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**INYUVESI
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**Examining the disaster mitigation efforts in eThekweni Municipality: The case of
Umlazi Township in South Africa**

By

Cosmas B. Ndlovu

217080633

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Supervisor: Dr Sybert Mutereko

DECLARATION

I, Mr Cosmas Buhlebuyeza Ndlovu student number 217080633 declare that:

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13 December 2019

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ABSTRACT

Disaster mitigation in South Africa is characterised by poor implementation of policies, thus there are few interventions that prevent the disaster impact or the reoccurrence of damages. Previous studies (Van Niekerk, 2014; Paton and Johnston, 2017; CoGTA, 2018) have established that stakeholders react to a disaster after it happens and a few measures are then put in place for disaster mitigation. Previous studies, as mentioned above have tended to focus on lack of funds as an impediment to proper disaster mitigation coordination rather than focusing on how implementation of policies or how specific stakeholders can be a weak link in the mitigation process. Using a qualitative research design that employed in-depth interviews with key stakeholders (n = 7) and three focus group discussions (n = 18), this study sought to identify the nature and the degree of disasters and to find out what mitigation strategies were employed by the Municipality and their effectiveness, according to different role players in Umlazi Township eThekweni Municipality.

Analysis of data revealed that floods and fire are the most common disasters in Umlazi and the disasters affect everyone in society. Better and stronger infrastructure was a common mitigation strategy recommended by participants. Effectiveness, however, was viewed as being limited. Emerging from the findings is the suggestion that a multi-pronged approach involving cooperation between the communities, ward committees and Municipal disaster management could be the effective means of curbing disasters. This study, which attempted to contribute to the growing corpus of literature and theory on disaster management, points to a need for political will among policymakers to ensure that issues of disaster management are prioritised in budgets and in decision-making.

Key words: disaster mitigation, nature and degree of mitigation, floods, fire, better and stronger infrastructure.

LISTS OF ACRONYMS

BECs	Branch Executive Committee
CAT	Community Action Theory
CBO	Community Based Organization
CBOs	Community Based Organizations
CoGTA	Cooperative Governance and Traditional Affairs
CR	Community Resilience
DMA	<i>Disaster Management Act</i>
DRR	Disaster Risk Reduction
DRRP	Disaster Reduction and Recovery Programme
DSD	Department of Social Development
FBOs	Faith-Based Organizations
FGD	Focus Group Discussions
ICDM	Intergovernmental Committee on Disaster Management
IIT	Infrastructure Investment Theory
IKS	Indigenous Knowledge System
KZN	KwaZulu Natal
MDG	Municipal Disaster Grant
MDMC	Municipal Disaster Management Centre
NDMAF	National Disaster Management Advisory Forum
NDMC	National Disaster Management Centre
NDMF	National Disaster Management Framework

NGOs	Non-Government Organisations
NPM	New Public Management
NPM	New Public Management
NPO	Non-Profit Organization
PDG	Provincial Disaster Grant
RDP	Reconstruction and Development Programme
SADC	Southern Africa Development Community
SALGA	South African Local Government Association
SASDiR	Southern Africa Society for Disaster Reduction
SOEs	State-Owned Enterprises
TPB	Theory of Planned Behaviour
TPG	Theory of Public Governance
TRA	Theory of Reasoned Action Theory
TTN	Theory of Townships Neighbouring
UNISDR	United Nations Strategy for Disaster Risk Reduction
UNISDR	United Nations Strategy for Office on Disaster Risk Reduction

CONTENTS LIST

DECLARATION	i
ACKNOWLEDGEMENTS	ii
ABSTRACT	iii
LISTS OF ACRONYMS	iv
List of Figures	x
LIST OF TABLES	x
LIST OF MATRICES	x
CHAPTER ONE: INTRODUCTION AND OVERVIEW	1
1.1 Introduction	1
1.2 Background of the study	1
1.3 Statement of the Problem	3
1.4 Aim	4
1.5 Research Questions	4
1.6 Research Objectives.....	4
1.7 The significance of the study	4
1.8 The justification for the study.....	5
1.9 Limitations of the study	5
1.10 The structure of the dissertation	6
1.11 Chapter summary.....	7
CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK UNDERPINNING DISASTER MANAGEMENT	8
2.1 Introduction	8
2.2 Nature and the Degree of Disasters.....	8
2.2.1 Floods.....	9
2.2.2 Droughts.....	11
2.2.3 Earthquakes	11
2.2.4 Tropical Cyclones	12
2.3 Disaster mitigation.....	12
2.4 Solutions: What do others say?	19
2.5 Theories underpinning this study	19
2.5.1 Theory of Planned Behaviour.....	19
2.5.2 Community Resilience Theory	22
2.5.3 Management of disasters in a Weberian hierarchical way.....	26

2.5.4 New Public Management.....	27
2.5.5 Network Governance Theory.....	28
2.6 Chapter summary and conclusion	29
CHAPTER 3: POLICY FRAMEWORK AND STAKEHOLDER PARTICIPATION IN DISASTER MITIGATION	30
3.1 Introduction	30
3.2 The Policy framework for disaster mitigation.....	30
3.2.1 International policies	30
3.2.1.1 The Yokohama Strategy	30
3.2.2 The African Regional Strategy for Disaster Mitigation.....	30
3.2.3 Southern Africa Development Community (SADC).....	31
3.2.4 National policies.....	31
3.2.4.1 The South African Constitution.....	32
3.3 Stakeholder participation	33
3.3.1 Local Government.....	33
3.3.2 Intergovernmental Committees and Advisory Forums	34
3.3.3 Ward Councillors, Committees and the Department of Social Development (DSD).....	35
3.4 Conclusion.....	36
CHAPTER 4: RESEARCH METHODOLOGY	38
4.1 Introduction	38
4.2 Research Worldviews.....	38
4.3 Research approach.....	38
4.4 Research Design.....	39
4.4.1 Limitations of the case study qualitative design.....	40
4.5 Study Site	40
4.6 Target Population.....	40
4.7 Sampling Strategies.....	41
4.7.1 Sample and Sample Size.....	42
4.8 Recruitment Strategy	43
4.9 Data Collection Methods	43
4.9.1 In-depth/Individual Interviews	44
4.9.2 Focus Group Interviews	45
4.9.3. Documents and Archives	45
4.10 Data Quality Control	46
4.10.1 Trustworthiness	46

4.10.2 Credibility	47
4.11 Measurement.....	47
4.12 Data Analysis	47
4.13 Ethical Considerations.....	48
4.13.1 Gatekeeping.....	48
4.13.2 Informed Consent/ Authorisation.....	48
4.13.3 Avoiding Harm.....	49
4.13.4 Confidentiality and anonymity.....	49
4.13.4.1 Participants Coding	50
4.14 Conclusion.....	52
CHAPTER 5: DATA PRESENTATION AND ANALYSIS.....	53
5.1 Introduction	53
5.2 The nature and the degree of disasters in Umlazi Township eThekweni.....	53
5.2.1 Floods.....	54
5.2.2 Fire	55
5.2.3 The effects of disasters	56
5.3 The disaster mitigation strategies employed in Umlazi Township	60
5.3.1 Better and Stronger Infrastructure	61
5.3.2 Early Warning.....	63
5.4 The effectiveness of disaster mitigation strategies employed in Umlazi Township.....	64
5.4.1 Below optimal effectiveness	66
5.4.2 Slow response	67
5.4.3 Lack of clear communication	68
5.5 The role played by different stakeholders in disaster mitigation	69
5.5.1 The Municipality.....	70
5.5.2 Ward Committees and Area Committees.....	72
5.5.3 Councillors.....	72
5.5.4 Religious and Traditional Leaders	73
5.5.5 The Community.....	75
5.5.6 Other players.....	75
5.6 The recommended solutions to improve disaster mitigation in Umlazi Township.	76
Participants offered an array of recommendations as solutions to mitigate disasters. They suggested the construction of RDP houses, grassroots participation, and multi-stakeholder coordination.....	76

5.6.1 RDP houses.....	77
5.6.2 Grassroots participation	78
5.6.3 Multi-stakeholder coordination.....	79
5.7 Discussion.....	80
5.8.1 The nature and extent of disasters in Umlazi Township.....	80
5.8.2 Mitigation strategies employed in Umlazi Township	82
5.8.3 The effectiveness of disaster mitigation strategies employed in Umlazi Township.....	84
5.8.4 The role played by different stakeholders in disaster mitigation in Umlazi Township	85
5.8.5 Solutions to improve disaster mitigation in Umlazi Township	85
5.9 Limitation of research findings	88
5.10 Chapter summary.....	88
CHAPTER 6: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	89
6.1 Introduction	89
6.2 Recap of research questions and objectives.....	89
6.3 Summary of chapters	89
6.4 Summary of findings and conclusions.....	92
6.5 Theoretical proposition as Contribution to Disaster mitigation	96
6.6 Overarching Recommendations	99
6.7 Limitations of the study	101
6.8 Suggestions for further research	101
6.9 Chapter summary.....	102
References.....	103
LIST OF APPENDICES.....	115
Appendix A: Gatekeeper approach letter: Dorothy Nyembe Zone Umlazi	115
Appendix A1: Gatekeeper approach letter: Disaster Management Centre - MDMC.....	117
Appendix A2: Gatekeeper approach letter: Department of Social Development (DSD).....	119
Appendix B: Recruitment letter for focus group	121
Appendix B1: Recruitment letter for interviews: Ward Councillors	122
Appendix B2: Recruitment letter for interviews: MDMC Officials	123
Appendix B3: Recruitment letter for interviews: DSD Umlazi	124
Appendix C: Consent Letter English	125
Appendix C1: Consent To Participate	127
Appendix C2: Consent Letter Isizulu	128
Appendix C3: Consent To Participate in IsiZulu	130

Appendix D: Commitment Letter	131
Appendix E: Focus Group Interview Guide	132
Appendix E1: Key Informants' Interview Schedule	134
Appendix F: Permission Letter MDMC.....	136
Appendix F1: Permission Letter Umlazi Ward 78, 80, and 82	137
Appendix F2: Permission Letter DSD	138
Appendix G: Ethical Approval Letter	139

List of Figures

Figure 2.1 - Theory of planned behaviour – (Source, Ajzen, 1991).....	21
Figure 2.2: The Social Organisation and Change (Source Mancini, Martin, & Bowen, 2009)....	23
Figure 2.3: Community Capacity Typology (Source Mancini, Martin, & Bowen, 2009).....	25

LIST OF TABLES

Table 4.1 – Illustration of sampling method and participant biographic data for Umlazi Township.....	42
Table 4.2 – Ward 78 Focus Group Interview	51
Table 4.3 – Wards 80 and 82 Focus Group Interviews.....	51
Table 6.1 Recapitulation of the research question and the objectives.....	89
Table 6.2: Theoretical Proposals Derived from Data	97

LIST OF MATRICES

Matrix 5.1: Summary of the nature and degree of disasters.....	53
Matrix 5.2: Summary of responses on the effect of disasters.....	57
Matrix 5.3: Summary of the responses to disaster mitigation strategies	60
Matrix 5.4: Summary of the effectiveness of disaster mitigation strategies	65
Matrix 5.5: Summary of the responses on the role played by different stakeholders in disaster mitigation	69
Matrix 5.6: Summary of the recommended solutions to improve disaster mitigation	76
Matrix 5.7 Summary of research questions, emergent themes, and the literature	87

CHAPTER ONE: INTRODUCTION AND OVERVIEW

1.1 Introduction

This study focused on examining the strategies in place needed to mitigate disasters in Umlazi Township within wards 78, 80, and 82 in eThekweni Municipality. The study took the view that a perfect disaster mitigation system manages the activities intended to maintain disaster control and to avoid consequential risks or future recurrences. This would then, hopefully, promote the economy, provide better health and safety for people, and reduce the loss of lives and injury. This study sought to explore a variety of disasters affecting Umlazi residents, in order to recommend strategies for the purpose of disaster mitigation. The study explored literature from previous studies and provided the conceptual framework for the mitigation of disasters. The methodology and design used to undertake the research are also defined.

1.2 Background of the study

The United Nations Office on Disaster Risk Reduction (UNISDR) has presented an International Systematic Framework guided by the Substantial Disaster Risk-reduction Mandate which aims to transform the world agenda for Sustainable Development, for the period 2015 to 2030. The initiative provided by UNISDR was to employ the *Hyogo Framework for Action 2005-2015* as a basis for implementing the *Sendai Framework for agenda 2016 to 2022* which is an international awareness campaign designated by the National Assembly in the United Nations as an event mounted in October every year, in which mitigation as part of the global culture is promoted for disaster reduction. It had 7 targets for a period of seven years (Aitsi-Selmi et al., 2016). Part of the 2018 framework under target (c) was to reduce direct economic loss as a result of disasters in relation to the global gross domestic product (GDP). In relation to this framework, the UNISDR has been broken down into six explained compounds. Compound1 (C-1) refers to ‘direct economic loss attributed to disasters in relation to global GDP’. C-2 indicates that disasters do contribute to an agricultural loss in the sense that crops, livestock, forestry sectors, and fisheries play a major role in the economy of any country. If this is affected by disasters, the economic impact can affect GDP because the total output of goods and services produced can be negatively affected, and this affects the country’s economy as a whole. This should also be seen in relation to C-3, C-4, C5, and C6 where ‘direct economic loss due to disasters, does contribute to the damaged productive assets, housing sector, critical infrastructure, and cultural heritage respectively (Clarke et al., 2018). As per the

international disaster database, an annual report from UNISDR 2016 indicated that, globally, there were over 22000 mass disasters to date, contained in the *Emergency Events Database (EM- DAT)* (Glasser, 2016).

In the South African context, the post-apartheid government strategy heralded an era of new policies in which the *Disaster Management Act (No.57 of 2002)* was implemented and became applicable in 2003. This Act recognised the promotion and co-ordination of national disaster risk as per the mandate of the National Disaster Management Centre. Pursuant upon the provisions of the *Disaster Management Framework of 2005*, the national centre had to achieve the development and approval of disaster policy by establishing the intergovernmental structure called the *Intergovernmental Committee on Disaster Management (ICDM)*. *Section 7.7.1.2 of the National Disaster Management Framework (NDMF)* and had to provide guidelines on Disaster Response and Recovery Operations. Furthermore, the *Sendai Framework* concerns the economic loss, especially where eThekweni Municipality would keep on recovering loss of infrastructural assets and issuing of disaster grants each and every year particularly to those at greater risk of death, injury, ill-health and loss of livelihood. (For example, an amount of R 61 025 000 from Provincial Disaster Grant (PDG) and Municipal Disaster Grant (MDG) was transferred to Mpumalanga Province to repair the damaged infrastructure as per the annual report 2014/2015 from National Disaster Management Centre (NDMC). In this case, Umlazi Township was the context of the study. Specifically, in Umlazi, disaster grants are issued to the family members affected by the disaster, based on a prior full assessment of the damages. Last financial year 2016/17, eThekweni Municipality had budgeted for a disaster grant to those who may be affected as per *Schedule 7* of the MDG.

However, part of the shortcomings since 1994 that were reported by the National Planning Commissioner, indicated slow progress on issues pertaining to climate change, building environmental sustainability and resilience, and poorly located infrastructure that is inadequate and under-maintained. As a result, the South African government set out nine priority challenges in November 2011 to be part of the *National Development Plan* in order to make people's lives better. Despite this, people are still affected by disaster risk where their lives are not safe. In 2014, 5750 KZN households were declared vulnerable as they were affected by the flood disaster and Umlazi residents were part of the disaster victims (CoGTA, 2014). News24 of the 10th October 2017 reported that the severe floods left death and destruction in its wake in Isipingo and in Umlazi. Road 102 and the N4 near Lamontville Township, Durban was

gridlocked due to the floods. In spite of this, few studies have explored disaster mitigation in the context of Durban and South Africa.

1.3 Statement of the Problem

In an ideal scenario, risk and disaster mitigation strategies together with contingency plans that should mitigate future disasters by promoting and coordinating national disaster risk management cascading from national to provincial and local levels and involving multiple stakeholders should be implemented in line with the existing legal framework and policies (Van Niekerk, 2014). In this process, disaster risk management centres, Non-Government Organisations (NGOs), Cooperative Governance and Traditional Affairs (CoGTA), and local ward committee structures within eThekweni Municipality should develop and implement coordinated policies that will mitigate disasters. The role of disaster mitigation is important because it should be proactive rather than reactive (Paton and Johnston, 2017).

Unfortunately, disaster mitigation in South Africa is characterised by the poor implementation of policies, thus there are little interventions which prevent the risk disaster impact and reoccurrence of the damages (Ngcamu & Dorasamy, 2011). Stakeholders react to a disaster after it happens and no measures are then put in place for disaster mitigation (*CoGTA, 2018*). This is due to the poor planning; poor policy implementation and lack of coordination, leading to the further loss of people's lives and loss of assets. The economic impact is enormous and it affects the poor especially in deep rural areas which increases the need for migration in urban townships, such as Umlazi.

A considerable amount of literature has been published on risk and disaster mitigation (Handmer & Dovers, 2012, Ngcamu, 2011). For instance, Ngcamu (2011) argues that there should be a strong financial measure, change of policies and legal measures implemented to circumvent the emergence of vulnerable conditions. Similarly, Handmer & Dovers (2012) indicate that the proper risk and disaster reduction is hindered by the lack of funds, poor workmanship, misinterpretation of policy, the absence of monitoring and evaluation tools for risk assessment and consequently negative outcomes occur. In another study, Ngcamu (2011) claims that most indigent occupants are exposed to disasters due to limited education, ambiguous policy frameworks, insufficient funding and the lack of capacity and skills of officials. However, many of the previous studies on disaster mitigation tend to be descriptive in nature and fail to deal with proactive mitigation measures to curb disaster in the townships. Consequently, in the context of South Africa, little is known about how local government,

disaster management centres and NGO's can play a role in disaster management and it is not clear what factors play a role in the policy implementation to mitigate disaster in the eThekweni Municipality.

1.4 Aim

Drawing on Mancini & Bowen's (2009) theory of community resilience and Ajzen's (1975) Theory of Planned Behaviour, this study seeks to explore disaster management in Umlazi eThekweni Municipality.

1.5 Research Questions

The study sought to answer the following questions:

- What are the nature and the degree of disasters in Umlazi Township eThekweni Municipality?
- What are the disaster mitigation strategies employed in Umlazi Township?
- How effective are the disaster mitigations strategies employed in Umlazi Township?
- What is the role played by different stakeholders in disaster mitigation in Umlazi Township?
- What could be done to improve disaster mitigation in Umlazi Township?

1.6 Research Objectives

The study's objectives were:

- To identify the nature and the degree of disasters in Umlazi Township eThekweni Municipality;
- To find out the mitigation strategies employed in Umlazi Township;
- To find out the effectiveness of disaster mitigation strategies employed in Umlazi Township;
- To identify the role played by different stakeholders in disaster mitigation in Umlazi Township; and
- To recommend solutions to improve disaster mitigation in Umlazi Township.

1.7 The significance of the study

The relevance of disaster mitigation function involves a permanent development, and sustainable action in mitigating risks of disasters by preventing, wherever possible, the disaster before it occurs. (Haddow et al., 2007, Lindell et al., 2006). A number of people in eThekweni

Municipality are affected by disasters every year, and Umlazi is part of the affected area, thus this disaster mitigation study is crucial for this township to avoid future disaster threats. It should make a positive contribution to the socio-economic and technological aspects of the local infrastructure. It will help in the disaster preparedness of eThekwini Municipality and other municipalities in South Africa in general.

1.8 The justification for the study

None of the existing academic studies regarding disaster mitigation in eThekwini Municipality has recommended strategies to curb future disasters. It is vital, therefore, to conduct such a study to assist the people of Umlazi to face the effects of future disasters. Moreover, eThekwini Municipality is the only metropolitan municipality in KwaZulu Natal under category A of municipalities and Umlazi is the biggest township in the entire KwaZulu Natal and the biggest township in South Africa, where extensive development is expected to attract tourism which will have a huge impact on socio-economic development. As a result, if this study is not conducted, disasters will persist, as there is no means of avoiding the influence of extreme weather conditions that have an effect on death-toll, health, loss of assets and infrastructural damage. Moreover, if this study is not undertaken, chances of opportunities to reduce the effects of disasters will be missed. This country and similar countries will continue to be negatively affected economically, especially when it comes to taxation as local government uses public funds for disaster grants.

1.9 Limitations of the study

In any research, there will be certain limitations, some due possibly to negligence and some due to unforeseen circumstances such as financial constraints, unavailability of stakeholders and lack of accessibility, time constraints, and even the researcher's personal challenges that may cause delays in the completion of the study. (Muda & Hasibuan, 2018).

The researcher will communicate telephonically with different stakeholders, such as ward councillors, eThekwini Municipality representative, NGOs, chairpersons of ward committees and the thesis supervisor. Cooperation with *Operation Sukuma Sakhe (OSS)* that is undertaken at ward level will be one way for the researcher to further promote good rapport with ward communities as part of the physical visit by the researcher. *Operation Sukuma Sakhe* was implemented by the KwaZulu Natal Premier to call upon all people of the province including departments, local leaders, community, ward champions, and committee members to discuss and overcome issues pertaining to their areas (Mottiar & Lodge, 2018). Issues are shared in

these meetings and any relevant Department or NGOs can be consulted to overcome such challenges without further delay. The presence of the Departments provides an opportunity to raise issues in their presence. For example, even though the question of disaster mitigation is still not a major issue at meetings in this township, the issue of the floods and storm disaster of October 2017 was raised in these meetings.

1.10 The structure of the dissertation

Chapter 1

This chapter introduces the study. It provides the background information to disaster management and mitigation and provides the rationale leading to the pursuance of the study. The chapter portrays the ideal situation in disaster mitigation and juxtaposes this with the reality on the ground. It then provides the research questions and the objectives of the study. The chapter also points out why the study is significant as well as the limitations encountered in the research process.

Chapter 2

The chapter explores existing literature on disaster management and mitigation strategies using a funnel approach. It discusses disaster management approaches in several non-African parts of the world, then in Africa and then it zeroes in on South Africa. In doing this the researcher reveals gaps in previous research and the rationale for filling these. The chapter further provides the theoretical framework upon which the study is centred.

Chapter 3

The discussion in this chapter involves policy and legal frameworks from international, regional to the local context. This discussion further involves a Disaster Management Framework within South Africa as well as the role players required in disaster mitigation.

Chapter 4

The chapter provides the research methodology. It discusses the research paradigm used as a lens for the study and further provides a description of the research approach. The chapter provides the research design, data collection techniques, target population and the sampling procedure used in the study. It also describes how the data were analysed. Lastly, the chapter discusses the ethical codes followed in doing this research.

Chapter 5

This chapter presents data thematically. It anonymously presents participant narratives and compares and contrasts them with what was revealed in the literature provided in the second chapter. The chapter also tests the theory used in the research, with the findings.

Chapter 6

This chapter summarises the study. In light of the findings, it provides the conclusions derived therefrom. Given these conclusions, the researcher suggests recommendations.

1.11 Chapter summary

This chapter introduced the study. It provided the background information to disaster management and mitigation and provided the rationale leading to the pursuance of the study. The chapter issued the statement of the problem. It discussed the ideal situation in disaster mitigation and juxtaposed this with the reality on the ground. It then provided the research questions and the objectives of the study. The chapter described significance of the study as well as limitations encountered in the research process. Lastly it provided a brief summary of the structure of the dissertation.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK UNDERPINNING DISASTER MANAGEMENT

2.1 Introduction

Previous studies define mitigation as one of the four phases of disaster management cycle that forms part of the pre-disaster period which continuously involves risk reduction and vulnerability to reduce the impact of disaster namely: preparedness, awareness, response and recovery (Harrison and Johnson, 2016). This chapter discusses disaster mitigation as a means to reduce disaster threads. It further discusses the nature and the degree of disaster, and also identifies the impact on it. Mitigation tools and strategies and their effectiveness are then explored. The chapter explores the role played by different stakeholders in disaster mitigation. To this end, the chapter explores a considerable amount of literature from recent studies so as to discover the information gaps. The chapter also outlines the theories and models that underpin this study. These are the Theory of Planned Behaviour (TPB), community resilience, Weberian Hierarchy, New Public Management (NPM), and the Network Governance theory. These theories outline the importance of risk mitigation. The study also provides an indication of the strengths and weaknesses of each theory used in an attempt to answer the research questions. By studying disaster mitigation in Umlazi Township, the application of these theories should provide a greater understanding of disaster governance in South Africa.

2.2 Nature and the Degree of Disasters

Different studies have been done on natural disasters caused by extreme weather conditions, flooding, droughts, cyclones, wildfires, tsunamis and earthquakes that to varying degrees impact negatively on socio-economic loss, environmental destruction, human fatalities and destruction of agricultural output as a result of droughts and heat impacting on harvests and on cereal production. (Carter, 2008; Lesk et al., 2016; Ziervogel & Smit, 2009).

The damages as well as losses from disasters, for example, “earthquakes, floods, tornadoes, and other major natural disasters, or fabricated disasters, have significant and intense impacts on a region’s economy” (Osmania et al., 2012:20). In addition, the effects of the destruction will endure for long periods and may have grave economic impacts on other areas. Likewise, the effects of these disasters are extremely complex, comprising not merely the negative impacts of damages, but similarly the positive commercial impacts from the revitalisation and reconstruction undertakings after the disaster.

The occurrence of disasters leads to social vulnerability as it involves loss of lives, impairment of health, and loss of assets. Malalgoda & Amaratunga (2015) argue that socio-economic activities are the result of the failure to build an environment that caters for infrastructural development. These authors argue that most of the aftermath and part of earthquake disaster that took place in Sri Lanka in 2013 and that cost half a million lives with a major negative effect on the economy, society, and on the technological infrastructure. In South Africa, a study in Cape Town by Ziervogel & Smit (2009) indicated that the livelihood strategies that were implemented to deal with, health, quality of life, and wellbeing of the residents, were the major achievements in the face of the impacts of the flooding disaster. Cape Town is one of the larger cities in South Africa, which was affected by flooding disasters in 2008. This negatively affected a large number of people especially in the informal settlements, and a number of unplanned shelters that were destroyed. This prompted Ziervogel & Smit (2009) to question if policies were actually implemented regarding improvements to existing structures. This suggests that there is need to include all civil society actors including community organisations, and religious bodies, and local social structures in the cycle of disaster management and to recognise the role of local government in policy implementation to lessen disaster impacts, thereby strengthening the disaster management cycle.

Recent research by Lesk et al., (2016) on the influence of extreme weather disasters on global crop production revealed that disasters are natured by extreme weather condition, flooding and droughts. This affects agricultural production by approximately 10 per cent because of droughts and heat affecting negatively on harvested areas and cereal production. Major disaster accidents are natured by the persistence of floods, drought, cyclones, wildfires, tsunamis and earthquakes which lead to socio-economic losses, environmental destruction, and critical human fatalities (Carter, 2008). For this research, discussion revolves around natural disasters that are likely to occur in a township or affect the same set up such as floods, droughts, cyclones and earthquakes. The research will discuss the impacts of every disaster drawn in this study from previous literature.

2.2.1 Floods

One of the major recurring disasters is flooding. Flooding is the overflow of water that submerges land because of heavy rainfall or structural failure, for example, the recent dam bursting in Brazil. Floods have a deadly impact on both developed and developing countries.

In their study on flooding in Sri Lanka, Malalgoda & Amaratunga (2015) point out that Sri Lanka is impacted by a number of natural disasters, of which ninety per cent are related to floods, where half a million people were affected during 2013. A study of Cape Town flood risk reduction, focusing on flooding governance by Ziervogel & Smit (2009) revealed that disasters are characterised by constant floods due to urbanisation especially in the informal settlements because these areas are characterised by dense infrastructure and concentrations of people. Cape Town is one of the larger cities in South Africa, which has been affected by flooding since 2008. This has negatively affected a large number of people especially in the informal settlements, in which a huge number of unplanned shelters were destroyed.

Previous research has established that the occurrence of floods leads to social vulnerability as it involves loss of lives, health risks, a high rate of fatalities and loss of assets. Musyoki et al., (2016), revealed that flooding has a negative effect on community vulnerability and the built environment. Cheema et al. indicated that Pakistan has regular experience of flooding disasters every year starting from 2010 where twenty million people either had their homes damaged or lost their lives. Ziervogel & Smit's (2009) study in Cape Town revealed the negative impact that flooding had on health, quality of life, and wellbeing of the residents who were exposed to unhygienic water due to damaged infrastructure such as burst sewer pipes. Though the possibility of people dying is most visibly increased in cases of flooding, Bennet's (1969) study of floods in Britain revealed a 50% increase in deaths in the once flooded area one year later.

Flood circumstances increase the possibility for faecal-oral spread of infections, particularly in regions where the populace lack access to hygienic water as well as sanitation. Available studies have revealed post-flood rises in cholera (Korthius et al., 1998; Sur et al., 2000), cryptosporidiosis (Katsumata et al., 1998), nonspecific diarrhoea (Heller et al., 2003), poliomyelitis (Sakar et al., 2002) rotavirus in addition to typhoid (Mondal et al., 2001). Flood-linked injuries might occur as people attempt to extricate themselves, relatives, or treasured possessions from the hazardous debris. In these cases, there is a similar probability of injuries when individuals go back to their households and industries and commence the clean-up process. A number of press releases, concerning the Durban floods of October 2017 have reiterated the concern at the building of informal residences in the flood zones and for the plight of the very young and the elderly; most of whom are too juvenile or too old to run away or to try some other means of mitigating and responding to disasters. This has concerned education stakeholders as children in KZN, Johannesburg and Mpumalanga are also affected intensely at schools (Pajtic, 2017).

2.2.2 Droughts

A drought occurs because of below-average rainfall, leading to a prolonged spell of dry conditions in the atmosphere, on the surface or depletion of groundwater. Droughts have a negative impact on crop yields and livestock production. According to Webb & Reardon (1992), where earnings from farms as well as non-farm enterprises have become tough to sustain, many families are compelled to sell properties to subsist. Drought-linked food shortages produce destitution in families that then have inadequate purchasing power to replace their failed harvests with new plantings. One effect of food strain is that families reduce the number of meals consumed every day. As may perhaps be anticipated, the lower echelons of society suffer excessively in times like these.

2.2.3 Earthquakes

According to the *Merriam-Webster English Dictionary*, “an earthquake is the shaking of the surface of the Earth, resulting from the sudden release of energy in the Earth's lithosphere that creates seismic waves.” The earthquakes that happened in Nepal in 2015 had serious longstanding socioeconomic effects on people as well (UN-OCHA, 2015). Rigg et al., (2005) carried out a survey in Krabi town in Thailand, a place that was severely damaged by a tsunami. The town has remained a site of destruction since the tidal wave hit.

“The Krabi Chinese Temple effectively became the makeshift morgue for the deceased of Phi Phi, who in turn needed to be identified, repatriated, cremated/buried or put on ice until their remains could be claimed. Yet tourism to all parts of Krabi has dwindled, regardless of the local severity of the impact. ... The livelihood eroding effects of the tsunami stretch in often surprising ways to inland provinces of Thailand and to other countries. The state and international organizations – even in a country, which is as wealthy and centralized as Thailand – are unable to provide support, which reaches to every area, every settlement, and every household.” (Rigg et al., 2005p.189)

DuPont IV et al. (2015) used panel data sets of urban areas in Japan to estimate the effects of the 1995 earthquake. They found that the population dimension and particularly the average earnings in Kobe, a town in Japan, have been lesser than before the tremor for above 15 years, signifying an enduring negative impact of the tremor. This negative impact may be found particularly in the inner parts of the town that are nearer to the epicentre. The surrounding areas underwent some positive lasting impacts, such as the speeding up of new technologies despite short run negative impacts of the quake.

2.2.4 Tropical Cyclones

Tropical hurricanes have a huge impact on structures, for example, housing, public health facilities, consumption of water, power supplies as well as transportation facilities.

A study by Hosain et al., (2008:20) in Bangladesh provides the most vivid example of the effects of disasters:

“Housing damages were the most visible and tangible damages associated with [the] cyclone. For worst affected areas [the] UN assessment team members witnessed numerous cases of flattened, overturned or sideways leaning household structures. Piles of damaged housing and construction materials were common within the hardest-hit residential areas. The total number of houses damaged was nearly 1.2 million, approximately 30% of those were reported as fully damaged, and the remaining 70% partially damaged. Approximately 697400 houses were damaged within only five districts. Damage to sanitation facilities and infrastructure was significant. For some of the worst affected areas, one estimate puts the percentage of slab latrines damaged or destroyed as high as 70%. The affected population was vulnerable to outbreaks of diarrhoea and other hygiene-related diseases. Drinking water sources in many communities had been contaminated by saline [water] and debris. Power outages had affected water supplies in areas with piped water”.

There was extensive destruction to transport as well as to communication systems. Roads and numerous embankments shielding the roads were significantly damaged. A majority of the highway damage was related to the tidal flows in coastal regions. Large displaced trees on pavements also explain the reason for several damages, because trees uprooted sections of tarmac and gravel roads became splintered or split. The destruction occurred to water transport set-ups in coastal waters as well as in inland watercourses. Numerous ships, and related landing and packing areas were destroyed. In many cases, the hurricane-force was so strong that average to huge-sized ships were actually lifted up clear from the sea and stranded on neighbouring high ground.

2.3 Disaster mitigation

Mitigation denotes actions, undertaken to diminish the destructive as well as the disruptive impacts of disasters and efforts to diminish the extent of the same. Mitigation actions may be of diverse kinds, ranging from physical actions, for example, the erecting of flood barricades

or legislated safe construction design to, awareness training as well as to promoting public consciousness. Mitigation, then, is any activity, undertaken at any time: prior to a disaster occurring, throughout a disaster, or subsequent to a disaster, in the course of recovery or rebuilding. The existing body of research on risk and disaster management suggests that the mitigation function is cost-effective and involves a number of external stakeholders who are not part of the management cycle. For example, Haddow et al., (2007:20) define mitigation as “an action that is sustainable in ameliorating risk from effects and hazards to the citizens and their property”. Lindell et al., (2006), argue that mitigation involves the likelihood of a reduction in the impact of disasters with a focus on preventing the disaster. In order for the mitigation to be effective, immediate action is vital to identify, analyse, reduce and insure the risk. This should be done through planning and education (Poser and Dransch, 2010). The above discussion reveals that a way to reduce disaster risk and to reduce the loss of property and the loss of people’s lives is by anticipating the risk beforehand. Sustainable means should be devised to mitigate the risk impact, and to prepare for future disaster periods by ensuring that what citizens have by way of being prepared is of permanent use.

Disaster mitigation commences from the top echelons of international organisations;

“With the establishment of The Disaster Management Facility (DMF) in 1998, the World Bank has aimed at mainstreaming disaster prevention and mitigation practices into all development activities. Particularly after Hurricane Mitch (in the US), the Inter-American Development Bank (IADB) has become a major actor supporting mitigation and preparedness programmes. Building on the International Decade for Natural Disaster Reduction (IDNDR), UNDP has launched initiatives to encourage a ‘culture of prevention’ based on a recognition of vulnerability reduction as a part of the development process. UNDP has included disaster reduction as an integral component of their overall planning framework, and risk and vulnerability are mainstreamed into development and post-disaster recovery through their Disaster Reduction and Recovery Programme.” (UNDP, 1999: 20)

In recent times, policy makers have acknowledged private players as important performers in disaster mitigation (Vanagris, 2001). Kreimer & Arnold (2000:102) proposed that the insurance sector provide a feasible channel of funds for both “dealing with the impact of disasters and for promoting risk mitigation through the power of the market”. Although previously insurance was not once mentioned in philanthropic and development spheres, an

understanding is developing that indeterminate and incomplete aid movements will never safeguard more than a minor portion of Disaster management Programmes requirements (Kreimer et al., 2000). Alternative methods for addressing this issue are being followed in numerous World Bank initiatives. For example “it is Market Incentives for Mitigation Investments projects, new loan guarantee schemes (Partial Risk Guarantees), exploratory weather insurance mechanisms and in various studies and publications” (Charveriat et al.; 2000:15).

In their study, La Porta et al., (2000) claim that the nations or municipalities with high revenue have the capacity to mitigate floods. Similarly, Sheets & Williams (2001) state that the countries of the north have mechanisms that are in place prior to disaster occurrences to protect the communities. Previous studies suggest that the poorest communities are prone to adverse effects of disasters because of poor infrastructure and lack of capacity (McCarty et al., 2001). There is some evidence to suggest that the developed countries have ways of mitigating the impact of disasters and of ensuring access to basic services in the aftermath of the same (Athey & Stern, 2000). Bresnahan et al., (1997), add that the use or dissemination of information through early warning signs is a fully justified means of minimising the impact of the disasters.

La Porta et al., (2000) point out that in order to minimise the negative impact of disasters, there needs to be capital for the provision of services. However, developing countries lack the capacity to provide this and this increases people’s vulnerability to disaster. Alesina et al., (2003), argue that the provisioning of services in diverse communities is very problematic. For example, the government in South Africa is currently challenged by financial constraints. The use of early warning signs is plausible but unrealistic to cater for all citizens as the source of information depends on who has access to it at that particular time. For example, floods in Durban on the 10th October 2017 were unexpected, early warning signs were available, but reached most of the victims late. Besides this, signs alone do not provide the means to mitigate disaster; instead, they form part of the response to it. Integration is crucial for disaster relief. However, practically, for a South African Municipality to have such mechanisms to mitigate disasters is still a challenge due to the variety of classes in society. These numerous groups with differences make it difficult for a municipality to address the issue of risk and disaster management.

Recent studies on risk and disaster have shown the importance of mitigation strategies that include various processes as an overall tactical approach that lessens the severity of the risk

impact. Risk mitigation strategies involve strategic planning, financial resources, and multi-stakeholder engagement. Several strategic attempts have been made to mitigate the societal risk from disaster hazards. These include a non-structural and structural mechanism (Blaikie et al., 2014).

Structural mitigation is a physical practice or act that prevents the effects of disasters from presenting far-reaching damage such as through building drainage systems or dams. Other measures include buttressing homes to make them as windproof as possible and any other means of preventing floodwater (in case of floods) from causing damage in the endangered area (Abbas et al., 2015). A similar opinion by Lindell et al., (2006) maintain that structural mitigation is any physical, practical and active means of preventing floodwater from the areas that can be affected by these threats. Birkland et al., (2003), argue that structural mitigation is using ‘works’ to protect the structures and citizens from disasters. The above views reveal that physical and practical methods can be employed as a means to lessen the effects of disasters in protected areas.

Non-structural mitigation involves personnel capacity such as planning or anything that involves practical preparedness such as having a flood insurance plan, households emergency plan, training, workshops and any planning discussions that would cover or reduce disaster threats (Faisal et al., 1999). Abbas et al., (2015), indicate that people should have the potential to pay for the flood insurance for their future protection from routine floods. Shah et al. ,(2017), state that non-structural mitigation is factored by an early warning system, training, and the use of land planning. However, financial constraints and inadequate resources affect these. Both structural and non-structural mitigation strategies have financial implication. However, most people of Umlazi including South African bond house owners – because the houses are bought on mortgage and are therefore used as surety – are mandated to be trained when making applications for the bond. The owners receive a certificate that attests to the fact that the household member is aware of any risk disasters that might affect the new building and as a result, most of the disasters that affected the communities have relevant bond insurance cover. As a result, the local government was forced to rebuild the structured and planned houses in the same informal areas. Most people do not have the means to pay for bond insurance or emergency plans and there are no insurance companies willing to protect or cover government-built homes.

Lindell et al., (2006), divide these strategies into five simple categories namely control of the source of disasters, land use, protection of works, contents and construction. These are discussed below. Firstly, Lindell et al., (2006) proposed that the role-players should understand the magnitude of risk hazards that need to be controlled, such that the strategy in flood disaster can be measured by ground surface maintenance to prevent the infiltration of rainfall into the soil. In addition to this fire, disasters are controlled by abolishing candles and by installing a power supply especially in the informal settlements in townships. As much as the local municipality does not support installing electrical power in such settlements due to relocation planning for development, such a source of energy has to be installed to avoid the daily use of candles (Ngcamu & Dorasamy, 2011). A similar view is expressed by Haddow et al. ,(2007) that all disaster effects should be known in order to implement such strategies. The hazard cannot be mitigated if it is not known and likewise its source and its effect.

The ground surface was maintained in order to trap excessive water as floods impacted on the social and the economy of Zambian people (Mwape, 2009). Kron (2015), argues that the flood disasters are increasingly claiming people's lives and material due to population growth, slum dwellers, illiteracy and poor infrastructure. It has been suggested that hazard risk management strategy is everyone's business and all stakeholders should not be left out in the floods mitigation plans (Masud, 2015).

Secondly, in the identification of the source of disasters, the strategy is to channel/divert water flooding from where the affected community is staying within the flood plains to the protected flood water areas such as levees, dams, floodwalls, and channelised streams (Lindell et al., 2006). Similarly, building barrier sites like dams and down-streaming water to help to shorten the increased capacity of water volume and building floodwalls serve as a strategic means of controlling floods within the community (Deen, 2015). However, Haddow et al. (2007) emphasise the construction and application/practices in the enforcement of building code which is much more cost-effective as this involves experts such as architects. There is some evidence to suggest that in the developed countries, the building structures that are flood resistant should be erected to mitigate the hazards of disasters (Nquot & Kulatunga, 2014).

Thirdly, previous research has established that land-use planning is a useful risk mitigation strategy. Kron (2015), argues that some areas are suitable to be used only for commercial, livestock grazing, farming, normal infrastructure and for industrial purposes in order to control disaster vulnerability. Such works on risk and disaster suggest that land-use planning is a

convenient way of mitigating the flood hazards (Roy & Ferland, 2015). Similarly, Mitchell et al. (2015) express the view that proper land usage can reduce the high level of vulnerability in the event of floods. However, the local government is faced with challenges on the issue of land that belongs to the traditional leaders (Mitchell, 2014). For example, some of the land in KwaZulu Natal in general and some of the rural land of eThekweni to be specific belongs to the Ingonyama Trust (Jewitt et al., 2015).

There is nonetheless, growing condemnation of mitigation plans. Huge centralised organisations with no concern for those who may be affected by poor choices in land usage, and driven only by self-interest are seeking to thwart mitigation plans because these could deprive them of the opportunity to exploit land or resources for their own financial gain (Laukkonen et al., 2009). Various governments have pointed to the need to concentrate on physical programmes on DRM, like the reconstruction of damaged infrastructure and never on social change to tackle the impacts of disasters and construct the assets of vulnerable set of communities.

“Many programmes treat the symptom and not the cause. The symptom may be unsafe buildings or vulnerable cropping patterns, but the causes may include all or some of the following: underdevelopment and poverty; control of land by absentee landlords; corruption; lack of education; risk reduction policies must rely on both technical measures and on political intervention.” (Poussin et al., 2009:167)

From the above, one can deduce that disaster mitigation has a political dimension and that it usually gives special treatment to the rich and influential at the expense of the poor. Organisations mitigate disasters to evade political discontent or economic damage and never to decrease the social circumstances of the underprivileged. Some plans actually strengthen the principal causes of susceptibility to poverty.

The effectiveness of disaster mitigation strategies mostly in the townships is questionable (van der Ree et al., 2007). The impact on vulnerability to hazard is not only determined by those who live in the informal settlements but also by poor service delivery in these settlements (Laukkonen et al., 2009). The local government is clearly incapable of changing the lives of the poorest citizens; instead, those who are better off remain so. Hence the opportunity for implementation of an effective disaster mitigation strategy is impossible and this compromises the lives of those who need a better chance in life. The effectiveness of disaster management

strategy may well be crucial. however, the desired actions that would ensure such effectiveness are not forthcoming (Haer et al., 2016).

The failure to be effective in disaster mitigation is highly likely since the government is failing to evaluate easy strategies, such as response and preparedness strategies, which have hardly been examined (for example communication strategies). The proposition from this author is then to evaluate the entire disaster management cycle, by promoting a centred approach in place of a top-down approach. The voices of the residents should be heard and respected, and the same is true for victims of disasters. Poussin et al., (2015), are of the view that mitigation-effective measures depend on those who are vulnerable to disaster. The authors indicated that mitigation strategies are very expensive; however, the households of France, for example, employed the cost-effective measure of by implementing building flood-proofing measures during major floods in 2014. Due to this, the authors mention that this strategy was maintained as an effective mitigation strategy for France thereafter. The costing of disaster mitigation in line with the Poussin argument is being embraced by Khalid & Shafiai (2015), however, the argument from this author is that disaster mitigation-effective strategies are not practicable and not viable due to financial constraints imposed by the socio-economic situation in South Africa. Likewise, Cheema et al., (2016) remind us that, when considering disaster mitigation policies and responsibilities of different institutions in Pakistan, it was found that disaster management institutional structure and mitigation was not effective until the experience of the 2005 earthquake. The government considered short-term policies for response and relief instead of long-term strategic goals of preparedness and prevention as well as empowerment of communities and local institutions including capacity building. Further, their paper claims that limited resources have caused this deficiency of effectiveness when planning and managing the disaster.

Whilst the findings of van der Ree et al., (2007) and Laukkonen et al., (2009) are outdated, they are supported by the current practical experience in South African informal settlements, where disastrous events happen annually and where mitigation strategies are ineffective.

Strategic planning for disaster management could be practicable if it is well executed and seems to be realistic because the recommendations for financial resource provision and stakeholders' integration require the prior participation of all stakeholders. The critical planning will then pave a way forward for resource provision. When all stakeholders are involved in disaster mitigation strategies, they should have a critical plan; a vision of what is required for resource

provision. Structural and non-structural mitigation are both interrelated and used interactively as one needs the support of the other in personal planning and physical work.

2.4 Solutions: What do others say?

One recommendation is to relocate the community permanently in order to clear disaster zones and thereby avoid vulnerability to disasters (Abbas et al., 2015). However, most of the communities are reluctant to support this municipal recommendation (Abbas et al., 2015; Birkland et al., 2003; Lindell et al., 2006). A good effective strategic measure on community engagement should be created to relocate disaster vulnerable communities to higher grounds in order to free space for sustainable development (Mwape, 2009). Such a strategy should ensure that people are convinced of the need to relocate. However, Mwape (2009) emphasises that this should be supported by a policy from the government to compel evacuation on the grounds of disaster mitigation legislation.

The recommendation by Khalid & Shafiai (2015) supports the idea of structural and non-structural strategy made by Lindell et al., (2015) to be part of disaster measures to avoid the likelihood of disaster impact to the disaster victims. Construction of dams, canals, means of directing the underground and surface water, together with building and maintenance of drainage systems should serve as a means of protecting communities from future flood disasters. These would be a strong strategic means of disaster mitigation (Cato & Rogers, 2018; Dudgeon, 2000; Mannina et al., 2018; Peter & Mathew, 2018).

2.5 Theories underpinning this study

This study used various theories as a basis for the testing of strategies. These are the theory of Planned Behaviour, Community Resilience theory, the Weberian Hierarchy concept, the New Public Management and the Network Governance Theory. The study used the theories as a basis for data analysis and discussion in Chapter 4.

2.5.1 Theory of Planned Behaviour

This study uses the Theory of Planned Behaviour (TPB) as a lens to anticipate the residents' behaviour and intentions in ensuring risk mitigation during floods. The Theory of Planned Behaviour (TPB) is "an extension of the Theory of Reasoned Action" (Ajzen & Fishbein, 1980, Fishbein & Ajzen, 1975). This theory is based on the thinking of Fishbein & Azjen in the 1970s in the field of social psychology (Shrestha & Thanabordeekij, 2017). According to

Cheng (2017), this theory consists of three aspects which include an attitudinal component, subjective norms, and perceived behavioural control proposed by Icek Ajzen in the year 1985 that developed from the similar Reasoned Action Theory (TRA) (see Figure 2.1). These components lead to particular self-identity and behavioural personalities as addressed below (Rise et al., 2010). The theory predicts that behaviour is deliberate because it can be planned and deliberated upon. The TPB assists one to have an understanding of how they can change the behaviour of individuals. In addition, these components determine or inform individual behaviour and the degree of thinking and performance resulting from specific circumstances (Gold, 2011). The theory suggests that human behaviour and development are determined by our immediate environment which affects the attitudes, beliefs, standards, expectations and results (Ajzen, 1991). In the same way, this shows that the decisions, intentions, level of success and identity are informed by the socio-cultural surroundings, conscious and cognitive perceptions (Conner & Abraham, 2001). In essence, the experiences and immediate environment can determine a specific behaviour or attitude.

The TPB states that the role of subjective norms is very complex to define but that it can be regarded as the perception or behaviour that an individual or group is subjected to. Secondly, the attitude has to determine right against wrong concerning the particular perception or school of thought and this varies also in evaluating the dichotomies of positive-negative, human-inhuman, good-evil, honest-dishonest and like-dislike (Albarracin et al., 2001). Thirdly, the perceived behaviour control is the probability function, which indicates that certain control factors are present (strength of belief) and the power of these factors, facilitates or inhibits the performance of the behaviour. In other words, the availability of opportunities and resources open to a person are an indication of the likelihood of achieving the behaviour. In practice, this theory depicts the behaviour and actions of people from diverse backgrounds.

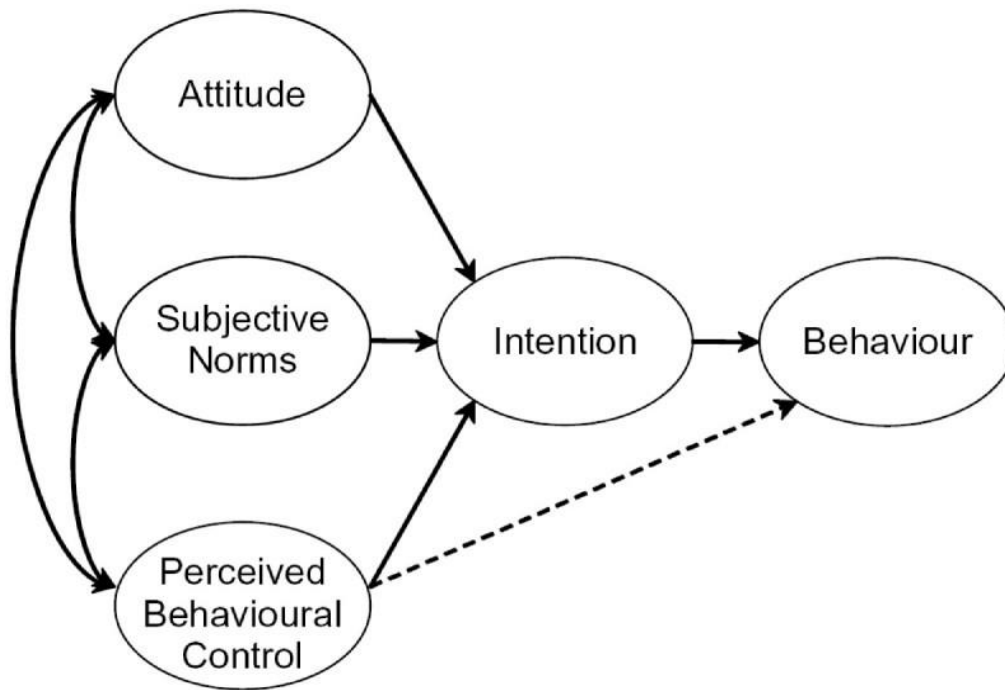


Figure 2.1 - Theory of planned behaviour – (Source, Ajzen, 1991:183)

The TPB has been used extensively as a theoretical lens in disaster management studies. In a very recent empirical study, Najafi et al., (2017) express the view that risk and disaster mitigation are being affected by political, economic, social, technological and psychological factors in an attempt to mitigate and minimise the undesirable effect of the catastrophe. Likewise, (Ejeta et al., 2015b) state that these socio-political challenges are the barriers in changing the perceptions and human behaviour to cope with disaster and to ensure risk mitigation mostly in developed countries because they have the capability of assisting developing countries to mitigate disasters. The claim of Ejeta et al., (2015a) is that developed countries are mostly sabotaging each other, competing to control other counties instead of assisting those who are in need of development. Ajzen emphasises the values and norms, in arguing that attitudes, subjective norms and worldviews determine the behaviour of the person as it allows one to think about how attitudes, identity and behaviour of different people need to be perceived to ensure positive support to warrant future disaster risk management for their township. To this end, Ajzen’s conceptualisation of planned behaviour is generative for grasping disaster management as it agrees that the behaviour or perception of different people with regard to risk is relative to various norms, beliefs, self-efficacy and the environment. In reference to the attitudes, norms and perceived behaviour, a positive attitude is needed to inform full behaviour participation especially from different actors’ perspectives in disaster

mitigation. There is some evidence to suggest that disaster mitigation is everyone's business without having to wait for the government to make changes (Pathak & Ahmad, 2018). The TPB assists the researcher in developing questions to frame this study as an organising framework. The theory of planned behaviour's emphasis on self-awareness, volunteerism, capacity-building, inclusive participatory action, data dissemination and a democratic approach should assist risk mitigation. The emphasis on active participation and in recommending a positive response in cases of natural and fabricated catastrophes is useful for this study. It is through the involvement of all stakeholders, as part of community engagement that unforeseen problems can be solved in the future.

2.5.2 Community Resilience Theory

Empirical studies show that the 'Community Resilience' (CR) is widely utilised in first world countries in order to mitigate risk in recent disasters (Mazerolle, 2010). Community resilience is the communities' ability to adapt to and to handle difficulties in situations of hardship and to achieve the anticipated community outcomes. This theory was proposed by Mancini & Bowen (2009) as part of the Social Organisation Theory of Action and change. This theory maintains that communities that accomplish adequate performance levels at any one stage are resilient. The CR has been adopted by various communities globally to advocate citizen participation, capacity-building, gender representation, effective communication and the use of indigenous knowledge system(IKS) during adverse events (Roberts, 2018). As part of the theme, social organisation is the process by which communities need to accomplish their desired results including three major components: networks of people, social capital and community capacity. These components describe the behaviour patterns, values and norms within the society that facilitate interactions and collective effort among its members. Figure 2.2 illustrates the relationship between the three major components:

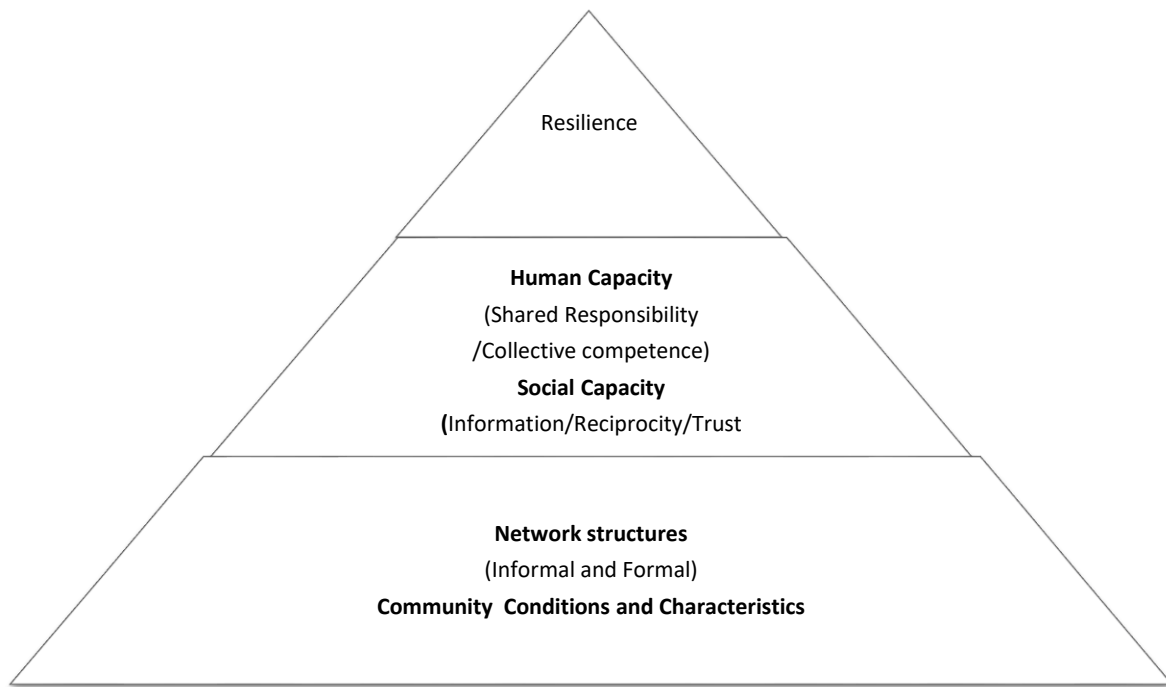


Figure 2.2: The Social Organisation and Change (Source Mancini, Martin, & Bowen, 2009: 246)

Networks as a primary component may be formal and informal including those of extended families and organisations respectively. The network theory component indicates major aspects such as interaction, connection, relationship and leadership such that interaction is perceived as existing within a network of human responses. As a result, a formal network provides support through resources to informal networks, whereas informal networks provide labour services to mitigate disasters. Community Resilience, it is all about “relationship, where the relationship is about connections, in which connections are about networks (Roberts, 2018:22). This theory has attracted a lot of attention in various domains such as in academia and in the public and private sectors in which different agencies in society make use of limited resources to advance the welfare of citizenry (Vaneckhaute et al., 2017). Communities should be encouraged to be responsible for changing their behaviour and norms by networking in order to mitigate disasters.

The social capital serves as the second major component, which is closely related to the network such that it aggregates resources arising from the mutual relationships between informal and formal networks. Through collective action, this theory indicates that these resources encourage the ability of the community to achieve anticipated outcomes.

Mancini, Martin, & Bowen, (2009) propose that the third major component of CR is social capital with two elements which are: shared responsibility and collective competence. As people do networking and provide social energy, the theory indicates that they must then demonstrate a sense of shared responsibility and collective competency for the prosperity of its members by taking up the challenge to address the needs of the community members. Therefore, the interactions and actions within the network generate social capital for providing energy for community capacity.

From Figure 2.2, it can be concluded that the major success of the theory is that those communities with excessive shared responsibility and collective competency, are seen to demonstrate community resilience. The opposite of this would serve as a witness such that community resilience is less likely to be achieved. In this case, Mancini, Martin, & Bowen (2009) illustrate four different types of community capacity namely synergic and disengaged community and relational and able communities. The first two types of community capacity involve each sharing a high level of both dimensions (responsibility and collective competency) which is a synergic community, whereas a disengaged community displays a low level of sharing in both dimensions. The other two types display diverse sharing such that relational community is high on shared responsibility and low on competency whereas able communities are low on responsibility and high on competency. These communities have different capacities to intervene or to prevent the activity (in this case disaster), are they labelled for descriptive purposes, as in figure 2.3 below:

Shared Responsibility

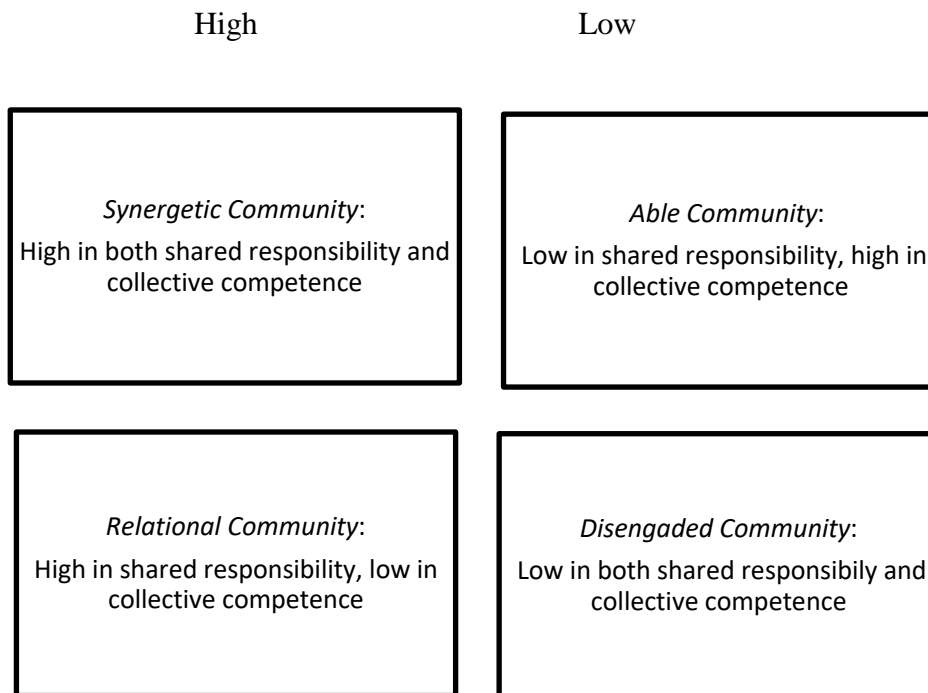


Figure 2.3: Community Capacity Typology (Source Mancini, Martin, & Bowen, 2009:250)

As shown in Figure 2.3, part of the strength is the community with the high-shared level on both dimensions, which denotes the most positive connotations (Mancini, Martin, and Bowen, 2009). In essence, relational communities have worthy intentions but are challenged by the implementation. They may even lack leadership abilities to convert positive ideas into action. On the other hand, able communities have the capacity to pull together and to respond to disasters but lack the capacity to share disaster experiences and to handle daily community challenges and they lack the capacity to use their common characteristics wisely. Change is also aligned with community capacity because capacity is required of members of the community as they come together and share similar goals. This is required to ensure fruitful decision-making when it comes to taking action to mitigate disasters. Community capacity can benefit from the community but in disengaged communities disaster mitigation cannot be achieved.

In the face of both a low level of shared responsibility and collective competence, this paper argues that formal networks need to develop opportunities to bring together members of the community that are isolated from one another. CR's emphasis on leadership, allows one to

think through the active participation of communities in disaster mitigation. To this end, CR's conceptualisation of community resilience is generative for grasping how these societies may encourage community leaders to play a combination of roles, including coaching, leading and supporting. It is here also that the Theory of Action and Change is of value to community resilience because it promotes the integration of different stakeholders in the community for ensuring collective effort in disaster mitigation.

2.5.3 Management of disasters in a Weberian hierarchical way

Numerous studies show that for many years the central government has been the only mechanism for providing services throughout all nations (Osmani et al., 2012, Aucoin, 1990). The Weberian hierarchy concept emerged in the 1940s first and foremost, in developed countries and spread across the world. In this hierarchy the national government provides basic services for the citizenry and ensures the well-being of its people (Frederickson, 1996). This theory is based on rules, leadership, a top-down approach, the distribution of labour and an administration-political dichotomy (Jain, 2004). Based on Max Weber's ideology of 'bureaucracy' the idea was to ensure that all first world countries use the central government as the state agency (Weber, 1978). Moreover, the Weberian theory was organizational-oriented in such a way that other parties have no or little role to play in providing basic services (Lounsbury & Carberry, 2004). The emergence of this theory gave more power and authority to the central government through which only the 'political elite' and the technocratic exercised their powers (Covell).

However, It has been observed that globalisation and the global financial meltdown has resulted in the failure of Weberian theory in modern times (Pollitt & Bouckaert, 2004). Due to poor community participation, rigidity, unclear policies, and lack of openness and accountability, this theory became prone to corruption and inefficiency (Dahlström and Lapuente, 2011). In essence this form of administration limits citizen inclusiveness and productivity in the market place (Lowery, 2000). Weberian hierarchy theory received intensive criticism from the world community due to 'monopolisation' and "capitalism" of resources (Collins, 1992). Furthermore, in the globalised world the governments of all nations should develop incorporated and systematic ways of ensuring the welfare of its own people (Osborne, 2006).

Despite the stated weakness of Weberian theory, this study draws on the work of Max Weber to argue that government should employ competent and skilled bureaucrats and that the

political representatives should adhere to the rules and regulations involved in disaster management. Stakeholder's integration is the only solution in disaster mitigation that deviates from this theory, as the central government was the only one empowered to provide services. To this end, the Weberian theory's conceptualisation of bureaucracy is generative for grasping how the political heads make and implement policies that govern the residents at the municipal level in the management of disasters. Moreover, this theory is of value for informing how the risk and disaster management unit in eThekweni Municipality should be guided by the rules (bylaws) and the public officials should understand their roles and responsibilities as per job descriptions.

2.5.4 New Public Management

Another well-known theory that underpins this study is the New Public Management (NPM). NPM is a 'paradigm shift' from the traditional Weberian hierarchy to introduce the concept of doing 'more with less' for the well-being of the citizens (Promberger & Rauskala, 2003). The Weberian theory's tenets, as explained above, are based on rules, leadership, a top-down approach and the distribution of labour and an administration-political dichotomy (Jain, 2004). In the ideology of Max Weber the notion of 'bureaucracy' was to ensure that all first world countries use the central government as a state agency (Weber, 1978). The NPM model in governance borrows elements from the private sector 'managerialism', performance management, decentralisation and client-orientation. (Gudelis & Guogis, 2011, Boea & Kvalvika, 2015, Ashraf & Uddin, 2016). The historical origins of the NPM emerge from the English-speaking countries namely the United Kingdom and the United State of America due to various challenges in government that included unethical behaviour, poor productivity and financial crisis in the stock market (Gruening, 2001). The adoption of NPM was based on the desire to transform the public sector and to enhance its effectiveness in the allocation of limited basic services of the government through the application of management principles (Matei & Chesaru, 2014). Eventually, this concept was embraced by many nations throughout the world including developed and developing countries (Kairouz et al., 2016). Similarly, the NPM model was used as the tool of service provision and transformation of the governmental institutions and State-Owned Enterprises (SOEs) throughout the globe (Alonso et al., 2015, Alonso & Manuel, 2015; Cavalcante & Camões, 2017).

For local government to allocate services that are health-related and for risk and disaster management the NPM is a convenient way to cut costs and to provide market-related,

outsourcing and privatisation (Ngcamu, 2011). However, a major problem with the NPM is that it was adopted to transform governmental departments and parastatals to form a bureaucratic system of administration in all spheres of government. An extensive case study of *Water and flood Risk Management* in Mexico highlights that the drastic reforms of NPM resulted in some sort of anarchy into which there was no clear role and responsibility between government and other role-players and there was a lack of jurisdiction (Arellano-Gault, 2000). Similarly, a case study of *Reform in the building sector* in Norway states that the countries of the South have a challenge in that the ‘share-ownership scheme’ was not implemented particularly in the under-developed areas which then affected governance (An & Sharma, 2015).

Because of the NPM, the public-private partnership in the eThekweni Municipality is a working model of service provision, and this could have a considerable impact on disaster mitigation in Umlazi. It is the intention of the NPM to decentralise, outsource, and share-responsibility between government and the private sector in the risk and disaster management in the eThekweni Municipality.

2.5.5 Network Governance Theory

The network governance theory that serves as the successor of NPM in the field of public administration and politics discusses the essence of network governance in the twenty-first century. Numerous studies state that the network governance traced back to the early 1990s throughout the European continent addressed the inefficiency and ineffectiveness of NPM (Klijn & Koppenjan, 2012; Klijn, 2008; Lewis, 2011). Yet, many lay people do use ‘government’ and ‘governance’ as interchangeable concepts on many occasions.

Governance networks are defined as the interconnection of the state, businesses and the community in a specific domain to attain the democratic ideal and the welfare of the citizenry (Marcussen & Torfing, 2003). The governance network consists of relevant characteristics in the modern times that involve intergovernmental relations, bargaining through negotiation, collective policy-making processes, the bottom-up approach and self-government and autonomy of bodies and institutions (Sørensen & Torfing, 2005). Nonetheless, the network governance has certain shortcomings because different stakeholders have different needs and preferences and strategically there is the conflict and misinterpretation of frameworks and directives (Klijn & Koppenjan, 2014). Through the thorough collective co-operation of

stakeholders the challenges of this nature can be resolved through trust, communication, openness, creativity, high morale and monitoring and evaluation (Klijn et al., 2014, Madureira Simaens, Matshego, 2011). A recent study in Uganda on risk and disaster praises network governance as being very effective in ensuring risk reduction (Maes et al., 2018). Similarly, Howes et al., (2015) in an Australian case study, advocate the network governance in addressing the outbreak of disasters in the twenty-first century.

The network governance theory's conceptualisation of integration and collaboration is important for grasping how the relevant stakeholders such eThekwini Municipality, private businesses, Non-Governmental Organizations (NGOs), Faith-Based Organizations (FBOs) Community Based Organization (CBO) can work toward reducing the losses and destruction that occurs in the event of disasters in the eThekwini Municipality. It is also here that the network governance approach to today's catastrophes sees the governments of different nations, through multi-level governance and decentralisation, utilising the limited resources available to address the effects of climate change.

2.6 Chapter summary and conclusion

This chapter explored a range of literature, which dwelt with types of disaster and their effects on communities. The chapter discussed mitigation as a means to reduce the effects of disasters. It also discussed, different stakeholder roles in the implementation of policies dealing with mitigating the effects of disasters. The literature revealed that an increase in education levels, access to grants and income could minimise the effects of disasters. Moreover, non-structural and structural classified strategies serve as the main mitigation strategies for disaster phenomena. The recommendation of different authors is to relocate communities permanently in order to evacuate communities from disaster zones in order to limit community disaster vulnerability and to implement policies that will provide sustainable infrastructural services. In spite of objections to this, the recommendation provided seems to be realistic, plausible and well-grounded because sustainability is part of mitigation action to reduce disaster threat. The chapter also reviewed theories related to disaster impacts and mitigation. These were the Theory of Planned Behaviour, the Community Resilience Theory, the Weberian Hierarchy, the New Public Management Theory and the Network Governance Theory. The study used the theories as a basis for data analysis and discussion in Chapter 4.

CHAPTER 3: POLICY FRAMEWORK AND STAKEHOLDER PARTICIPATION IN DISASTER MITIGATION

3.1 Introduction

This chapter discusses the policy and legal frameworks as well as the stakeholders involved in disaster mitigation. It begins with international policies as they relate to local level strategies and it cascades the discussion to regional and sub-regional levels. The chapter discusses the Disaster Management Framework in the South African context. The chapter then discusses the role of stakeholders in disaster mitigation.

3.2 The Policy framework for disaster mitigation

Under this section, the researcher discusses the policy and legal frameworks from the international to the local level.

3.2.1 International policies

The researcher explores international and regional disaster mitigation policies as they relate to local communities.

3.2.1.1 The Yokohama Strategy

According to the United Nations Yokohama strategy of 2004, the development, as well as strengthening of capabilities to avert, to reduce and to mitigate disasters, should be top priorities that every country should address. Each country has the primary duty to safeguard its public, structures, and the national properties from the effect of ecological disasters. The countries should have the political dedication to decrease their residents' vulnerability through affirmation, legislature, policy choices and implementation at the highest levels, which requires the gradual execution of disaster appraisal and the formulation of mitigation strategies at a national and community levels. Countries should develop documented complete nationwide disaster management strategies with prominence given to disaster mitigation.

3.2.2 The African Regional Strategy for Disaster Mitigation

The African Union lived up to their pledge to attend to disaster risk mitigation by formulating the *Africa Regional Strategy for Disaster Risk Reduction*.

“The Programme of Action for the Implementation of the Africa Regional Strategy for DRR (2005-2010) was subsequently formulated and adopted at the first African Ministerial Conference on DRR in Addis Ababa in 2005. A revision was discussed and agreed upon at the 2nd Africa Regional Platform (AfRP, 2009) in Nairobi in May 2009

in order to better reflect current challenges and gaps, and extend the timeframe to 2015” (UNSDR, 2014:24).

Throughout Africa, there is an encouraging trend towards the formation or improvement of official, legislative as well as policy agendas for disaster management, mainly for member states.

“The eleventh recommendation of the 2nd African Ministerial Conference on DRR called on the African Union Commission and the Member States to make disaster risk reduction and climate change adaptation a national education priority through their integration into the educational system, including the development of curricula, and the training of teachers.” (UNSDR, 2014:26)

3.2.3 Southern Africa Development Community (SADC)

The Southern Africa Society for Disaster Reduction (SASDiR), recommends the formation of a disaster mitigation unit in the regional framework of the SADC. SASDiR combines civil society groups, academics as well as research institutions in addition to government units with a shared purpose to mitigate disaster risks within a trans-disciplinary effort. SASDiR is confident that Africans possess the ability, knowledge as well as capabilities to take ownership of their mutual disaster risk profiles and that they have the expertise to find feasible African-centred answers to persistent disaster risk matters. SASDiR operates in the belief that within its members there is at present a treasure of disaster mitigation knowledge, that is growing gradually and which can be pooled.

SADC seeks to include communities at every level to outline risks as well as to record disaster occurrence in a hands-on manner. SADC has endeavoured to integrate children and the youth as key performers in disaster mitigation as well as in decision-making, to improve public ownership, faith and dedication. SADC also vowed to use Space monitoring equipment for remote sensing as well as Geographic Information System (GIS) for precision and to support communal initiatives

3.2.4 National policies

This section explores the national policy and legal framework for disaster mitigation in the South African context.

3.2.4.1 The South African Constitution

The primary duty for disaster mitigation in the country is with the central government. *The Constitution of the Republic of South Africa, section 41(1) (b)* stipulates that “All spheres of government are required to secure the well-being of the people of the Republic.” Part A of Schedule 4 lists disaster mitigation as a practical area, implying that in cooperation the national, as well as provincial departments, are capable of developing and executing laws in this area and possess powers and accountability in the arena of disaster mitigation.

The Disaster Management Act Number 57 of 2002

The goal of the *Disaster Management Act* is:

“to provide 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; the establishment of national, provincial and municipal disaster management centres; disaster management volunteers; and matters incidental thereto” (RSA, 2002:3)

The Act specifies that this decentralisation must occur through the three domains of government (local, provincial and national) as well as within government sectors. The Act demands the planning of a combined and synchronised policy for mitigation of disasters, and the prominence is given to certain facets of post-disaster revival.

The Act additionally elaborates that various disaster mitigation structures should be established inside the layers of government. There should be a drive for the participation of native ‘at risk’ groups, the commercial firms and state-owned enterprises, for example, the utility corporations, institutes of research as well as the tertiary education subdivision, NGOs, as well as traditional chiefs. The DMA also provides data on the design of disaster mitigation centres as well as on other inter-governmental assemblies at every level of the government.

The National Disaster Management Framework (NDMF)

The DMNF is the legal tool identified by the DMA to address the needs for constancy across numerous interest assemblies, by stipulating, “a coherent, transparent and inclusive policy on disaster management appropriate for the Republic as a whole.” (RSA, 2002:13)

In this situation, the NDMF recognises a variety of risks as well as disasters that happen in the country, and it gives priority to developing measures that lessen the susceptibility of disaster-prone zones, communities as well as households. In addition, in maintaining the international standards, the NDMF places clear importance on the DRR ideas of disaster anticipation as well as mitigation in the role of the core values to direct disaster risk managing in the country

The NDMF also appraises the provincial as well as municipal disaster managing frameworks and strategies that influence actions taken by the government.

3.3 Stakeholder participation

Various stakeholders are involved in efforts to mitigate disasters. There is a growing body of literature that recognises the importance of different stakeholders, structures, forums, and committees on disaster management. This section discusses the role played by local government, The Intergovernmental Committee on Disaster Management (ICDM), The National Disaster Management Advisory Forum (NDMAF), The Local Ward Champions (Ward Councillors), Ward Committees, and NGOs involved in disaster mitigation. In fact, in all aspects leadership has an important and influential role to play in facing disasters and in facing the threat of disasters. These stakeholders/actors are discussed below.

3.3.1 Local Government

Carter (2008) holds the view that society and the environment is changing constantly and that there is, therefore, need for the support of leading stakeholders in any developments especially at the local government level, which is close to the community, with regard to the management of the disaster. However, Malalgoda & Amaratunga (2015) list a number of challenges faced by the local government as they are not considered to be capable of administering functions of management. They rather act as primary agents where they only plan for alterations and extend new and existing structures. Issues related to human and financial resources were the main drivers for disaster resilience which needed to be addressed. With regard to the policy amendments, this paper also recommends that compliance with regulations needs to be ensured or other measures put in place to address per non-performance (Van Niekerk, 2014).

According to David et al., (2016), local governments are mostly made up of various stakeholders who need to play a critical role in a disaster-resilient built environment. However, there are a number of challenges faced by local government in urban resilience responsiveness. In exploring their role in disaster-resilient environments, part of the challenge faced by local

government is that they are not recognised or considered capable of administering functions of management. As pointed out above, they rather act as primary agents where they only plan for alterations and extended new and existing structures. This means that they are mainly concerned with the planning and control of land use. Malalgoda & Amaratunga (2001) recommend local government empowerment in Sri Lanka to ensure that a building environment is effectively created for disaster resilience. Based on the challenges, part of the findings are the recommendations for the amendment of policies in relation to disaster management and for the Municipal council's establishment to provide local government with authority and powers to address effectively disaster resilience within the city.

Issues related to human and financial resources were the main drivers for disaster resilience which needed to be addressed. These also include the establishment of control mechanisms and proper monitoring, the integration of all city development plans such as construction, risk, operational guidelines, resilient land utilisation, plans that conform to the building regulations and the monitoring for compliance of current plans.

Workshops, seminars and education programmes would serve as awareness mechanisms to enable the disaster risk officials to organise resilient practices. Moreover, municipal officials should partake in the decision-making at a national level which should assist the local areas to achieve disaster resilience. In another study on flood risk and its governance, Ziervogel & Smit (2010) established that there has been a failure to ease the flood risk in Cape Town in the informal settlements such as Khayelitsha. As a result, Ziervogel & Smit (2010) proposed an integrated approach to have a proactive way of collaborative governance where the University of Cape Town proposed to collaborate with civil society organisations to support local government in the flood risk reduction in these informal settlements. Based on the formation of local government in Sri Lanka, there is some evidence to suggest that grants, loans and local taxation within the four-year term of councillors should be the sources of revenue for local government in order to function well in their participation in disaster mitigation.

3.3.2 Intergovernmental Committees and Advisory Forums

There is a structure called the Intergovernmental Committee on Disaster Management (ICDM) that was introduced by the South African President. Nine members from each premier executive committee and two councillors nominated by SALGA have been tasked with the development of a disaster policy through establishing a variety of intergovernmental structures

and forums (CoGTA, 2017). In this process, a number of government departments serve in this forum where the National Disaster Management Centre (NDMC) within eThekweni Municipality is one of those introduced structural forums mandated to control disasters at all levels, priority being given to the local sphere. Disaster management structures should, therefore, develop and approve policy that will mitigate the disasters as part of the challenges that arise from people's loss of lives during the disasters. Similarly, the role of the National Disaster Management Centre (NDMC) is critical because it is there to promote and coordinate an integrated approach to managing disasters from national, to the local level involving all spheres of government with the aim of preventing and mitigating disaster threats affecting people's assets and lives (Paton & Johnston, 2017).

3.3.3 Ward Councillors, Committees and the Department of Social Development (DSD)

There is an existing government association at a local level that represents all municipalities in South Africa called the South African Local Government Association (SALGA) involving ward councillors and committees. Ward councillors are elected by the local citizens and services for the period of five years to serve the needs of the local people by delivering services required at a local level as per the *1998 Municipality Structures Act section 74(b)*. Due to the fact that the local demarcation covers huge areas mostly in KwaZulu Natal, ward committees came on board to serve as a communication channel between the ward champions (ward councillors) and different key stakeholders such as the local community, development workers and traditional councils (CoGTA, 2017). Ward champions chair ward committee meetings as they bring together all issues between community and the Municipality. Ward committees do understand and have knowledge of disaster-prone communities and report such challenges to the councillor who then can take immediate action. These ward committees also have a seat in the Operation Sukuma Sakhe (OSS) war rooms to discuss matters affecting the communities where different local departments and NGOs being coordinated by CoGTA are invited to assist in resolving any burning issues. The role of the Department of Social Development (DSD) normally starts at these lower levels where they normally assist the communities affected by disasters through disaster grant provisions, such as providing assistance with temporary shelters, food and counselling (Nappi & Souza, 2015). This author feels that challenges of financial constraints and restricted powers do limit this Department's effectiveness to mitigate disaster; hence the eThekweni Municipality has its Municipal Disaster Management Centre (MDMC).

Nappi & Souza (2015) argue that local government should play a big role in action to reduce disaster threats. For example, local government is close to the people and understands the dynamics of people in the local areas who need the support of those in power closest to them which is the local government in Umlazi. Therefore the recommendation of policy implementation in disaster mitigation by local government involvement is both practical and plausible. As much as the role of ward committee members is crucial, their role in disaster mitigation is worthless if there is no collaborative integration between them and the local structures and centres mandated to deal with disaster management Lack of such integration leads to the present situation where most of the affected people have still not recovered from the 2017 disasters.

There seems to be many structures and forums especially at a lower level, set up to assist local people who are the victims of disasters, but there is a long waiting period before their situation resulting from a disaster can be suitably addressed. People have to await a report from the local, district, and provincial governments and the recommendations made by advisory forums to the intergovernmental committees have first to be considered. In spite of this, the effectiveness of disaster mitigation is minimal; instead, there are disaster relief funds and grants received normally reported as the initiatives by the South African government. For example Stakeholders just react to the disaster after it happened such that, an amount of R 61 025 000 from the Provincial Disaster Grant (PDG) and the Municipal Disaster Grant (MDG) was transferred to Mpumalanga Province to repair the damaged infrastructure as per the annual report 2014/2015 from National Disaster Management Centre (CoGTA, 2016). No measures were put in place for disaster mitigation for the annual report 2016/2017 except 290.7 million for a desalination plant in KwaZulu Natal. In 2016/17, eThekweni Municipality budgeted for a disaster grant to those who may be affected as per Schedule 7 of the MDG, hence this counters the mitigation efforts. This study explores integration between local working communities serving as committees with disaster management centres at the local level to assist quick responses for disaster mitigation between local structures and disaster centres.

3.4 Conclusion

The chapter discussed the policy and legal frameworks as well as the stakeholders involved in disaster mitigation. It began with international policies as they relate to local level strategies and cascaded the issue to regional and sub-regional levels. The chapter discussed the Disaster

Management Framework in the South African context. The chapter then discussed the role of stakeholders in disaster mitigation.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

Research is, “a process in which a key question is investigated and the information is presented to increase an understanding of the topic or issue” (Creswell, 2013a:3). As per this claim, each of these process steps has a design and a selected way of doing it called a research methodology. Similarly, the manner in which the problem or research is investigated or studied is part of research methodology (Wagner et al., 2012). The chapter therefore identifies and applies the research methodology used which is relevant to disaster mitigation such as worldviews, qualitative design, exploring strategic means of a case study approach where in-depth interviews and a focus group served as tools for data collection. Purposive sampling, trustworthiness, thematic analysis, and ethical considerations are discussed as part of empirical studies that this research sought to achieve. The enquiry was therefore undertaken in stages as discussed below.

4.2 Research Worldviews

This study is guided by the social constructivist research paradigm. Social Constructivism (interpretivism) is based on specific assumptions about reality, knowledge, and learning (Kim, 2001). Social constructivists believe that reality is constructed through human activity; as a result, reality does not exist prior to its social invention. Knowledge is also a human product, in the sense that individuals create meaning through their interactions with each other and with the environment they live in (Wagner et al., 2012). Since the aim of social constructivism is to gain an in-depth understanding of multiple realities, it depends on the qualitative research approach (Du Plooy-Cilliers et al., 2014). The social constructivist paradigm was suitable for this study because the researcher seeks to gain an in-depth understanding of the nature and strategic means of disaster mitigation in Umlazi, as explained by the residents of the study location, through gathering people’s responses on the ground.

4.3 Research approach

A number of researchers have defined the research approach. For example, Cohen (2014) indicated that a research approach refers to the plan and structure of the investigation that will be used to obtain evidence and to answer the research questions. The research approach guides a researcher on how to select the subject, on the procedures to be followed in data collection

and on selecting a relevant site for the study (McMillan & Schumacher, 2001). The approach describes the procedures and processes for conducting the study and for determining the date by which to achieve set objectives. Additionally, in social research, a research approach is a plan that determines the appropriate method of conducting research and there are basically three research paradigms: qualitative, quantitative and mixed-method research designs (Creswell, 2003, Wagner et al., 2012).

This study used a qualitative research approach in an attempt to attain an in-depth understanding of the mitigation strategies employed in Umlazi. Creswell (2013b), defines qualitative research as an approach that a researcher uses in the process of interacting with people and/or focus groups to go where respondents are and to interview them practically by collecting data obtained in the participants' environment. This kind of approach is advantageous because it was established to understand cultural experiences, views, perspectives and attitudes related to the phenomenon being studied and importantly it is still used currently in social science (Cope, 2014, Creswell, 2003). It is also exploratory in nature using ethnography, phenomenology, grounded theory, case study and narrative enquiry. (Du Plooy-Cilliers et al., 2014, Elo et al., 2014). Concepts are represented in the form of themes as part of data presentation for this study (Lincoln & Denzin, 2003). Furthermore, this approach is also inductive in nature and a researcher engages with participants in order to generate knowledge and to draw conclusions (Onwuegbuzie et al., 2009). The major reason for employing this approach was that the researcher wanted to engage participants in getting their views, concerns, beliefs and to gain insight through interviews and focus groups.

4.4 Research Design

The purpose of the research design is to provide the most valid, reliable and accurate approach in determining the answers to the research questions (Lewis, 2015). This research employed a case study qualitative research design which was exploratory in order to gain an in-depth understanding of the complex dynamics of disasters (particularly hydro-meteorological disasters) (Lewis, 2015, Wagner et al., 2012). Crowe et al., (2011), state that a researcher employs a case study when one aims at eliciting an in-depth, multi-pronged understanding of an activity, or issue in its real-life context. Similarly, a case study is basically an event that has happened or is happening but the period is time-bound and it uses an in-depth approach (Karlsson, 2016, Ridder, 2012). A researcher can use a number of tools such as an interview

with participant observation at the same time. Then a researcher can develop a theory based on the time-bound phenomena.

This study focused on Umlazi, as this township is prone to disasters. The study derived the data from observations, direct interviews with individuals and focus groups and then presented findings based on this particular environment. This is because the researcher was interested in getting in-depth understanding of the issue in a real-life context to achieve the set objectives regarding disaster mitigation.

4.4.1 Limitations of the case study qualitative design

In carrying out the study, the researcher acknowledged the weakness inherent in the case study qualitative design. These generic limitations are also cited in various literature. Reiss (2009) argues that since a case study focuses on a single unit, the results obtained therein are difficult to generalise. In addition, the researcher is the primary data collector in the form of interviews and focus group discussions, and this leaves the difficulty to the investigator as he/she has to rely on personal intuitions and abilities (Creswell and Clarke, 2017). Thus the research may confirm the researcher's preconceived notions. However, the researcher countered these limitations by having an in-depth insight into that case. During this research particular effort was made in order to keep an objective view of the results obtained.

4.5 Study Site

The researcher selected Umlazi Township as the geographical area to conduct this disaster management study. Umlazi is the fourth biggest township in South Africa with a population of 404811 (the largest is Soweto in terms of numbers, then Tembisa and Katlehong respectively) with a huge number in the informal sections of the township (*Stats, 2012*).

4.6 Target Population

A target population is a group of units or people from which the sample is drawn (Le Ray et al., 2015). Blanche et al. (2006), hold the view that the target population includes all subjects from which a researcher draws sample elements, in order to generalise the results. Their argument is that the target population includes everything that falls within the particular interest of study and the accessible population is only a section of the entire target population that a researcher includes in that particular research project. The population for this study was Ward Councillors (n=3), Officials from Department of Social Development (DSD) (n=1), Ward Committee Members (n=36), and Officials from Disaster Management Centre in eThekweni

Municipality (n=18). This target population was selected for various reasons, for example, Ward councillors are the champions of the wards, representing all the people in the ward, serving the needs of the people and ensuring socio-economic, political and technological development in the ward. People nominate Ward committees to represent them and forward their issues (in this case - disaster issues) to the office and to the ward champions. They also understand the dynamics of their areas and the people. Municipal Disaster Management Centre (MDMC) was also part of the target population because all disaster cases are reported, recorded, considered and dealt with in this office. The Department of Social Development (DSD) issues a number of disaster grants and monitor them to support the victims during disaster recovery, hence the reason to include this office in the target population.

4.7 Sampling Strategies

The study used a non-probability sampling strategy. This is a sampling technique where the samples are gathered in a process that does not give all individuals in the population an equal chance of being selected and it is used in cases where it is impossible to determine who the entire population is (Etikan et al., 2016b). The advantage of the selection of this strategy is that researchers can use their own discretion in selecting the subjects or units (Kothari, 2004). Due to the complexity of the township, and the types of questions that need certain individuals to give answers in order to address the phenomenon, not all individuals in the three target population groups were given an equal chance to be selected, hence non-probability sampling was selected.

The researcher purposively sampled the participants to understand the nature, and the strategies of disaster management to be implemented in this township as part of the recommendation for the study. Du Plooy-Cilliers et al., (2014), state that the researcher does purposively select or choose participants who would respond to the questions and objectives that might be pursued in answering the phenomenon. Orcher (2016), claims that purposive sampling is used within certain people or groups that have similar characteristics and that have information of interest, regarding that particular problem. Similarly, purposive sampling is considered desirable in studying people with similar characteristics (Etikan et al., 2016a). As a result the researcher recruited study participants from ward committee members, DSD officials, and Disaster Management officials from EThekweni Municipality within the disaster centre in Umlazi, and ward champions (local ward councillors) as they are relevant and have similar characteristics

in addressing disasters in Umlazi and have all the information of the disaster circumstances and experience of disasters in Umlazi.

4.7.1 Sample and Sample Size

A sample is a small portion drawn from the larger population that participate in the study, while the sample size refers to the total number of subjects from the sample who are engaged in the study (Morse, 2004).

As Table 3.1 shows, the sample that was drawn from the target population of wards 78, 80 and 82, was 58 as the sample population size. Only 25 respondents were interviewed, where 7 and 18 were sampled from interviews and focus group interviews respectively. This is because this was a qualitative study, and the researcher spent a long time interviewing the participants in a limited timeframe and so a smaller sample was applicable. Additionally, the goal of qualitative research is quality non-numeric data, which can only be collected through a narrow, focused and informed sample of participants.

Table 4.1 – Illustration of sampling method and participant biographic data for Umlazi Township

Target Population - Administration	Sampling Population	Population Size	Sampling Method	Sample Size – interview	Focus Group Discussion (FGD)
Ward 78	Ward Councillors	1	Purposive Sampling Technique	1	
	Ward Committee Members	12			6
Ward 80	Ward Councillors	1	Purposive Sampling Technique	1	
	Ward Committee Members	12			6
Ward 82	Ward Councillors	1	Purposive Sampling Technique	1	
	Corporate support from DSD	1		1	
	Ward Committee Members	12			6
Disaster Management Centre	Disaster Coordinators	18		3	
Total		58		7	18
			Total FGD & Interviews	25	

Table 1 above clarifies the process of recruiting and the manner in which the sample was selected, such that:

All twelve members (12) of the ward committee were included in the sample to participate in a focus group discussion involving wards 78, 80, and 82. Out of the twelve (12) members of the ward committee, six (6) were selected to participate in a focus group interview. The six participants were selected based on their availability on the day of the focus group discussion. Apart from ward committee members, all three ward councillors for these three wards were selected and participated in an in-depth interview as key informants. Furthermore, a representative from the Department of Social Development (DSD) under corporate support component in the centre of Umlazi under ward 82 was selected and interviewed in an in-depth interview. Moreover, eighteen (18) Disaster Coordinators from Municipal Disaster Management Centre (MDMC) were included in the sample; however, three (3) coordinators were purposively selected to participate in an in-depth interview.

A total of 7 participants (3 councillors, 1 DSD staff and 3 officials from the Disaster Centre) selected for the in-depth interview were excluded from the focus group discussion. Then 18 ward committee participants were part of the focus group interview (7 participants from in-depth interviews + 18 participants from focus group discussion = 25 interviews as per table 1 above).

4.8 Recruitment Strategy

Subsequent to the approval by the eThekweni Municipality (Dorothy Nyembe Zone Councillors), MDMC, and DSD head of department to conduct both focus group and interview studies in wards 78, 80, and 82 Umlazi, an email was sent and telephonic contact was made with the designated official (participant) for an interview a month prior to the study (see *Appendix B1 – councillors, Appendix B2 – MDMC, and Appendix B3 - DSD*). Moreover, posters were placed in strategic areas (e.g. shopping/tuck-shops complexes, and clinics) to invite the selected residents (Ward Committee Members) for the focus group discussion (see *Appendix B*). The researcher reminded all respondents telephonically as well as verbally during the Operation Sukuma Sakhe (OSS) visit as the study dates approached.

4.9 Data Collection Methods

Data collection, “is a systematic approach to gathering information from a variety of sources to get a complete and accurate picture of an area of interest” (Cooper, 2016:35). Du Plooy-Cilliers et al., (2014) state that data can be sourced in two ways; primary and secondary data.

The primary source is the data that is collected by the researchers themselves, such as through interviews, observation, action research, case studies, life histories, questionnaires, ethnographic research or longitudinal studies. Likewise, Denscombe (2014) holds the view that tools for data collection include things like questionnaires, interviews, observation, focus groups, historical researches and documents. As much as different studies have already been reviewed involving phenomena similar to that experienced in the Umlazi disasters, it was indicated earlier that this study is empirical, thus the focus was intended to collect the data physically, hence this study used interviews, focus groups, documentary analysis and the focus group as the qualitative approaches. The focus group discussion, as well as the in-depth interviews, explored the key research questions relating to disaster mitigation challenges in Umlazi Township. Each data collection instrument was used for a specific group in the targeted population.

4.9.1 In-depth/Individual Interviews

This study employed an in-depth interview as part of the data collection method. “An in-depth interview is a qualitative data collection method where a researcher poses questions to participants, probing, with the aim of getting the views, beliefs and opinions about a specific phenomenon” (Du Plooy-Cilliers et al., 2014:25). The in-depth interview was chosen to get an insight into different people’s meanings, similarities and their differences regarding disasters in Umlazi, and to compare and contrast their responses for the disaster mitigation findings from previous research.

A rapport was created by conducting face-to-face individual interviews where open-ended questions were used to gain insight into the problem. The responses were electronically-recorded and later transcribed. The interviews were informal, conversational, and open-ended. The three key informants were selected from wards 78, 80 and 82. These three key informants were the ward councillors, who were referred to as ‘ward champions’ who received daily complaints and reports about disaster incidents and any related ward issues. Other key informants interviewed were 3 Municipal officials who are disaster coordinators from the Disaster Management Centre in eThekweni Municipality, 1 corporate support from the DSD in the Umlazi cluster with a total of 7 key informants (3 councillors, 1 municipal official, and 3 disaster coordinators = 7). A facilitator asked the prepared open-ended questions. All interviews were electronically recorded with the participants’ permission. A cellphone interview (with app recorder) using a schedule was the second option for those who were unavailable, following the same procedure for interviewing.

4.9.2 Focus Group Interviews

Apart from the individual interviews, an interaction was set up with a group of selected individuals who were sampled for focus group discussion (ward committees) to gain different or similar views about the phenomenon. Focus group interviews are similar to the individual interviews, but the focus was on the group where participants were interviewed simultaneously by a facilitator to determine the conduct, attitude, aspirations, preferences and aversions of the participants (Du Plooy-Cilliers et al., 2014). Blanche et al., (2006), maintains that interaction with people rather than using a questionnaire is a more natural form of interview as it helps to get to know people better, and it gives an opportunity to create good rapport so as to gain insight into their different understanding, thinking, feeling and behaviour. Similarly, focus groups help the interviewer to realise how serious they are about the issue (Lauruschkus et al., 2017). This tool was chosen for the purpose of getting different or similar views, establishing good rapport and to assess their overall response to disasters happening in Umlazi. This facilitated the recommendation of possible solutions to mitigate disasters. However focus groups are not recommended for people who are sensitive, as it may spoil the entire intervention as they can dominate the entire group (Gill et al., 2008). Therefore focus groups involve a smaller number of participants normally between six and twelve people and an experienced researcher to facilitate the process (Du Plooy-Cilliers et al., 2014, Stewart and Shamdasani, 2014). In this case, there were 12 ward committee members including the ward councillor.

As a result, focus group discussions with six ward committee members from each of wards 78, 80, and 82 respectively in Umlazi was conducted using the focus group discussion schedule prepared and administered by the researcher. Where the use of English was problematic for comprehension and response for some committee members, an additional prepared consent letter in IsiZulu was included in the focus group supporting tools used during these interviews (see Appendix C2 and C3). The total number of participants was 18 (6x3=18) and the three groups were interviewed separately in three sessions on different days in their wards. The focus group approach was chosen because it is less time-consuming when facilitated by a researcher who directly regulates the process, arranging the settings, recordings and taking notes at the same time (Onwuegbuzie et al., 2009). This also developed a good rapport as the facilitator was fully engaging with the group (Sagoe, 2012).

4.9.3. Documents and Archives

Document analysis is the process of reviewing the stored documentation record (Kennedy & Cepeda, 2015, MacKay, 2017). Document analysis can be undertaken by reviewing the

material manually or through the use of electronic scanning programmes. (Bowen, 2009, Kassab et al., 2017). Bowen & Kennedy maintain that official minutes of meetings, journal articles, textbooks, policy documents and many more should serve as documentary evidence to support the analysis. Therefore, the researcher selected several relevant hard copy items from reliable sources as part of secondary data relevant to disaster mitigation. The various documents that were reviewed selectively were journal articles, dissertations, textbooks, departmental reports, online sources, policies and a wide range of legislative frameworks such as the *United Nations Hyogo Framework for Action*, the *Constitution of the Republic of South Africa*, the *Policy Framework for Disaster Risk Management in the Province of KwaZulu-Natal*, the *Municipal Structures Act of 1998*, the *Municipal Systems Act of 2000*, and the *Integrated Development Plans (IDP)*.

4.10 Data Quality Control

Data quality control is the control method of data profiling to discover inconsistencies and other anomalies in the data, as well as performing data cleansing activities such as removing outliers, missing data interpolation, to improve data quality (Han et al., 2011). There are a number of factors that may contribute to data quality control, for example, trustworthiness, credibility, conformability, dependability, and transferability. Because of their particular importance to the proposed study, trustworthiness and credibility are discussed below:

4.10.1 Trustworthiness

Most studies refer to trustworthiness as something that stimulates trust, reliability and validity and it is regarded as the key criterion in ensuring truthfulness of the information assessed in terms of conformability, transferability, authenticity, credibility, and dependability (Du Plooy-Cilliers et al., 2014, Elo et al., 2014, Schwandt et al., 2007). The information provided should prompt trust and confidence. Trustworthiness refers to reliability and validity in the context of quantitative research (Anney, 2014, Wagner et al., 2012). Normally the trust is assessed on the basis of people doing what they say they will do. In a qualitative study, there is no tangible evidence like numbers. Therefore this study regarded information as trustworthy, such that even if the information can be verified by similar findings collected during any control visit (by anyone) or even if different researchers conduct the same interview with the same people the results, if trustworthy, should be similar.

4.10.2 Credibility

Credibility refers to the accuracy of findings interpreted by a researcher which cannot deviate from information provided by respondents. To do this a researcher should have done in-depth interviews, in which the time spent with respondents has been long enough to understand them better and to gain insight into their lives (Cope, 2014, Du Plooy-Cilliers et al., 2014). Similarly, (Foy et al., 2017) hold the view that credibility means that the information provided is precise, and based on the researcher having spent sufficient time to become familiar with the area and the dynamics of those people. The results could then be regarded as believable.

4.11 Measurement

Measurement is a process of assigning a number in order to characterise an object for easy comparison with other objects (Blanche et al., 2006). Wagner et al., (2012), hold the view that measurement is a process of measuring the variables and concepts by allocating numbers to an event or object being studied, Ordinal measurement was used in this study where the interview scheduled questions were the instruments set in a manner that recorded the respondent's views easily. Using the method of Wagner et al., (2014), ordinal measurement is a process of allocating a number to a specific attribute of a defined variable in an orderly ranked manner. For example, Umlazi J, K, and Kwamgaga are the sections that fall under ward 78. Their accounts of disasters can be used to establish a recommendation for the best way of mitigating disasters. The study needed to be undertaken in different wards and locations in Umlazi to help the researcher analyse the results accurately based on different socio-political and other dynamics in different areas.

4.12 Data Analysis

As the data were gathered from the field involving different perspectives of behaviour, disaster experience, and attitudes, the second to last stage in the methodology was to analyse data using thematic qualitative data analysis. Thematic data analysis is a process of identifying themes in a qualitative analytic method, and to report on their patterns within the data (Wagner et al., 2012). The information that was gathered empirically was qualitatively encoded as the researcher identified patterns in the data (Boyatzis, 1998). This was done in the study by exploring and identifying patterns embedded within the transcripts. This assisted in addressing the primary objective of the study.

4.13 Ethical Considerations

Ethical issues were considered in this study, which included the use of consent letters, ensuring confidentiality and anonymity, and obtaining authorisation from the relevant gatekeepers to conduct this study (see Appendix F, F1, and F2). Ethics involve moral behaviour that the researcher is required to observe as part of professional conduct on his/her part in conducting a research project (Blanche et al., 2006, Du Plooy-Cilliers et al., 2014).

4.13.1 Gatekeeping

One of the key aspects of ethics in research was to request permission from gatekeepers to conduct the study. Gatekeepers are the people who provide the researcher with permission to enter their community, institution/organisation to conduct a study (*Statistics South Africa, 2016*, Wagner et al., 2012). These include elected leaders, household heads, leaders in the community, who can give permission for research to be done or not and can decide who can be consulted and on what conditions (Andoh-Arthur et al., 2018, Oscar et al., 2018). The gatekeeper should be informed of the purpose of the study and its aims and objectives and the request to be granted by his/her office. The researcher sought permission from the eThekweni Municipal executives (Councillor Representative, and MDMC), and the DSD, all of whom had the authority to grant permission for the study to proceed.

4.13.2 Informed Consent/ Authorisation

A consent form is a letter of introduction that sought permission from a gatekeeper to conduct the study. The letter provided a clear description of the study, and all the guiding principles that were required to be known by the participants and the gatekeepers, such as the expectations, and what is required of them. The researcher informed the participants on the voluntary nature of participation, the right to withdraw without negative consequences, the purpose and period of the study, any possible risks and benefits involved, the assurance of confidentiality and anonymity and all contact information. Such a request was made in writing by the researcher to the gatekeepers using the letter of introduction/consent form, in which the gatekeeper was asked to provide his/her consent in writing and to sign the document. In this case, authorisation for the researcher to perform the study was requested from the relevant eThekweni Municipal executives and DSD in writing. Mumford (2018), argues that most participants do not read the consent form and do not pay attention to it. It is therefore important to ensure that the consent form is clearly understood for them to provide written permission in this letter. During the interview, all participants were given the consent form in which all the

guiding principles were explained verbally prior to the interview including participants in the focus group discussions, who were expected to sign an agreement to take part in the study. As indicated earlier, consent forms were also translated into isiZulu to cater to those who had challenges in reading English.

4.13.3 Avoiding Harm

The researcher ensured that participants were not harmed in any way by ensuring that the questions asked did not embarrass anyone. Painful memories were avoided and it was indicated prior to the consent signing or interview that anyone has the right to postpone or to stop the interview or decide not to participate in the study for any reason whatsoever. In the social sciences participants may be harmed emotionally due to a number of reasons such as the inconvenience of the time of research, stress, sensitive discussion, undermining their contribution, questioning their intelligence or integrity and many more (Du Plooy-Cilliers et al., 2014, Eves et al., 2018, Wagner et al., 2012).

4.13.4 Confidentiality and anonymity

Confidentiality and anonymity are the ethical practices that ensure that the identities of the participants including sensitive items of information are protected and safeguarded (Du Plooy-Cilliers et al., 2014; Magnani et al., 2018; Wagner et al., 2012). According to Wagner et al., anonymity means that the researcher does not know the identity or the source of sensitive information, whereas in confidentiality, a researcher will receive information about the participants, but such information will be kept strictly confidential and it will not be shared with anyone. In order to maintain confidentiality and anonymity in protecting the identity of the respondents, the researcher used pseudonyms during the interview process. The process of confidentiality and anonymity was maintained not only during data collection. This was continually maintained even after the collection of data, the analysing stage, and during documentation of the findings. For this data to be stored and to ensure safety, transcribed hard copies of data are now kept in a locked filing cabinet in the supervisor's office in the School of Management, Information Technology and Governance on the Westville Campus. In the Supervisor's computer and the laptop of the researcher, the relevant information is password protected in these computers. The effective disposal of information as per the university policy is undertaken after 5 years. All hard copy materials will be shredded except for the dissertation that will be available in the University of Durban-Westville library.

4.13.4.1 Participants Coding

In the course of in-depth and focus group interviews, each respondent was allocated a pseudonym, for the purpose of understanding the source of response during transcribing, coding and easy analysis. As per the availability of the Ward committee members and MDMC coordinators, together with targeted ward councillors and corporate support officer (DSD) the tables below indicate the arrangement of respondents for both interviews.

Table 4.2 – Ward 78 Focus Group Interview

Participants	Participant code
Ward Executive committee secretary	Interviewee 1
Chairperson – Human Settlements	Interviewee 2
Chairperson – Vulnerable group development	Interviewee 3
Chairperson – Health Safety and Security	Interviewee 4
Chairperson – Sport and Recreation	Interviewee 5
Chairperson – Energy, Water, and Sanitation	Interviewee 6

Source: 2019 Fieldwork

Table 4.3 – Ward 80 and 82 Focus Group Interview

Participants	Participant code
Ward Executive committee secretary	Interviewee 1
Chairperson – Sport and Recreation	Interviewee 2
Chairperson – Health Safety and Security	Interviewee 3
Chairperson – Human Settlements	Interviewee 4
Chairperson - Vulnerable group development	Interviewee 5
Ward Committee Member	Interviewee 6

Source: 2019 Fieldwork

Table 4.4 – In-depth Interview

Participants	Interview Date
MDMC Coordinator	19 December 2019
MDMC Coordinator	19 December 2019
MDMC Coordinator	19 December 2019
Ward 78 Councillor	05 February 2019
Ward 80 Councillor	06 February 2019
Ward 82 Assisting Councillor	06 February 2019
DSD Corporate Support	04 April 2019

Source: 2019 Fieldwork

4.14 Conclusion

The chapter discussed different methods applied in disaster mitigation which are worldviews. A qualitative design, research strategy was selected where a case study approach was applied; hence the study is exploratory and qualitative in nature. Umlazi was indicated as the study site with a population of relevant stakeholders targeted as relevant in responding to the objectives of the study. A table was also presented to summarise and project with a clear indication of the sampling technique used. In-depth interviews and focus group discussions were discussed as relevant tools for data collection. Data quality control, thematic analysis, and ethical consideration were discussed as part of the empirical study that this researcher sought to achieve.

CHAPTER 5: DATA PRESENTATION AND ANALYSIS

5.1 Introduction

The discussion in this chapter involves the analysis of the transcriptions of individual interviews and focus group discussions. Anonymous responses were transcribed, compared and contrasted in some form of matrix analysis. Indeed, in drawing from different transcriptions, the chapter also presents analysis where themes emerge and were analysed for the purpose of obtaining findings and recommendations of the study. The chapter provides the findings following the objectives of the research. Themes and subthemes pertinent to the objectives are presented. Lastly, the findings are discussed in relation to previous literature and theory. The findings of this study were presented following the thematic analysis as espoused by Creswell & Creswell (2009). For the evidence, the chapter presents transcribed verbatim responses from the study participants using pseudonyms to protect their anonymity and for confidentiality. The various themes emerged and were grouped together and often broken down into similar themes which were ultimately related to the objectives.

5.2 The nature and the degree of disasters in Umlazi Township eThekweni

Two main themes emerged and these were related to the nature and degree of disasters. These were fires and floods. These became themes after being mentioned many times by the research participants and were all related to the first objective.

Matrix 5.1: Summary of the nature and degree of disasters

Theme	Focus group 1	Focus group 2	Focus Group 3	Individual Interviews
Floods	<p>Joy: Collapsing [offences] due to floods.</p> <p>Majay: the floods that collapse houses and fences normally comes during summer when it rains as unmaintained drainage systems are uncontrollable.</p> <p>Thobile: Rivers become full; there are no bridges so people get flooded by water.</p> <p>Thabo: in addition to this, when floods happen, the scale is so high to the extent that it is not</p>	<p>Themba: I would say they are severe floods as they affect people tremendously. I would also add that political interest is also causing a lack of service delivery such as lack of drainage systems, by the time of floods, we are more on risk.</p> <p>Thelma: Normally storms, floods, and fire disasters. The way they are so high, a number of things are affected leading to even death</p>	<p>Dube: I would say floods and fire mostly causing death to people.</p> <p>Makhosi: there a number of disasters in South Africa in particular, however in our ward and mostly in Umlazi the severe ones are floods and sometimes fire. The other ones are not popular and are not severe</p> <p>Zandile: when these storms take place, it is very difficult to control their magnitude due to the high level</p>	<p>Noji: Normally storms such as floods disasters.</p> <p>Mgaba: I would say floods and fire mostly.</p> <p>Mafi: Common disasters would be the storm damage (natural disasters in the form of tropical disasters extending to flooding) and house fires.</p> <p>Thanda: floods and fire where houses collapsed and people left homeless</p> <p>Siba: mostly are heavy rains leading to floods and seldom fire. And the reason why we provide temporally shelters</p>

	<i>controllable causing a lot of damages.</i>			<i>and blankets is that people are affected by uncontrollable floods where even drainage systems get loaded and water is directed straight to houses.</i>
<i>Fires</i>	<p>Sthe: <i>burning of houses as a result of a fire.</i></p> <p>Thabo: <i>Snake cables are the one which sometimes burns houses. When the fire disasters are due to snake cables, houses collapse thus affecting the lives and welfare of the people due to the high volume of fire.</i></p> <p>Joy: <i>Others leave candles [laxly] burn inside their houses and die because of all those cables.</i></p>	<p>Gumede: <i>Burning of informal structures due to the high volume of fire that leads to displaced people.</i></p> <p>Gumede: <i>Burning of informal structures due to unexpected executed fire.</i></p> <p>Busi: <i>Fire disasters mostly happen in winter but, there is no scale period, burning take place at any time. It can be weekly, every day, once a month or even once a season.</i></p>	<p>Kenny: <i>There is pollution whenever there is fire or heavy rain and people die.</i></p> <p>Dube: <i>The increase in tin houses lead to an increase in electricity cables connected in an unsafe place where even children pass by and tread these cables and fire occur.</i></p> <p>Zandile: <i>Residents of informal areas wanted to apply for electricity, however, they were refused, and as a result, illegal connections were their solution, hence led to a fire disaster.</i></p>	<p>Mbovu: <i>Burning of informal structures.</i></p> <p>Mamo: <i>It is caused by the stealing of electricity cable, fraud connection of electricity. And also Municipality denies people the rights to apply and connect electricity.</i></p> <p>Noji: <i>we also experience fire disasters although they are rarely happening. But they also huge when they happen to the extent that victims become homeless and others affected healthily.</i></p>

5.2.1 Floods

Floods are the temporary overflow of water onto usually dry land. Floods as a theme emerged after being repeatedly mentioned by the majority of the participants as occurring in their area. Over half of those interviewed reported that floods are devastating because the drainage systems are not maintained (*Majay, Themba, Siba*). One participant, Majay reported that:

They (drainage systems) are very small to handle the capacity of heavy rains. Due to this, water is then directed straight to houses and become uncontrollable due to high magnitude. Lack of waste collection is also causing disasters because, during floods, all these wastes are loaded in these small drainages. (Majay)

The majority of responses indicate that the magnitude of floods becomes so enormous because many people are living in a congested area where there is no easy flow of water inside residences. One of the respondents claimed that:

Poverty brings people to the township with the intention of getting proper houses, employment and better opportunities and then stay stacked in risky houses for a longer period, leading to a high volume of water flow during flood disaster. (Siba)

Due to poor drainage or maintenance of the drainage system, *Dube* indicated that water overflows over roads affecting vehicles and people get swept away. There is damage to cars, injuries and death to people. However, flooding normally occurs during the summer sometimes it happens every time it rains, in different weeks. One key informant *Mpho* said that:

Due to climate change, the rain that used to happen once in ten years is now increasingly occurring in a couple of years. This affects our small capacity of drainage systems where water overflows to the entire houses and over roads. (Mpho)

These responses reveal substantial information on the occurrence of disasters in Umlazi, which was the objective of the research. Participants agree that there is a high likelihood of flooding occurring in their area. In reference to the reviewed literature and research question for this objective, the floods as natural disasters were noted as the most frequent local disasters. As such, in relation to the empirical data findings, the study found no divergences in information about flooding. When asked about the nature of disasters, the participants were unanimous in the view that floods occur with adverse effects in their area. In the reviewed literature, a number of scholars indicated floods as the most popular natural disaster among other disasters (Malalgoda & Amaratunga, 2015; Musyoki et al., 2016; Ziervogel & Smit, 2009). For the current situation in Umlazi in relation to disasters, both primary and desktop data were positive in answering the research objective and as a result, there is no doubt that these outcomes were a reliable reflection of the situation.

5.2.2 Fire

Concerns were expressed about the fire disasters, which occur due to the municipality's failure to supply electricity, so the residents resort to connecting electricity among each other with what is referred to as 'snaked' cables, which may cause fire at any time. The disaster is compounded by the presence of a lot of shacks, as many people lack access to RDP houses (*Zandile, Mamo, Thabo, and Dube*).

This talks to lack of capacitation where people play with fire anyhow. The lack of electricity in such areas causes people to [take] risk with candles and gases. People do not want to relocate to other areas causing houses [to be] stacked in one area and

there is a limited space to pass and run away during disasters. People are overpopulated in the informal settlements. Some people leave candles alight and go out until late, some will be inside and fall asleep. as a result, all these perpetrates fire. (Thabo)

Some respondents indicate that both ruling and the opposition parties influence people to build houses in undesignated areas, in a sense that there are no control measures put in place for those people who build tin houses in undesignated areas.

The municipality is also not putting preventive measures and people build tin houses, which is the genesis of the fire problem. Instead, community leaders are promising people RDP houses to those having tin houses. Cases and disaster risks are reported but officials do not attend to [these] on time or at all. (Dube)

Participants (Zandile, Dube, Busi, Joy) concurred that the burning of houses normally takes place mostly during winter where people normally use candles and gas stoves to heat their rooms because of the cold weather.

In summary, these results reveal the concurrence of the people that fire is a disaster factor in Umlazi. The narratives from the participants answered directly the objective on the nature of disasters in their area. However, the results also reveal participant focus on the shortcomings of the Municipality as opposed to fire is a natural phenomenon. In as much as disasters are avoidable, it is the actions of the disaster management committees that are important to lessen the extent of fire-related disasters and to put in place measures to prevent fire outbreaks. As much as fire was identified as a disaster risk by participants it was also an expected response due to the dynamics of informal settlements in Umlazi, A further problem was that the data on fire disasters were often incorporated into the drought statistics under disasters in general. Statistics were also affected by participants' place of residence because drought mainly affects farms and tribal areas. Fire disasters in this region are far more prevalent in the crowded living areas of Umlazi township.

5.2.3 The effects of disasters

An examination of the effect of disasters is not part of the main objective. However, due to the high volume of floods and impact of these floods, effects of disaster were of greatest concern to the participants and this was part of the questions in the interviewer guide. As a result, it is included as a subtheme.

The majority of the participants (70%) identified several effects of the disasters in their community. The participants perceived that disasters have the following effects: death, destruction of infrastructure, disturbance of children’s learning time, and displacement.

Matrix 5.2: Summary of responses on the effect of disasters

Question/the me	Focus Group 1	Focus Group 2	Focus Group 3	Individual Interviews
<p>Subtheme: Far-reaching effects</p>	<p>Sthe: In the event of a fire, people get injured and some die.</p> <p>Thabo: If a house burns many people are affected not just at the family level because when it burns electricity wires are inside, and end up affecting the whole electricity in the area.</p> <p>Kathy: due to building improper houses in undesignated areas, risk of disasters, injuries, and death are too high and they do happen to such structures. Most children with future careers do die, some become injured and under depression and affected at school without [being] given counselling.</p> <p>Joy: besides that people die as a result of fire, however, their infrastructure becomes damage[d] and they are even displaced.</p>	<p>Themba: sometimes disaster does happen when the victims are at work, and they will come back without shelter and stay in halls or just come to councillor office.</p> <p>Msayi: There is also damage to infrastructure when there are disasters.</p> <p>Thelma: Mostly are elders and children who can’t run away during disasters. Even the youth, especially when there are heavy rains. And this does not only affect tin houses, but it happens also to newly built RDP, four rooms and other government structures</p> <p>Gumede: when these two disasters happen, people are affected healthily; their welfare is affected and become displaced. Those who are learners at school they become homeless with no belongings for school.</p>	<p>Makhosi: Children’s mind is mostly affected, seeing such a strategy where school uniform, stationery, books and without shelter and food are destroyed by disasters.</p> <p>Dube: Mostly they would be with someone at home during the disaster process where they experience the housing collapse and death.</p> <p>Zandile: These disasters have an effect on the loss of people’s lives especially in the informal settlements. Some of them are having severe injuries, in which most of them end up being disabled.</p> <p>Sipho: It also affects everyone health-wise, affecting learners at school and increasing Alzheimer’s disease to elders.</p>	<p>Mamo: I have normally seen youth and granny’s who are mostly affected.</p> <p>Mbovu: well the impact is [very] huge. We had a number of reported case where there was a loss of life, particularly for Umlazi including infrastructure damages and people displaced.</p> <p>Mafi: Its different age groups, in an informal settlement you’ll find more of young people, within the formal structures of the townships you’ll also find senior[s] and young people</p> <p>Siba: Disasters also have an impact on the loss of lives, health as they are injured and sick, leading more to depression. I have also mentioned a structure with is part of infrastructural loss, harvest and production effect.</p>

Death

A minority of the participants (*Sthe, Thabo, Makhosi, Msayi and Mamo*) argued that disasters affected everyone in society and it was sometimes better if fire-fighters arrive early because they can control the situation. Mamo concurred that “the poor drainage system fails to control heavy water, and [they] are directed inside the houses, and damage everything, and then people die. In the event of a fire, people get injured and some die”. Msayi also added that:

The overpopulation has led to the death of people because one person is negligent in leaving the candle lighted on and other people connect electricity illegally and affect most of the houses, then people die.

From the above findings, it can be deduced that disasters do have an impact on the loss of lives, and health as people are injured and become sick and this can lead to depression. As most of the houses are weak, water comes easily and floods inside those tin houses, affecting the lives of people through avoidable injuries, sickness and sometimes death. From the media perspective and experience from scholars’ reports, death has left a number of families’ disordered and distressed due to fire and flood disasters. Participants confirmed that the effects of such disasters were momentous.

Destruction of infrastructure

The majority of participants agreed with the statement that infrastructure is affected by such disasters and that people are left with no shelter, affecting even their belongings (*Msayi, Thelma, and Mbovu*). In their argument, they indicated that the government is failing to create a stronger infrastructure that can mitigate disasters.

There are still many tin houses at Umlazi which are very weak to maintain and control heavy water, thus leading to the damage of these infrastructures. (Msayi)

The participants claim that the infrastructure does not only include tin houses and four-room houses. It also affects the recently built RDP houses (as they were not properly built) and it affects government infrastructures like community halls, clinics, hospitals, libraries, schools, Departments, councillor’s offices, roads, and even local shops, supermarkets and industries affecting the local economy which collapses during these periods and is slow to recover. They pointed out that most of the township clinics are also affected by disasters and are closed during the storm. They also suffer from a shortage of staff because they can even die if they remain inside such structures.

The Municipality is prioritising more on RDP houses, however other people from the township formal structures have a problem of old structures which are also affected during a disaster including government structures and current RDP structures. (Thelma)

Respondents maintained that the cause of most disasters was the poor drainage system as part of poor maintenance in this township.

Drainage systems are not maintained and are very small to control the capacity of water during heavy rains, thus collapsing the infrastructural houses as the water get directed straight the residence houses. (Zandile)

The recommendations were to improve infrastructures, such as clinics, bridges and a proper drainage system to avoid flooding after heavy storms.

Disturbance of children's learning time

A number of participants reiterated that disasters affect the education system (Zandile, Dube and Mafi).

Children's minds are mostly affected, when school uniforms, stationery, books, shelter and food are destroyed by disasters. In an informal settlement, there are more young people and within the formal structures of the townships, there is a mixture of senior and young people. (Mafi)

Although some participants indicated that disasters affect every age group, the elderly and the kids definitely are marked as the most affected because they are always at home as the majority are unemployed and have no power to run away or have any means to protect themselves. Participants indicated that some parents were complaining that their learners pass rate is negatively adjusted after disasters due to loss of either a friend, or family member, and loss of their belongings such as school stationery, uniform etc. Even though other learners are not affected during disasters, however, their mind is also sensitive to the suffering of their classmates. Two of the councillors (*Mom, Siba*) indicated that time is costly because, during disasters, children are affected, school is damaged, classes are delayed, subjects are not finished on time, therefore the effect is not only on learner's mindset and belongings but also on disruption to the teaching programme.

Besides responses from data collection, there are several reports especially on the storms of 2017 October where a number of children were assisted with new belongings for school, and these children felt vulnerable during this period (Pajtic, 2017). During the times of floods and fire disasters, the intensity of rain and fires is so massive and the onset is very fast. To that extent the age level does count when running away in trying to evade the effects of the disaster. The very young and the elderly are particularly vulnerable and disadvantaged because of their ages.

Displacement

A number of key informants reported that people are displaced; for example, when a house collapses or is burnt down a person is displaced (*Mbovu, Xolo and Thelma*).

“If one is displaced it means the person will lose all their belongings, a structure, food and blankets” (Thelma).

On the community level, there is a reduction in population size and this has a major impact in terms of socio-economic loss.

“In places like Mega-City, a lot of people were residing in flood-prone areas so the impact there was very high” (Gumede).

The most striking result to emerge from the data is that the participants acknowledged the vulnerability of children to disasters. Most of the participants indicated that there has been cancelling of school days for children after disasters. Both the key informants and the ward residents viewed this as a widespread negative effect of disasters in Umlazi.

5.3 The disaster mitigation strategies employed in Umlazi Township

A majority of participants (65%) reiterated that there are several disaster mitigation strategies employed in Umlazi Township. They revealed the following strategies: better and stronger infrastructure and an early warning system. These subsequently became the main themes.

Matrix 5.3: Summary of the responses to disaster mitigation strategies

Question/theme	Focus group 1	Focus group 2	Focus group 3	Individual Interviews
What are the disaster mitigation strategies	<i>Joy: Strategies that have been taken is building people RDP</i>	<i>Themba: I think there is some intervention but a big gap. There are a</i>	<i>Xolo: Disaster offices are not taking any action on mitigating</i>	<i>Mamo: We have tried to build some RDP houses. Sometimes people are selfish for example those</i>

<p><i>employed in Umlazi Township?</i></p> <p><i>Better and Stronger Infrastructure</i></p>	<p><i>houses so that they can move from shacks.</i></p> <p>Khathi: <i>this started in 2014; they started changing informal houses to RDP. They were built at K11, K13 and K1.</i></p> <p>Majay: <i>they are very few strategies. Only to build RDPs and the gap is still huge.</i></p> <p>Thobile: <i>they have also built sidewalks for easy people to walk and run away easily and safely on vehicles affected by disasters .four rooms are also included in this process of renovating old structures</i></p>	<p><i>number of government houses being built already</i></p> <p>Gumede: <i>Not enough resources such as money to build proper houses in time. No support from the municipality especially disaster offices are not responding to our issues. However, RDPs are built in some areas but not in all sections. We also get warned on radios if there are forthcoming disasters</i></p>	<p><i>disasters except building RDPs.</i></p> <p>Dube: <i>infrastructure like RDP has been implemented in this ward. Our councillor is informed on her cellphone by SMS as a warning if there will be a sever disaster.</i></p> <p>Makhosi: <i>I think RDPs are in the process including other weak structures inside townships are being renovated.</i></p>	<p><i>who received one room previously, they do not demand four-room houses.</i></p> <p>Noji: <i>crime is also a challenge. Government builds infrastructure such as RDPs, but the material is being stolen by the communities.</i></p> <p>Siba: <i>I have seen some small bridges were built some years back, I have also seen RDP houses, although others still experiencing tin houses. Besides solving tin houses issue, the government is also looking at four rooms that are very weak to be rebuilt.</i></p>
<p><i>Early Warning</i></p>	<p>Khathi: <i>In the past three years municipality has improved to warn people to stay indoors, and posts are issued with circular by the municipality in advance but people are not reading.</i></p>	<p>Thelma: <i>we used to receive a message from our councillor that informs us as ward committee about disasters.</i></p> <p>Gumede: <i>people use the radio to listen to weather focus and warning session by broadcast workers especially when there are unusual disasters.</i></p>	<p>Zandile: <i>sometimes people do leason[listen] on radios where they are warned about incoming disasters. People always looked at weather condition in which as from my perspective I think that is also a warning</i></p>	<p>Mafi: <i>One is public awareness campaigns – training and capacitating people on extreme weather conditions.</i></p> <p>Mbovu: <i>it consults with departments, within the municipality, with regards to their plans, it plays a coordinating role basically, between departments internally and then it also engages external role players such as NGO's.</i></p>

5.3.1 Better and Stronger Infrastructure

Most participants (*Joy, Kathi, Majay, Gumede, Dube and Mamo*) wished that the local government build better and stronger infrastructure, although some efforts are being made towards the same.

There is currently a process of building proper infrastructure where the government has started including all these wards (the process of [varnishing] removing all the Informal structures). (Joy)

The process of relocation for the purpose of building new structures and locating people in new buildings as part of the mitigation strategies mainly suggested by the participants. However, most of the responses indicated that people are hesitant to move away from their usual habitation and feel this as a huge disturbance in their life endeavours.

Government has temporally relocated people to occupy temporary shelters called 'oLindela' meaning waiting areas where they also installed electricity while waiting for their RDP houses.

The mitigation process in the informal settlements was not the only strategy indicated by the participants. Indeed repair of old structures that were regarded as formal buildings was also part of responses by participants included in the mitigation process.

Government has also started looking within the formal settlement considering those structures that are poorly made or in need of renovation to be built into proper designated formal structures. (Kathi)

One informant pointed out the existence of a running project for the purpose of disaster mitigation. However, this has raised anxiety that most of the mitigation processes are instigated when some flooding has already taken place and so the concern is that the government should have been pro-active instead of implementing a reactive strategy:

There are projects which are based on rehabilitation of infrastructure which is run by the city engineers department. So they are rehabilitating schools, roads and people who were affected particularly with the October 2017 incident, by providing new shelter. However, that is more of a reactive strategy, not a proactive strategy as the October storm revealed that the infrastructure is not sufficient enough to absorb the pressure. So currently, there is no sufficient infrastructure to deal with such incidents. (Mafi)

Nevertheless, other participants (*Siba and Thobile*) added that they have seen some sidewalks and stronger passages in the area with electricity to assist smooth walking and to avoid passing through people's houses and this limits the opportunity for crime. They also indicated that small bridges were built to assist especially in the informal settlements to smoothly cross to the nearby area of interest. Disaster grants are part of government mitigation strategies; however, they apply more for recovery or restoration purposes.

In general, therefore, it seems that the focus is on what the government can do to assist in disaster mitigation. From the narratives, there seems to be a lack of citizen-centred focus on disaster mitigation. For example, on what the citizens can do to mitigate the disasters in their localities to complement government efforts. However, the overall significance of this theme highlighted the need for increased infrastructural development in a number of informal settlements in Umlazi and this is expected to be part of the recommendations even for future studies.

5.3.2 Early Warning

Informants (*Mom and Mafi*) argued that a proper warning system has been implemented. Most of the councillors have indicated that they do receive a warning through their cell phones whenever there will be massive disasters (*Mafi*). Most committee members have also affirmed that their councillors do provide this information to them; however, it is mostly too late to convey to local people (*Gumede, Khathi, and Zandile*).

Other key informants (*Mbovu and Siba*) revealed that the city has embarked on establishing a single unit called Flood Early Warning System Department, in which there is the technology that they use that can give a 3-hour prior warning.

They can measure an incident before it happens, that's the first strategy. The second strategy is awareness campaigns in the wards whereby there is a door to door campaign, including schools. Because they are targeting those who are affected most (children and the elderly) they find them at home and kids usually at school. They engage with the department of education and come up with some kind of a bilateral [intervention] to start having this dialogue that society is vulnerable, what they should do if an incident of that nature occurs. (Siba)

The narratives reveal that the Municipality has a robust campaign to bring awareness to the people about the impact and the realities of climate change. The participants further revealed that the Municipality has also tried to build solid houses, added container toilets and showers to those areas still experiencing tin houses.

“Government has also issued some disaster grants only to those affected as part of relief and [for] reconstructing solid infrastructure” (Mafi).

This was supported by Xolo, who said that:

“There is a group which has been established by the mayor together with the city manager a group of advisers from the climate change office. They advise that office on a daily basis with regards to the climate change patterns. It was also learnt in the past that, political [parties] will play[s] a huge role because there is nothing that can be done without funding”.

However, most of the participants (68%) pointed towards the gap between policy and practice. The disaster office was viewed by the participants as not responding when the community are affected. They are too preoccupied with analysing the definition of ‘disaster’. They regard everything as an accident, even when the catastrophe has affected everyone. Ward committees and the people themselves are not thinking strategically to assist themselves or their neighbours in disaster mitigation. Ignorance of officials has increased the level of community ignorance. Lack of financial resources does lead to a lack of disaster mitigation, and this results in increasing the ignorance of the officials who have never experienced mitigation efforts.

Some of the participants were of the view that if the affected communities are mostly from the opposition party, they will not be assisted because only the ruling party has full powers to have resources to assist these people and to mitigate disasters beforehand. The opposition parties were also viewed as having a big influence on inspiring people to occupy land unlawfully that is not designated for household living. Presumably, this is to ensure the failure of the ruling party to build houses and to gain votes.

There seemed to be differences in participant opinions on the efforts by the Municipality to provide early warnings. Key informants who are mostly policy makers painted a rosy picture of the efforts of the Municipality, whilst the ward residents sought to debunk the council’s efforts. These responses revealed participant biases, which might be resolved by observation. The responses also revealed the political biases of the participants, as some viewed opposition parties with suspicion. From observation, the notion of communicating this warning system by Municipal officials is ineffective due to the fact that the communiqué is received late. It does not help matters when most of the councillors become aggressive when confronted with their lack of effectiveness in providing an early warning system.

5.4 The effectiveness of disaster mitigation strategies employed in Umlazi Township

Participants had diverse views on the effectiveness or otherwise of disaster mitigation strategies. A recurrent theme in the interviews was a sense amongst interviewees that disaster

mitigation strategies were ineffective. However, two divergent and often conflicting discourses emerged: one insinuated a great success in disaster mitigation; whilst the other pointed towards the failure of the same. Participant’s responses yielded diverse themes that suggested: below optimal effectiveness, slow response and lack of clear communication.

Matrix 5.4: Summary of the effectiveness or otherwise of disaster mitigation strategies

Question/theme	Focus Group 1	Focus Group 2	Focus Group 3	Individual Interviews
<p><i>How effective are the disaster mitigations strategies employed in Umlazi Township?</i></p> <p><i>Below optimal effectiveness</i></p>	<p>Thabo: They are very effective because since 2014 when the change was implemented the rate of people who are dying from a car accident has dropped. Even the RDP houses do not collapse from floods since the change.</p> <p>Sthe: Places that were dark were put street light, so the crime dropped from those places. There is some change but not much effectiveness.</p>	<p>Busi: Infrastructure is vandalised, hence there is a financial crisis in this world that hinders the effectiveness and might be difficult for the government to renovate some structures that were vandalised.</p> <p>Thelma: the effectiveness is very minimal because it only applies to RDP housing. The effectiveness passion of providing services is very little.</p>	<p>Thandy: Those who are in powers will only be effective in recommending something if it will favour his or her friends to get tender approval.</p>	<p>Mbovu: Although the risk still persists, in some areas with RDP houses, there is the little challenge of disaster victims. However, they are not that effective because the pace of building proper infrastructure is very slow.</p>
<p><i>Slow response</i></p>	<p>Joy: The change or effectiveness only apply to the RDP houses, but not effective to other areas due to slow development and corruption and lack of funds.</p> <p>Khathi: there are several times when we send motivations to the Municipality to assist with drainage systems at Megacity exit bridge since all vehicles are swept away under that bridge, but nothing is being responded to mitigate this.</p>	<p>Msayi: I think disaster offices are lacking in terms of assisting to mitigate disasters.</p> <p>Gumede: Lack of funds from government is a serious issue because services are not provided in time and [are not] satisfactory.</p> <p>Majay: I remember when a big rock fell in front of someone’s house and it stayed there for a month before it was removed, and it was blocking water to pass.</p>	<p>Xolo: All government departments are lazy to do their job</p> <p>Zandile: I would say, the RDP is constructed in some informal settlements but the pace is very slow because, in ten years back, not even half of the RDP houses are built.</p>	<p>Siba: I have seen a number of developments pertaining to disaster mitigation, but the pace is not that effective since people are still left homeless after disasters. We always asked to assist as DSD every time when there are disaster victims.</p>

Lack of clear communication	Sthe: There is a lack of monitoring and provision of adequate information on the part of the Municipality.	Themba: There should be a monitoring system like in the private sector to track their performance to avoid laziness because it affects the rendering of services to the people.	Makhosi: Disaster offices do not want to cooperate with us for them to know the challenges of our people during disasters as they do not even answer their phones during this time.	Mafi: There is lack of ward-based disaster management structures.
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5.4.1 Below optimal effectiveness

A minority of the participants (*Thabo, Busi, Sthe and Thelma*) argued that the RDP houses do not collapse from floods since the change.

“Basically, the rates are dropping since changes were implemented. Places that were previously dark had street lighting erected, so the crime dropped from those places. There is a big change. This also includes new mitigation strategies that are under the government plan”.

However, some responders expressed the view that strategies are implemented but are disrupted because of destruction of infrastructure and political lack of will.

“Such opportunities are less effective because the community is destroying what is available. There is an element of political conflict and interest. Services rendered are vandalised, stolen and criticised by [the] opposition just to prove the incompetence of the ruling party in delivering services.” (Busi)

Thabo supported the above and reiterated that some of the disaster mitigation strategies are effective which have impacted positively on the change in people’s lives, as a result of built drainage systems and other proper infrastructure.

“In Wards 78 and 82 there are changes because the people that were in the place that was not suitable landslide have moved so again that speaks to the impact of natural hazard lessening. There is then a change in the reduction of a number of deaths; the government has implemented disaster grants for those affected where there was a change for a few victims from the informal structures to the formal.

Some of the bridges within the townships have been built to lessen the strain to these small drainage systems.”

The results reveal a positive correlation between politics and disaster mitigation. In the case of increased political will, there is also effective disaster mitigation and where there is a lack of political will, then the disaster mitigation strategies become blunted. Many of the responses from focus groups and key informants revealed apprehension that the process of mitigation had started but that there was still so much to be done and that so many people were still in need of RDP housing. Furthermore, mitigation strategies like an early warning system seemed not to be effective when looking critically in those responses. Umlazi informal settlements are still of great concern to the researcher for any forthcoming disasters will be catastrophic as ineffectiveness of disaster mitigation still needs urgent attention.

5.4.2 Slow response

Some participants (*Joy, Zandile, Msayi and Gumede*) complained of the slow response from the Municipality, who argue that there are incidents and not disasters. Although there is no budget, participants urged the relevant Department to write motivations and to make recommendations to the relevant authorities, but they believed that the officials were too lazy to do this.

The participants felt that limited effectiveness was due to corruption.

“For example, if someone in power’s friend does not get the tender, they will drag and use their powers to sabotage which end up affecting the community. In the end, money is returned back after the financial year, but resources or services were not delivered. Some act as forums [to] stop construction by striking for themselves to get tenders forcefully. Political interest plays a huge role in the lack of effective implementation strategies”. (Msayi)

Other participants reiterated that councillors or the opposition parties influence people to generate service delivery protests which lead to a need to renovate what has been damaged first, before relooking at the planned development.

“The refusal of people to be relocated has also been a challenge because these RDP structures are still built in the same risky areas. This is both caused by the community and their councillors or [the] opposition in order to have the same people who will

add votes during the elections. Lack of budget is a challenge because, without financial resources, nothing is built.” (Gumede)

Another participant felt that this boiled down to Municipal lethargy:

“The Municipality is doing nothing about these people who come and build tin houses in an undesignated area. Ward councillors call local communities to meetings, but most do not attend these local meetings which hinder the pace of development and understanding [of] the people’s views and interests. (Joy)

What stands out in the narratives is the view that the government is doing little to mitigate disasters because of corruption, favouritism, and lack of cooperation between ward committee and disaster management offices, and most lack funds. These views decrease the effectiveness of disaster mitigation.

5.4.3 Lack of clear communication

Some participants felt that most are not aware of what constitutes a disaster (*Sthe, Themba, Makhosi, Mbovu and Mafi*). This is because people take everything as disastrous, whereas most of the cases are regarded as incidents, which require the attention of local people themselves.

“The process of mitigating disaster is much slower because of financial constraints; people move from temporary shelters to RDP houses and accommodate his/her relative or friend to the temporary shelter leading to continuous demand for development. These create a lack of a strong monitoring system” (Mafi).

One key informant argued that awareness campaigns are quite effective.

“The awareness campaign focuses on people who are from the informal settlement, who are more congested, who do not pay attention to safety messages. They are driven by their social and economic background so those are the people targeted.” (Mbovu)

On the other hand, the focus group, participants responded that:

“There is no clear communication between them as ward committee members and disaster offices to the matters that need their attention. They are supposed to engage with ward committees in understanding the people’s challenges”. (Sthe)

These responses are quite revealing in several ways. First, they reveal the importance of communication in effective disaster mitigation. Second, they reveal a general agreement that there is a current lack of communication on disaster mitigation strategies, but at the same time, there is disagreement as to why this is so. Again, this reveals participant biases, and the playing of blame games, with the key informants likely to defend themselves as policy makers and the ward residents also defending themselves.

5.5 The role played by different stakeholders in disaster mitigation

When asked about the role of different stakeholders, the participants were unanimous in the view that they are the key to disaster mitigation. The participants identified that the stakeholders in disaster mitigation include the Municipality, Ward and Street Committees, Councillors, Religious and Traditional Leaders. This also includes the community members themselves and other players like NGOs, BECs and CBOs.

Matrix 5.5: Summary of the responses on the role played by different stakeholders in disaster mitigation

Question/theme	Focus Group 1	Focus Group 2	Focus Group 3	Interviews
<p><i>The role played by different stakeholders in disaster mitigation</i></p> <p><i>The Municipality</i></p>	<p>Joy: Department of hous[ing] and Eskom can also intervene, the councillor, the Ward committee, BEC and the area committee.</p> <p>Thabo: Let Municipality have control measures to mitigate disasters by providing financial resources and [by] build[ing] proper houses [for] everyone,[to] reduce overpopulated [crowded living conditions], Strengthen police to avoid people build[ing] houses in</p>	<p>Thelma: government departments as according to their functions and responsibilities.</p> <p>Sphiwe: Municipality, Ward Councillors</p>	<p>Thandy: Municipality – They address issues brought by the ward councillor to the community, and provide services.</p> <p>Xolo: I would say the Disaster Management Centre, electricity department, and housing are the main stakeholders for disaster mitigation.</p>	<p>Noji: government to build strong infrastructures relocate all residents that leave [live] in undesignated areas and build them all decent houses. The Municipality must have financial resources to mitigate disasters [and must] strengthen means of disaster mitigation policies.</p> <p>Siba: eThekwini Municipality including all officials such as councillors, Mayors, and disaster offices are relevant in serving the community about disaster reduction, and then, COGTA, and DSD which is mostly food relief.</p>

	<i>an undesignated area.</i>			
<i>Ward Committees and Area Committees</i>	<i>Majay: I think we as ward committees serve a huge role in communicating with the Municipality, assisting those affected by disasters</i>	<i>Themba: even us as ward committees and street committees Thelma: However we mostly work in hand with street committees.</i>	<i>Makhosi: Ward Committee – they are the open eye and ensure interconnection between ward councillors, area committee, Municipality and the community</i>	<i>Mamo: I also have my committee members who assist me as a councillor to profile those affected by disasters. They then work with street committees who are closest to the people</i>
<i>Councillors</i>	<i>Joy: Our councillor writes [a] motivation every time when there are disasters but the Municipality is slowly [to] respond.</i>	<i>Sphiwe: The ward councillor will consolidate all the issues tabled by ourselves and report to the Municipality.</i>	<i>Zandile: Ward councillor is managing the entire ward. He brings services to the people, responds to the ward committee reports and issues pertaining to the community.</i>	<i>Noji: You know that the community fight with us when provisions for disaster mitigation are not met. We as councillors face huge challenges because we are the first ones to act</i>
<i>The community</i>	<i>Khathi: The community itself is a role player. They should try avoiding buying stolen stuff, avoid making ‘snake’ electricity cables. Sthe: in addition to this, the community is the one who should mitigate disaster first by avoiding building on risky places</i>	<i>Busi: Furthermore, people themselves are not educated about taking responsibility for mitigating disasters. For me, mitigating disaster is for everyone, except if we need financial resources then we can request the government to assist.</i>	<i>Dube: Community – Their role is to ensure that they do not allow people to build houses in undesignated areas Zandile: Area Committee and Ward Councillor – Area committee, NGOs are closest to the people covering their nearby houses as they also called street committees</i>	<i>Mafi: community plays a very huge role together with NGOs and BECs. Mamo: As we have mentioned community participation in disaster mitigation, I think they are the role players. I have also allocated an office for NPOs to assist when there are disasters. BECs are also involved although they are more political.</i>

5.5.1 The Municipality

Some participants (*Joy, Thabo, Xolo, Siba and Noji*) viewed the Municipality as a key player because it provides services to the community working with the councillor of that ward.

“They provide financial resources to mitigate disasters. Department of social development also used to assist with blankets, tents and food parcels when there are disasters. But their role is not to mitigate disaster except assisting those victims after

the incident. They ensure early warning system prior to the process of heavy rains.”

(Siba)

The Municipality was viewed by the majority of the participants as providing services to the Municipal jurisdiction, working with the relevant ward councillor to bring services to the area.

This was clearly described by one key informant:

“In terms of particular disaster challenges, the ward councillor will report this to the Municipality. In support of this, the reconstruction of government houses is done in conjunction with the municipality, ward councillors, and community structures.”

(Siba)

Some comments from the focus group discussion indicated that the Municipality does assist during disasters; however they need to strengthen the process of proactive measures instead of waiting for disaster to occur.

“Government departments are the ones who provide services such as human settlement. They are the ones who provide housing services in the area, temporal shelters, food, but this is done once a disaster has happened. To avoid ‘izinyokanyoka’ electricity department must allow people to apply for electricity”.

(Xolo)

Surprisingly, only a minority of participants indicated that the Municipality was not assisting in disaster mitigation.

“Disaster management is not doing their role at all. They do not even answer their phone; they will tell you they are understaffed. Sometimes they will give you another department to call who is responsible for such a case. They even do not log a call for you; they will tell you to call such a department” (Sphiwe).

It was only to be expected that Municipal officials would have a positive view regarding their performance in disaster mitigation, and other participants were expected to hold a different view. However, it was a surprise to find that most of the participants in the focus group believed that the Municipality does do its part in trying to mitigate disasters. This was the view of the majority with the exception of a limited number of participants. From the researcher’s perspective, RDP housing appeared to be the main role performed by the Municipality. However, there is still much more to be done in disaster mitigation, such as improving drainage systems, building some bridges, and removing all Informal structures for the purpose of disaster

mitigation. This is because participants are more interested in RDP houses rather than in considering other issues. Furthermore, some participants were honest in the view that the Municipality is providing for the needs of the disaster victims but that it is neglecting to take other proactive measures in disaster mitigation. In general the Municipality is regarded as the key stakeholder in disaster mitigation.

5.5.2 Ward Committees and Area Committees

The ward structures were viewed as effective role players by most participants (*Majay, Themba, Makhosi, and Mamo*).

“They write reports every month, and send to the Municipality via ward councillors, stating all risks and disasters that affect the community and stating everything that has happened, however, they do not get any response” (Makhosi).

Themba also weighed in:

“Ward committees liaise with all government and community structures. The Ward Committee takes challenges from the street/area committee, community, and reports accordingly to the ward councillor as per their different roles.”

According to Mamo,

“The ward councillor consolidates all the issues tabled by these committees and submits to the relevant department in a detailed written and motivated format and .report to the municipality. Sometimes they deal with department especially when services are not rendered, but nothing supersedes our councillor.”

The Area committee was viewed by the participants as effective because they work closer to the people taking their concerns, challenges, and experiences to the ward committee and be forwarded to the ward councillor and sometimes directly to the Municipality.

5.5.3 Councillors

Most participants were satisfied with the role of ward councillors and the street committees (*Joy, Zandile, Noji, Mbovu and Themba*). This is because they always need people to be provided with proper shelters and better services that will assist in mitigating disasters.

“Councillors are there to bring services to the people, take challenges of the ward from the ward committee structures and submit to the relevant stakeholders for service response. Some people believe in communicating directly to the ward

councillor who used to call a community meeting to understand community issues while most of the Municipal officers are present. Ward councillor does not only receive complaints but also advice on the wrongdoing of the community members”. (Zandile)

Another participant argued that politicians influence people being affected by disasters, about their rights on disaster mitigation. However, they are not doing it correctly because their intention is to seek future votes and support.

“They sometimes direct people wrongly. They, for example, send people who are not merely affected by disasters to the councillor’s offices and tell them that they deserve shelters, food and clothing, while ward committee and the councillor have assessed the situation and identified correct people affected by the disaster who also need help”. (Zandile)

A number of participants referred to the issue of unacceptable political influence, where the opposition parties see the opportunity of providing wrong advice, hence confusing the community to understand the role that should be played by the councillors.

“They play a big role in influencing unlawful occupation of land where they send people to go and occupy vacant land which is not designated for household living with the aim of seeking votes.” (Gumede)

It can be deduced that councillors are Municipal officials who are expected to provide services for the people, thus it was expected, in the previous studies that councillors would be stakeholders that were expected to take part in disaster mitigation. There was then no doubt for the researcher that it was appropriate for him to include ward councillors in the empirical study. As much as the role of ward councillors are clearly understood by the entire body of participants, the critical issue remains that opposition parties provide wrong leadership by putting the ruling party down in the hope of gaining ground in the elections. However, from the researcher’s viewpoint, continuous community meetings with the presence of other government department representatives could be a solution to clear up issues that might be confusing the entire community.

5.5.4 Religious and Traditional Leaders

Two key informants felt that the religious leaders pray for the community, praying for safety, security, and protection from disasters and the good health of the people (Mafi and Mbovu).

“They should instil the youth practice to proactively participate in any activities needed to mitigate disasters, work hand in hand and provide assistance with the municipality in the disaster mitigation effort. They further used teach them to refrain from using drugs. They also teach the community to take responsibility themselves without depending on the government every time” (Mafi)

Other participants pointed out that the traditional leaders were able to predict weather and to assist the nearby communities by giving warning of risky weather to ensure that the risk is minimised. For example,

“Our great grandfathers would use traditional medicine to cool down expected bad weather conditions. They also used a pierced vehicle tire to slow down the lightning that comes with heavy rains. They should warn the community in preparation for unusual weather conditions instead of depending on municipal early warning signs” (Sphiwe).

Thelma also added that

“They must also teach people how to respect the weather. There are believable procedural ways of respecting bad weather when it happens, such as avoiding colourful clothes, not driving, [taking up certain] sitting positions, and burning tyres during thunder.”

Lastly, Mamo was of the view that:

“They should also themselves avoid throwing used ‘muti’ in open areas as it also affects health. They are not supposed to dig medicines in risky areas because these trees make soil to be stronger.”

It is clear that traditional leaders should take part in advising the community about self-responsibility. On the other hand self-introspection is also required from these leaders where their assistance in healing patients traditionally tends to increase waste through their illegal and negligent dumping, thus jamming the flow of water during heavy rains. The Municipality needs to consider the competency of these traditional leaders and provide workshops for them to improve their skills so as to assist the entire community in taking responsibility for mitigating disasters.

5.5.5 The Community

All the participants felt that the community is a key stakeholder. However, according to Joy,

“They must stop stealing water and stop vandalising government resources that are provided to them. Their role is to assist and rescue those who need help. They should mitigate disasters themselves, but need to be educated on this and be informed. Those who have money should contribute to building a house for people who are worse off than they are instead of waiting for the government to act. They report any risky incidents to us” (Mafi).

Zandile added that

“The community comes to the scene immediately; they assist in rescuing those injured and report to the Municipality. Most of the times, they will directly contact disaster offices to fast-track the services. They also have the power to reduce the practice of stealing material from the government in the area by not buying stolen stuff that is meant to assist the community. Their role is also to ensure that they do not allow people to build houses in undesignated areas such as places near the railway, roads, main pipes, streams, pit, quarries and river areas. By doing so, they are mitigating disasters for future occurrence.”

All things considered, community members are the key stakeholders in mitigating disasters without waiting for the government to provide support. In the researcher’s view, community members should realign their attitude and behaviour and commit themselves to disaster mitigation, and seek critical assistance where they cannot provide, such as in heavy construction work.

5.5.6 Other players

Other role players mentioned by the participants include the NGOs, CBOs, as social partners who, in most cases, assist with social relief efforts (Zandile, Mbovu, Mamo and Thabo).

“They have those social banks whereby they need to ensure that there are enough food stores, should the city experience disaster; they are a phone call away to assist. Institutions of higher learning come up with professional research from students with regard to how they feel about mitigating strategies at a professional level. And then the departments take those studies and also implement them in the city. They all have their role and these disasters might be minimised. BEC play a political role in influencing people to use relevant offices if affected by disasters”. (Mbovu)

The participants also felt that the City engineers’ role is to maintain and protect infrastructure, and the water department has to provide sufficient water.

“The role of fire department calls upon on how to respond in terms of their preparedness. Department like Environmental Health also come up with a plan. Departments like Climate Change, also have to have a disaster plan pertaining to climate variation. Various Municipal units or disaster mitigation units within the city must have the plans. Everyone must have these plans accompanied by resources’ projection in place to assist”. (Mamo)

The narratives revealed that the perceptions were drawn from stakeholders who are not part of grassroots organisations but who are ward residents. The higher the participants were in the levels of governance, the more likely they were to support the Municipality and the central government. This might affect the authenticity of the results as the participants preferred to refer to what they thought the researcher wanted to hear rather than to what they really felt about issues.

5.6 The recommended solutions to improve disaster mitigation in Umlazi Township.

Participants offered an array of recommendations as solutions to mitigate disasters. They suggested the construction of RDP houses, grassroots participation, and multi-stakeholder coordination.

Matrix 5.6: Summary of the recommended solutions to improve disaster mitigation

Question/theme	Focus Group 1	Focus Group 2	Focus Group 3	Individual Interviews
<p><i>What could be done to improve disaster mitigation in Umlazi Township?</i></p> <p><i>Construction of RDP houses</i></p>	<p>Joy: <i>I think the construction of houses should continue at a rapid pace.</i></p> <p>Sthe: <i>besides construction of RDP houses, drainage systems, proper infrastructure, roads, renovations of government structures like schools and clinics is crucial to prepare for the forthcoming disasters</i></p>	<p>Busi: <i>is to encourage the government to prioritise human beings’ lives by providing enough budgets to build more RDP houses</i></p>	<p>Zandile: <i>Improvement of drainage systems within our township is crucial, hence this will sustain RDP houses that have been built already since water will not penetrate further to the houses.</i></p>	<p>Mafi: <i>Municipality should demolish all informal settlements and built new houses but in the correct places.</i></p> <p>Noji: <i>I think even RDP houses that are built in the same risky areas must be demolished because the government is providing more empty spaces to accommodate new residents in other areas. It is shameful to see most of the constructed houses in Umlazi, are built on very risky steep hill places.</i></p>

<p><i>Grassroots participation</i></p>	<p>Majay: The mitigation process should start from us as the community members. We should also learn to stand on our own feet, we should focus more on our needs rather than wants. Thereafter we should seek assistance at a higher level.</p>	<p>Thelma: I think we as a community need to be educated or have that conscious behaviour to change ourselves.</p>	<p>Makhosi: It is time for the community to mitigate disasters themselves by avoiding new residents in tin houses, close all potholes, assist those who are at risk, make some contributions to assist neighbours without waiting for government. Let start something, the government will help us on our way forward.</p>	<p>Mbovu: Highly positioned people must accompany us to the community meetings to encourage and advise people to stand on their own to mitigate disaster.</p>
<p><i>Monitoring mechanisms</i></p>	<p>Thabo: Police must play their role in arresting these people who bribe to receive tenders and disturb development.</p> <p>Joy: all completed projects should be evaluated and payments should not be settled for any inadequate work and such people should be removed from the database.</p>	<p>Gumede: there should be a spirit of 'Ubuntu' from the political parties. They must monitor their behaviour to do justice to the community. They do not respect each other, they always fight which affect the process of service delivery.</p>	<p>Dube: All government departments should change their attitudes. They must learn to start a project and finish courteously. There must be an evaluation stage to check if these RDP houses and roads are constructed according to the specimen as they are still affected by disasters.</p> <p>Sipho: I have also indicated corruption as a critical issue which needs serious monitoring and the taking of remedial actions to those who take the country backwards on service delivery.</p>	<p>Mafi: there should be a team of qualified persons to monitor the progress and quality of building infrastructure and all those that need to be built.</p> <p>Mamo: I also recommend avoiding building RDP houses in the same yard where the area is not designated for residential. In this so, this requires the full participation of city engineers who will fail these projects.</p>
<p><i>Mulita-stakeholder coordination</i></p>	<p>Thobile: There should be a team from the community employed to work with disaster offices since this office is lazy to do their work.</p>	<p>Sphiwe: Municipality should employ people from the area who will assist disaster offices in profiling dangerous areas prone to disaster risk.</p>	<p>Thandy: Disaster Management should employ local youth from deep down from the community who will understand the nature of their people, work hand in hand with Disaster officials in ensuring the success of disaster mitigation efforts.</p>	<p>Siba: eThekweni Municipality in conjunction with all relevant stakeholders should come up with a disaster management plan that will guide disaster mitigation such as drainage system.</p>

5.6.1 RDP houses

Participants felt that the government should stop building RDP houses in the same yard and area where the tin house was built (*Joy, Busi, Noji, and Mafi*).

“The municipality should give other people a chance of getting tenders, especially within the ward as opposed to giving the same people tenders. The Government should also intervene with the ideas that they propose to uplift the standard of living. Government need to improvise financial resources to implement disaster mitigation policy so as to remove all informal settlements and to relocate people to suitable areas. Those who do not want to be relocated, they must go back to their original homesteads.” (Busi)

Other participants felt that a weekly collection of waste is required. As argued by Thabo:

“The country should do away with informal settlements and build proper houses for those who are in need in a proper place. However, community members who hesitate to be moved from their normal places due to various reasons such as to be closer to their work places, suitable schools for their learners and so forth should go back to their places of origin.”

The results were hardly surprising, as all residents expect the government to build RDP houses for everyone. Besides RDP houses, further renovations to government structures like schools, hospitals, clinics, roads, community halls need to be prioritised since they are affected during the disasters. The results reveal the aspirations of ordinary residents who expect something from the government.

5.6.2 Grassroots participation

Some participants (*Makhosi, Mbovu, Thelma, and Majay*) felt that the community must learn how to be independent, not to wait for the government to do everything. This will assist in building a strong infrastructure that is difficult to vandalise.

They must all support government resources as they are assisting the entire community. Residents must stop this attitude of not supporting each other. The community should be educated to work smart, assist those who are in disasters, sponsor them with something that prevents future disaster risk. They must work for the community, not for themselves.
(Thobile)

Another interviewee alluded to the notion of educating the community about being responsible and learning to be accountable for their area.

“If waste is not collected they can collect [it] themselves. If there is a priority need for a household to be assisted in the week tin house or mostly risky in disaster, the

community should play a role. Even during disasters, the community should assist those injured, rescue them and plan ahead of disasters to mitigate those who are risky. The community can be able to group themselves and form service delivery protest easy. In this so, nothing can fail them to act positively on this to defend their neighbours who are at risk” (Mafi)

5.6.3 Multi-stakeholder coordination

Some participants believed that non-profit organisations should be at ward level and have a formal structure liaising with ward structures that will be able to spearhead disaster management mitigation strategies (*Thobile, Sphiwe, Thandy, Mafi, and Siba*).

“Disaster mitigation is everyone’s business” (Zandile).

Thobile argued that,

“All departments who have key performance areas in disaster monitoring and mitigation should form a committee or team who will work together as part of mitigation strategies. Sometimes ward committee or the councillor tends to be confused as to who is responsible for what, instead of all disaster official stakeholders to communicate during the tragedy period.”

Thabo urged for decisions to be localised to increase disaster mitigation effectiveness:

“There are some responses that need to take place at ward level, like that of NPO, DSD (social worker) who have to profile all areas needed for disaster mitigation. Each ward should have an NPO that is looking after the interests of disaster management in an area, in terms of education awareness campaigns, in terms of providing relief after a person is being displaced, and also in terms of providing food, blankets and rehabilitation. But for them to be able to do this, they will have to partner with a local municipality, councillors and community structures”.

However, for Mafi, the most important things are to strengthen disaster grants to be used more for disaster mitigation rather than being spent on recovering items lost.

“Issues of corruption also need to be addressed efficiently among stakeholders to have more money for disaster mitigation. There must [also] be a way for the government to fast-track the issue of collecting waste in these townships.”

One informant reiterated that awareness campaigners should go door-to-door to inform people about being responsible and that they are the custodians of disaster mitigation. For example, if people do recognise the importance of relocation, it will be easy for the Municipality to remove all informal structures and make the city clean (*Thobile*). The government should form a group in each ward who will work in the Municipal Disaster Management Centre (MDMC) (*Zandile*). These people will know challenges faced by their locals; know who is affected and who needs to be assisted (*Mafi*). They will then work hand-in-hand with disaster coordinators.

A minority of participants felt that the Disaster Management Department should employ youth from deep rural areas who will understand the nature of their people, work hand-in-hand with Disaster officials, and assist disaster offices in profiling dangerous areas prone to disaster risk to inform disaster mitigation efforts (*Dube and Joy*). These employed people will also assist in looking after these rendered services. Even if you call them and they are not available, it will be easier to call the community member or to visit them personally (*Mamo*). If disaster offices are contacted telephonically, they do not respond. If there are local people contracted to work with these officials, there can be a difference. The Municipality should involve all communities when mitigating disasters; seek advice as to what needs urgent intervention, and where to locate the problems. They must be competent to deal with community disaster challenges.

5.7 Discussion

The discussion centres on the five broad research objectives, informed by the theoretical framework and literature discussed in Chapter 2 and 3.

5.8.1 The nature and extent of disasters in Umlazi Township

One of the objectives of the study sought to establish the nature and extent of disasters in Umlazi Township. The data reveal that floods and fires are the most common disasters in Umlazi Township. The disaster is compounded by the presence of a lot of shacks, as many people lack access to RDP houses. The results also reveal that floods are devastating because the drainage systems are not maintained.

The results are similar to a study of Cape Town flood risk reduction that focused on flood disaster management that was undertaken by Ziervogel & Smit (2009). That study revealed that disasters are characterised by constant floods due to urbanisation especially in the informal settlements because these areas are dense in infrastructure and in the concentration of people. This has negatively affected a large number of people especially in the informal settlements, in

which a huge number of unplanned shelters were destroyed. Although the climate may differ, sprawling shacks are found in Khayelitsha and they are likewise found in Umlazi.

The results also reveal a significant correlation between flooding and health effects, especially among children and the elderly. The studies by Ziervogel & Smit (2009) in Cape Town revealed the negative impact that flooding has on health, quality of life, and wellbeing of the residents who are exposed to unhygienic water due to damaged infrastructure such as burst sewer pipes. Cheema et al. indicated that Pakistan has had regular experience of flooding disasters every year starting from 2010 when twenty million people either had their homes damaged or lost their lives. Available studies have revealed post-flood rises in cholera (Korthius et al., 1998; Sur et al., 2000), cryptosporidiosis (Katsumata et al., 1998), nonspecific diarrhoea (Heller et al., 2003), poliomyelitis (Sakar et al., 2002) rotavirus in addition to typhoid (Mondal et al., 2001).

The effects of both hydrological and climatological disasters were essentially identical with the research findings and with those described in the previously reviewed literature. Previously published studies have tended to identify more meteorological storms and geophysical earthquakes which are unlikely to be identified by the researcher's findings, given the weather conditions in South Africa generally and weather conditions in Umlazi, specifically, that have not yet experienced these massive disasters. Climatological drought affects crop yields and livestock production.

Ziervogel & Smit (2009) maintain that urbanisation is one of the causes of flood disaster as people build houses in undesignated areas, which is analogous to the current findings. However, the current research has revealed that unemployment, which is part of poverty, is the reason for overcrowded township informal settlements, which previous literature has failed to divulge and has overlooked.

In spite of the similarities and variances from both findings, both losses of people's lives, and their health and assets were common factors that featured as the results of disasters.

The above findings are significant and have implications for policy. Firstly, by identifying that flooding and fires are the main disasters affecting township areas in South Africa, the government can devise appropriate mitigation strategies.

5.8.2 Mitigation strategies employed in Umlazi Township

One of the objectives of the study was to identify the disaster mitigation strategies employed in Umlazi Township. The findings revealed structural and non-structural mitigation strategies. Structural mitigation involved the construction of RDP houses and unblocking of drains. Non-structural mitigation efforts involved early warning strategies and awareness campaigns. However, the results reveal that there were limited proactive strategies, as most are more reactive. Always reacting to disasters may lead to loss of many lives, which could have been avoided by adopting a more proactive strategy.

The results from this study are similar to those of Lindell et al., (2006) who characterised structural mitigation as a physical practice or act that prevents the effects of disasters from presenting far-reaching damage such as through building drainage systems or dams. Other measures include buttressing homes to make them as windproof as possible and any other means of preventing floodwater (in case of floods) from causing damage in the endangered area (Abbas et al., 2015).

The network governance theory's conceptualisation of integration and collaboration is important for grasping how the relevant stakeholders can work toward reducing the losses and destruction that occurs in the event of disasters in eThekweni, by devising all-encompassing mitigation strategies.

However, previous work by Laukkonen et al., (2009) contradicts the findings from this study. The authors condemn mitigation plans such as those described above. They argue that several of these are cascading (top-down) in method, overseen by huge centralised organisations, deprived of any real contribution to policymaking by those disturbed by the disaster. Thus this study has mostly confirmed what previous authors have discovered, except Laukkonen et al. This might be due to locational differences and different governance systems in the studies as Laukkonen et al are from Helsinki. South Africa has a three-tier governance system, that allows for a clear demarcation of roles of the central, provincial and local government in disaster mitigation.

Consequently, the results from both studies agree that there are interventions being taken to mitigate disasters and they are related to the building of stronger infrastructure, although these interventions are minimal in South African townships because interventions are practically more related to the building of RDP houses. Other studies focus more on different critical mitigation strategies such as design and construction works, insurance, land use practice,

building bridges, dams etc. For example, disaster grants feature in both kinds of study but disaster relief featured more in the researcher's investigation, whereas in most countries instead of giving the victims blankets, money, and temporary shelters (as South Africa does), most countries looked at structural classification strategy rather than temporary recovery. Therefore, the response received from the researcher's investigation relates only slightly to structural mitigation strategy (RDP construction and maintenance of drainage system). For example, there are a lot of bridges that are full of water overflow during heavy rains in Umlazi but little is highlighted by all participants. In the past several attempts were made to mitigate disasters but massive floods remain because only one classification of strategies was effected. Although a recently established Early Warning System Department and an awareness campaign was created in eThekweni Municipality which serves as non-structural mitigation strategies, this approach is not serving the purpose to mitigate disaster because it is a three-hour prior alert that may be activated while some people are not at home and are not even trained to respond to such a warning. Besides this the volume of the flood waters will still not be contained by the current weak structures.

The results confirm the theory of planned behaviour's assertions that socio-political challenges are the barriers in changing the perceptions and human behaviour to cope with disaster and in ensuring effective disaster mitigation. Beside identifying strategies being implemented in Umlazi, challenges and strategic means was part of a subtopic as a follow-up question to discover the best strategic means of mitigating the disasters. In looking at the challenges, relocation and financial challenges are the common key barriers that emerge in disaster mitigation in both findings. However, most councillors indicated that there is a budget yearly for disasters across the provinces, but in KwaZulu-Natal, it is limited to municipalities in which eThekweni Municipality should be prioritised more in terms of financial capacity as one of the biggest Municipalities in South Africa. This claim has been contested by different writers at different times. For example, bigger municipalities should not have a challenge of revenue for disaster mitigation as in most countries they have the capacity to sort out the problem using existing reserves (La Porta et al., 2000; Sheets & Williams, 2001). In addition to this, countries in the northern hemisphere tend to have in place mechanisms to prevent disaster vulnerability.

There are a number of strategies that were suggested during the researcher's enquiry, however, the financial capacity to mitigate disasters was the key requirement to implement all suggestions.

5.8.3 The effectiveness of disaster mitigation strategies employed in Umlazi Township

Another objective of this study was to measure the degree of effectiveness of the disaster mitigation strategies employed in Umlazi Township. The results reveal limited effectiveness. Participants complained of the slow response from the Municipality and of corruption. This has implications for the overall effectiveness of any envisaged disaster mitigation strategies and might lead to compounding and recurrent problems. The findings are in line with the theory of planned behaviour, which views risk and disaster mitigation as being affected by political, economic, social, technological and psychological factors in an attempt to mitigate and minimise the undesirable effects of the catastrophe.

The results from this study are similar to those of van der Ree et al.'s (2007) *International Review of Mitigation Strategies*, that argues that the effectiveness of disaster mitigation strategies mostly in the townships remains poor (van der Ree et al., 2007) Laukkonen et al. (2009) further argue that the impact on vulnerability to hazard is not only determined by those who live in the informal settlements but also by the manner of poor service delivery in these settlements. According to this argument, the local government is not capable of changing the lives of the poorest citizens; instead, those who are better off remain better off, hence an effective disaster mitigation strategy is impossible under those circumstances, thus compromising the lives of those who need a better chance in life.

Likewise, (Ejeta et al., 2015b) state that these socio-political challenges are the barriers in changing the perceptions and human behaviours to cope with disaster and in ensuring risk mitigation mostly from developed countries because they have the capability to assist developing countries to mitigate disasters.

Therefore, this study is vigorously challenged by this question from the researcher as part of the objective of this study because the government has failed to take into account the effectiveness of disaster mitigation and this emerges from both research findings. This is due to the fact that financial capacity is a critical challenge in all countries which limits the capacity to assist those countries that have the need to mitigate the effects of disasters. In as much as early warning systems were regarded as being similarly effective in both findings, the time frame is highly problematic to reach everyone in time. Even when these alerts are received in good time, the power of floods, earthquakes, volcanoes, and cyclones is far greater than the currently weak infrastructure is capable of withstanding.

These findings are significant as they lay bare the weakness of the current strategies and their degree of applicability in township settings. Like previous work, the findings reveal the below optimal impact of the mitigation strategies employed by policymakers in disaster mitigation.

5.8.4 The role played by different stakeholders in disaster mitigation in Umlazi Township

Another objective of this study was to establish the role played by different stakeholders in disaster mitigation in Umlazi Township. The findings reveal the diversity of stakeholders involved in disaster mitigation including the councillors, the ward committees, NGOs, Government departments, Municipality, Community, and traditional and religious leaders. The majority of participants revealed that the ward committees are the most effective in disaster mitigation.

The results conform to the NPM theory which stipulates that for local government to allocate services for disaster management the New Public Management approach is the convenient way to cut costs and to provide market-related, outsourcing and privatisation (Ngcamu, 2011). The results also took the Network Governance Theory which advocates for the interconnection of the state, businesses and the community in the specific domain to attain the extent of mitigation required to address disasters effectively. (Marcussen & Torfing, 2003).

The findings are similar to Nappi and Souza's arguments that ward committees do quickly understand and have knowledge of disaster-prone communities and report such challenges to the councillor who then should take immediate action (Nappi & Souza, 2015). They argue that local government should play a major role in action to reduce disaster threats. For example, the local government is close to the people and should fully understand the dynamics of people and the local areas, in which the community then need the support of those in power closer to them.

Overall, this study provides an insight into the exact role that should be played by various stakeholders in disaster mitigation.

5.8.5 Solutions to improve disaster mitigation in Umlazi Township

The last objective of the study was to find out what participants perceive to be the best solutions in order to improve disaster mitigation in Umlazi Township. The data speak to the novel nature of recommendations provided by the participants and also reveal a diversity of views in relation to perceived mitigation strategies. Most participants wished that the government would construct stronger houses and move people from the shacks or prevent the erection of shanty

towns. In the case of this study, the recommendations are in accord with Weberian Hierarchy social theory and show how the eThekweni Municipality can recognise the role played by political heads, the bylaws that need to be obeyed by residents, the leaders that must be selected based on merit, not charisma and the hiring of officials based on competency and experience in ensuring a success in disaster mitigation in the informal settlements of Umlazi.

The recommendations are to relocate the community permanently in order to free space to further limit community vulnerability to disasters which is similar to the approach recommended by Abbas et al., (2005). However, most of the communities are reluctant to support this municipal recommendation. A good effective strategic measure for community engagement should be created to relocate disaster vulnerable communities to higher grounds in order to free space for sustainable development (Mwape, 2009). Such a strategy should ensure that people are convinced of the need to relocate. However, Mwape (2009) emphasises that this should be supported by a policy from the government that would, in effect, compel people to move.

The recommendations from the participants echo the tenets of the community resilience theory. This theory says that communities that accomplish adequate performance levels at any one stage are resilient. The CR has been adopted by various communities globally to advocate for citizen participation, capacity-building, gender representation, effective communication and the use of indigenous knowledge system (IKS) during adverse events (Roberts, 2018).

The study findings imply that there is a wealth of technical and social views on the best way to mitigate disasters in local townships. The findings resonate with the previous studies mentioned above, but the current findings add a fresh impetus to the best solutions available to mitigate recurrent disasters.

Matrix 5.7 Summary of research questions, emergent themes, and the literature

Research question	Emergent theme/s	Interaction with literature	Sources
Nature and the degree of disasters in Umlazi Township	<ul style="list-style-type: none"> - fires, - floods - the effects of disasters 	<ul style="list-style-type: none"> - Constant floods due to urbanisation especially in the informal settlements because these areas are dense in infrastructure and concentrations of people. - Post-flood increase in cholera. - crop yield and livestock production was the negative impacts on drought disaster which is in contrast with wildfire due to lack of electrical power 	<ul style="list-style-type: none"> - Ziervogel & Smit (2009) - Korthius et al., (1998) - Sur et al., (2000) - Katsumata et al. (1998) - Heller et al., (2003) - Sakar et al., (2002)
Mitigation strategies employed in Umlazi Township	<ul style="list-style-type: none"> - better and stronger infrastructure - early warning 	<ul style="list-style-type: none"> - Buttrressing homes to make them as windproof as possible and any other means of preventing floodwater penetration. - There are interventions being taken to mitigate disasters and they are related to the building of stronger infrastructure. - Bigger municipalities should not have a challenge of revenue for disaster mitigation and in most countries; they have the capacity to sort this problem out. 	<ul style="list-style-type: none"> - Lindell et al., (2006) - Abbas et al., (2015) - Laukkonen et al., (2009) - La Porta et al., (2000) - Sheets & Williams (2001)
The effectiveness of disaster mitigation strategies employed in Umlazi Township	<ul style="list-style-type: none"> - below optimal effectiveness, - slow response - lack of clear communication 	<ul style="list-style-type: none"> - The effectiveness of disaster mitigation strategies mostly in the townships remains problematic (van der Ree et al., 2007). - The impact on vulnerability to hazard is not only determined by those who live in the informal settlements but also with the manner of poor service delivery in these settlements. - Socio-political challenges are barriers to changing perceptions and human behaviour. 	<ul style="list-style-type: none"> - van der Ree et al., (2007) - Laukkonen et al., (2009) - Ejeta et al., (2015)
The role played by different stakeholders in disaster mitigation in Umlazi Township	<ul style="list-style-type: none"> - Municipality - Ward Street Committees - Councillors - Religious and - Traditional Leaders - The Community - Other players 	<ul style="list-style-type: none"> - Advocates for the interconnection of the state, businesses and the community in the specific domain to attain the mitigation of disasters - Ward committees should understand and have knowledge of disaster-prone communities and report such challenges to the councillor who should then take immediate action. - Local government should play a major role in action to reduce disaster threats 	<ul style="list-style-type: none"> - Ngcamu (2011) - Marcussen & Torfing (2003) - Nappi & Souza (2015)
Solutions to improve disaster mitigation in Umlazi Township	<ul style="list-style-type: none"> - construction of RDP houses - grassroots participation - monitoring mechanisms - multi-stakeholder coordination 	<ul style="list-style-type: none"> - free space to further limit community vulnerability to disasters - This should be supported by a policy from the government to compel communities to relocate. - There is a wealth of technical and social views on the best way to mitigate disasters in local townships. - A good effective strategic measure for community engagement should be created to relocate disaster vulnerable communities to higher grounds in order to free space for sustainable development 	<ul style="list-style-type: none"> - Abbas et al., (2005) - Mwape (2009) - Roberts (2018)

5.9 Limitation of research findings

Findings may have been significantly varied if every eligible research participant contributed to the study. The Data obtained was humongous and some of it irrelevant to the study, but the researcher managed to streamline findings with the objectives. There was some interviewee bias, for example, the key informant tended to glorify the municipal role in disaster mitigation, whilst ordinary residents concentrated on failures. Some interviewees dominated the focus group discussions and the other were 'whipped' into line. This threatened to prevent diversity of views. However, the researcher had to explain the importance of free contribution. Future studies must permit a large number of participants for a variety of views.

5.10 Chapter summary

The chapter presented findings thematically using a matrix analysis to facilitate comparison. The findings revealed that floods and fires are the most common disasters in Umlazi Township. The disasters affect everybody, although mostly the children and the elderly are disproportionately affected. The mitigation strategies used by the Municipality involve the construction of RDP houses and in the creation of an early warning system. However, these strategies are less effective as coordination among key stakeholders is lacking. The participants offered varied recommendations that might assist in disaster management.

CHAPTER 6: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summarises the chapters and the major findings of this research. It commences by recapitulating the research questions and the objectives. It then provides a summary of each chapter of the dissertation. The chapter then provides a summary of the findings and the conclusions derived therefrom, following each research question. Lastly, the chapter provides overarching recommendations in light of the findings and the study's conclusion.

6.2 Recap of research questions and objectives

The initial proposal accompanied by a preliminary literature review and reported disaster challenges in Umlazi underpinned the research problem. The research question and objectives were articulated. Table 6.1 presents the research questions and the objectives in a table layout.

Table 6.1 Presentation of the research question and the objectives.

Research questions	Research Objectives
What is the nature and extent of disasters in Umlazi Township eThekweni Municipality?	To identify the nature and extent of disasters in Umlazi Township eThekweni Municipality.
What are the disaster mitigation strategies employed in Umlazi Township?	To find out the mitigation strategies employed in Umlazi Township.
How effective are the disaster mitigation strategies employed in Umlazi Township?	To find out the effectiveness of disaster mitigation strategies employed in Umlazi Township.
What is the role played by different stakeholders in disaster mitigation in Umlazi Township?	To identify the role played by different stakeholders in disaster mitigation in Umlazi Township.
What could be done to improve disaster mitigation in Umlazi Township?	To recommend solutions to improve disaster mitigation in Umlazi Township.

6.3 Summary of chapters

The section presents a summary of each chapter in relation to the questions and objectives articulated in table 6.1.

Chapter 1 introduced the study. It provided the background information to disaster management and mitigation and provided the rationale leading to the pursuance of the study. The chapter provided the statement of the problem and discussed the ideal situation in disaster mitigation and juxtaposed this with the reality on the ground. It then provided the research

questions and the objectives of the study. The chapter described the significance of the study as well as limitations encountered in the research process. Lastly, it provided a brief summary of the structure of the dissertation.

Chapter 2 explored a range of literature, which dwelt on types of disasters and their effects on the communities. The chapter discussed mitigation as a means to reduce the disaster. It also discussed, different stakeholder's roles in the implementation of policies dealing with mitigating the effects of disasters. The literature revealed that an increase in education levels, access to grants and income could minimise the effects of disasters. Moreover, non-structural and structural classified strategies serve as the main mitigation strategies for these disaster phenomena. Part of the recommendations by different authors is to relocate the community permanently in order to free space to further limit community disaster vulnerability and to implement policies that will provide sustainable infrastructural service. The recommendation provided seems to be realistic, plausible and well-grounded because sustainability is part of mitigation action to reduce disaster threat. The chapter also reviewed theories related to disaster impacts and mitigation. These are the Theory of Planned Behaviour, the Community Resilience Theory, Weberian Hierarchy, the New Public Management and the Network Governance theory.

Chapter 3 discussed the policy and legal frameworks as well as the stakeholders involved in disaster mitigation. It began with international policies as they relate to local level strategies and cascade down to regional and sub-regional levels. The chapter discussed the Disaster Management Framework in the South African context. The chapter then discussed the role of stakeholders in disaster mitigation. The chapter set the tone for the subsequent collection of data and its presentation in chapter 4.

Chapter 4 discussed the research methodology. It discussed the qualitative design, research strategies where a case study approach was applied; hence the study is exploratory and qualitative in nature. Umlazi was the study site with a population of relevant stakeholders targeted as relevant in responding to the objectives of the study. A table was also drawn up to summarise and project a clear indication of the sampling technique used. In-depth interviews and focus groups were discussed as relevant tools for data collection. The researcher interviewed three municipal officials who are disaster coordinators from the Disaster Management Centre in eThekweni Municipality, one corporate support staff member from DSD in Umlazi cluster with a total of seven key informants (3 councillors, 1 municipal official,

and 3 disaster coordinators = 7). In addition, the researcher held Focus Group Discussions (FGD) with six ward committee members in each of wards 78, 80, and 82 respectively using the focus group discussion schedule prepared and administered by the researcher. The total participants of the FGD were 18 (6x3=18) and these three groups were interviewed separately in three sessions on different days in their wards. Data quality control, thematic analysis, and ethical considerations were discussed as part of empirical studies that this research sought to achieve. The data were gathered from the field involving different perspectives of behaviour, disaster experience, and attitudes. The second to last stage in the methodology was to analyse data using thematic qualitative data analysis. Ethical issues were considered in this study, which included the use of a consent letter, ensuring confidentiality and anonymity, and obtaining authorisation from the relevant gatekeepers to conduct this study.

Chapter 5 presented findings thematically using matrix analysis as a suitable means of making comparisons. Several themes emerged and this was related to the first objective on the nature and extent of the disasters. These were: fires and floods and the effects of these disasters. The findings revealed that floods and fires are the most common disasters in Umlazi Township. The participants identified several effects of the disasters in their community. The participants perceived that disasters have the following effects: death, destruction of infrastructure, disturbance of children's learning time and displacement. The disasters affect everybody, although mostly the children and the elderly are disproportionately affected. The participants also reiterated that there are several disaster mitigation strategies employed in Umlazi Township. They revealed the following mitigation strategies: better and stronger infrastructure and an early warning system. These subsequently became the main themes. The mitigation strategies used by the Municipality involve the construction of RDP houses and early warning systems. The participants had diverse views on the effectiveness of disaster mitigation strategies. Their responses revealed diverse themes. These were: below optimal effectiveness, slow response and lack of clear communication. However, most of these strategies were viewed as less effective as coordination among key stakeholders is lacking. The Stakeholders in disaster mitigation include the Municipality, Ward and Street Committees, Councillors, Religious and Traditional Leaders. This also includes the Community itself and other players like NGOs, BECs and CBOs. The participants offered an array of recommendations as solutions to mitigate disasters. They suggested the construction of RDP houses, grassroots participation, monitoring mechanisms and multi-stakeholder coordination.

Chapter 6 provided a summary of the whole dissertation. It recalled the study's research questions and objectives. In this vein, it summarised the chapters and the findings of the study. The chapter provided the conclusions, based on the findings from the study. The research proposed theories based on the findings of the study. After the conclusions, the researcher provided the recommendations. The researcher discussed the limitations of the study and the mitigation measures undertaken to ensure quality control. Lastly, the research provided suggestions for further research.

6.4 Summary of findings and conclusions

This section provides a summary of the study's findings following the research questions and derives conclusions.

Research Question 1: *What are the nature and the extent of disasters in Umlazi Township eThekweni Municipality?*

Findings

The results of this study indicate that floods and fires are the most common disasters in Umlazi Township. The disaster is compounded by the presence of a lot of shacks, as many people lack access to RDP houses. The results reveal that floods are devastating because the drainage systems are not maintained. The Municipality is also not providing means of mitigating disasters before they happen. There was no control measure put in place for those people who were building tin houses in undesignated areas. The most obvious finding to emerge from this study is that disasters do have an impact on the loss of lives, and health as people are injured and become sick, leading to depression. RDP houses are also affected because they were not properly inspected when completed and they were not built in designated areas because people refused to be relocated to other better places. During disasters, children are affected, schools are damaged, classes are delayed, and subjects are not finished on time.

Conclusion

The conclusion resulted from the participant narratives. The majority of the participants revealed that significant damage results from floods and fires. The narratives revealed that flooding is compounded by the poor drainage systems and illegal electric connections. The narratives from the participants also revealed that in terms of the demographics, it depends on those houses/households affected. Displaced people lose their belongings including vital food, medicine and blankets. This has physical and psychological consequences for the affected

people. It increases trauma and diseases such as pneumonia and other water-borne infections. The results contributed to the similar understanding of flooding disaster experience in Umlazi from previous years together with previous researchers in African countries. The study suggested full participation from all stakeholders in taking into consideration strategies to avoid the effects of floods and fire disasters in Umlazi.

Research Question 2: *What are the disaster mitigation strategies employed in Umlazi Township?*

Findings

The findings of this research suggest that there are structural and non-structural mitigation strategies in Umlazi Township. Structural mitigation involved the construction of RDP houses and unblocking of drains. The City Engineers Department is rehabilitating schools, roads and assisting people who were affected particularly by floods. However, sometimes Municipal workers steal material during the building of RDP houses or schools. Non-structural mitigation involved an early warning system and awareness campaigns. The city has embarked on establishing a single unit called the Flood Early Warning System Department, in which there is the technology that they use that gives a 3-hour prior warning. However, the local government react to disaster well after the destruction. This has led to the loss of lives. The results revealed a gap between policy and practice. The disaster office was viewed by the participants as not responding when the community are affected.

With the assistance of the use of TPB and NT to further construct the entire research together with disaster strategic responses from participants, the overall study confirmed that strategic issues of both a structural and a non-structural nature still need to be taken into consideration by the Municipality. Despite this policy and implementation gap, the entire study confirms the consistency from previous results and researcher findings due to structural mitigation expressed as a concern at the commencement of this research study.

Conclusion

In general, therefore, it seems that the government is preoccupied with the construction of RDP houses. The main strategy to mitigate disasters present in Umlazi Township is the construction of stronger, central government-funded RDP houses. The narratives reveal that the Municipality has a robust campaign to bring awareness to the people about the impact and the realities of climate change. The participants further revealed that the Municipality has also tried

to build solid houses, and has added container toilets and showers to those areas still experiencing tin houses.

Research Question 3: *How effective are the disaster mitigations strategies employed in Umlazi Township?*

Findings

The third major finding was that of the limited effectiveness of the mitigation strategies in Umlazi Township. This is due to the slow response from the Municipality and due to corruption, as per the narratives revealed by participants. Some act as forums to stop construction by encouraging striking so that they can use force to get tenders. Political interest plays a huge role in the lack of effective implementation strategies. Ward councillors call local communities to meetings, but most do not attend these local meetings which hinder the pace of development and understanding the people's views and interests. The process of mitigating disaster is much slower because of financial constraints. There is no clear communication between them as ward committee members and disaster offices regarding the matters that need their attention.

Conclusion

Taken together, these results suggest that ineffective disaster mitigation strategies, effect on-the-ground personnel. This leads to compounding problems. The results reveal that if services rendered are vandalised, or material was stolen, there is a divergence between the policy makers and the community. Political discord also hampers the effectiveness of the disaster mitigation strategies, as opposition and ruling politicians compete for political space. However, the competition is a 'sabotage-competition' in which the opposition attempts to denigrate the efforts of the ruling politicians. The end result is ineffective disaster mitigation.

Research Question 4: *What is the role played by different stakeholders in disaster mitigation in Umlazi Township?*

Findings

The research has also shown that there is diversity in stakeholders involved in disaster mitigation including the councillors, the ward committees, NGOs, Government departments, Municipality, Community, and traditional and religious leaders. Residents channel their grievances and contributions via the ward committees. The Municipality was viewed by the majority of the participants as providing services to the Municipal jurisdiction, working with

the relevant ward councillors to bring services to the area. Most participants were satisfied with the role of ward councillors and the street committees. One of the more significant findings to emerge from this study is that institutions of higher learning come up with professional research from students with regard to how they feel about mitigating strategies at a professional level. The Climate Change Committee also has to have a disaster plan pertaining to climate variation. Various municipal units or disaster mitigation units within the city must have plans.

Conclusion

Overall, this study strengthens the idea that among stakeholders in disaster mitigation, ward committees are the most effective. This is due to their proximity to residents as compared to other stakeholders. The community has ‘on the ground’ realities and can use networks of relations to galvanise themselves into action in times of disaster. However, other stakeholders are equally important in disaster mitigation for various reasons such as moral, logistical and for their financial capacity. Effective disaster mitigation, therefore, involves harnessing the strengths of every stakeholder.

Research Question 5: *What could be done to improve disaster mitigation in Umlazi Township?*

Findings

The results of this study indicated that there were many different recommendations provided by the participants and there were a diversity of views in relation to perceived mitigation strategies. However, the majority viewed the construction of stronger houses and moving people from the shacks as the best solutions. The results revealed that the government should increase the budget for disaster mitigation. Mitigation should be a priority so as to reduce restoration costs and to free up funding to address other critical issues. There is a need to prioritise the improvement of drainage systems in our roads, and to build more street bridges. The country should do away with informal settlements and build proper houses for those who are in need in a proper place. The community should be educated to work smart, and to assist those who are in distress by, sponsoring them with something that prevents future disaster risk. More financial resources are needed by the government to implement disaster mitigation policies. All departments who have key performance areas in disaster monitoring and mitigation should form a committee or team who will work together as part of mitigation strategies.

Conclusion

The evidence from this study suggests that a diversity of solutions were proffered, ranging from the erection of stronger houses, participation and early warning mechanisms. This reveals the potential inherent in every member of society in clearly discerning what needs to be done to mitigate disasters. The type of shelter that people will use and the areas where they build also plays a role. The Municipality should have a monitoring system to check whether officials especially disaster offices are effective in their job and how competent they are to understand the experience of the people and their needs. The government should form a group in each ward who will work in the Municipal Disaster Management Centre.

6.5 Theoretical proposition as Contribution to Disaster mitigation

Based on the results and conclusion, the researcher provides four sets of theoretical propositions derived from the participant narratives in the previous chapter. The theoretical propositions are:

1. Theory of Townships Neighbouring (TTN)
2. Community Action Theory (CAT)
3. Theory of Public Governance (TPG)
4. Infrastructure Investment Theory (IIT)

In summary, the theoretical propositions advocate for community involvement in public governance. This ensures that as part of the governance system, they disseminate information through their Ward structures and to the municipal level. Involving communities has an advantage of improving the efficiency of disaster mitigation strategies. The community are the grassroots and may be able to offer their labour in the construction of infrastructure in their respective areas and at a lower cost. The community are not only interested in the financial gain but also in their wellbeing. The support received from the local neighbours will provide zero disaster victim forbearance. So it is important in public governance to put in place participatory mechanisms by ensuring that everyone invests in the proper infrastructure for the benefit of those victims. Table 6.2 presents the said theories as per the propositions by the researcher.

Table 6.2: Theoretical Proposals Derived from Data

Theory of Townships Neighbouring (TTN)	Community Action Theory (CAT)	Theory of Public Governance (TPG)	Infrastructure Investment Theory (IIT)
Inductive Theory Cases and Constructs			
<ul style="list-style-type: none"> • Reinforce kindness, trust and support among the neighbours in supporting disaster victims. • Encouraging street and neighbours to implement mitigation measures without waiting for municipal intervention. 	<ul style="list-style-type: none"> • Need for stakeholder involvement. • The organisation should be at a ward level which is a formal structure that will be able to spearhead disaster mitigation strategies. • Door to door campaign is required to capacitate these people about mitigation strategies • Community members need to be capacitated in assisting the community during disasters. 	<ul style="list-style-type: none"> • Monitoring system like in the private sector to track their performance. • Corruption also needs to be addressed efficiently to have more money for disaster mitigation. • Mitigation should be a priority amongst other cycles of disasters so as to reduce restoration costs and to spend more money on other critical issues. 	<ul style="list-style-type: none"> • Strengthen the policy that disaster grants are to be used more on disaster mitigation rather than on recovering items lost. • Improve drainage systems, communication strategies, building stronger infrastructure. • More financial resources needed from government to implement disaster mitigation policies. • Employ qualified people who will build proper houses in designated areas.
Theoretical Assumptions			
<ul style="list-style-type: none"> • Assisting a neighbour in distress. Mitigation is a key factor in achieving zero disaster victims. 	<ul style="list-style-type: none"> • Involving the community in disaster management is key to its effectiveness. • Disaster mitigation is everyone’s business. • The community is a key stakeholder. • Collective action is the key to disaster mitigation. 	<ul style="list-style-type: none"> • Governance system should be swift and responsive to community needs and disasters. • The government should be at the forefront of encouraging stakeholders to work together for improved disaster mitigation. • Educating the community about being responsible and learning to be accountable for their area. • Political interest plays a huge role in the lack of effective implementation strategies. 	<ul style="list-style-type: none"> • Investment in stronger infrastructure helps in mitigating the adverse effects of disasters. • Government need to provide financial resources to implement disaster mitigation policy and to relocate people to suitable areas. • More proactive strategies needed. • Infrastructure encompasses technological devices for early warning systems.

The four tabled theoretical propositions are presumed to be mutually exclusive to the extent that the support of next-door neighbours in pre- and post-disaster periods, and the collaboration of community members do determine good governance because the Municipality may then be inspired by the effectiveness of the community action to providing financial support for infrastructural investment. This will strengthen all three structures (neighbours, community and government) in the implementation of disaster mitigation efforts.

There has to be a collaboration of all service delivery structures between the local neighbour, the entire community, and government structures in following the protocol up to the effort stage of service delivery. The ineffectiveness of one structure will cause the collapse of the entire response structure.

The aim of the Theory of Township Neighbouring (TTN) is to promote neighbouring support. Basically, there are two levels of neighbouring, which are local neighbouring and next-door neighbouring. A Local neighbour merely refers to any or all neighbours within the same street close by a victim's house. All street neighbours should ensure that no one is suffering from unsupported challenges related to disasters. This does not refer only to disaster victims, but also to any structure that may be prone to disaster. Local people should be assisting one another at all times. Next door neighbour refers to any persons living behind, across and next to that person who is then his/her closest neighbour (Molayi, 2019). Based on this theory, the researcher proposed three attributes: *kindness, trust, and support*. The superiority of being generous, considerate and friendly defines someone as kindly. Such a person is concerned about his/her neighbour. In being concerned this increases the element of trust between neighbours and promotes a sense that neighbours can support one another in difficult times.

Likewise, the collaboration of the entire community is influenced by the neighbouring attributes, where everyone within the community can assist each other by collaborating among all households in the investment of infrastructure. This is advantageous because all well-developed households (starting with the household neighbours) can play a huge role in supporting those who are in need, ensuring that mitigation measures are locally applied without waiting for Municipal intervention. This leads to the Theory of Public Governance (TPG), whereby the government provides resources to support the initiatives of the community, such as financial support, awareness and to be responsive to the community at all levels to pursue service delivery that is of high quality. Such a good monitoring system will promote good

governance that will offer value to its customers and provide effective service delivery (Grönroos & Ravald, 2011: 6-7).

Overall, the support among local neighbours' actions should inspire the entire community to collaborate and influence good governance among all stakeholders in service delivery such as stronger infrastructural investments.

6.6 Overarching Recommendations

From the above conclusions, the researcher provided the following recommendations:

Objective one: The nature and extent of disasters in Umlazi Township eThekweni Municipality

Long-term and Short-term measures: To start with, the Municipality should focus on clearing debris that might be clogging the drainage systems and in cases where there is none; they should focus on constructing drains. In the long term, the policymakers should seek to introduce alternative power, such as solar power, whilst the residents are still waiting their turn to access RDP houses. The projects should be based on the rehabilitation of infrastructure and should be administered by the Engineering Department. There should be the rehabilitation of schools, roads and people who were affected. Fires are by nature avoidable if the Municipality engages the citizens in awareness campaigns to stop the illegal connections whilst at the same time works on providing alternatives. Communication should be a key strategy in a policy document envisaged by the Municipality.

Objective two: Mitigation strategies employed in Umlazi Township

Early warning systems: In addition to expediting the construction of RDP houses and closing the backlog, the government must also provide the installation of state-of-the-art weather stations which detect disasters especially floods and provide warnings to residents or improve evacuations if need be. These should be accompanied by city-wide weather news dissemination on all platforms. The city should strengthen its social media presence and run Facebook and Twitter pages efficiently, especially in news distribution. They are supposed to engage with ward committees in understanding the people's challenges. Academic institutions such as the Universities should also be involved in the research on early warning, including participating in the implementation of a variety of disaster early warning systems. Studies need to be carried out in order to determine the topography of areas most prone to disasters and the likely

mitigation measures. Considerably more work will need to be done to determine the extent of current strategies and their impact on disaster mitigation work. The Municipality already has a disaster reduction policy, which needs to be implemented in conjunction with the proper qualified and dedicated human resources.

Objective three: Effectiveness of disaster mitigation strategies employed in Umlazi Township

Concerted effort: The government at all levels should be cognisant of their responsibility to protect citizens through rapid action, Therefore, bureaucratic lethargy and corruption should be nipped in the bud. This necessitates appointing people of integrity to positions of authority. Red tape should be avoided at all costs, lest the disasters strike unexpectedly and there arises a need to respond swiftly. There should be free information flow from top-down and vice-versa. Politicking should be refocused to be a competition for service provision, as opposed to putting impediments in the way of service delivery. Of course, this is easier said than done, but it calls for a code of ethics for political actors as disasters have an adverse impact on the general populace and involve lives. This code of conduct should be enforceable so that political actors refocus on aiding efficient disaster management.

Objective four: The role played by different stakeholders in disaster mitigation

Community action: The local government need to harness the potential of ward committees, as a grassroots body that is near to the people. Community-driven disaster mitigation is likely to be effective as the residents have ‘on the ground’ knowledge. Politicians should, therefore, desist from dividing the local communities along political lines, as this hampers effective participation. Every stakeholder is key to effective disaster mitigation. The disaster mitigation policy should, therefore, reflect this input from key stakeholders ranging from research, technical equipment input and social services. The efforts, although diverse should be combined and streamlined to bring efficient disaster management.

Objective five: Solutions to improve disaster mitigation

A multi-pronged approach to disaster mitigation: The findings have shown clearly that every stakeholder knows what needs to be done to mitigate the disasters. A combined approach to disaster mitigation, which takes into account, that a number of solutions may need to be undertaken simultaneously, should be adopted. This calls for multitasking. The novelty of disaster mitigation recommendations offered by the participants reveals that every stakeholder

has a grasp of what really needs to be done. The researcher recommends an *imbizo* to further solicit the views of the grassroots organisations and communities so that the municipality may make a policy document on disaster mitigation that is inclusive and considers views concerning ‘on the ground’ realities.

6.7 Limitations of the study

In any research, there are certain limitations, some due possibly to negligence and some due to unforeseen circumstances such as financial constraints, unavailability of stakeholders and lack of accessibility, time constraints, and even the researcher’s personal challenges that may cause delays in the completion of the study (Muda & Hasibuan, 2018). In moderating this, the researcher communicated telephonically with different stakeholders, such as ward councillors, eThekweni Municipality representative, NGOs, chairpersons of ward committees and the dissertation supervisor. *Operation Sukuma Sakhe (OSS)* that is undertaken at the ward level was a suitable opportunity for the researcher to further promote good rapport with ward communities as part of his physical visit. *OSS* was implemented by the KwaZulu-Natal Premier to call upon all people of the province including departments, local leaders, community structures, ward champions, and committee members to discuss and overcome issues pertaining to their areas (Mottiar & Lodge, 2018). Many issues are shared in these meetings and any relevant departments or NGOs can be consulted to overcome challenges without further delay. The presence of the departments provided an opportunity to raise issues in their presence. For example, even though the question of disaster mitigation is still not a major issue at meetings in this township, the specific issue of the floods and storm disaster of October 2017 was raised in these meetings.

6.8 Suggestions for further research

This dissertation has hopefully provided a deeper insight into the effectiveness of disaster mitigation in Umlazi. The results should have been considerably varied if all qualified residents, as well as policy leaders, contributed. Future research should involve a greater number of participants so that a greater diversity of views can be captured. Duplication of the research in another diverse urban location would be useful for double-checking the results of this study and this could provide an indication of whether these results could be generalised or not.

6.9 Chapter summary

The chapter provided a summary of the whole dissertation. It summarised the chapters and the findings of the study. The chapter provided the conclusions, based on the findings of the study. The research proposed theories based on the findings and, after the conclusions, the researcher provided the recommendations. The researcher discussed the limitations of the study and the mitigation measures undertaken to ensure quality control. Lastly, the researcher provided suggestions for further research.

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LIST OF APPENDICES

Appendix A: Gatekeeper approach letter: Dorothy Nyembe Zone Umlazi



School of Management, IT and Governance

Dear eThekwini Municipality: Chairperson- Dorothy Nyembe Zone Umlazi

Request for permission to conduct a study: Examining the disaster mitigation efforts in eThekwini Municipality: The case of Umlazi Township in South Africa.

Date: 10 October 2018

My name is **Cosmas Buhlebuyeza Ndlovu**, MADMIN student at the University of KwaZulu Natal Westville, School of Management, IT & Governance, Colledge of Public Governance

Student number: 217080633

Contact Number: 072 147 8297

Email address: cosmosn@statssa.gov.za or 217080633@stu.ukzn.ac.za

The above matter bears reference;

As the Chairperson for Dorothy Nyembe in Umlazi, your zone has been selected for this study. The aim and purpose of this research is to ascertain strategies needed to mitigate disasters in Umlazi Township within wards 78, 80, and 82 in eThekwini Municipality from the participants' view- points. The project is a prerequisite for completion of my degree. I have identified Umlazi under eThekwini Municipality as having the necessary information which I deem necessary for my research project.

The objectives of the study are:

- To identify the nature and the degree of disasters in Umlazi Township eThekwini Municipality;
- To find out the mitigation strategies employed in Umlazi Township;
- To find out the effectiveness or otherwise of disaster mitigation strategies employed in Umlazi Township;
- To identify the role played by different stakeholders in disaster mitigation in Umlazi Township; and
- To recommend solutions to improve disaster mitigation in Umlazi Township.

The results of the interview/focus group/survey/secondary data shall be analysed by me (the researcher) with the supervision of my supervisor Dr S. Mutereko. The collected data will hopefully assist me in achieving the study's objectives by conducting an analysis of the data and by providing possible recommendations for the mitigation of issues and phenomena under inquiry/ being studied.

The study will take place during office hours and it is expected to include all ward committee members in each of the three wards involved in the focus group discussion. Apart from the focus group discussion, the researcher shall also conduct interviews with three ward councillors (from wards 78, 80, and 82) to gain in-depth details for the study as they represent different wards. The participation of your zone would be valued as it should enrich the study by drawing upon insights and experiences to understand disaster mitigation efforts in Umlazi.

Please note that the participation in the study is voluntary and all information to be collected will be treated with strict confidentiality and anonymity, such that the names will only assist the researcher to follow logical steps per respondent, and names shall be removed during the analysis/presentation stage so that the data cannot be traced to any individual.

Request:

I therefore request your support in granting permission to conduct this research in Umlazi within the above mentioned three wards. If you have any additional questions or concerns about being part of this study, please do not hesitate to contact me (the researcher) on the contact details provided above (researcher).

Your cooperation would be highly appreciated.
Regards

(Cosmas Buhlebuyeza. Ndlovu)

Appendix A1: Gatekeeper approach letter: Disaster Management Centre - MDMC



School of Management, IT and Governance

Dear Manager: Disaster Management Centre eThekweni Municipality

Request permission to conduct a study: Examining the disaster mitigation efforts in eThekweni Municipality: The case of Umlazi Township in South Africa.

My name is **Cosmas Buhlebuyeza Ndlovu**, MADMIN student at the University of KwaZulu Natal, School of Management, IT & Governance, and College of Public Governance

Student number: 217080633

Contact Number: 072 147 8297

Email address: cosmosn@statssa.gov.za or 217080633@stu.ukzn.ac.za

Date: 10 October 2018

The above matter bears reference;

As a Manager for eThekweni Disaster Management Centre, I need to inform you that your office has been selected for this study. The aim and purpose of this research is to ascertain strategies needed to mitigate disasters in Umlazi Township from the participants' view-points. I have identified Umlazi under eThekweni Municipality as having the necessary information which I deem necessary for my research project.

The objectives of the study are:

- To identify the nature and the degree of disasters in Umlazi Township eThekweni Municipality;
- To find out the mitigation strategies employed in Umlazi Township;
- To find out the effectiveness of disaster mitigation strategies employed in Umlazi Township;
- To identify the role played by different stakeholders in disaster mitigation in Umlazi Township; and
- To recommend solutions to improve disaster mitigation in Umlazi Township.

The results of the interview/focus group/survey/secondary data shall be analysed by me (the researcher) with the supervision of my supervisor Dr S. Mutereko. The collected data will, hopefully, assist me in achieving the study's objectives by conducting an analysis of the data

and by providing possible recommendations for the mitigation of the the issues/phenomena under inquiry.

The study will take place during office hours and is expected to include all staff dealing with Umlazi when there are disasters. One staff member will be purposively sampled based on the availability to participate in an in-depth interview to gain in-depth details for the study. The participation of this office would be valued and as it should enrich the study by drawing upon insights and experiences to enhance understanding of disaster mitigation efforts in Umlazi.

Please note that the participation in the study is voluntary and all information to be collected will be treated with strict confidentiality and anonymity will be maintained, such that the names will only assist the researcher to follow logical steps per respondent, and names shall be removed during the analysis/presentation stage so that the data cannot be traced to any individual.

Request:

I therefore request your support in granting permission to conduct this research with the assistance of officials in your office. If you have any additional questions or concerns about being part of this study, please do not hesitate to contact me (the researcher) on the contact details provided above.

Your cooperation would be highly appreciated.

Regards

(Cosmas Buhlebuyeza. Ndlovu)

Appendix A2: Gatekeeper approach letter: Department of Social Development (DSD)



School of Management, IT and Governance

Dear Department of Social Development (DSD): eThekwini Cluster

Request permission to conduct a study: Examining the disaster mitigation efforts in eThekwini Municipality: The case of Umlazi Township in South Africa.

My name is **Cosmas Buhlebuyeza Ndlovu**, MADMIN student at the University of KwaZulu Natal, School of Management, IT & Governance, and College of Public Governance

Student number: 217080633

Contact Number: 072 147 8297

Email address: cosmosn@statssa.gov.za or 217080633@stu.ukzn.ac.za

Date: 10 October 2018

The above matter bears reference;

As the Chief Director for eThekwini Cluster (DSD), Umlazi branch service office in your cluster you are requested to give permission for Mr. C.B. Ndlovu to conduct a research a research study, the aim and purpose of which will be to ascertain strategies needed to mitigate disasters in Umlazi Township from the participants' view-points. I have identified Umlazi under eThekwini Municipality as having the necessary information which I deem necessary for my research project.

The objectives of the study are:

- To identify the nature and the degree of disasters in Umlazi Township eThekwini Municipality;
- To find out the disaster mitigation strategies employed in Umlazi Township;
- To find out the effectiveness of disaster mitigation strategies employed in Umlazi Township;
- To identify the role played by different stakeholders in disaster mitigation in Umlazi Township; and
- To recommend solutions to improve disaster mitigation in Umlazi Township.

The results of the interview/focus group/survey/secondary data shall be administered by me (the researcher) with the supervision of my supervisor Dr S. Mutereko. The collected data will,

hopefully, assist me to achieve the study's objectives by conducting an analysis of the data and by providing possible recommendations for improvement of the mitigation efforts.

The study will take place during office hours and it is expected to include all staff in the Umlazi branch service office. The Administrative Supervisor of service office staff will be asked to participate in an in-depth interview as the relevant person who administers disaster issues within Umlazi to gain in-depth details of the study. The participation of this office is valued and it should enrich the study by drawing on insights and experiences regarding disaster mitigation efforts in Umlazi.

Please note that the participation in the study is voluntary and all information to be collected will be treated as strictly confidential and anonymity will be maintained, such that the names will only assist the researcher to follow logical steps per respondent, and names shall be removed during the analysis/presentation stage so that the data cannot be traced to any individual.

Request:

I therefore request your support in granting permission to conduct this research via the Umlazi DSD branch service office department. If you have any additional questions or concerns about being part of this study, please do not hesitate to contact me (the researcher) on the contact details provided above (researcher).

Your cooperation would be highly appreciated.

Regards

(Cosmas Buhlebuyeza. Ndlovu)

Appendix B: Recruitment letter for focus group



School of Management, IT and Governance

Dear Ward Committee members

RE: INVITATION TO PARTICIPATE IN A STUDY: EXAMINING THE DISASTER MITIGATION EFFORTS IN ETHEKWINI MUNICIPALITY: THE CASE OF UMLAZI TOWNSHIP IN SOUTH AFRICA

As a ward committee member of this ward, you are invited by Mr. C.B Ndlovu (researcher), to join a focus group interview regarding examining the disaster mitigation efforts in eThekweni Municipality: The case of Umlazi Township in South Africa. The group interview will be chaired by Mr. Ndlovu.

You have been selected for this survey because you reside in and are part of the committee representing in this ward. Your participation will involve giving responses as a group regarding the subject matter. The discussion for the study should take between 30 and 40 minutes of your time. Your participation is valued and should enrich the study as I will draw on the group's insights and experiences to understand the disaster mitigation effort in Umlazi in the eThekweni Municipality.

Regards

.....

Cosmas Buhlebuyeza Ndlovu

072 147 8297

Email: cosmosn@statsa.gov.za

This dissertation research is supervised by Dr. Sybert Mutereko (sybert@ukzn.ac.za) under the auspices of the University of KwaZulu-Natal, School of Management, Information Technology and Governance, Discipline of Public Governance.

Appendix B1: Recruitment letter for interviews: Ward Councillors



School of Management, IT and Governance

Dear Ward Councillor (s)

RE: INVITATION TO PARTICIPATE IN A STUDY: EXAMINING THE DISASTER MITIGATION EFFORTS IN ETHEKWINI MUNICIPALITY: THE CASE OF UMLAZI TOWNSHIP IN SOUTH AFRICA

The above matter bears reference.

As the ward councillor in this ward, you are invited to take part in the above mentioned study. You have been selected for this interview because you work for the eThekweni Municipality and you serve as a ward champion for this ward leading the ward. Your participation will involve giving responses to interview questions regarding the subject matter. The interview will take you about 25 minutes. Your participation is valued and should enrich the study as I will draw on your insights and experiences to understand the disaster mitigation effort in Umlazi in the eThekweni Municipality.

Regards.

.....

Cosmas Buhlebuyeza Ndlovu

072 147 8297

Email: cosmosn@statsa.gov.za

Appendix B2: Recruitment letter for interviews: MDMC Officials



School of Management, IT and Governance

Dear eThekweni Municipality employee(s)/official (s)

RE: INVITATION TO PARTICIPATE IN A STUDY: EXAMINING THE DISASTER MITIGATION EFFORTS IN ETHEKWINI MUNICIPALITY: THE CASE OF UMLAZI TOWNSHIP IN SOUTH AFRICA

The above matter bears reference;

As a disaster coordinator in the eThekweni Municipality, you are invited to take part in the above-mentioned study. You have been selected for this interview because you work for the eThekweni Municipality and you are coordinating disasters in areas such as Umlazi, which is part of this Municipality. Your participation will involve giving responses to interview questions regarding the subject matter. The interview will take you about 25 minutes. Your participation is valued and should enrich the study as I will draw on your insights and experiences to understand the disaster mitigation effort in Umlazi in the eThekweni Municipality.

Regards.

.....

Cosmas Buhlebuyeza Ndlovu

072 147 8297

Email: cosmosn@statssa.gov.za

Appendix B3: Recruitment letter for interviews: DSD Umlazi



School of Management, IT and Governance

Dear Corporate Support Officer – DSD Umlazi

RE: INVITATION TO PARTICIPATE IN A STUDY: EXAMINING THE DISASTER MITIGATION EFFORTS IN ETHEKWINI MUNICIPALITY: THE CASE OF UMLAZI TOWNSHIP IN SOUTH AFRICA

The above matter bears reference;

As a member of the administrative corporate support division in the Department of Social Development (DSD), you are invited to take part in the above mentioned study. You have been selected for this interview because you work for this Department and your office provides support in disaster cases in Umlazi. Your participation will involve giving responses to interview questions regarding the subject matter. The interview will take you about 25 minutes. Your participation is valued and should enrich the study as I will draw on your insights and experiences to understand the disaster mitigation effort in Umlazi in the eThekwini Municipality.

Regards.

.....

Cosmas Buhlebuyeza Ndlovu

072 147 8297

Email: cosmosn@statssa.gov.za

Appendix C: Consent Letter English

CONSENT LETTER

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

APPLICATION FOR ETHICS APPROVAL (For research with human participants)

Information Sheet and Consent to Participate in Research

Date: 10 October 2018

Greetings,

My name is **Cosmas Buhlebuyeza Ndlovu**, MADMIN student from:
Institution: University of KwaZulu Natal – Westville Campus
School: Management, IT & Governance, College of Public Governance
Email: cosmosn@statssa.gov.za / 217080633@stu.ukzn.ac.za
Mobile: 072 147 8297

You are kindly requested to consider participating in a research study titled: **Examining the disaster mitigation efforts in eThekweni Municipality: The case of Umlazi Township in South Africa**. The aim and purpose of this research is to ascertain strategies needed to mitigate disasters in Umlazi Township within wards 78, 80, and 82 in eThekweni Municipality from the participants' viewpoints. The study is expected to include all the twelve members of the ward committee in these three wards in the focus group discussion as part as the sample size. Out of the twelve members (12) of the ward committee, six (6) committee members have been selected randomly, based on their availability during the time of the focus group discussion. Apart from the focus group discussion, the researcher shall also administer interviews with three ward councilors (wards 78, 80, and 82) to gain in-depth details of the study as they represent specific ward. It is therefore very important to get your opinion and for you to participate effectively, so that the results will be useful. The study will involve the following procedures:

- Questions will be asked based on the objectives of the study,
- Your participation is voluntary and all information to be collected will be treated with strict confidentiality and anonymity will be maintained,
- All of you are requested to participate fairly, actively and honestly,
- You are also requested to allow the researcher to record all the conversations, since this is a formal discussion in which the results are intended to change behaviour. However, your names will not be used anywhere in the study except as pseudonyms as part of the assured confidentiality and anonymity,
- Participation in the recording of study conversations is also voluntary,

- The duration of your participation if you choose to participate and remain in the study is expected to be twenty (20) minutes maximum.

The study may involve the following risks and/or discomfort:

- This process might recall painful memories from anyone of you. You are advised to stay strong (with the understanding that you are part of the ward committee representing the community), and/or you are free to suggest or indicate some suitable time to continue with the study,
- Should you need psychosocial support (counseling services), the ward councilor’s office will make arrangements with the municipal psychologist.

There will be no personal individual benefit to the study; however the results of your participation as the committee members might change the lives of the community in this township. It should be noted again that the study will be strictly confidential.

If the research could potentially involve risk as mentioned above, assistance can be obtained from the ward councilor’s office with regard to counselling procedures.

This study has been reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number_[INSERT NUMBER]).

In the event of any problems or concerns/questions you may contact the researcher at 214 Pixley Ka Seme Street, Durban, 8th floor, or at the number 072147 8297 or via the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
 Govan Mbeki Building
 Private Bag X 54001
 Durban 4000 KwaZulu-Natal, SOUTH AFRICA
 Tel: 27 31 2604557- Fax: 27 31 2604609
 Email: HSSREC@ukzn.ac.za

Your participation in the study is voluntary and by participating, you are granting the researcher permission to use your responses. You may refuse to participate or withdraw from the study at any time with no negative consequence. There will be no monetary gain from participating in the study. Your anonymity will be maintained by the researcher and the School of Management, I.T. & Governance and your responses will not be used for any purposes outside of this study.

All data, both electronic and hard copy will be securely stored during the study and archived for 5 years. After this time, all data will be destroyed.

If you have any questions or concerns about participating in the study, please contact me or my research supervisor at the numbers listed above.

Sincerely
 (Researcher name and signature)
 Cosmas Ndlovu
 Signature.....

Appendix C1: Consent To Participate

I..... have been informed about the study entitled: **Examining the disaster mitigation efforts in eThekweni Municipality: The case of Umlazi Township in South Africa** by Cosmas Ndlovu.

I understand the purpose and procedures of the study (add these again if appropriate).

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

I have been informed about any available compensation or medical treatment if injury occurs to me as a result of study-related procedures.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at 072 147 8397.

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557 - Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Additional consent, where applicable

I hereby provide consent to:

Audio-record my interview / focus group discussion YES / NO

Signature of Participant

Date

Signature of Witness
(Where applicable)

Date

Signature of Translator
(Where applicable)

Date

Appendix C2: Consent Letter Isizulu

Incwadi yokuthola imvume

IKOMITI LOMNYANGO WEZOCWANINGO LESAYENSI NEZENHLALAKAHLE LWABANTU ENYUVESI YAKWAZULU NATALI

INCWAZI YOKUCELA IMVUME YOKWENZA UNCWANINGO Kucwaningwa abazobamba iqhaza

Incwadi mayelana nolwazi lokubamba iqhaza kucwaningo

Usuku: 10 kuMfumu 2018

Sanibonani,

Igama lami ngingu **Cosmas Buhlebuyeza Ndlovu**, umfundi oqeqeshelwa izifundo zokuba uMasta kwezokuphatha (Administration)

Oqhamuka kwisikhungo: Inyuvesi yakwa Zulu Natali – kwi khampani yase Westville

Ngaphansi Kwesikole: Ukuphathwa, ubuchwepheshe bezokwaziswa, ikolishi yokuPhatha komphakathi

Imininingwane ye – imeyili: cosmosn@statssa.gov.za / 217080633@stu.ukzn.ac.za

Inombolo yocingo: 072 147 8297

Uyamenywa ngomusa ukuba ubambe iqhaza locwaningo mayelana nenhlolo ngqangi ethinta: **Ukuhlola imizamo yokunciphisa izinhlekelele ngaphansi komkhandlu weTheku: sivivinya indawo ilokishi laseMlazi eNingizimu Afrika.** Inhloso nenjongo yalolu cwano ukuqinisekisa izinyathelo ezidingekayo zokunciphisa izinhlekelele elokishini laseMlazi ngaphakathi kwamawadi u 78, 80, no-82 ngaphansi kwaMasipala waseThekwini kusukela emibonweni yomhlanganyeli. Lolucwaningo lulindeleke ukuba lufake wonke amalunga esigceme sekomiti ayishumi nambili kulamawadi amathathu engxoxweni yeqembu njengengxenye yosayizi wesampula. Kulelikomiti lesigceme eliyishumi nambili (12), ayisithupha (6) amalunga azokhethwa ngokuzenzekelayo, kuzoya ngokuthi bayatholakala yini ngesikhathi seqembu lwengxoxo yocwaningo, yingako bezokhetheka kanjalo. Ngaphandle kwengxoxo yeqembu, umcwaningi uzophinde ahlele izingxoxo ezivela kumakhansela amathathu esigceme (isigceme 78, 80, no-82) ukuze athole imininingwane ejulile yocwaningo njengoba emele isigceme esithile.

Kubalulekileke ukuba sithole imicabango yenu nokuthi nibambe iqhaza ngokukhulu ukuzimisela, ukuze imiphumela ibe usizo. Ucwano luzothinta lezinqubo ezilandelayo:

- Imibuzo izobuzwa mayelana nenhloso yocwaningo,
- Ukubamba iqhaza ukuzithandela nokuthi lonke ulwazi oluzoqoqwa luzogcinwa luyimfihlo nokuthi imininingwano yenu enibambe iqhaza izovikeleka ingadalulwa kumuntu,
- Nonke niyacelwa nibambe iqhaza ngokulinganayo, ngenkuthalo nangokuthembeka,
- Niyacelwa nivumele umcwaningi ukurekhoda yonke inkulumo, ngengoba kuyingxoxo esemthethweni ngokuthi imiphumela iqonde ukushintsha ukuziphatha kwalendlela, nokoke amagama enu angeke asetshenziswe noma ngabe ikephi kulolucwaningo okunalokho kuzosetshenziswa amagama okungewona awenu njengendlela yemfihlo nokuvikeleka,
- Ukurekhoda lengxoxo yocwaningo kuzoba ukuzithandela kwenu,
- Uma nikhetha ukubamba iqhaza kulindeleke ukuba isikhathi enizosihlala kulolucwaningo lungeqi kwimizuzu elinganiselwa kwengamashumi amabili,

Lokhu okulandelayo kungabandakanya ubungozi nokungaphatheki kahle kulolucwaningo:

- Kungase kwenzeka kunikhumbuze ubuhlungu. Niyacelwa ukuba nikhululeke niqine (ngokuqonda ukuthi niyinxenye yesigceme sekomiti emele umphakathi), niyakhululwa ukuba niphakamise noma nibeke isikhathi esifanele sokuqhubeka nocwaningo.
- Uma kwenzeka kukhona odinga usizo lwesazi ngqondo (ukukhanseliswa), ihhovisi lekansela lesigceme lizowenza amalungiselelo nehhovisi lwesazi ngqondo kumasipala.

Akuzoba khona ukuhlomula komuntu kulolucwaningo, kodwa imiphumela yokubamba iqhaza njengamalunga ekomiti kungenzeka kushintshe izimpilo zomphakathi kuleli lokishi. Kumele kuqondeke futhi ukuba lolucwaningo luzoba imfihlo ngokuqinisekile.

Uma kungenzeka ucwaningo lubandakanya ubungozi njengoba kuke kwabalulwa ngenhla, usizo lungatholakala ehhovisi lwekhansela lesigceme mayelana nezinqubo zokululekwa Lolucwaningo lubuyekwezwe ngokuziphatha nemvume yekomiti lwezocwaningo yezenhloloze yinyuvesi yakwaZulu Natali (inamba yemvume_____).

Uma ngabe kukhona isimo senkinga noma ukukhathazeka/imibuzo ningathintana nomcwaningi ku number 214 Pixley Ka Seme Street, eThekwini, 8th floor, noma ku 072 147 8297 noma nithintane nekomiti lokuziphatha kumnyango wezocwaningo lesayensi lezenhlalakahle lwabantu enyuvesi yakwaZulu Natali kuleminingwane elandelayo:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban 4000 KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Iqhaza lenu kulolucwaningo aluphoqelekile futhi ukubamba iqhaza, nivumela umcwaningi asebenzise izimpendulo zenu. Ninganqaba ukubamba iqhaza noma niyeke ukuzibandakanya nocwaningo noma ngabe isiphi isikhathi, ngalokhu akukho miphumela emibi eningayithola. Akukho mhlomulo wemali ekubambeni iqhaza kulolucwaningo. Ukuvikeleka kwemininingwano yenu kuzogcinwa umcwaningi nabaphathi besikole, kumnyango wolwazi lobucwepheshe nokubusa (I.T. & Governance) nezimpendulo zenu angeke zisethsensiswe noma zikhishelwe ngaphandle kwalolucwaningo noma ngabe iyiphi inhloso.

Yonke imininingwano, ekwinjulabucopho (computer) namakhophi, azovikeleka agcinwe ngesikhathi socwaningo abekwe iminyaka emihlanu. Emva kwaleskhathi, yonke imininingwano izobe isiyahlwa.

Uma ngabe ninayo imibuzo noma kukhona enufuna ukukuzwisisa kahle ngokubamba kwenu iqhaza kulolucwaningo, niyacelwa ukuba ningithinte noma nithinte umphathi wami womncwaningi kulezinombolo ezibhalwe ngenhla.

Ngokuzithoba

(Igama lomncwaningi nokushicilelwa)

Cosmas Ndlovu

Signature.....

Appendix C3: Consent To Participate in IsiZulu

IMVUME YOKUBAMBA IQHAZA

Mina ngazisiwe mayelana nocwaningo oluthinta isihloko:
Ukuhlola imizamo yokunciphisa izinhlekelele ngaphansi komkhandlu weTheku: sivivinya indawo ilokishi laseMlazi eNingizimu Afrika ngu Cosmas Ndlovu.

Ngियाqonda inhloso nenqubo yocwaningo.

Nginikeziwe ithuba lokubuza imibuzo mayelana nocwaningo ngaphinda ngaphenduleka ngokugculiseka.

Ngियाqinisekisa ukuthi ukubamba kwami iqhaza kulolucwaningo kungukuzikhethela kwami nokuthi ngingayeka noma ngabe inini ngaphandle kokulangazelela noma imuphi umhlomulo engike ngiwuthole.

Ngazisiwe mayelana ngesinxephezelo noma usizo lozwebochwepheshe olukhona uma ngilimala mayelana nenqubo yokuhlobana kwalolucwaningo.

Umangabe nginemibuzo/ukungaqondi okuthintana nocwaningo ngियाqonda ukuthi ngingathinta umcwaningi ku 072 147 8297

Umangabe nginemibuzo noma ukungaqondi mayelana namalungelo ami ngengobambe iqhaza, noma uma ngingaqondi mayelana nengxenye yocwaningo noma abacwaningi sengingathinta:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557 - Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Imvume eyengeziwe, uma kunesidingo

Ngilapha ukunikeza imvume ukuba:

Kuqoshwe inkulumo yokuhlolwa yami / engxoxweni yeqembu YES / NO

Ukushicilela kobambe iqhaza

Usuku

**Ukushicilela kofakazi
(Uma kunesidingo)**

Usuku

**Ukushicilela komhumushi
(Uma kunesidingo)**

Usuku

Appendix D: Commitment Letter



Councillor
Mezzanine Floor Shell House
Cnr. Anton Lembede & Samora Michell Street, Durban, 4001
P O Box 1014, Durban, 4000
Tel: 031 322 7030, Fax 03131113827
www.durban.gov.za

11 October 2018

Dear

Sir/Madam,

MASTER OF ADMINISTRATION RESEARCH: FEEDBACK COMMITMENT

I am currently supervising Cosmas Buhlebuyeza Ndlovu who is conducting a study titled: *Examining the disaster mitigation efforts in eThekweni Municipality: The case of Umlazi Township in South Africa*. This study requires the participation of some of the eThekweni Metropolitan Municipality staff – Ward Councillors.

This letter serves to inform the eThekweni Metropolitan Municipality that a formal feedback session will be conducted by myself, the researcher, Cosmas Buhlebuyeza Ndlovu and the Units participating in the study.

Researcher: Cosmas Buhlebuyeza Ndlovu, Supervisor: Dr Sybert Mutereko – 078 193 3022, Muterekos@ukzn.ac.za

Regards,

A handwritten signature in blue ink, appearing to read "Sybert Mutereko", written over a horizontal line.

Dr Sybert Mutereko

**Dr Sybert
Mutereko
Senior Lecturer
Academic Leader, Public Governance
Discipline**

Postal Address: Private Bag X54001, Durban, 4000, South Africa

Telephone: +27 (0)31 260 7951

Facsimile: +27 (0)31 260 2352
www.ukzn.ac.za

Email: scheepers@ukzn.ac.za Website:

Founding Campuses:
Westville

 Edgewood

 Howard College

 Medical School

 Pietermaritzburg



Appendix E: Focus Group Interview Guide

Research Topic: Examining the disaster mitigation strategies in eThekweni Municipality:
Case of Umlazi Township ward 78, 80, and 82 in South Africa

Researcher's Name: Mr Cosmas Ndlovu

Supervisor: Dr Sybert Mutereko

Read out: Now I am going to ask you questions related to disasters in your area

Objective One: To identify the nature and the degree of disasters in Umlazi Township eThekweni Municipality

1. Have you or any other person who resides in this area experienced disasters?
2. What is the nature and what are the types of disasters most people have experienced in this area?
3. To what extent did you personally experience the mentioned disasters?
4. During which season of the year do these disasters mostly take place?
5. In the mentioned season, how often do they happen?
6. What do you think could be the cause of these disasters?
7. During the time of the disasters are the victims mostly in the area? If so are they alone or with someone else?
8. What effect do these disasters have on this area when they happen?
9. In terms of human effect, which age group is mostly affected?

Objective two: To find out disaster mitigation strategies employed in Umlazi Township

1. Do you know if there are any strategies being implemented to mitigate disasters in this area?
2. If there are, what types of strategies have been implemented to mitigate disasters?
3. Do you think strategies implemented (if any) are beneficial to everyone in the area/section – such as victims only or for all people?

4. In your own opinion, what do you think could be the challenge of mitigating disasters in this area?
5. Based on your perception, what do you think can be the best strategic means of disaster mitigations in this area?

Objective three: To find out the effectiveness of disaster mitigation strategies employed in Umlazi Township

1. If you have mentioned that disasters strategies in this area were implemented, how effective were they?
2. If they were not effective, what do you think was or could have been the possible reasons for the lack of effectiveness?
3. If there were effective strategic disaster interventions in this area, were there any changes that you have seen or observed? If so what were those changes.
4. In your opinion, what do you think is the best, most effective way of disaster mitigation.

Objective four: To identify the role played by different stakeholders in disaster mitigation in Umlazi Township

1. Who do you think are the main role-players in disaster mitigation?
2. Having mentioned the role-players, how do you define their role/s?
3. Having understood their role/s, how effective are they in disaster management?
4. How satisfied are you with their role/s, if so please explain?

Objective five: To recommend solutions to improve disaster mitigation in Umlazi Township

1. Are there any other comments, ideas or recommendations you think can made to mitigate disasters?

Now I take this opportunity to thank you for your time and for contributing to this study.

Appendix E1: Key Informants' Interview Schedule

Research Topic: Examining the disaster mitigation strategies in eThekweni Municipality:
The Case of Umlazi Township wards 78, 80, and 82 in South Africa

Researcher's Name: Mr Cosmas Ndlovu

Supervisor: Dr Sybert Mutereko

Read out: Now I am going to ask you questions related to disasters in your area

Objective One: **To identify the nature and the degree of disasters in Umlazi Township eThekweni Municipality**

1. Have you or any other person who resides in this area experienced disasters?
2. What is the nature and what are the types of disaster/s most people have experienced in this area?
3. To what extent were you personally involved in the disaster/s?
4. During which period of the year do these disasters mostly take place?
5. In the mentioned season, how often do they happen?
6. What do you think could be the cause of these disasters?
7. During the time of disasters are the victims mostly in the area? If so are they alone or with someone else?
8. What effect do these disasters have on this area when they happen?
9. In terms of human effect, which age group is mostly affected?

Objective two: **To find out disaster mitigation strategies employed in Umlazi Township.**

1. Do you know if there are any strategies being implemented to mitigate disasters in this area?
2. If there are, what type of strategies have been implemented to mitigate disasters?
3. Do you think strategies implemented (if any) are beneficial to everyone in the area/section – such as victims only, or for all people?

4. In your opinion, what do you think could be the challenges of mitigating disasters in this area?
5. Based on your perception, what do you think is the best strategic means of disaster mitigation in this area?

Objective three: To find out the effectiveness of disaster mitigation strategies employed in Umlazi Township

1. If you have mentioned that disaster strategies in this area were implemented, how effective were they?
2. If they were not effective, what do you think was or could have been the cause of the lack of effectiveness?
3. After an effective, strategic disasters intervention in this area, have you seen or observed any changes? If so what are those changes?
4. In your opinion, what do you think is the best and most effective way of disaster mitigation

Objective four: To identify the role played by different stakeholders in disaster mitigation in Umlazi Township

1. Who do you think are the role players in disaster mitigation?
2. Having mentioned the role players, how do you understand what their roles are?
3. Having understood their role/s, how effective are they in disaster management?
4. How satisfied are you with their role/s, if you are then please explain?

Objective five: To recommend solutions to improve disaster mitigation in Umlazi Township

1. Are there any other comments, ideas or recommendations you think can contribute to mitigate disaster?

Now I take this opportunity to thank you for your time and for contributing to this study.

Appendix F: Permission Letter MDMC



3, Jelf Taylor Crescent
Durban
4025
Tel: 031 361 0000
www.durban.gov.za

Our Ref: Manager W. Mkhwanazi

Your Ref: 031 367 0033

Enquires: 22 October 2018

TO WHOM IT MAY CONCERN

Re – Grant Permission: Ndlovu Cosmas Buhlebuyeza

The letter dated 10 October 2018 from Mr Cosmas Buhlebuyeza Ndlovu, student number 217080633 whom indicated as MADMIN student at the University of KwaZulu-Natal - Westville campus is acknowledged. As a Manager for eThekweni Municipality Disaster Management Centre understand that his research project will contribute towards his Master's degree achievement titled: *Examining the disaster mitigation efforts in eThekweni Municipality: The case of Umlazi Township in South Africa*. The Manager is aware that the study will take place during office hours for which the researcher will be collecting data by means of interviewing three staff selected purposively in the form of open-ended interviews, which Mr Ndlovu (researcher) deems necessary to achieve the objectives of this research.

eThekweni Municipality Disaster Management Centre supports and understands that this project involves accessing personal views and information from disaster management coordinators. I support and grant Mr Ndlovu a permission to conduct this research in this office.

Sincerely,



22/10/2018

(Mr. Wilfred Mkhwanazi)

(Manager – eThekweni Municipality Disaster Management Centre)

(031 367 0033)

Appendix F1: Permission Letter Umlazi Ward 78, 80, and 82



Councillor
Mezzanine Floor Shell House
Cnr. Anton Lembede & Samora Michell Street, Durban, 4001
P O Box 1014, Durban, 4000
Tel: 031 322 7030, Fax 0313113827
www.durban.gov.za

Our Ref: Cllr. M.A.K. Dladla

Your Ref: 076 704 3794

Enquires: 23 October 2018

TO WHOM IT MAY CONCERN

Re – Grant Permission: Ndlovu Cosmas Buhlebu eza

The letter dated 11 October 2018 from Mr Cosmas Buhlebuyeza Ndlovu, student number 217080633 whom indicated as MADMIN student at the University of KwaZulu-Natal - Westville campus is acknowledged. As eThekweni Municipality secretary for Dorothy Nyembe Zone understand that his research project will contribute towards his Master's degree achievement titled: *Examining the disaster mitigation efforts in eThekweni Municipality: The case of Umlazi Township in South Africa*. The secretary for Dorothy Nyembe zone is aware that the study will take place during office hours for which the researcher will be collecting data by means of interviewing ward councillors in the form of open-ended interviews. The researcher will also conduct focus group discussions with selected ward committee members in the area of Umlazi ward 78, 80, and 82, which Mr Ndlovu (researcher) deems necessary to achieve the objectives of this research.

Dorothy Nyembe zone representing the said wards (78, 80, and 82) of eThekweni Municipality supports and understands that this project involves accessing personal views and information from the locals of ward 78, 80, and 82 under Dorothy Nyembe zone. I support and grant Mr Ndlovu a permission to conduct this research in the targeted wards (78, 80, and 82) in Umlazi eThekweni Municipality.

Sincerely

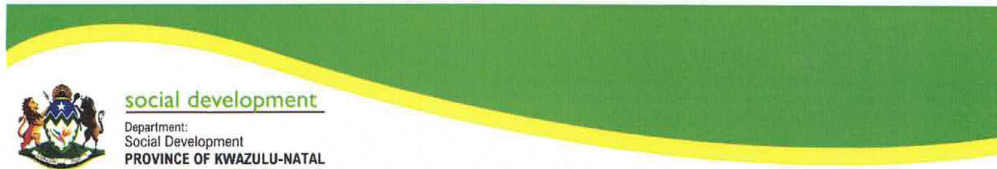
A handwritten signature in black ink, appearing to read "Muziwenyanga Amon Kumakwabo Dladla", written over a horizontal line.

(Cllr. Muziwenyanga Amon Kumakwabo Dladla)

(Ward 82 2016 – 2021 Councillor and Chairperson for Dorothy Nyembe Zone)

(076 704 3794)

Appendix F2: Permission Letter DSD



FAX	: 033-264 2075	HUMAN RESOURCE DEVELOPMENT
Telephone/Ucingo/Telefoon	: 033 264 2078	174 Mayors Walk Road
Enquiries/Imibuzo/Navrae	: Mr VV Gumede	Private Bag X9144
Email address	: velaphi.gumede@kznsocdev.gov.za	Pietermaritzburg
Reference/ Inkomba/ Navrae:	S6/5/3	3200

To: Mr CB Ndlovu
Westville Campus, Govan Mbeki Building
Private Bag x54001
Durban
4000

Email: cosmosn@statessa.gov.za


Dear Mr Ndlovu

PERMISSION TO CONDUCT RESEARCH UNDER A TOPIC “EXAMINING THE DISASTER MITIGATION EFFORTS IN ETHEKWINI MUNICIPALITY: THE CASE STUDY OF UMLAZI TOWNSHIP IN SOUTH AFRICA”

1. This matter has reference.
2. Kindly be informed that the permission has been granted by the Head of Department for you to conduct research in the department for you to fulfill the requirement of your Masters.
3. The permission authorizes you to: -
 - (a) Interview Corporate Services Supervisor at his or her consent deemed relevant to your research project and maintain high level of confidentiality; and
 - (b) Share your findings with the Department.

Wishing you success during your research project.

Yours Faithfully



MS NG KHANYILE
HEAD OF DEPARTMENT

DATE: 01/3/2019

Appendix G: Ethical Approval Letter



10 December 2018

Mr Cosmas Buhlebuyeza Ndlovu (217080633)
School of Management, IT & Governance
Westville Campus

Dear Mr Ndlovu,

Protocol reference number: HSS/2027/018M

Project title: Examining the disaster mitigation efforts in eThekweni Municipality: The case of Umlazi Township in South Africa

Approval Notification – Expedited Approval

In response to your application dated 05 November 2018, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully


.....
Professor Shenuka Singh (Chair)

/ms

Cc Supervisor: Dr Sybert Mutereko
cc Academic Leader Research: Professor Isabel Martins
cc School Administrator: Ms Angela Pearce

Humanities & Social Sciences Research Ethics Committee

Professor Shenuka Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31-260 4609 Email: shenuka@ukzn.ac.za siyameim@ukzn.ac.za mohuro@ukzn.ac.za

Website: www.ukzn.ac.za


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