem Services under Scenarios of Change in Southern and Eastern Africa*. Stockholm Resilience Centre. Sweden: Stockholm University.

Horizon Series. 2009. Future issues for development (Pilot Issue) - Population Growth, Environment and Food Security: What Does the Future Hold? Institute of Development Studies at the University of Sussex. UK: East Sussex, Brighton.

Integrated Urban Development Framework. 2016. *Integrated Urban Development Framework: A new deal for South African Cities and towns*. South Africa: The Department of Cooperative Governance and Traditional Affairs.

Johannesburg Growth Development Strategy. 2011. *Johannesburg Growth Development Strategy - A promising future*. Central Strategy Unit Office of the Executive Mayor City of Johannesburg. ISBN 978-0-620-51782-9.

Johnson, G., Scholes, K. & Whittington, R. *Exploring Corporate Strategy: Text & Cases.* 9th Edition. London: Prentice Hall. ISBN10: 140588732X.

Jonas, M. 2015. *The Deputy Minister of Finance, 5 keys for BCMM to prosper.* [O]. Available: http://www.dispatchlive.co.za. Accessed on 2016/08/12.

Laldaparsad, S., Geyer, H. & Du Plessis, D. 2013. The reshaping of urban structure in South Africa through municipal capital investment: Evidence from three municipalities. Statistics South Africa.

Le Roux, I. 2005. Entrepreneurship cognition and the decision to exploit a new venture creation opportunity. Dissertation submitted for PhD in Entrepreneurship. Pretoria: University of Pretoria.

Leedy, P.D. & Ormrod, J. E. 2010. *Practical Research: Planning and Design*. 9th Edition. NYC: Merrill.

Leedy, P.D. & Ormrod, J.E. 2015. *Practical Research: Planning and Design*. 11th Edition. England: Pearson Education Limited.

Li, Q. 2006. Democracy and Environmental Degradation: A Formal and Empirical Investigation. The Pennsylvania State University: Blackwell Publishing.

Loubser, J. & Freeman, M. 2011. *Environmental Impact Assessment and Management Strategy*. South Africa: The Department of Environmental Affairs.

Mosby's Medical Dictionary. 2009. 8th edition. [O]. Available: http://medical-dictionary.thefreedictionary.com/conceptual+framework. Accessed on 2015/12/05.

Mouton, J. 2006. *How to succeed in your Master's & Doctoral Studies*. A South African Guide and Resource Book. Cape Town: Van Schaik Publishers.

Naoum, S. & Tsanis, I.K. 2004. *Global Nest: Ranking spatial interpolation techniques using a GIS-based DSS*. Department of Civil Engineering, McMaster University, Hamilton. Canada: Ontario.

National Human Settlements Conference. 2016. Sustainable future cities and human settlements begin today. South Africa: Department of Human Settlements and Development, Nelson Mandela Metropolitan University.

National Planning Commission. 2011. *National Development Commission, South African National Development Plan (vision, 2030): Our future - Make it work.* South Africa: Department of the Presidency.

Ngcamu, B.S. 2010. *Disaster Preparedness by Local Government: A case study of foreman and Kennedy road informal settlements in the eThekwini municipality*. Soutyh Africa: South Africa: Department of Human Resource and Development, Mangosuthu University of Technology.

Pepu, M. 2006. *Urban Livelihood Strategies of Internal migrants and the Response of the City of Johannesburg's Policy Agenda*. South Africa: University of the Witwatersrand, Faculty of Engineering and Built Environment: School of Architecture and Planning.

Pillay, U. 2010. A Rapid Verification Study on the Informal Settlements and Backyard Shacks' Backlog and Trends within the Eastern Cape. South Africa: Eastern Cape Provincial Department of Housing.

Raleigh, C. & Urdal, H. 2007. *Climate Change, Environmental Degradation and Armed Conflict.* Department of Government, University of Essex, United Kingdom: Colchester.

Reuveny, R. 2007. *Climate Change - Induced Migration and Violent Conflict*. School of Public and Environmental Affairs. Bloomington: Indiana University.

Roberts, P. 2004. FM: new urban and community alignments. *Facilities* 22(13/14): 349-352.

Roof, K & Oleru, N. 2008. "Public Health: Seattle and King County's Push for the Built Environment." *J Environ Health* 71:24–27.

Royal Society. 2015. Climate Change Evidence & Causes: An overview from the Royal Society and the US National Academy of Sciences. United Kingdom: National Academy of Science.

Rust, K. 2006. Analysis of South Africa's housing sector performance. FinMark Trust.

SACN. 2016. State of South African Cities Report 2016. Johannesburg: SACN.

Satterthwaite, D., 2009. The implications of population growth and urbanization for climate change. *Environment and Urbanization*, 21(2):545-567.

Simon M.K. 2011. Dissertation and scholarly research: Recipes for success. Seattle: WA.

South Africa. 2014. *Environmental Impact Assessment and Management Strategy for South Africa (Draft)*. South Africa: Department of Environmental Affairs

South Africa. 1997. Housing Act 107 of 1997, part 4: Local Government (sec 9:10B) functions of municipalities. South Africa.

South African Cities Network. 2014. South African Cities Network, Spatial Transformation of Cities Conference Report. Kristina Davidson (Write to the Point), Ink Design. ISBN: 978-0-620-62567-8.

South African Cities Network. 2015. *SPLUMA as a tool for Spatial Transformation. Inclusive Cities.* South Africa: Research Centre Johannesburg.

Spatial Planning and Land Use Management Act. 2014. South African Department of Rural Development and Land Reforms. PowerPoint Presentation.

Stats SA. 2006. *Statistics South Africa: Migration and Urbanization in South Africa*. South Africa: Stats SA Library Cataloguing-in-Publication (CIP) Data.

Tamazian, A. & Rao, B. 2008. *Do Economic, Financial, and Institutional Development Matter for Environmental Degradation?* University of Santiago de Compostela. Evidence from Transitional Economics. School of Economics and Business Administration.

Tihomola, S.J. 2010. Failure of small medium and micro enterprises in the Tshwane Metropolitan Municipality. Department of Human Resource and Development. South Africa: Mangosuthu University of Technology-

Tobi, S.U.M. 2011. Social Enterprise Applications in an Urban Facilities Management Setting: Initial Findings. School of the Built Environment, The University of Salford, UK. Malaysia: Universiti Teknologi Malaysia, Johor.

Todes, A. 2007: *Democracy and Delivery - Chapter three - Urban Spatial Policy*. University of the Witwatersrand, Gauteng City-Region Observatory.

United Nations-Habitat. 2013. Making Cities Resilient: Summary for Policymakers. A global snapshot of how local governments reduce disaster risk – April 2013.

Urdal, H. 2005. People vs. Malthus: Population Pressure, Environmental Degradation, and Armed Conflict. *Journal of Peace Research* 2005 (42): 417.

Verheye, W. 2006. Land Use, Land cover and Soil Sciences. Land Use Management.

National Science Foundation Flanders / Belgium and Geography Department.

Belgium: University Gent.

Walker, J.R. 2012. Population and the Environment. E 623 Sustainability Evidence.

Welman, C., Kruger, F. & Mitchell, B. 2005. *Research Methodology*. 3rd Edition. Cape Town: Oxford University Press.

Environmental Outlook South Africa. 2013. [O]. Available: What is affecting our environment? – Chapter3. 2013. [O]. Available: 2015/12/05.

White Paper. 2011. *Republic of South Africa, National Climate Change Response*. South Africa: Department of Environmental Affairs.

Williams, J.J. 2000. South Africa: urban transformation. Cities, 17(3): 167-183.

Working Group on Environmental Auditing. 2013. Land Use and Land Management Practices in Environmental Perspective. Published by INTOSAI Working Group on Environmental Auditing (WGEA). ISBN 978-9949-9061-9-2 (PDF)

Yang, Y. 2010. Sustainable urban transformation driving forces, indicators and processes. M.Sc. Bauhaus-University Weimar.

YourDictionary. 2015. Environmental degradation. [O]. Available: http://www.yourdictionary.com/environmental-degradation. Accessed on 2015/1205.

Zuma, N. 2013. Growth, Transformation, Reform: Emerging Economies in the Next

APPENDICES

APPENDIX I: THE QUESTIONNAIRE



Monday, 10 August 2016

Buffalo City Metropolitan Municipality
Trust Centre Building
117 Oxford Street, corner Oxford and North Streets **EAST LONDON**5200

Attention: To whom it may concern

Dear Sir / Madam,

RESEARCH PROJECT: URBAN RESILIENCE DETERMINANTS WITH SPECIFIC REFERENCE TO THE BUFFALO CITY METROPOLITAN MUNICIPALITY, EAST LONDON

I, Mr. Khululekani Ntakana introduce myself to you. I am undertaking the above mentioned research project in partial fulfillment of the requirements for the Degree of Magister Scientiae in the Built Environment (specialising in the field of Property Economics and Valuations) in the Faculty of Engineering, The Built Environment and Information Technology at the Nelson Mandela Metropolitan University, Port Elizabeth.

In this study, a non-probability sampling technique is used to select key informants who are believed to be resourceful by virtue of possessing crucial information to achieve the study objectives within the Buffalo City Metropolitan Municipality, East London. Your department has been chosen and thus your participation is of importance to the success of this study.

You are kindly requested to spend a few minutes of your time to fill this questionnaire. All information that you impart will be treated with strict confidence and your anonymity is assured.

Thank you in advance for participating in this research process.

If you have any difficulties with this questionnaire, please phone;

Mr. Khululekani Ntakana: 079 626 8166

URBAN RESILIENCE DETERMINANTS WITH SPECIFIC REFERENCE TO THE BUFFALO CITY METROPOLITAN MUNICIPALITY, EAST LONDON

The purpose of this questionnaire is to gather information regarding solutions to environmental degradation, methods or approaches to optimise on the available space of land that can be followed municipalities, how urban resilience principles can be incorporated into city planning, and lastly, developing a framework that cities can use to determine urban resilience.

| What type of in | nstitution do y | you work for? | | | |
|-----------------|-----------------|---------------|----------|---------|-------|
| Buffalo City N | /letropolitan N | Municipality | Business | NGO | |
| Name of the B | usiness or N | GO? | | | |
| SECTION A: I | <u>DEMOGRAP</u> | HIC INFORM | ATION: | | |
| . Gender? | | | | | |
| Male | Female | | | | |
| . Age? | | | | | |
| 16 – 24 | 25-34 | 35-44 | 45-54 | 55-64 | 65 + |
| . Home langu | uage? | | • | | |
| Zulu | Xhosa | Afrikaans | English | Sesotho | Other |
| . Nationality? | | Other | • | • | |
| If other plea | ase specify? | | | | |

| 5. | Highest Qua | dification | on? | | | | | | | | | | |
|-----|---------------------------|------------|------------|-------|------------|-------|----------|----|----------|-------|-------|-------|-----|
| | Grade 12 | Trade | esman | Dip | oloma | D | egree | | Post Gr | ad | Ph[|) | |
| 6. | What position | n do y | ou occu | py ir | n your ins | titut | on? | | | • | | | |
| | Junior Man | ager | Manag | er | Director | , | CEO | Ov | vner | | Other | | |
| | If other, please specify? | | | | | | | | | | | | |
| 7. | How long ha | | | | | | • | | | | | | |
| | Less than 5 | year | 5 years | to 1 | 0 years | 11 | years to | 15 | years ' | 16 ye | ars a | nd ab | ove |
| 8. | Total experie | ence in | ı your fie | eld o | f study? | | | | | | | | |
| | Less than 5 | year | 5 years | to 1 | 0 years | 11 | years to | 15 | years ' | 16 ye | ars a | nd ab | ove |
| 9. | How long ha | ive you | ı lived in | Eas | st Londor | 1? | | | <u>'</u> | | | | |
| | Less than 5 | year | 5 years | to 1 | 0 years | 11 | years to | 15 | years | 16 ye | ars a | nd ab | ove |
| 10. | Do you prac | tice ga | rden at | hom | e? | | | | , | | | | |
| 11. | Where would | d you c | choose t | o liv | e? | | | | | | | | |
| | Coastal | | Inland | k | | City | | | Rural | | | | |

SECTION B: ENVIRONMENTAL DEGRADATION.

Instructions:

This is not a test, there are no right or wrong answers. We are interested in your opinions, so please feel free to provide your first opinion. Please mark with an "X" the appropriate box to indicate "YES" or "NO" in the table below each statement.

1. In your opinion, would you say that the city has developed model bylaws aimed at establishing measures for the management of environmental impacts of any development?

| YES | NO | |
|-----|----|--|
|-----|----|--|

2. Has the city developed and adopted credible environmental management instruments such as environmental management frameworks, strategic environmental assessments, environmental impact assessments, environmental management programme, environmental risk assessments, environmental feasibility assessments, etc.?

| YES | NO | |
|-----|----|--|
| | | |

3. Does BCMM's environmental management place people and their needs at the forefront of its concerns, and serve their physical, psychological, developmental, cultural, and social interest equitably?

| YES | | NO | |
|-----|--|----|--|
|-----|--|----|--|

4. In your opinion, would you say all the developments within BCMM are socially, environmentally, and economically sustainable?

| YES NO |
|--------|
|--------|

5. Would you say that in all the developments within BCMM, the disturbance of ecosystems and loss of biodiversity are avoided, minimized and remedied?

| YES NO | |
|--------|--|
|--------|--|

6. Would you say that in all the developments within BCMM, pollution and degradation of the environment is avoided, minimized and remedied?

| YES | | NO | |
|-------------|-----------|-----------|---|
| | | | |
| Would you | say that | in all th | e developments within BCMM, the disturbance of |
| landscapes | and site | es that o | constitute the city's cultural heritage is avoided, |
| minimized : | and remed | died? | |

YES NO

7.

8. Would you say that in all the developments within BCMM, the waste is avoided, or minimized and reused or recycled where possible and otherwise disposed of in a responsible manner?

| YES | NO | |
|-----|----|--|
|-----|----|--|

9. Would you say that in all the developments within BCMM, the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the recourse?

| YES | NO | |
|-----|----|--|
|-----|----|--|

10. Would you say that in all the developments within BCMM, the development, use and exploitation of renewable resources and the ecosystem of which they are part do not exceed the level beyond which their integrity is jeopardized?

| YES | NO | |
|-----|----|--|

11. Would you say that in all the developments within BCMM, a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions?

| YES | NO | |
|-----|----|--|
| | | |

12. Would you say that in all the developments within BCMM, negative impacts on the environment and on people's environmental rights are anticipated and prevented, minimized and remedied?

| YES | NO | |
|-----|----|--|

13. In your opinion, would you say in BCMM environmental justice is pursued in such a manner that adverse environmental impacts are not distributed so as to unfairly discriminate against any person, or community, particularly vulnerable and disadvantaged areas (i.e. Duncan village, Gompo, etc.)?

| YES | | NO | | |
|------------|------------|-----------|------------|---|
| | • | | | ss to environmental resources, benefits and ensure human wellbeing is pursued? |
| YES | | NO | | |
| is promote | ed through | n enviror | nmental ed | community wellbeing and empowerment ucation, the raising or environmental and experience, and other appropriate |

16. In your opinion, would you say in BCMM the social, economic and environmental impacts of activities, including disadvantages and benefits, are considered, assessed, and evaluated?

| YES | NO | |
|-----|----|--|
| | | |

NO

SECTION C: SPATIAL PLANNING AND LAND USE MANAGEMENT.

Instruction:

YES

Please mark with an "X" the appropriate box to indicate "YES" or "NO" in the table below each statement.

1. In your opinion, would you say your city has undertaken land audit that determine land availability, current uses, land ownership, and split between private and public land?

| YES | NO | |
|-----|----|--|
|-----|----|--|

2. In your opinion, would you say your city has developed and adopted a credible Spatial Development Framework and guides resource allocation and investments in the city integrate development plan?

| | 10 |
|--|----|
|--|----|

| 3. | If YES (2), does spatial develop | • | spatial development framework include a five year |
|----|----------------------------------|---------------------------------------|---|
| | YES | NO | |
| 4. | ` , . | es the municipal es for the next f | spatial development framework include population ive years? |
| | YES | NO | |
| 5. | the demand for | r housing units | spatial development framework include estimates of across different socio-economic categories and the of future housing developments? |
| | YES | NO | |
| 6. | ` ' | | cipal spatial development framework identify the tional or provincial inclusionary housing policy may |
| | YES | NO | |
| 7. | assessment of area, including | the environmen | spatial development framework include a strategic stal pressures and opportunities within the municipal cation of environmental sensitivities, high potential ccess strips? |
| | YES | NO | |
| 8. | Has the city de | veloped policies | s that prevent illegal occupation of land? |
| | YES | NO | |
| 9. | | | oles, norms, and standards that must guide spatial nt and land development? |
| | YES | NO | |
| 10 | - | _ | in place for the management and facilitation of land and use schemes? |

| YES | NO | | |
|-----|----|---|---|
| , , | • | • | se scheme include provisions to promote dential land development? |
| YES | NO | | |

12.If YES (10), does the municipality's land use scheme include land use and development incentives to promote the effective implementation of the spatial development framework and other development policies?

13.If YES (10), does the municipality pass by-laws aimed at enforcing its land use scheme?

| YES | NO | |
|-----|----|--|

14. Does the city follow procedures and processes for the preparation, submission and consideration of land development applications?

15. Has the municipality undertaken the compilation, approval, and review of the components of an IDP prescribed by legislation and falling within the competence of a municipality?

| YES | | NO | |
|-----|--|----|--|
|-----|--|----|--|

16. Has the municipality undertaken the redressing of past spatial and other development imbalances through improved access to and use of land?

| TES |
|-----|
|-----|

17. In your opinion, would you say your city's spatial development framework and policies addresses the inclusion of persons and areas that were previously excluded, with an emphasis on informal settlements, former homeland areas and areas characterized by widespread poverty and deprivation?

| YES NO |) |
|--------|---|
|--------|---|

| | incorporate provisions that enable redress in access to land by disadvantaged communities and persons? | | | | | | | |
|-----|---|---|----|---|---|--|--|--|
| | YES | | NO | | | | | |
| 19. | 19. In your opinion, would you say your city's land use management systems include all areas of the municipality and specifically provisions that are flexible and appropriate for the management of disadvantaged areas, informal settlements and former homeland areas? | | | | | | | |
| | YES | | NO | | | | | |
| 20. | - | - | | • | procedures include provisions that not the incremental upgrading of informal | | | |
| | YES | | NO | | | | | |
| 21. | • | • | • | • | use management systems promote land tutional and administrative means of the | | | |
| | YES | | NO | | | | | |
| 22. | • | | • | • | d use management systems ensure that tection of prime and unique agricultural | | | |
| | YES | | NO | | | | | |
| 23. | 23. Does your city's spatial planning and land use management systems uphold consistency of land use measures in accordance with environmental management instruments? | | | | | | | |
| | YES | | NO | | | | | |
| 24. | 24. Does your city's spatial planning and land use management systems promote and stimulate the effective and equitable functioning of land markets? | | | | | | | |

YES

NO

18. Does the city's spatial planning mechanisms, including land use schemes,

| 25 | 25. Does your city's spatial planning and land use management systems promote land development in locations that are sustainable and limit urban sprawl? | | | | | | | | |
|-----|--|------------|-------------|----------|-----|--|--|--|--|
| | YES | | NO | | | | | | |
| SE | SECTION D: URBAN RESILIENCE PRINCIPLES IN THE CITY PLANNING. | | | | | | | | |
| Ins | truction: | | | | | | | | |
| | | | | • | | in the table below each statement to ith the statement. | | | |
| 1. | • | - | | • • | | M) in its East London neighbourhoods es, users, building types, and public | | | |
| | AGREE | | DISAGREE | : | | | | | |
| 2. | | | • | | • | orioritizes walking as the preferred tof a healthy quality of life. | | | |
| | AGREE | | DISAGREE | | | | | | |
| 3. | BCMM in its supportive. | s East Lor | ndon neighl | oourhood | s d | levelops in a way that is transit | | | |
| | AGREE | | DISAGREE | | | | | | |
| 4. | BCMM in i | ts East L | ondon nei | ghbourho | ods | s focuses energy and resources on | | | |

conserving, enhancing, and creating strong, vibrant places, which are a significant component of the neighbourhood's structure and of the community's identity.

| AGREE | | DISAGREE | |
|-------|--|----------|--|
|-------|--|----------|--|

5. East London neighbourhoods provide the needs of daily living, within walking distance (a 500 m radius).

| AGREE | DISAGREE | |
|------------|------------------------|---|
| | • | ourhoods conserves and enhances the health of e) and areas of environmental significance, and |
| • | ` | , |
| manage the | impacts of climate cha | iange. |

6.

AGREE DISAGREE

7. BCMM in its East London neighbourhoods enhances the effectiveness, efficiency and safety of their technical and industrial systems and processes, including their manufacturing, transportation, communications and construction infrastructure and systems to increase their energy efficiency, and reduce their environmental footprint.

| AGREE | DISAGREE | |
|-------|----------|--|
|-------|----------|--|

8. BCMM in its East London neighbourhoods grows and produces the resources it needs, in close proximity (200 kilometre radius).

| AGREE | DISAGREE | |
|-------|----------|--|
|-------|----------|--|

9. BCMM in its East London neighbourhoods promotes active participation of community members, in all development programmes and at all scales.

| AGREE | DISAGREE | |
|-------|----------|--|
|-------|----------|--|

10. BCMM in its neighbourhood's plans and designs for redundancy and durability of their life safety and critical infrastructure systems.

11. BCMM in its East London neighbourhoods develop building types and urban forms with reduced servicing costs, and reduced environmental footprints.

| AGREE | DISAGREE | |
|-------|----------|--|

12.BCMM in its East London neighbourhoods maintains a comprehensive security and rule of law (including law enforcement, crime prevention, justice, and emergency management).

| AGREE | DISAGREE |
|-------|----------|
|-------|----------|

| 13. | BCMM in its | East London | neighbourhoods | has a sou | nd financial | management, |
|-----|----------------|----------------|----------------------|--------------|--------------|---------------|
| | diverse reven | ue streams, ar | nd the ability to at | tract busine | ess investme | nts, adequate |
| | investments, a | and emergend | y funds. | | | |

| AGREE | DISAGREE | |
|-------|----------|--|
|-------|----------|--|

14. BCMM in its East London neighbourhoods has a reduced exposure and fragility, indicated by environmental stewardship; appropriate infrastructure; effective land use planning; and enforcement of planning regulations.

| AGREE | | DISAGREE | |
|-------|--|----------|--|
|-------|--|----------|--|

15.BCMM in its East London neighbourhoods has an effective provision of critical services, indicated by diverse provision and active management; maintenance of ecosystems and infrastructure; and contingency planning.

| AGREE | DISAGREE | |
|-------|----------|--|
|-------|----------|--|

16.BCMM in its East London neighbourhoods has a reliable communication system and mobility, indicated by diverse and affordable multi-modal transport systems and information and communication technology (ICT) networks; and contingency planning.

| AGREE DISAGREE |
|----------------|
|----------------|

17.BCMM in its East London neighbourhoods provides effective leadership and management, involving government, business and civil society, and indicated by trusted individuals; multi-stakeholder consultation; and evidence based decision-making.

| AGREE | DISAGREE | |
|-------|----------|--|

18. BCMM in its East London neighbourhoods has empowered stakeholders, indicated by education for all, and access to up-to-date information and knowledge to enable people and organisations to take appropriate actions.

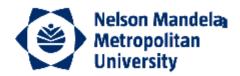
| AGREE | DISAGREE | |
|-------|----------|--|
|-------|----------|--|

19. BCMM and its East London neighbourhoods has an Integrated Development Plan (IDP), guided by the presence of a city vision; an integrated development strategy; and plans that are regularly reviewed and updated by cross-departmental working groups.

| | AGREE | DISAGREE | | |
|---------|------------|----------------|----------|---|
| SF | CTION F: G | ENERAL COMMENT | ·s | _ |
| <u></u> | <u> </u> | | <u> </u> | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Thank you for participating in this study. The information you provided will be analyzed and incorporated into the recommendation of the inquiry. **PLEASE RETURN THE QUESTIONNAIRE TO** khntakana@wsu.ac.za or kllknntakana@gmail.com

APPENDIX II: SUPPORT TO CONDUCT RESEARCH



PO Box 77000 - Nelson Mandela Metropolitan University

Port Elizabeth • 6031 • South Africa • www.nmmu.ac.za

for tomorrow

MISSIONVALE CAMPUS FACULTY OF ENGINEERING BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

Tel. +27 (0) 41 504 3498/ 1276 / 1153 /1519 Fax. +27 (0) 86 602 2170 Eng: Prof Sijekula Mbanga

Monday, 7 March 2016

The City Manager
Buffalo City Metropolitan Municipality
10th Floor Trust Centre Building
117 Oxford Street, Corner Oxford and North Streets
EAST LONDON
5200

Attention: Mr Nceba Ncunyane

Dear Sir

SUPPORT TOWARDS AN NMMU MASTER OF BUILT ENVIRONMENT RESEARCHER, MR KHULULEKANI NTAKANA, STUDENT NUMBER 212315137

I write, herein, to introduce one of our Post-graduate students, Mr Khululekani Ntakana, who is commencing research in partial fulfilment of the requirements for completion of an M Sc (Built Environment) with specialisation in Property Economics and Valuation.

Mr Ntakana is pursuing a study entitled "Factors that would determine urban resilience with specific reference to East London in the Buffalo City Metropolitan Municipality." His adopted research methodology requires of him to solicit some critical planning information from the municipality and its agencies, including interacting with key informants or functionaries within the City. In this maintaining utmost confidentiality and anonymity.

I, thus, appeal for support of Mr Ntakana during his important study, in any manner your good office deems appropriate. I have no doubts that Mr Ntakana's research will add value in the forward planning of the City while contributing to the Built Environment discipline.

Thanking you in advance.

Prof Sijekula Mbanga, Ph. D

Associate Professor for Buildings and Human Settlements

M Sc (Built Environment) Research Supervisor

APPENDIX III: REQUEST TO CONDUCT RESEARCH

No: 29 Murray Avenue Cambridge; East London

5201

DATE: 01 JUNE 2016

THE ACTING CITY MANAGER
BUFFALO CITY METROPOLITAN MUNICIPALITY
PO BOX 134
EAST LONDON
5200

Dear Sir,

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH STUDY AT BCMM

I am a student at **Nelson Mandela Metropolitan University**, completing **Megister Scientae in Property Economics and Valuations**. I am sure you are aware that any post graduate study involves completion of a Treatise or Dissertation or Thesis. It is for this reason that I request your personal and professional permission to partake in my research in directorates and departments within BCMM.

The title of my research Treatise is "URBAN RESILIENCE DETERMINANTS WITH SPECIFIC REFERENCE TO EAST LONDON IN THE BUFFALO CITY METROPOLITAN MUNICIPALITY", and is being undertaken under the Supervision of Associate Professor Sjekula Mbanga.

The objectives and aims of this research are [1] to investigate solutions to environmental degradation; [2] to examine methods and approaches that a municipality can follow to optimise on the available space or land (land use management); [3] to explore the manner in which urban resilience principles can be incorporated in the city planning and [4] to provide a conceptual framework that cities can use to determine urban resilience. The research study shall make use of interviews / completion of questionnaries with key selected potential participants or respondents, chosen through / according to purposive or convenience sampling technique. The potential participants or respondents would thus include City manager; Corporate Services Directorate; Municipal Services Directorate;

Development and Spatial Planning Directorate; Infrastructure Directorate; Health and Public Safety Directorate; Economic Development Directorate, Human Settlement Directorate and all the junior managers of these directorates. The study will be benefitial to BCMM in the this manner "This study aims to contribute to the goals of the local municipalities by improving understanding of the drivers of urban resilience, enable a city system to withstand and recover

quickly from multiple and diverse shocks and stresses, and improve its

performance over time".

The ethical research principles will be strictly adhered to throughout the research process so as to maintain a high standard of work and a high quality of the research study. The infromation obtained will be used ony for purposes of this study, and will ensure anonymity and confidentiality of potential research participants or respondents. A copy of the full research report, once approved by the University will be handed to BCMM.

I thus request granting of permission to collect the necessary data / information from relevant officials (and Councillors) at BCMM for the purposes of completion of my Research Treatise.

Your kind assistance in granting me permission will be highly appreciated and thank you for taking the time in allowing your staff to be part of this research study as I am sure it will not only be of benefit to me but to them as well..

Yours faithfully,

KHULULEKANI NTAKANA

N. NCUNYANA

ACTING CITY MANAGER

| Approved Not Approved | Approved | Not Approved |
|-----------------------|----------|--------------|
|-----------------------|----------|--------------|

APPENDIX IV: PERMISSION TO CONDUCT RESEARCH

BUFFALO CITY METROPOLITAN MUNICIPALITY



MEMORANDUM

Date: 07 JULY 2016

From: HEAD: INFORMATION

To: Mr. Khululekani Ntakana

KNOWLEDGE

MANAGEMENT, RESEARCH

AND POLICY

Our ref:

14.

Pleaso ask for

Your ref:

MR J.FINE (043) 705 9742

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN BCMM:

MR. K. NTAKANA

It is hereby acknowledged:that Mr. Ntakana, a student at Nelson Mandela Metropolitan Unniversity completing Megister Scientae in Property Economics and Valuations has met the prerequisites for conducting research at Buffalo City Metropolitan Municipality (BCMM) for partial fulfillment of his degree. He has provided us with all the necessary documentation as per the BCMM Policy on External Students conducting research at the institution. With reference to the letter to the Acting City Manager received on 30 June 2016, pormission was requested to conduct research at BCMM for her Research Report, entitled "Factors that would determine Urban Resillience with Specific reference to

APPENDIX V: CERTIFICATE OF PROOFREADING



Certificate of proofreading

This serves to certify that the treatise of Mr K Ntakana has been proofread, edited and referenced with the referencing material and limited time available to me.

Date: 24 February 2016