

**A review of the Implementation of Disaster Risk Assessments in the City of Cape Town:
Challenges and Prospects**

Deon Robin White

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Supervisor: Dr L. G. Pretorius

KEYWORDS

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Disaster Mitigation

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Disaster Response

Disaster Risk Management

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Disaster Risk Assessment

Emergency Management



ABSTRACT

A review of the implementation of the disaster risk assessment activities of the City of Cape Town with a view to understand the challenges and prospects encountered

D.R. White

Master's in Public Administration

The problem question of this study is how the City of Cape Town, as a metro municipality went about implementing Disaster Risk Assessments. While the National Disaster Management Centre acknowledges that municipalities are battling to perform Disaster Risk Assessments. Understanding what was done, by whom and when will aid in the understanding of implementing Disaster Risk Assessments. Uncovering the prospects and challenges they faced and will help shed light on the guidance that is required by other municipalities, although this study's inference is limited by the methodology. The relatively new Disaster Management Act requires a shift from old civil defence legislation to a proactive disaster risk reduction mode, with new institutional arrangements. The shift to a proactive disaster risk reduction approach required by the new legislation cannot be achieved without firstly implementing these new institutional and policy arrangements and secondly, implementing this first and vital step in the disaster risk reduction process namely, Disaster Risk Assessments. The study also seeks to understand in the community was involved.

This is a qualitative study, i.e. it contains descriptive statistics and narratives. It used questionnaires to provide numerical and descriptive data to measure compliance to the Disaster Management Act in terms of the institutional arrangements implemented by the City of Cape Town. Secondly, qualitative data was collected through semi-structured interviews to provide data to understand the challenges and prospects encountered in performing Disaster Risk Assessments. A literature review was also undertaken to highlight the current debates in Disaster Risk Reduction. The stratified sample was from the officials employed at the City's Disaster Management Centre, Area Managers, NGOs, Ward Councillors and Consultants. The data was collated and the analysed. The objective is to primarily understand what was done, by whom, when and secondly to understand the prospects and challenges faced. The findings, recommendations and areas of future study are captured in this research report.

October 2013

DECLARATION

I declare that the work contained in this thesis is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Full name: **Deon Robin White**

Date: **31 October 2013**

Signed:



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ACRONYMS

DM – Disaster Management

DMA – Disaster Management Act No. 57 of 2002

DMC – Disaster Management Centre

DRM - Disaster Risk Management

DRR – Disaster Risk Reduction

DRA – Disaster Risk Assessment

EMS – Emergency Medical Services

GEAR – Growth Employment and Redistribution (South African macroeconomic policy)

GIS - Geographical Information Systems

HOC – Head of Disaster Management Centre (includes all levels)

IDP - Integrated Development Plan

MDMC - Municipal Disaster Management Centre

MEC - Member of the Executive Council (member of a provincial Cabinet)

MIG - Municipal Infrastructure Grant

NDMAF - National Disaster Management Advisory Forum

NDMC - National Disaster Management Centre

NDMF – National Disaster Management Framework

PDMAF - Provincial Disaster Management Advisory Forum

PDMC - Provincial Disaster Management Centre

RDP – Reconstruction and Development Programme

SADC - Southern African Development Community

SALGA - South African Local Government Association

UN - United Nations

UNESCO - United Nations Educational, Scientific and Cultural Organization

WHO - World Health Organisation

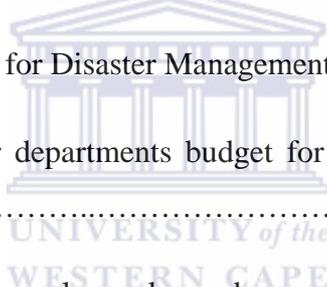
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CHAPTER 1: INTRODUCTION AND CONTEXT

1.1 Introduction

There can be no safe tomorrow without planning today. This is the view of the United Nations Office for Disaster Risk Reduction (UN, Global Assessment Report, 2013).

The risk to loss of life, injury and property that communities around the globe face as a result of natural disasters like floods, tsunamis and earthquakes to mention a few, is increasing (UN, Global Assessment Report, 2013). During the 1970s, 2 million people reportedly died due to natural disasters. In the 1990s, reportedly 800 000 people died from natural disasters. Today, more than 226 million people are now affected by disasters every year (UN, Global Assessment Report, 2013). The cost of natural disasters has reached US\$2.5 trillion so far this century according to the UN International Strategy for Disaster Risk Reduction (UN, Global Assessment Report, 2013). With statistics like these governments around the world cannot ignore these risks that threaten citizens' lives, livelihood and property. Managing these risks is Disaster Management and the first step is to identify these risks and this is Disaster Risk Assessment.

This study reviews the implementation of Disaster Risk Assessment (DRA) activities, as mandated by the Disaster Management Act (No.57 of 2002) in the City of Cape Town at a local government level, i.e. a municipal level. These DRA activities refer to the institutional and policy arrangements, e.g. the legislation requires the establishment of a Municipal Disaster Management Centre and a Head of such a centre must be appointed. This Head then initiates the Disaster Risk Assessment. Therefore the study observed what institutional arrangements have been implemented and observed how these Disaster Risk Assessments activities have been performed to understand what challenges and prospects were faced.

The rest of this chapter deals with the following sections. Section 1.2 provides more background to the study. In section 1.3 the aims and objectives are discussed. Section 1.4 deals with the primary research question. Section 1.5 explains the outline of how the rest of the chapters in the study are laid out.

1.2 Background and context to the study

South Africa has transitioned from an apartheid government to a democratic government and so too has policy shifted from reactive disaster relief and response to a proactive and preventative disaster risk reduction approach in the field of disaster management.

This descriptive study seeks to demonstrate who did what and when at the City of Cape Town with regard to the implementation of Disaster Risk Assessment policy.

Disasters are global phenomena and cannot be ignored. On a global scale, disasters caused approximately US\$ 235 billion of damage from 1996 till 2000 (CRED as cited in van Niekerk, 2005). Disasters also affected 211 million people per year on average when measured from 1990 till 2000 (Munich as cited in van Niekerk, 2005). According to the Director of the United Nations' International Strategy for Disaster Reduction (UNISDR), Briceno (2004), 70,000 people died as a direct result of 700 disasters in 2003 alone. He mentions that the disasters are on the rise because of the world's growing population and the interventions of mankind on the planet and its environment. In addition, he raises the point that the poor are the most vulnerable and without risk reduction will become even more vulnerable (UNISDR, 2004).

South Africa is no exception to the global phenomena of disasters. According to the Centre for Research on the Epidemiology of Disasters International database, between 1980 and 2010 South Africa suffered 77 natural disasters, killing 1,869 and affecting 18,456,835 people. These disasters cost South Africa US\$ 3, 3 Trillion (CRED International database, 2012).

In a provincial context, the Western Cape regularly experiences fires and floods sweep through informal settlements and devastate these communities. According to the Western Cape's Minister of Local government, Environmental Affairs and Development, the Western Cape has seen floods during August 2007, November 2009 & June 2011 to mention a few. The 2011 floods amounted to losses and damages of R 579 660 369 to state-owned enterprises, national and provincial departments as well as municipalities (Bredell, 2011).

Cape Town's poor communities of the Cape Flats and informal settlements like Khayelitsha and Delft to mention a few are more vulnerable than other more affluent communities like Constantia. According to the UNISDR (2004), vulnerability is a collection of circumstances based on physical, social, economic and environmental factors. These factors affect the

resistance of communities to cope with the impact of disasters (UNISDR, 2004). This is because the poor have less resources and capacity to cope with the effects of disasters, precisely because they are poor. As a result, the poorest of the poor need protection from disasters and hazards.

Disasters are defined as a progressive or sudden, widespread or localised, natural or man-made occurrence which causes death, injury and disease, damage to property or disruption of the life of a community and with a magnitude exceeding the ability, of those affected, to cope with the consequences (Disaster Management Act No. 57 of 2002).

A hazard is a potentially damaging physical event, phenomenon or activity that causes a loss of life or injury, damage to property, including social and economic disruption or environmental degradation (UNISDR, 2004).

Disaster Management seeks to provide such protection through the reduction of risks facing communities, preparation of plans and disaster response in the event of a crisis or disaster. According to the glossary of the National Disaster Management Centre (NDMC):

“Disaster management is the process of dealing with disasters, like floods and earthquakes. It refers to efforts to prevent disasters and reduce their impact and to responses to disasters after they have happened, such as disaster relief” (Retrieved 18 February 2013, from www.ndmc.gov.za).

The vulnerability of communities must be combated by Disaster Risk Reduction which is a discipline within Disaster Management. The NDMC defines vulnerability as *“the ability a person or community has to predict, cope with, or avoid and recover from, the consequences of a hazard or disaster”* (Retrieved 18 March 2013, from www.ndmc.gov.za).

The first step in planning an effective Disaster Risk Reduction approach is to perform Disaster Risk Assessments (National Disaster Management Framework, 2002) which is the focus of this study within the City of Cape Town. Disaster Management and Disaster Risk Reduction are important because both man-made disasters and natural disasters can neutralize and negatively impact on development progress through devastating events and the costly rehabilitation. South Africa is also a developing country that is focusing on social development in order to eradicate poverty and reduce inequality. According to the World Bank, South Africa also has the highest rate of inequality (World Bank, 2006). This is called the GINI Coefficient indicator and a score of 0 represents perfect equality and 1 means that the difference between the poorest and the richest is completely unequal. South Africa scores

0.67 and as such it needs to counteract threats to development (World Bank, 2006). Therefore South Africa's developmental needs are vast. Disasters whether natural or man-made pose a threat to this development. This places additional strain on resources, financial and otherwise. The limited resources available for infrastructure and social development also justify the need for Disaster Risk Reduction. In addition, South Africa is a relatively new democracy with a constitution that seeks to protect its people and provide them with a sustainable environment for the betterment of all. As a result the government has a duty to perform Disaster Risk Assessments.

According to George Killian (2009), the Acting Executive Manager: Disaster Management in the National Disaster Management Centre (NDMC) in his address to the Portfolio Committee on Operative Governance & Traditional Affairs on 1 September 2009: *"We are struggling to lift the awareness of Disaster Management in the department, provinces and municipalities"* (Retrieved 18 February 2010, from <http://www.pmg.org.za>). This study deals with the municipal level that is struggling and specifically the City of Cape Town as a large municipality or metro. Mr Killian then proceeds to provide an update on how municipalities have started to set up the institutional arrangements. The Chairperson of the Standing Committee responded with these insightful comments:

"What struck me George is your expressing relative satisfaction with the creation or implementation of the Act (Disaster Management Act No. 57 of 2002), at least the institutional requirements. The centres (Disaster Management Centres- DMC) and so on, but the most significant things you can't speak about, Risk Assessment, which is what this legislation is about. This is where the problem lies. In the construction of housing and dealing with informal settlements, people settle on land that is in flood plains. They locate themselves under electrical pylons and so this issue is problematic. When we speak about risk assessments these are the things that we are talking about. In the event of a disaster striking, people are going to lose their lives, their limbs and property. So if we say that many municipalities have not done them (risk assessments) then this is a serious indictment and so part of our task as Parliament is to ensure implementation of legislation, not for the sake of compliance This is a serious one, so I thought that going back to those three aspects that you identified including risk assessments and the training of volunteers ... those are the four provisions of the Disaster Management Act." (Retrieved 18 February 2010, from <http://www.pmg.org.za>).

The chairperson makes it clear that the main objective of the Disaster Management Act is to move the government from a purely reactive mode into a proactive risk reductive mode. Key

to this shift is firstly the setting up of the necessary institutional arrangements as per the DM Act and secondly, the focus of this study, the conducting of Disaster Risk Assessments in order to proactively reduce risk and plan for disasters. After having been addressed by the Chairperson, George Killian's response is particularly interesting and worth consideration:

“As far as the risk and vulnerability assessments are concerned, most of the municipalities have embarked on their own risk assessments, the bigger municipalities, so there is some kind of movement there, but I think it requires something from national's side. We are in the process of now putting something together, to have a risk and vulnerability assessment throughout the country as the National Disaster Management Framework (NDMF) is saying, an indicative risk profile on which one can then do the proper planning from there. Because if you don't know the risks and vulnerabilities in your area then you can't obviously plan for it ... so we will have to fast track that because that is very important. Hopefully the capacity the Disaster Management Centre is getting will contribute to that.”
(Retrieved 18 February 2010, from <http://www.pmg.org.za>).

These utterances Killian (2009) form the basis of the problem dealt with in this study, namely municipalities are struggling with implementing the institutional arrangements and performing the risk assessments. It is obvious that the larger municipalities or metros have made some progress because they have capacity and access to more financial and human resources than district municipalities. So the problem is bigger in small municipalities. If one considers these words, then Disaster Risk Assessments are crucial and vital to the successful implementation of the Disaster Management Act and National Disaster Management Framework (NDMF) at municipal level, whether metro or district municipalities. Municipalities face problems with rising inequality and a high level of unemployment. As a result people flock to the cities for employment and a better quality of life (urbanisation). This increased densification presents additional hazards e.g. shacks that are built too close together and the use of candles and paraffin stoves means that the risk of widespread fires are increased in such settlements. Disaster Risk Assessments therefore provide a mechanism to quantify and prioritise the likelihood of these risks occurring and then providing plans to mitigate them. The fact that municipalities are struggling to complete Disaster Risk Assessments and that at a national level the NDMC is putting together 'something' to assist them, begs the question, what can be learnt from the experience of implementing Disaster Risk Assessments at a metro such as the City of Cape Town. This makes this study worthwhile because there is clearly a problem surrounding the implementation of the

provisions of the DM Act with regard to the institutional arrangements and the first step of the new proactive policy, namely Disaster Risk Assessments.

1.3 Aim and objectives

This study seeks to review the implementation of Disaster Risk Assessment activities in the City of Cape Town in terms of the Disaster Management Act (No. 57 of 2002). The primary objective is to determine the arrangements the City of Cape Town has made to implement disaster risk assessments, as mandated by the legislation. The secondary objectives are to determine whether the institutional arrangements that need to be in place in order to perform risk assessments have been implemented. Firstly, in order to observe whether these arrangements have been implemented a review of the legislative framework is necessary to identify what is required by law. Another objective is to review the current debates in this field in order to understand what constraints are faced by the municipalities. To this end a literature review is undertaken. A further objective is to document what the City of Cape Town's practices are with regard to Disaster Risk Assessment policy and uncover the city's challenges and prospects faced with the implementation. The legislation is new and represents a shift from the old Civil Defence Act (No. 44 of 1957) to the Disaster Management Act (Act No. 57 of 2002). It has shifted from mere emergency response in the old legislation to proactive risk mitigation. Has the City of Cape Town shifted its approach to a proactive risk reduction? Finally the study seeks to make recommendations based on the findings of the research. Therefore this research seeks to describe and understand the implementation of Disaster Risk Assessment activities as part of the Disaster Management policy of the City of Cape Town. It will critically analyse specifically how and what has been done by the Disaster Management Centre in terms of Disaster Risk Assessments. The outcome of the analyses will help one to understanding the progress, challenges and prospects were experienced during the implementation of Disaster Risk Assessments. To this end the following research questions were formulated.

1.4 Research questions

This research will attempt to answer the following key question. What has been done by the City of Cape Town in performing Disaster Risk Assessment activities as mandated using the Disaster Management Act and the National Disaster Management Framework that the Act

refers to? The legislation requires e.g. that a municipal disaster management centre (MDMC) be established, that a Head of the MDMC be appointed and that a Disaster Management Forum be created. In terms of section 2, these institutional arrangements need to be in place before a municipality can initiate Disaster Risk Assessments because the appointed Head is responsible for initiating the assessment and the results must be presented and discussed in the Disaster Management Forum with a view to be used in the planning that leads to the Municipal Disaster Management Plans. In turn, the Disaster Management Plans must be included in the municipality's Integrated Development Plan (National Disaster Management Framework, 2002). These stipulations in the legislation will be used as quantifiable measures to review the implementation. Structured interviews are used as the instrument to quantify whether these measures were undertaken. Many municipalities are battling to comply with the legislation and implement Disaster Risk Assessment activities and so it is necessary to establish what the City of Cape Town has done in this regard. The legislation requires that municipalities establish a Municipal Disaster Management Centre (MDMC) and appoint a Head of the Centre. The Head then establishes a Disaster Management Advisory Forum which provides oversight of the Disaster Risk Assessment (DRA) process after the Head initiates the DRA activities. Most municipalities have not done this as discussed above (Killian, 2009. Retrieved 18 February 2010, from <http://www.pmg.org.za>). Even though the City of Cape Town as a large and affluent metro municipality may have done it, how was it done? Even though the City may have done it, the Head of the MDMC could have multiple portfolios and therefore not prioritise these activities, which affect his or her effectiveness. Has the community been involved in the Disaster Risk Assessment process? Have DRA process outcomes been integrated into Disaster Management Plan and the Integrated Development Plan

1.5 Outline by chapter

In the ensuing chapters of this study various sections will focus on the following elements. Chapter 2 provides a comprehensive review of the current literature pertaining to Disaster Management and current debates relevant to local government, i.e. municipalities. Thereafter Chapter 3 provides a detailed discussion of the research methodology employed in the investigation, sample selection and the method of data collection. It also provides the statistical techniques employed in the primary research. Chapter 4 presents results of the

study as descriptive statistics and narratives. Finally, Chapter 5 discusses conclusions drawn from the results and recommendations are also made. Some suggestions are also made regarding future research studies.



CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The focus of this chapter is to do a literature review of and examine the institutional capacity and arrangements in the field of Disaster Management. It is important to acknowledge that there are several international examples of disaster risk assessments, but this study focusses deliberately on the local implementation. This section describes the situation in the City of Cape Town and provides a theoretical context for discussing how implementation of such a Disaster Management Plan can mitigate against the impact of disasters on vulnerable groups in the City. It is important to mitigate the impact of disasters as people can lose their lives and possessions if the disasters are left unchecked. On 1 January 2013, 5 men died and 800 families were left homeless as a fire swept through the Khayelitsha informal settlement (SAPA, 2013. [Press Statement], Retrieved 31 October 2013, from www.iol.co.za).

South Africa is an emerging country but also an upper middle income country with a current GDP per capita of nearly R50000 per annum (Humby, 2012). This income is very unevenly distributed, i.e. 48% of the population living on less than US\$2 per day or R524 a month (Humby, 2012). This is also supported by the highest GINI co-efficient in the world of 0.63 as mentioned previously. There are also significant differences in average income by ethnic groups with the majority of poor households being black (Humby, 2012). The City of Cape Town is no exception to poverty and the City mimics the nation in this regard. This poverty makes the poor even more vulnerable to disaster risk because their ability to cope and recover from disasters is hampered. Thus the poorest of the poor are most vulnerable. While the City of Cape Town has very wealthy areas, there are very poor communities in the City. Furthermore, no review of the background to the vulnerabilities of poor communities in South Africa and more specifically Cape Town is complete without reference to the part that spatial planning and apartheid has had. According to Mohamed, “South Africa’s spatial configuration is also the product of apartheid spatial planning” (Mohamed as cited by Kochendörfer-Lucius et al., 2009, p213). At a grass roots level, this apartheid spatial policy resulted in black human settlements that were placed furthest away from the central business districts and investments were focussed no white areas (Mohamed as cited by Kochendörfer-Lucius et al., 2009). The result of this policy means that today the poorest of the poor live the places that are furthest from work in the City such as Khayelitsha. They also have had the least investment in their areas and are more vulnerable to hazards and disasters risk because

they have less resources and capacity to cope with disasters. It is against this historical backdrop that this study is conducted. It is to this end, that a conceptual framework that takes these factors into account has been reviewed and selected.

This will be discussed later in this chapter. In section 2.2 the key concepts and debates are defined. The institutional and policy arrangements are discussed in section 2.3. Section 2.4 explains the theoretical and policy framework. Finally, section 2.5 is a summary of this chapter. This portion of the study will define the legislative framework for Disaster Risk Assessments. A conceptual framework for explaining how Disaster Management should be viewed will be presented. It is important to understand the broader field of study, i.e. Disaster Management and how Disaster Risk Assessments pertain to this field of study. It will be explained later that Disaster Risk Assessments is a series of activities within this field. It is necessary to undertake this series of activities because it can save lives and property as alluded to in chapter 1. Explaining the link between Disaster Management and Disaster Risk Assessment activities is important because it highlights the importance of planning the implementation. If the City of Cape Town did not perform these activities then natural disasters could become social disasters. By performing these Disaster Risk Assessment activities, according to the Mayor, Patricia de Lille, the City has reduced the rate of deaths per 100,000 people in informal settlements like Khayelitsha from 7.9 in 2005 to 4.3 in 2011 (Press Statement on 31 January 2013, Retrieved 4 November 2013 from www.iol.co.za). The City's policy around Disaster Management includes the institutional arrangements of preparing to perform Disaster Risk Assessment activities and how these disasters can be anticipated. If one adds to this the fact that the poorest of the poor are most at risk and the City's duty to provide sustainable environments, then understanding how these activities fit in with the broader agenda is important and useful to the theoretical framework of this study. The empirical research, however does not focus on the inner working of the theoretical models discussed but on the review of the implementation of the preparatory activities, the capacity of the City to perform assessments and the planning within the institutions e.g. Municipal Disaster Management Centre and Disaster Management Advisory Forum, leading up to the performance of the Disaster Risk Assessments. This chapter then ends with a look at the current debates raging in this field of study.

2.2 Definition of key terms and debates

Certain concepts synonymous with the disaster management field of study are frequently used in this text and it is important to define and discuss them. Clarity of these concepts is essential to their application in this study. In addition, key debates currently in the field of disaster management will also be discussed in this section.

According to the Disaster Management Act (No. 57 of 2002) it is defined as

“A continuous and integrated multi-sector, multi-disciplinary process of planning and implementation of measures aimed at , preventing or reducing risk of disasters; mitigating the severity or consequences of disasters; emergency preparedness; a rapid and effective response to disasters; and post-disaster recovery and rehabilitation”.

According to Jeggie, disaster management is a process of organizing and managing the resources and responsibilities in dealing with all the elements of emergencies, specifically, preparedness, response and rehabilitation involved (as cited in van Niekerk, 2005). Jeggie also includes emergency management in his definition of disaster management. He says:

“Emergency management involves plans, structures and arrangements established to engage the normal endeavours of government, voluntary and private agencies in a comprehensive and coordinated way to respond to the whole spectrum of emergency needs. This is also known as disaster management” (Jeggie as cited in van Niekerk, 2005).

Van Niekerk makes the point that the international definition (Jeggie) and the South African (Disaster Management Act) definition differ. He suggests that the difference in the South African version is due to the inclusion of the previous disaster management concept from the pre-1994 regime. He points out that the South African version focuses on the reduction of risk and as a result is actually Disaster Risk Management. Finally he argues that in South Africa one can therefore argue that disaster management is effectively Disaster Risk Management, while acknowledging that internationally this is not the case (van Niekerk, 2005). Coburn, Spence and Promonis suggest that disaster management is a collective term including all the dimensions of planning and responding both before and after a disaster, as well as the management of risks and consequences (as cited in van Niekerk, 2005).

For the purpose of this research, Disaster Management will include the definition as per the Disaster Management Act and therefore be a collective term for encompassing all disaster-related activities including disaster risk reduction, disaster mitigation, disaster planning and disaster recovery and rehabilitation. This is necessary to ensure accurate understanding of the Disaster Management legislation in a South African context. Evident from the definition mentioned above, the discipline of Disaster Management has five distinct phases. These phases are also defined in the Green Paper on Disaster Recovery (Retrieved 20 May 2013, from www.polity.org.za). These phases can be categorised into Disaster Risk Reduction, Mitigation, Preparedness, Response and Disaster Recovery & Rehabilitation. The focus in this study is on the Disaster Risk Reduction phase and specifically Disaster Risk Assessments as an action in this phase (Green Paper on Disaster Management, 1998).



Figure 1 Graphical representation of the Disaster Management Phases

The first phase, as displayed above, is Disaster Risk Reduction (DRR). The United Nations' International Strategy for Disaster Risk Reduction (ISDR) refers to DRR as “the systematic development and application of policies, strategies and practises to minimise vulnerabilities and disaster risks throughout society, to avoid or to limit adverse impacts of hazards, within the broader context of sustainable development” (UNISDR, 2004, pg.1).

The National Disaster Management Centre (NDMC) defines disaster risk reduction using the same definition as the ISDR. The only statement they add is: *“In South Africa, disaster risk reduction is an integral and important part of disaster management”* (Retrieved 18 March 2013, from www.ndmc.gov.za). The first appropriate action in Disaster Management is thus to prevent or reduce risk also called Disaster Risk Reduction. If one has to develop policies and plans to minimise risks in this phase, then arguably the first action within this phase must be Disaster Risk Assessment (DRA). This is an initial and essential part of Disaster Risk Reduction because one must arguably, in order to prevent or reduce risk, understand what the risks are by identifying vulnerabilities, hazards & their probabilities. Subsequently analyse their impact and prioritise them based on the product of their impact and probability. This process is called Disaster Risk Assessment (Retrieved 18 March 2013, from www.ndmc.gov.za). Practically, one cannot however, simply perform such assessments in a vacuum. There needs to be a plan on how this is to be done. Who has the power to initiate such assessments? Who provides the oversight on this activity? Who determines if the assessment is completed and if it is successful? It is vital that there is a plan of how this is to be executed. The answers to these questions can be found in the Disaster Management Act (No.57 of 2002). These institutional arrangements are the Disaster Risk Assessments activities that this study refers to e.g. the establishment of a Municipal Disaster Management Centre (MDMC) and the appointment of the Head of the MDMC is vital because the incumbent in this role initiates the other DRA activities. This is discussed in more detail in section 2.3 of this chapter.

The next phase, Disaster Mitigation, according to the National Disaster Management Centre: *“refers to the structural and non-structural measures that are undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards on vulnerable areas, communities and households”* (Retrieved 18 February 2013, from www.ndmc.gov.za). The structural measures refer to efforts that are aimed at the hazards or threats, also known as ‘structural mitigation’. An example of structural measures would be ensuring that the housing units in a human settlement are built a minimum of three metres apart to reduce the spread of fires. On the other hand non-structural mitigation focuses on efforts aimed at the people, community or households at risk. An example would be awareness campaigns to educate communities in the informal settlements on the dangers of fires in order to promote behaviour that avoids risk.

The following phase, Disaster Preparedness, deals with the last preparatory actions required before the disaster. According to Messer (2003), Disaster Preparedness “*involves measures taken to ensure effective response to the impact of disasters. Preparedness measures include, for example, evacuation plans, early warning systems, pre-stocking of relief items - all being part of a national disaster relief plan*” (Messer, 2003). Often these actions require rehearsals.

The next phase, Disaster Response, describes the immediate actions after a disaster event occurs. According to FEMA, Disaster Response is a series of “*activities to address the immediate and short-term effects of an emergency or disaster. Response includes immediate actions to save lives, protect property, and meet basic human needs*” (Retrieved 31 October 2012, from www.fema.org).

According to Messer (2003), disaster recovery “*is the process by which communities are assisted in returning to their proper level of functioning. The recovery process can be very protracted, in some cases up to a decade or more. Typical activities undertaken under this phase include: restoration of essential services and installations, and long-term measures of reconstruction, including the replacement of buildings and infrastructure that have been destroyed by the disaster*” (Messer, 2003). Therefore disaster recovery also includes long-term rehabilitation efforts.

According to the NDMC, *Risk is usually associated with the human inability to cope with a particular situation*” (Retrieved 18 March 2013, from www.ndmc.gov.za). From a disaster management perspective, the NDMC refers to Disaster Risk as the “*probability of harmful consequences, or expected losses, death, injury, damage to property and the environment, jobs, disruption of economic activity or social systems*” (Retrieved 18 March 2013, from www.ndmc.gov.za). The NDMC also acknowledges in their definition of risk that different communities will be affected differently by risk. A very important link between development, poverty and vulnerability is made by them when they acknowledge that the communities’ ability to cope is a product of the resources at their disposal. Therefore poorer communities will be more at risk or more vulnerable than others (Retrieved 18 March 2013, from www.ndmc.gov.za).

There are several debates raging in the current arena of Disaster Management and Disaster Risk Reduction. This discussion is not meant to be an exhaustive list but rather an attempt to highlight a few particularly relevant to this study. According to Killian (2009), only the large municipalities, i.e. the metros have performed Disaster Risk Assessments (Retrieved 18

February 2010, from <http://www.pmg.org.za>). This is most likely due to their being more capacity (human resources & financial resources) in the metros than the district municipalities. The National Disaster Management Centre (NDMC) is endeavouring to remedy this problem, but at the same time, they expect the metros to “take the smaller municipalities with them” (Parliamentary Podcast, Retrieved 18 February 2010, from <http://www.pmg.org.za>). The question therefore arises whether the NDMC has provided sufficient support and training for local municipalities to perform their own Disaster Risk Assessments. Failing this, does the contradictory expectation that metros will help smaller municipalities not create another unfunded mandate? Also how has a metro like the City of Cape Town performed Disaster Risk Assessments with or without NDMC help? Secondly, where municipalities whether large metros, district municipalities or smaller jurisdictions are performing Disaster Risk Assessments, how involved are the communities?

The recent report by the African Centre for Disaster Studies commissioned by the South African Local Government Association (SALGA) on Disaster Risk Management Status Assessment at Municipalities in South Africa highlighted seven challenges. In their study, they found that a lack of budgeting and funding was raised as the primary problem. This included not only the ability to fund training, programmes, volunteers, projects but also post disaster activities such as disaster recovery and rehabilitation. As expected, a lack of funding also impacts the equipment available for Disaster Management-related activities. Municipalities reported that they need vehicles, emergency response and recovery equipment amongst others. Again, the lack of funding leads to a lack of skilled and trained personnel. Municipalities indicated that staff lacked the skills to perform Disaster Management activities. Some of the municipalities have not complied with the Disaster Management Act other than having Disaster Management Plans and some have said that the lack of compliance is due to the unfunded mandate that the legislation places on them without clearly defined sources of funding. The lack of political will was also raised in the SALGA study. Both politicians and local government officials often view Disaster Management as merely having emergency services to respond to disasters. The shift to truly acting proactively has not happened consistently across all municipalities. Poor integration and involvement across departments and sectors is still present not only interdepartmentally at municipal level but also between national, provincial and local government levels with regard to Disaster Management. Examples of these are conflicting service delivery programmes and disjointed and inconsistent implementation of policy stipulated by the Disaster Management Act (No.

57 of 2002). Pen ultimately, the lack of community-participation in Disaster Risk Reduction remains a concern. Community-participation is vital to the process if local government officials are to grasp the needs of communities and launch integrated development programmes that not only create sustainable environments but mitigate disaster risk. Finally, the SALGA study highlighted the need for a communication strategy between Disaster Management officials at national, provincial & local level, communities, other line functions and other stakeholders (Botha et al, 2011).

A preliminary review suggested that Disaster Risk Assessments appear to have been performed by the City of Cape Town in conjunction with subject matter experts and consultancy firms. This raises the question of how involved are communities in these exercises? Thirdly, how integrated are the risk assessment outcomes across sectors such as housing, town planning, public works etc. especially where these services are the prerogative of the national government as opposed to the provincial or local government e.g. Housing. Furthermore, how effective have the Disaster Risk Assessments been in informing the Disaster Management Plans, and how integrated are these plans in the IDP and probably more importantly, in the City's budget? In other words, is the implementation of Disaster Risk Assessments having the desired effect of informing planning and social development plans and priorities? In an ideal world, the implementation of Disaster Risk Assessments, planning and development should lead to improved service delivery. This study seeks to describe the implementation of Disaster Risk Assessments activities in the City of Cape Town, while broadening understanding of the challenges and prospects that can be uncovered. In other words, has the City of Cape Town established a Municipal Disaster Management Centre (MDMC), has a Head of the MDMC been appointed, does the Head hold other portfolios because this impacts on his or her effectiveness and has the Head established a Disaster Management Advisory Forum to perform oversight on the Disaster Risk Assessments. These are the type of institutional arrangements and risk assessment activities being referred to. How the City performs on these activities will be highlighted later in this study.

2.3 Institutional and policy arrangements

The focus of this section is to discuss the institutional and policy arrangements in terms of the legislation applicable to Disaster Risk Assessments activities. It is necessary to start the discussion with a brief historic overview of the progression of legislation in this field.

The process of drafting new disaster management legislation started with the Green Paper on Disaster Management that requested that submissions to close April 1998. According to the National Disaster Management Centre, this process started in 1994, when the new government decided to adopt a more “*holistic approach to managing disasters*” (NDMC, retrieved from www.ndmc.gov.za on 30 September 2013). The Green Paper was a call by the Minister of Provincial Affairs and Constitutional Development for contributions on the topic. The broad objectives of the Green Paper was to (a) assess current policy, approaches and capacities, (b) ascertain key principles for a new disaster management policy and (c) to create a basis for further discussion in order establish a conceptual framework for disaster management and risk reduction (NDMC, retrieved from www.ndmc.gov.za on 30 September 2013). It led to the drafting of the White Paper on Disaster Management which was promulgated in 1999. The White Paper introduced seven policy proposals, (1) the integration of disaster risk reduction into development, (2) a strategy for reduction of vulnerability, (3) establishing disaster management centres, (4) a new funding system for disaster management, (5) a framework to enable community awareness and participation in disaster risk reduction, (6) enable training and community education and (7) the drafting of an Act of Parliament to enact disaster recovery policy in South Africa (NDMC, retrieved from www.ndmc.gov.za on 30 September 2013). This led to the Disaster Management Act (No.57 of 2002).

The legislation applicable to Disaster Management in South Africa is grounded firstly in the Constitution of the Republic of South Africa, (Act No.108 of 1996) because it requires the government to protect human rights and property rights of its citizens and all who reside in its borders (Section 41). Such protection needs to offer more than reactive measures such as law enforcement. In addition, the government policies such as RDP and GEAR aim to eradicate poverty and inequality as their primary strategic objectives. These objectives can be eroded by disasters such as fires, floods and droughts. These disasters pose a threat to citizens’ rights as mentioned in the Bill of Rights and strategic objectives of development. Therefore to reduce the effects of natural and man-made disasters on development, communities and promote integrated development, the government promulgated the Disaster Management Act in 2002, herein referred to as the ‘DM Act’. In terms of objectives the DM Act has three primary objectives. Firstly the DM Act seeks to provide a combined (multi-sectorial and

multi-disciplinary) and systematic approach to Disaster Management in South Africa. The DM Act, according to its preface, seeks to achieve this by reducing the risk of disasters, mitigating the effects of disasters, being more prepared for emergencies and performing disaster recovery and rehabilitation after disasters have occurred. Secondly, the DM Act seeks to provide institutional arrangements through the establishment of Disaster Management Centres at national, provincial and municipal levels. Thirdly, the DM Act seeks to provide for volunteers to be able to assist the local authorities and communities when disaster strikes (NDMC, retrieved from www.ndmc.gov.za on 30 September 2013). The requirements of the DM Act in terms of Disaster Risk Assessments (DRA) activities are grouped into areas of activities. These areas of activities are hereafter referred to as themes. These themes are discussed later in this chapter and drawn through into the research design in chapter 3 and the findings in chapter 4 and 5.

Furthermore, the Municipal Systems Act, (No. 32 of 2000), necessitates municipalities to plan and create an Integrated Development Plan (IDP), to improve the quality of life of citizens in their jurisdiction. In addition, section 42(2) (c) of Municipal Structures Act (No. 117 of 1998) requires that the social and economic priorities be part of the IDP. Also according to George Killian, Acting Executive Manager of the NDMC, the IDP's are incomplete and not compliant if they do not contain a Disaster Management Plan (Retrieved 12 March 2013, from www.pmg.org.za). In addition, Regulation 7 of the Municipal Planning and Performance Management Regulations in the Municipal Finance Management Act (No. 56 of 2003) requires local municipalities to adopt a performance management system in order to monitor and evaluate performance (Retrieved 30 March 2013, from www.dplg.gov.za).

The DM Act refers to the National Disaster Management Framework (NDMF) (National Disaster Management Framework, 2005). The NDMF is a legal instrument devised to provide a coherent, transparent and consistent approach across the spheres of government to Disaster Management according to section 7(1) of the Disaster Management Act (No. 57 of 2002). The objectives of the NDMF are to inform contingency planning, reduce vulnerability and identify high risk areas (Section 19 of the National Disaster Management Framework, 2005). The NDMF has the following Key Performance Areas (KPA): Integrated Institutional Capacity for Disaster Risk Management, Disaster Risk Assessment, Disaster Risk Reduction, Response and Recovery. The NDMF also specifies the following Enablers which facilitate the KPAs, Information Management and Communication, Education, Training, Public Awareness & Research and Funding Arrangements for Disaster Risk Management (Retrieved

30 March 2013, from www.acts.co.za). The City of Cape Town's Disaster Management policy is informed by the national legislation and is discussed in more detail in themes here below.

In order to perform DRA, certain institutional arrangements are required by the Disaster Management Act (No. 57 of 2002). These arrangements are better understood if grouped into themes. Firstly, the organisational units or parties required for governance are required in order to start the activities. The municipality (City Council) must establish a municipal disaster management centre (MDMC) in terms of Section 43. In terms of Section 45, a Head of the MDMC must be appointed. A Municipal Disaster Management Advisory Forum (MDMAF) must be established according to Section 51. The Head of the Centre is also part of the MDMAF and this body performs an oversight function with regard to the disaster risk assessment activities performed by the MDMC. The effectiveness of the individual in this role is subject to the amount of other portfolios held. This role already has two dimensions as the Head of the MDMC and Chair of the MDMAF. These, one may argue, are already conflicting roles as the Head needs to manage the Municipal Disaster Management Centre, its staff and programmes (Section 44 & 45), while as Chair providing consultative support and oversight (Section 51). Therefore this becomes one of the key criteria in understanding the implementation of Disaster Risk Assessment activities in the City of Cape Town.

Another theme that emerges when reviewing the legislation is training. The MDMC must promote training in terms of Section 44 (Disaster Management Act No. 57 of 2002). There is also reference made to the National Disaster Management Centre assisting the Provincial Disaster Management Centres and the Municipal Disaster Management Centres. In turn the Municipal Disaster Management Centres are to educate communities and other departments. Also, the MDMC must establish a unit of volunteers in accordance with Section 58 (Disaster Management Act No. 57 of 2002).

Another theme is the Disaster Risk Assessment process itself. There are three aspects to this process that one must consider. Firstly, the National Disaster Management Framework (NDMF) specifies minimum criteria that Disaster Risk Assessments must meet. Disaster Risk Assessments (DRA) must be performed in terms of the National Disaster Management Framework (National Disaster Management Framework, 2005). The NDMF defines Disaster Risk Assessment as a process that establishes the priorities of risk through the identification and analyses of hazards and threats; and assessment of vulnerability to humans, environment,

infrastructure, agriculture & property (National Disaster Management Framework, 2005). In other words a DRA report must contain a list of hazards and anticipate threats within the given area and the product of these factors lead to prioritised risks. The formula suggested by United Nations Office of Disaster Risk Reduction (UNISDR) in this field, to prioritise risk is discussed in section 2.4 of this chapter. Secondly, the integration of the DRA report into planning and development is a key aspect. It is a key aspect because the City must focus on the highest risks in future planning and development. The risk assessment activities will be of no consequence if the outcome i.e. prioritised risks are not taken into consideration in planning and development. This is done by ensuring that the highest risks prioritised in the Disaster Risk Assessment are incorporated and mitigated in the City's Disaster Management Plans. The Disaster Risk Assessments must therefore inform the Disaster Management Plans (DMP), which are to be drafted in accordance with Section 52 (Disaster Management Act No. 57 of 2002). Similarly, the DMP should be taken into consideration in the municipality's Integrated Development Plan (IDP) in terms of Section 53 (Disaster Management Act No. 57 of 2002). In the case of the City of Cape Town with its history of fires, the IDP needs to reflect a focus on fires as an example. In addition, the DM Act explicitly requires that the MDMC integrates disaster management into practical implementable developmental plans and programmes according to section 46 (c) (ii) (Disaster Management Act No. 57 of 2002). In other words, the disaster risk assessment outputs (prioritised risks) must be integrated into the planning process of the municipality. Lastly but by no means least, is the vital aspect of community-participation. The participation of the community in disaster risk assessment and planning is required in terms of Section 53 (Disaster Management Act No. 57 of 2002). The DM Act, section 53 (1) (d) states that:

“each municipality must within the applicable municipal disaster management framework...through appropriate mechanisms, processes and procedures established in terms of Chapter 4 of the Local Government: Municipal Systems Act (No. 32 of 2000), consult the local community on the preparation or amendment of its plan (Disaster Management Act No. 57 of 2002).

The City of Cape Town's Disaster Risk Management Framework is captured as part of the Municipal Disaster Management Plan and is described as being consistent with the Disaster Management Act (No. 57 of 2002), the National Disaster Management Framework, as described above (City of Cape Town, Municipal Disaster Management Plan, 2012).

2.4 Theoretical and policy framework

Asghar, Alahakoon and Churilov have argued that a succinct model is beneficial for managing disasters because it simplifies the understanding of disaster management and therefore accelerates the support thereof (Asghar, 2006). Kelly (1998) asserts that there are four primary reasons why a disaster management model may be useful. Firstly, a model helps to explain complex phenomenon and describes what needs to be done. These explanations become more critical when dealing with disasters where time is of the essence. Secondly, using a theoretical model is beneficial when comparing empirical conditions. A theoretical model aids understanding of the present position and therefore in turn is beneficial for planning, which an essential part of drafting disaster management plans. Furthermore, a model assists in creating a common understanding among stakeholders. This allows for enhanced integration of relief and recovery efforts, so that the role played by different stakeholders in the implementation is clarified (Kelly, 1998). For these reasons, Disaster Management demands the use of a model to facilitate the planning process, manage and reduce the risk of disasters occurring. Therefore this section, for understanding how to implement, discusses briefly several models used in the field of Disaster Management and later more specifically in Disaster Risk Assessments.

According to Turner (1976) the “failure of foresight” can be explained as a sequence of events with six stages. Stage 1 termed “Notionally normal starting point” (Turner, 1976, p.378). This stage deals with the accepted beliefs of the world and its hazards. It also includes the preventative norms linked to these hazards. Stage 2 refers to “Incubation period” during which refers to the slow build-up of events that initially remain ignored because they are in conflict with the accepted beliefs about the hazards described in stage 1 (Turner, 1976, p.379). Stage 3 is the “Precipitating event” which brings enlightenment to the beliefs in stage 2 (Turner, 1976, p.379). Stage 4 is termed the “Onset” forces the abandonment of the preventative beliefs because of the direct results of the disaster (Turner, 1976, p.380). Stage 5 is the “Rescue and Salvage” (Turner, 1976, p.381). Recovery and Rehabilitation is started. Stage 6 is termed the “Full cultural readjustment” because as the post assessment is performed the beliefs and preventative customs mentioned in the previous stages are modified based on the new understanding after the disaster (Turner, 1976, p.381). This model was useful because it provided a newly developed sequence that took circumstances before the disaster occurred into account. The downfall of this model is that when consequences of a disaster match the beliefs and customs held then no adjustment to planning may occur,

instead a reaffirmation of the beliefs and customs may occur. This undermines the practical process of planning and implementation.

Shrivastava (1993) suggested the use of crisis theory in order to understand the many disasters taking place. He compares three disasters namely, Bhopal, Tylenol and the Space Shuttle Challenger. He traces changes to crisis theory from being reactive, based on mainly on incident response to anticipatory, based on organisational capability and incorporating a systems approach. Finally he suggests that the unify concept is sustainable development where industrial and environmental crises will increase along with a rise in social, political and cultural systems. He purports that only sustainable development can overcome the erroneous pattern of previous industrial development (Shrivastava, 1993).

Myers (1996) suggested that strategically planning for disasters needs to take into account four phases, namely normal operations, emergency response, the interim process and finally, the restoration phase. This approach offers a step-by-step model for developing, testing, and maintaining a cost-effective, long-range strategic plan for disasters (Myers, 1996).

Keller and Al-Madhari (1996), recommended a model for the probabilistic prediction of disaster magnitude after-effects and the period taken to return to the normality before the disaster. This model is well suited to identifying risk profiles (Keller and Al-Madhari as cited in Ashga, et al. 2006). Risk profiles are simply the hazards and risks of a given geographical area. In the City of Cape Town, there are 108 wards and all of these wards could potentially have a risk profile. The profiles are not necessarily unique, e.g. informal settlements from different areas may share common hazards such as fire in Khayelitsha and Bloekombos. However, risk profiles are beyond the scope of this study.

Kelly (1998) suggested a circular model for understanding disaster management. He suggests that many previous scholars (Neal, Haas and Freaks) focussed on the definition of disaster management as mere phases. These phases imply order of time when in reality disasters are characterised by disorder and so he proposed a model that represents iteration and the non-linear nature of disasters in the form of a spiral, in order to go beyond the simple definition of disaster stages (Kelly, 1998). His point is that disasters are complex events and if one is able to reduce the complexity through better understanding them, the management of disasters would improve (Kelly, 1998).

According to the Weichselgartner (2001), his model seeks to inform planning by assessing the damage (Weichselgartner, 2001). It focusses on the assessment of vulnerability by identifying the primary contributors to vulnerability (Dwyer et al., 2004). In this model vulnerability is defined as being either individual, social or technical. Individual vulnerability is personal and is sensitive to losses in spatial and non-spatial spheres. Social vulnerability refers to the susceptibility of large groups to disasters such as communities. Technical vulnerability is the ability of a system to cope with disasters e.g. electrical grid or a house (Amaratunga and Haigh, 2011).

According to van Wisner, one of the most widely used models in Disaster Risk Reduction is the Pressure and Release (PAR) model (Wisner as cited by van Riet, 2009). It traces the progression of vulnerability. With this model vulnerability can be traced from 'root causes'. These are then aggravated by 'dynamic pressures'. This leads to 'unsafe conceptions'. Here communities are vulnerable to hazards. In this model vulnerability is a dynamic process, rather than a static outcome (van Riet and Diederick, 2009). The PAR model can be seen as a juncture where physical hazards and the accumulative vulnerability or socio-economic circumstances collide as graphically displayed in figure 2 (Blaikie et al, 1994). As a result this is also termed the Crunch model (Smyth and Vu Minh, 2012). The Crunch Model or Pressure and Release model is appropriate for this study for several reasons. Firstly, this model takes into account the cumulative effect that the, root causes, dynamic pressures and unsafe conditions have on the poorest communities. If one looks at the informal settlements in Cape Town, the vulnerability is amplified by the lack of resources, the rapid growth of the population and urbanisation [population growth of 36.7% from 1996-2007] (Small, 2008) and how the risk of fire is amplified by the unsafe conditions like the wide-scale use of paraffin stoves when compared to formal homes and the wide-scale impact a fire would have because of the proximity of shacks to each other when compared to formal settlements (van Riet and Diedericks, 2009).

Finally, the notion of the assessment of risk has developed over time and so too has the formula to quantify it. According to Wisner et al. (2004) this formula is $R = H \times V$, where R is risk, H is hazard and V is vulnerability. He continues to describe it as follows:

“The risk of disaster is a compound function of the natural hazard and number of people, characterised by their varying degree of vulnerability to that specific hazard, who occupy the space and time of exposure to the hazard event” (Wisner et al. 2004).

However, this formula is flawed because it does not take into account the capacity of the people to cope with the hazard (Makhado and Saidi, 2013). To this end, the United Nations International Strategy for Disaster Reduction's (UNISDR) formula is more appropriate, i.e. $\text{Risk} = (\text{Hazard} \times \text{Vulnerability}) \div \text{Capacity}$ (UNISDR, 2004). Various other scholars have developed formulas for quantifying risk, e.g. Moyrimiya 1992; Kaji, 2002; Jordaan 2006; Van Westen, Van Asch and Soeters 2006 (as cited by Makhado and Saidi, 2013). However, the most popular formula used in South Africa according to Jordaan (2006) is the latter of the two discussed above, i.e. the one which includes Capacity (Jordaan as cited by Makhado and Saidi, 2013). The National Disaster Management Centre quotes this formula on their website (Retrieved 15 May 2013, from www.ndmc.gov.za). This is also the formula used by the Disaster Management Centre of the City of Cape Town, according to a preliminary review of the City of Cape Town's Disaster Management Plan (DMP, 2012). Each hazard is assigned a score. This score is the product of the severity (impact of the hazard) and probability (likelihood of occurrence). The probability of the hazard is measured on a scale with three options: likely, normal and unlikely (DMP, 2012). The severity of the hazard is measured in a 3-point score, where 3 equals extreme, 2 is moderate and 1 equals insignificant (DMP, 2012). The City's DMP stipulates that the Disaster Risk Assessments must identify the vulnerability and the coping capacity of communities of each particular hazard (DMP, 2012). The coping capacity is measured in a scale of 1 to 3, where 1 is poor, 2 is modest and 3 equals good. Vulnerability also by the City on a 3 point scale, where 1 is not vulnerable, 2 is moderately vulnerable and 3 equals extremely vulnerable (DMP, 2012).

These models such as the UNISDR's formula and the Crunch model are useful but it is not the purpose of this study to evaluate the implementation of Disaster Risk Assessments against these models. The significance of the use of models in this study holds two insights which form the theoretical basis of this study. Firstly, the Crunch Model illustrates that the poorest communities are the most at risk. The City of Cape Town makes several references on its website to its aim with regards to Disaster Management:

“It is our aim at the Disaster Risk Management Centre (DRMC) to identify, prevent or reduce the occurrence of disasters and to soften the impact of those hazards that cannot be prevented... Together we can take great strides to try and reduce the occurrence or impact of disasters and ensure that we can cope in the best way possible when they do occur. We need to think ‘safety’ and act safely” (Retrieved 29 October 2013, from www.capetown.gov.za).

This commitment to identifying, preventing and specifically reducing disasters, when viewed against the backdrop of recurring floods and fires in the City, means that the poor bear the brunt of the impact. Taking these factors into account, the implementation of Disaster Risk Assessments (DRA) is crucial. Determining how the City implemented the institutional arrangements is an indication of its commitment to make good on its published aim. To this end, the study seeks to determine whether the City has established a Municipal Disaster Management Centre, has a Head of the Centre been appointed, has he or she initiated a DRA. The study therefore seeks to focus not on the inner workings of the model but on the review of the implementation of Disaster Risk Assessments and its institutional arrangements. Without the implementation of the institutional arrangements, no assessments can take place.

Secondly, the UNISDR's formula dictates that one needs to take the capacity of the community to cope with the hazards and vulnerabilities in their area (UNISDR, 2004). Therefore, when one is performing a Disaster Risk Assessment of a given area then it is vital to understand the community's ability to cope. This understanding requires interaction and feedback from the community and it is this interaction and feedback or community participation that is vital to the implementation of Disaster Risk Assessments. To this end, this study seeks to understand if the communities were involved in the implementation and how were they involved. How did the City go about interacting with the communities? What was the outcome of the community involvement? Therefore this study seeks to understand how the City of Cape Town interacted with the community in implementing Disaster Risk Assessments.

2.5 Summary

The phase of Disaster Management that pertains to this study is the Disaster Risk Reduction phase. Within this phase is the first step of Disaster Risk Assessment. Disaster Risk Assessment involves the identification of hazards, determining vulnerability and the product of these factors provides divided by the capacity to cope provides a rating of the risk occurring leading to a prioritised list of risks. Without performing a Disaster Risk Assessment, one cannot move onto the Mitigation phase because it is the highest risks that need to be mitigated. It is in this particular action of Disaster Risk Reduction that this study finds its boundaries, namely Disaster Risk Assessments activities. This is then further geographically limited to a descriptive study on how the City of Cape Town implemented

Disaster Risk Assessments activities, i.e. the enabling institutional arrangements, did the community participate and what were the prospects and challenges faced. The enabling institutional arrangements and key criteria for performing Disaster Risk Assessments can be summarised into the following key points. The municipality must establish a Disaster Risk Management Centre. A Head of the Centre must be appointed. A Municipal Disaster Management Advisory forum must be established and provide oversight. The Disaster Risk Assessment must, as mentioned above, prioritise risks and these must inform the Disaster Management Plan. The DMP must in turn inform the Integrate Disaster Management Plan of the city. Finally, the community should be involved in the process.



CHAPTER 3: RESEARCH METHODOLOGY

This chapter outlines the methodology used to conduct the research. It discusses the research design, sample process, data collection, data analysis and the ethical considerations.

3.1 Research design

A qualitative research design is employed for observing the implementation of the institutional arrangements. According to Cohen and Manion (1980), qualitative research or social research uses empirical methods to express a descriptive statement about the case in the real world as opposed to what should be the case (Cohen and Manion, 1980). This method therefore provides data that can be expressed in numbers. It was selected because it often employs automated means of collecting data such as surveys which is well suited to this study. It was also selected because it allows for the examining of preferences through two-alternative, forced-choice studies e.g. has a Head of the Disaster Management Centre been appointed, “yes” or “no”? Using the example mentioned above, a qualitative research method allows one to determine the real situation regarding the appointment versus the requirement of the legislation. In addition, this research method was selected because it allows for data to be expressed in distinct mathematical values, e.g. how many risk assessments were performed? Furthermore, a qualitative research design is used to observe Disaster Risk Assessment activities. A qualitative research method was selected because it is traditionally used in the social sciences, it helps one gather a deep understanding of human behaviour, why this behaviour has occurred and it helps to uncover the why and how of the decisions as well as the what, when and where (Denzin and Lincoln, 2005). In this study it helps in the understanding of how the City of Cape Town performed Disaster Risk Assessments and what prospects and challenges were faced. In terms of the limitation of the research methodology, qualitative methods yield data on the specific case studied only and as a result general inferences are limited. In the case of this study, the City of Cape Town is not the typical municipality. Even the communities in the City are not typical of the other communities within the province, so the study and its inferences are limited to this specific context and generalisation beyond these boundaries are not recommended.

This study involves both secondary and primary research. The secondary research was undertaken in the form of a literature review. A literature study was undertaken to guide the

empirical research and to highlight the current debates on the research problem. A significant amount of literature was reviewed. Some of the literature reviewed includes the legislation applicable to Disaster Management: Green Paper on Disaster Management, 1998; Disaster Management Act (No. 57 of 2002); National Disaster Management Framework; 2005; Public Recording of the feedback from the NDMC to the parliamentary committee and African Centre for Disaster Studies report to SALGA on the Disaster Risk Management Status Assessment at Municipalities in South Africa, 2011. This list is not meant to be exhaustive but rather to highlight the primary literature that speaks to the research question of this study.

Primary research was undertaken to record empirical evidence of the Disaster Risk Assessment activities, Prospects and Challenges experienced. Qualitative research methods are appropriate to recording the narratives of respondents with a view to answering the secondary research questions, i.e. understanding the challenges and prospects the City Cape Town faced when performing Disaster Risk Assessments. To this end, interviews are employed because they allow the respondent to provide feedback in a manner that captures their experience, as opposed to questions with distinct values as answers. In other words, asking a respondent in an interview allows them to provide feedback that would not otherwise fit into a questionnaire with yes or no answers. In addition to the primary qualitative research methods some numerical descriptive methods will be utilised. These are best employed to answer questions with discreet value such as determining whether Disaster Risk Assessments were performed or not. The qualitative instrument used was telephonic and semi-structured interviews. The questions are available in Appendix 1. They were designed to extract data along the following themes: Organisational Units; the Disaster Risk Assessment process; Integration with the Disaster Management Plans and Integrated Development Plan; Community-Participation and Training, Capacity and Resources. The investigation into the institutional arrangements used a questionnaire as an instrument. The questionnaire is available in Appendix 2. The questions are based on the key criteria discussed in chapter 2. The primary research will be discussed in more detail in the following sections of this chapter in terms of the scope and delimitation, research problem, sampling design, data collection and data analysis. The chapter ends with the ethical considerations.

3.2 Scope and delimitation

The study covers the period of Disaster Risk Assessment activities undertaken by the City of Cape Town from 2008 till 2011. The study does not discuss the old Civil Defence Act. The Disaster Risk Assessment activities are mandated by the terms of the Key Performance Area 2 of the National Disaster Management Framework, 2005. The study also includes the enabling institutional arrangements at a municipal level according to chapter 5 of the Disaster Management Act (No. 57 of 2002). It does not deal with the submission of the DR Assessment, DM Plans & IDP to the Provincial and National DMCs as laid out in other sections of the Disaster Management Act. This study also does not go beyond the Disaster Risk Assessment activities as part of the Disaster Risk Reduction phase as prescribed by the legislation.

3.3 Research problem

The research problem that needs to be addressed is how the City of Cape Town has implemented Disaster Risk Assessments policy. This is in the light of the comment from George Killian, the then Acting Executive Manager of the National Disaster Management Centre, that municipalities are battling to perform Disaster Risk Assessments (Retrieved 31 October 2012, from www.pmg.org.za). The Disaster Management Act (No. 57 of 2002) along with the National Disaster Management Framework dictates the institutional arrangements that need to be completed in order to implement Disaster Risk Assessment activities. If these arrangements are not implemented and DRAs are not performed, then meaningful Disaster Management Plans cannot be drawn up and they will in turn not inform the City's Integrated Development Plan. This result is a lack of mitigation and inhabitants of the City of Cape Town, especially the poor run the risk of losing their lives and property. To this end the research seeks to answer the questions, has the City implemented the institutional and policy arrangements mandated by the legislation. Questions about the City's performance of these activities include, amongst others, e.g. has the City established a Municipal Disaster Management Centre (MDMC), has a Head of the MDMC been appointed, has the Head established a Disaster Management Advisory Forum and has the community been involved in Disaster Risk Assessment activities. In addition, there are some sub-questions that flow from these questions. Firstly, have Disaster Risk Assessments been completed by the City of Cape Town? In section 20 (1) of the National Disaster Management Framework, the legislation stipulates that Disaster Risk Assessments must be undertaken. A review of the Risk

Assessment report is not possible as the document is highly confidential and so interviews with the parties involved with the risk assessment are undertaken to determine whether the report, tabled at the Disaster Management Forum and was signed off by the Head of the MDMC, met with the criteria in the legislation. For example, hazards must be identified in order to prevent losses and limit the impact (National Disaster Management Framework, 2005). Secondly, assuming that Disaster Risk Assessments have been completed, have the results been incorporated in Disaster Management Plans? The outcome of the Disaster Risk Assessment should provide hazards, vulnerabilities and their impact categorised into a risk profile. The Disaster Management Plans should therefore take the highest risks from the profile into account, e.g. floods and fires in the City of Cape Town should therefore enjoy a high priority in the Disaster Management Plans. Thirdly, have these Disaster Management Plans been incorporated into the Integrated Development Plans (IDP) by the City of Cape Town? If the Disaster Management Plans have been incorporated into the IDP, then the mitigation for the highest risks City should be apparent. A simple review of the IDP should be sufficient to determine if integration has occurred.

Fourthly, to what extent have the local communities of the City of Cape Town participated in the Disaster Risk Assessments? In sections 7(2), 20(1), 20(2), 33(1), 33(2), 47(1) and 47(2) of the legislation reference is made to community-participation in risk assessments in order to increase local capacity and reduce the impact of disasters. Again, structured interviews are used as an instrument to measure compliance. Furthermore, what challenges were encountered during the Disaster Risk Assessments exercises? Using a triangulation method the parties involved will be interviewed to determine the answers to this question. Finally, what prospects were identified or lessons learnt during the Disaster Risk Assessments? These narratives are recorded in a manner supporting qualitative methods, i.e. via interviews.

3.4 Sampling design

The extent and nature of this research study required the full involvement of the target population but the constraint of time necessitated that a representative sample be used. The sample size was pegged at 20% of population. According to Niles (2006), a good estimate of the margin of error (or confidence interval) is given by $1/\sqrt{N}$, where N is the number of participants or sample size. The total population consists of 227 individuals, see figure 2 below. The population consists of the officials in the Municipal Disaster Management Centre,

the City of Cape Town’s four Area Managers, The Managing Consultants undertaking the Disaster Risk Assessments, Ward Counsellors representing the community and the NGO’s operating within the City. Using Niles assertion a sample of 15 individuals would provide a confidence interval of 95%; therefore a sample size of 45 individuals is very representative of the population. The approach to selecting the respondents within the staff of Disaster Management Centre was through simple random sampling. The selection of the Area Manager and Managers of the Municipal Disaster Management Centre was not random as these individuals are key to the process, however triangulation was ensured through the random selection of Municipal Disaster Management Centre staff at various levels, ward counsellors and NGO representative. The purpose of triangulation is provide more accurate results by providing the answers to the same questions from individuals that cover at least three other perspectives. When applied to this study, city officials, private consultants, NGO and ward counsellors provide different perspectives as stakeholders, therefore improving the reliability of the results. However, identifying the groups represented within the sample was done using stratification. According to Babbie and Mouton (2001), Stratification is not a substitute for random sampling but more an adjustment.

“Stratified sampling is a method for obtaining a greater degree of representativeness – decreasing the probable sampling error. Rather than selecting your sample from the total population at large, you ensure the appropriate number of elements drawn from homogeneous subsets of that population” (Babbie and Mouton, 2001).

In this study the subsets of the population are represented by the groups of respondents, i.e. the City’s Area Managers, Staff at the Disaster Management Centre, the NGOs, Ward Counsellors and Consultants that participated in the Disaster Risk Assessment activities.

	Area Managers	Disaster Management Centre Staff	Ward Councillors	NGOs in scope	Consulting Firms/Experts (involved)
Total Population	4	83	105	25	2 Firms / 10 Experts
Sample	2	42	21	10	6
Total Respondents	2	34	10	5	2

Figure 2 Sample breakdown

3.5 Data collection

The qualitative data was collected through questionnaires. The questionnaire used in the survey is displayed in Appendix 1. The questionnaire was administered via a web application and therefore the responses to the questionnaires were captured electronically via an online tool. The qualitative data was collected through telephonic and semi-structured interviews. The questions posed in the telephonic and semi-structured interviews are displayed in Appendix 2. Qualitative research often relies on structured interviews, semi-structured interviews and the analysis of documents and reports (Marshall and Rossman, 1999). This method was selected because it allows the researcher to interact on a personal (one-on-one) level to capture the factors not easily obtainable from closed questions in a questionnaire. The requirement is to understand the activities undertaken, the challenges and prospects faced by City of Cape Town in performing the Disaster Risk Assessments. Triangulation was used to ensure validity & reliability.

“Triangulation refers to combining several different methods of inquiry and data collection into a single study. The rationale of triangulation is that each method different reveals different aspects of empirical study. The most common form of triangulation employed is data triangulation in which different data sources are used e.g. multiple informants or multiple groups” (Simkiss, et al. 2013, p.9).

In this study the data sources were represented by multiple groups as displayed in figure 2 above.

3.6 Data analysis

The approach to the data analysis is one of Grounded Theory in that *“one does not begin with a theory then prove it...rather, one begins with an area of study and what is relevant”* is allowed to emerge (Straus and Corbin, 1990, p.23). In other words, in Grounded Theory, qualitative researchers *“do not go around testing hypothesis”*, but rather go around discovering *“what it is that they do not know”* (Babbie and Mouton, 2001, p.499). The use of Grounded Theory in this section of the study means that the analysis of data followed a selective coding procedure. Selective coding is defined as *“the process of selecting a core category, systematically relating it to other categories”* (Straus and Corbin, 1990, p.23). The core category is *“the central phenomenon around which all other categories are integrated”* (Babbie and Mouton, 2001, p.499). In this study the core category is the Disaster Risk Assessment activities or process undertaken by the City of Cape Town. The core and other

categories are informed by the legislative requirements and are aligned with the themes discussed in chapter 2. Therefore the analysis of the qualitative data was categorised based on the theme the data or narratives informed. These are the themes used: (a) *Organisational units or parties* e.g. MDMC, Head of the MDMC and MDMA; (b) *the Disaster Risk Assessment process* i.e. the legislated requirements; integration to disaster plans & development plans; community-participation and (c) Training. According to Babbie and Mouton (2001, p.499) “*The key here is to find the main storyline*”. To this end the analysis of the qualitative data follows the narratives of the respondents around the core category of Disaster Risk Assessments activities and the sub categories are the prospects and challenges encountered.

In terms of the qualitative data, the responses to the interviews were recorded digitally, then transcribed to text and grouped into categories that matched the themes discussed in the literature review. The results of which are discussed in the chapter on findings. The web application mentioned above provided a means of exporting the data into SPSS. The simple descriptive statistics are displayed graphically using Microsoft Excel. The responses were analysis by collating and summing them up based on the range of structured answers. The key criteria discussed in the literature review, was used to determine the questions and therefore determining compliance to the institutional arrangements. One of the themes is of course the Disaster Risk Assessment activities performed by the City of Cape Town. The categories and themes have therefore, deliberately been linked to align the research questions to the theoretical approach, the data analysis and discussion of the findings or results.

3.7 Limitation of the methodology

While there may be common lessons amongst the experience of metros in performing risk assessments, this study offers little to no inferences beyond the contextual environment surveyed, i.e. the City of Cape Town. It is clear that as a case study, it holds truths that may not even be applicable in other district municipalities within the same province, e.g. the Cape Winelands District municipality. This municipality a.k.a. Stellenbosch is on the border to the City of Cape Town, but the contextual differences are vast e.g. the budget is much smaller and the human capacity will necessarily be less than Cape Town.

3.8 Ethical Considerations

The respondents participated in a voluntary manner while their anonymity was ensured. Respondents were not coerced into answering any questions or providing qualitative data. They were free to halt their participation at any point in the interview or survey. The research was conducted in an ethical and confidential manner.

This portion of the study has highlighted the research methodology which was employed in assessing who should have been interviewed and questioned, the procedure that was followed, the methods used to collect data, sampling design and sample size considerations and ethical issues that were considered, were discussed. The following section speaks to the results which emerged.



CHAPTER 4: RESULTS – PRESENTATION AND DISCUSSION

The study was undertaken to understand how Cape Town performed in the light of utterances by George Killian, the Acting Executive Manager: Disaster Management of the National Disaster Management Centre that many municipalities, were struggling to complete their Disaster Risk Assessments. This study seeks to broaden the understanding of Disaster Risk Assessments in the field of study, Disaster Management within the City of Cape Town. To this end, this chapter presents the findings from the primary research conducted. In order to follow a structured approach, the findings are presented in the themes mentioned in chapter 2 and contain both simple descriptive statistics and narratives.

4.1 Organisational units / parties

The Disaster Management Act (No. 57 of 2002) and National Disaster Management Framework require certain institutional arrangements. These institutional units then initiate the risk assessment, participate in the Disaster Risk Assessments, provide oversight of the process, draw up the Disaster Risk Plans, integrate them into the Integrated Development Plan and provide an annual report to the City Manager, Provincial authority and the National Disaster Management Centre, as such the establishment and effective functioning of these institutional units are vital in the Disaster Risk Assessment process. This section provides more detail on whether these institutional units have been established.

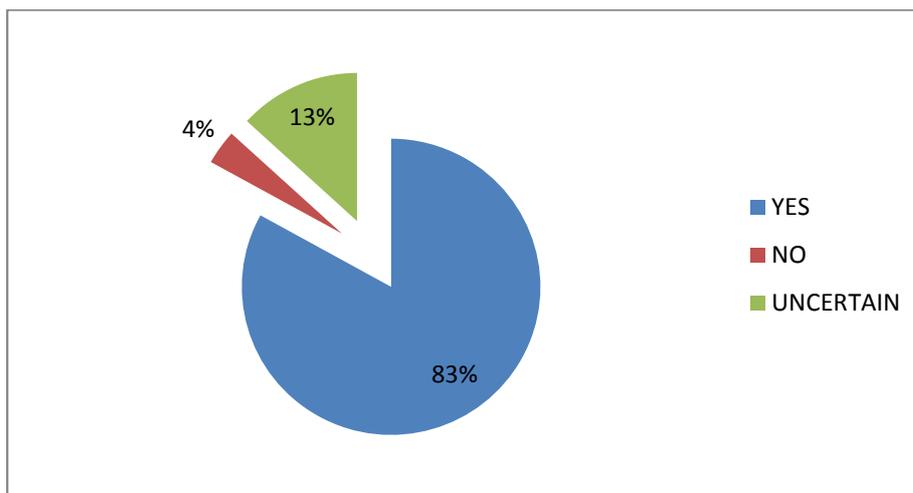


Figure 3 Establishment of a Disaster Management Centre

The City of Cape Town has indeed established a municipal Disaster Management Centre. The vast majority (83%) of respondents agreed. The 13% of uncertainty are ward counsellors.

The data often showed that some respondents were either uncertain or in disagreement about the questions and a pattern is visible in the data. These respondents were often from the ward counsellors group. It appears that ward counsellors were often not aware of the institutional and policy arrangements implemented by the City of Cape Town. This was usually because they were new counsellors or they were simply not in office when the Disaster Risk Assessment activities were performed. Throughout the ensuing qualitative findings this pattern repeats, i.e. that ward counsellors are uncertain or are not aware of the Disaster Risk Assessment activities and implementation by the City of Cape Town and therefore have voted “no” or “uncertain”.

Incumbents in this role, the Head of the Disaster Management Centre are appointed in terms of Section 45 of the Disaster Management Act (No 57 of 2002), herein referred to as the ‘DM Act’. Furthermore, the duties of the Head of the MDMC are laid out in Section 44 of the DM Act. It was with this mandate that Cape Town’s MDMC Head was appointed in 2005.

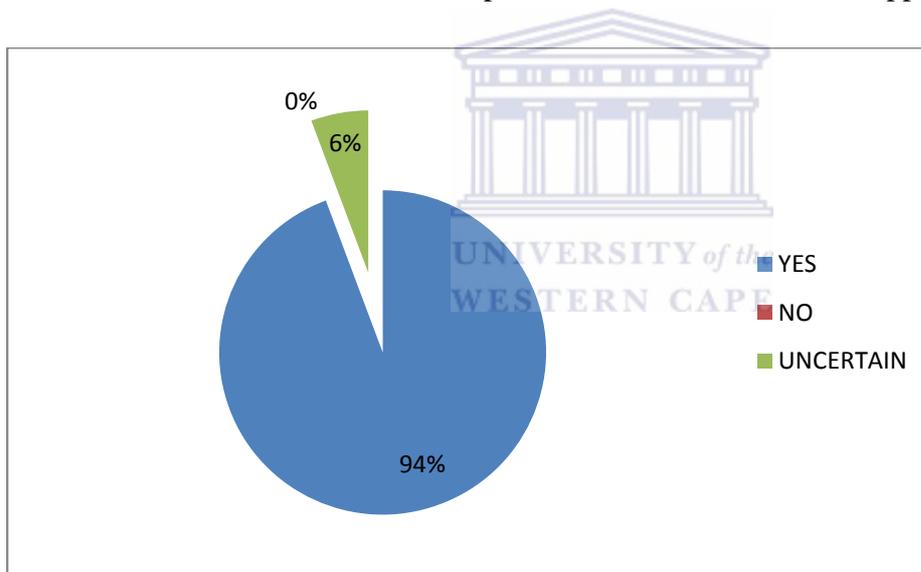


Figure 4 Appointment of a Head of the Disaster Management Centre

Respondents strongly agreed (94%) that the City of Cape Town had appointed a Head of the Disaster Management Centre. The “Uncertain” respondent represents a statistical outlier and as mentioned above are from the ward counsellor group.

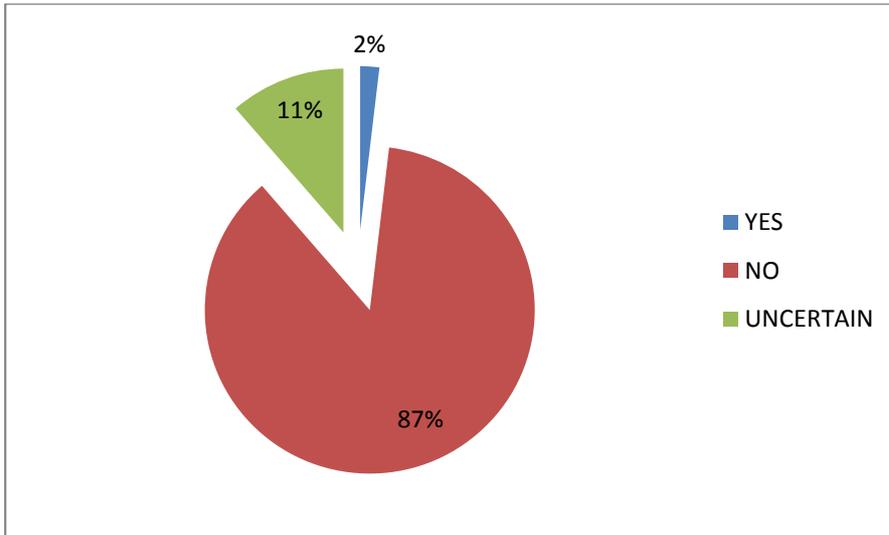


Figure 5 Head of Disaster Management Centre holding other portfolios

The majority (87%) of respondents confirmed that the Head of the Disaster Management Centre in the City of Cape Town does not hold other portfolios. This is a good indication as the incumbent is therefore dedicated to Disaster Management-related activities. Again the 11% uncertainty is from the ward counsellors group of respondents.

The majority (89%) of respondents confirmed that the City of Cape Town had established a Municipal Disaster Management Advisory Forum. The City of Cape Town is divided into four areas namely Central, North, East and West. Each of these areas is the responsibility of one of four Area Managers. These Area Managers, chaired by the Head of the Disaster Management Centre formed a committee called the Municipal Disaster Management Advisory Forum in 2005.

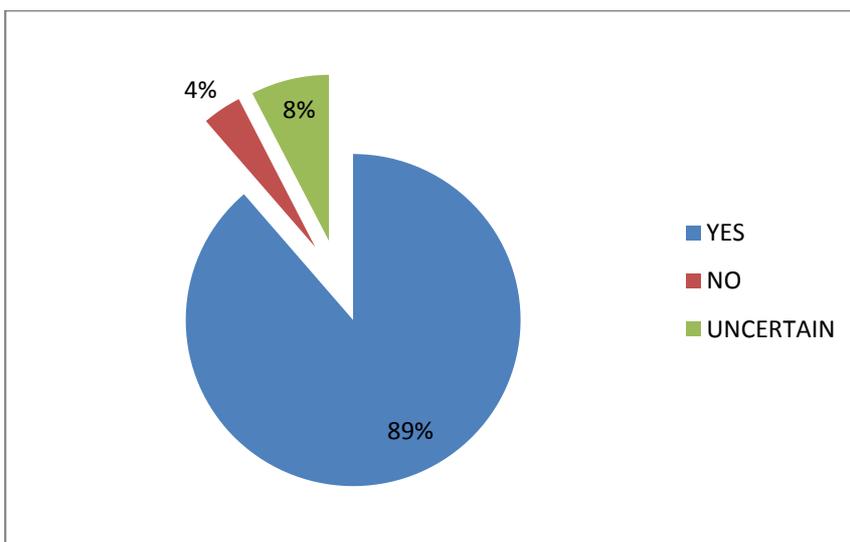


Figure 6 Establishment of a Municipal Disaster Management Advisory Forum

The respondents overwhelmingly (91%) agreed that the City of Cape Town has established a unit of volunteers. According to the qualitative responses, the Cape Town has a long history of volunteers. According to one respondent, the mountain rescue function that responds to distressed victims on Table Mountain is purely run by volunteers.

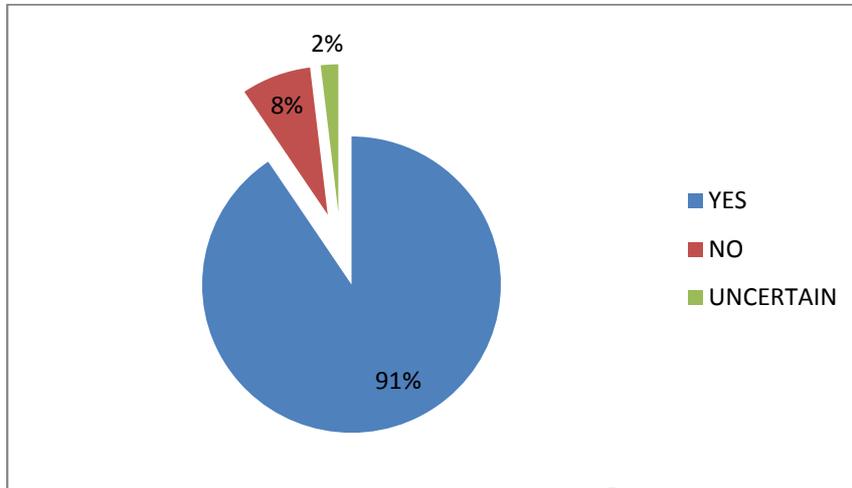


Figure 7 Establishment of a Unit of Volunteers

Again, the majority (66%) of respondents confirmed the establishment of an Interdepartmental Disaster Risk Management Committee in the City of Cape Town. The 34% of respondents that collectively voted either “no” or “uncertain” were once again from the ward counsellors group and they do not have any contact with this committee, but the narratives from the qualitative portion of the study confirms the existence of this committee.

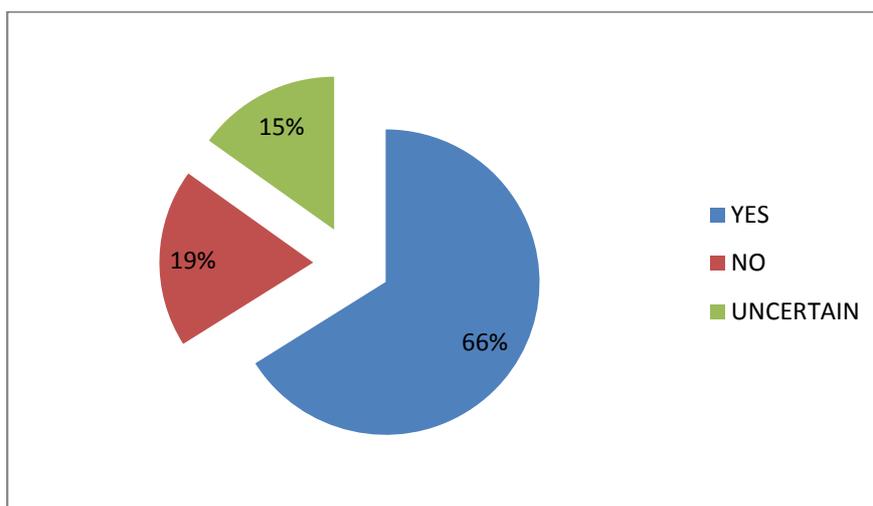


Figure 8 Establishment of an Interdepartmental Disaster Risk Management Committee

The results indicate that the most effective institutions are the Disaster Management Centre and the Disaster Risk Management Forum surpassed only by a very effective Head of the Disaster Management Centre. The Interdepartmental Disaster Risk Committee achieved the lowest score, indicating that respondents felt that this institutional unit was ineffective. The unit of volunteers have not scored high. This may be attributed to the fact that the respondents are unaware of the efforts of volunteer. Here a more effective communication strategy celebrating success would benefit the City of Cape Town.

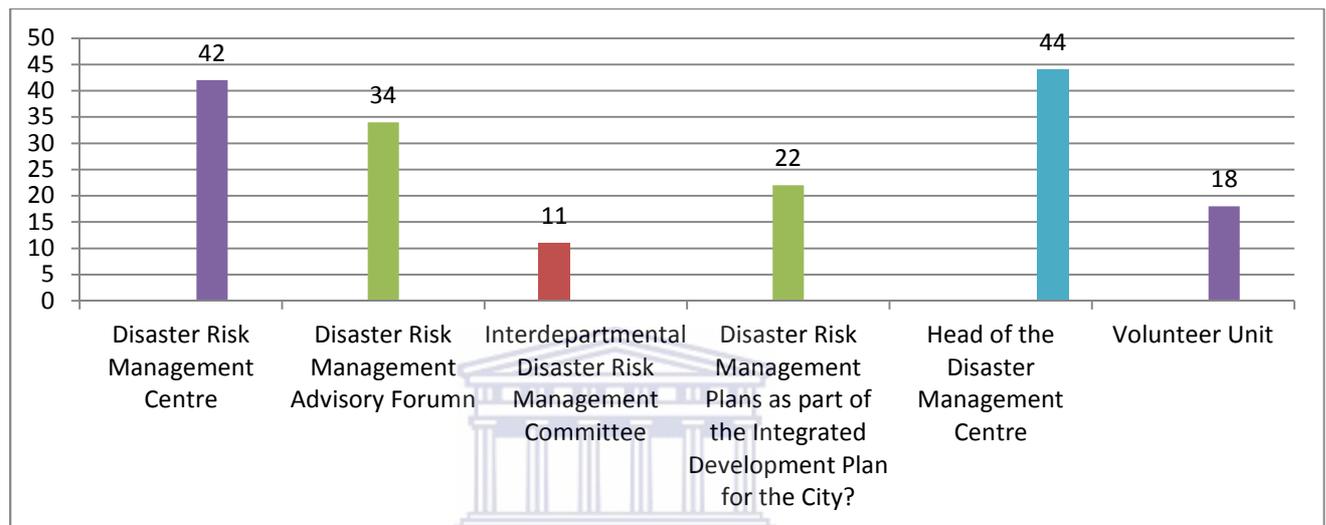


Figure 9 Effectiveness of Disaster Management Structures in the City of Cape Town

4.2 The Disaster Risk Assessment activities

These findings seek to describe how the City of Cape Town went about performing Disaster Risk Assessments as a function of the Disaster Management Centre. Furthermore, it describes what actions or approach was followed, by whom and when it occurred. To this end the findings are grouped into logical sections or themes dealing with aspects of the Disaster Risk Assessment activities, such as implementation of the disaster risk assessment requirements, the oversight of thereof, what occurred after the assessment, i.e. integration into the Disaster Management Plans and into the Integrated Development Plan.

4.2.1 Disaster Risk Assessment process

Disaster Risk Assessments are mandated by the National Disaster Management Framework of 2005 in section KPA 2. The Disaster Risk Assessment process is initiated by the Head of the Disaster Management Centre. Shortly after his appointment, the Head of the MDMC the risk assessment process was initiated. The first challenge facing the MDMC was a lack of funding to undertake the risk assessment of a large city like Cape Town. It was soon apparent

to MDMC administrators that it would be impossible to conduct a comprehensive assessment with the financial resources at their immediate disposal. The old adage goes, one can only eat an elephant piece by piece, so too the Disaster Risk Assessment process needed to be broken up into manageable pieces and so a phased approach was planned as a strategy. The first phase of the Disaster Risk Assessment process would be undertaken as an internal project, which is often the case when funding is an issue. The strategy was to do a macro assessment in which the primary focus was to determine the facilities and resources available for preparedness in the City. This macro risk assessment took several months to complete. This assessment was completed in 2006. It became the foundation on which a comprehensive risk assessment was built. The second phase was the releasing of a tender to the private sector for the commissioning of a comprehensive risk assessment to be undertaken on behalf of the City by subject matter experts in the field. The tender process alone took several months to complete and was undertaken by the City's Disaster Management Centre staff with oversight provided by the Municipal Disaster Management Advisory Forum. This was a challenge for the MDMC staff as they did not have experience of the state's tender processes. Their expertise lay mostly in emergency medical and fire brigade services. The guidelines for what the risk assessment had to contain were provided by the National Disaster Management Centre. These guidelines also became the criteria for measuring the success of the comprehensive Disaster Risk Assessment. This cooperation between the NDMC and MDMC is supported by the qualitative data. The results for the co-operation between the City's Disaster Management Centre and the National Disaster Management Centre is also positive with 40% of respondents feeling that it is very good, 25% feel is good and 36% feeling it is acceptable. No respondents voted that it was unacceptable or extremely unacceptable.

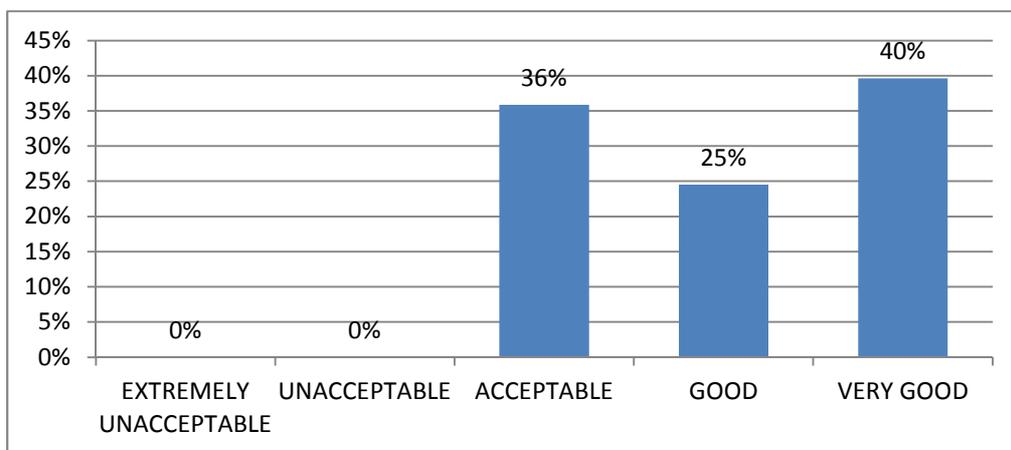


Figure 10 Degree of co-operation between the NDMC and the City MDMC

All respondents agree that the level of co-operation between the Municipal Disaster Management Centre and the Provincial Disaster Management Centre was acceptable or better. This is most lightly due to the engagement between these two centres during the hosting of the FIFA 2010 World Cup® based on the qualitative feedback.

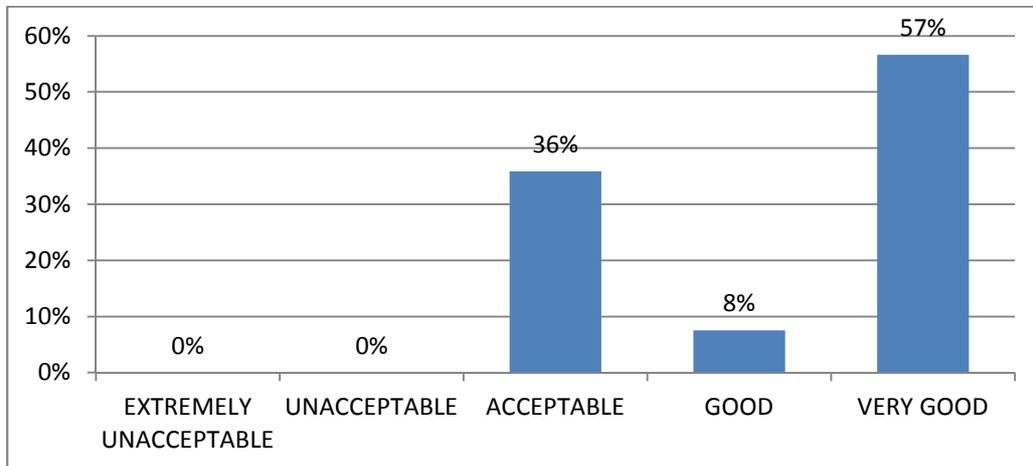


Figure 11 Degree of co-operation between the Provincial Disaster Management Centre and the City of Cape Town Disaster Management Centre

The tender mentioned above was awarded to a company called Aurecon in 2007. Aurecon is a consulting group consisting of 7500 people. The local subsidiary is head quartered in Lynnwood Pretoria. The Chief Executive Officer is Paul Hardy. The MDMC has partnered with mainly two vendors over the years to provide consulting and training services. Aurecon is the one vendor and Disaster Management Solutions (DMS) the other vendor. The Comprehensive Disaster Risk Assessment was not the only work done by Aurecon for the City of Cape Town. The Disaster Risk Management Training Centre of the City of Cape Town is in Alphen Centre, Constantia. This Training Centre uses Aurecon and DMS to provide awareness training as well as skills development opportunities for interested civil servants, e.g. occupational health and safety training. This three-way partnership is called the Events Safety Training Partnership (ESTP). Aurecon performed the comprehensive risk assessment during 2008 to 2010. It took eighteen months to complete the assessment at a cost of R 6.6 million. Aurecon and DMS also worked with the City of Cape Town on other projects as well like the Traffic Management Centre. The objective of the comprehensive risk assessment was primarily to firstly identify all the hazards facing the city and its inhabitants. A city the size and age of Cape Town faces many hazards. Historically, the City faces regular flooding in the winter season while fires are a regular occurrence in the summer

months. Informal settlement dwellers with their shacks are particularly vulnerable to fire in these settlements. Some of the factors contributing to this hazard leading to a disaster event are the use of paraffin stoves, candles and gas used for cooking lighting and heating. In addition, the shacks are built close together as community members try to find space to live. These poor social-economic circumstances along with the factors mentioned previously make the perfect storm for raging fires that destroy lives and possessions particular of those already ravished by poverty. The next step of the Disaster Risk Assessment process after identifying the hazards was to prioritize them. This meant that stakeholders could then focus on the highest priorities. The strategy was that the Disaster Management Plans were to be created in order to mitigate the high and medium prioritised risks. During the prioritising of risks a single formula governed the process, the risk factor assigned was calculated as the product of the hazard multiplied by the vulnerability and this is divided by the ability to cope, as shown in this formula: Risk = (Hazard x Vulnerability) ÷ The ability to cope (Respondent,[personal communication], 22 May 2013). The approach followed by Aurecon included traditional project management with regular project status updates and stakeholder meetings. For example, Aurecon met with the Disaster Management Advisory Forum on a quarterly basis.

In addition, Aurecon also employed a systematic research process similar to what academics would follow when producing a university paper. For example, they interviewed the Area Managers, Medical professionals from the City's emergency services, sector heads from departments like Roads, Storm Water & Drain, Electricity and Transport. It appears that the participation at local level was wide spread because they also interviewed the City Manager. They also interviewed civil servants at a National level, such as the Department of Housing Settlements etc. In other words the research net was thrown out over a wide area. Furthermore, they employed, co-opted and consulted with specialists in the area of seismology, climate change and geographical scientists too mention a few. The research net was not only thrown out across multiple sectors but also multi-disciplinary with many experts and scientists involved. The research methods followed within the comprehensive risk assessment included interviews, discussions, collation of data, categorisation of risks and publishing of the report with its findings, conclusions as well as the prioritised risks. This comprehensive risk assessment was further broken down into two sub-phases, the first one being a technical risk assessment undertaken largely through input from civil servants and subject matter experts in their fields as discussed previously. This brings one to a key theme namely community participation.

4.2.2 Community-Participation in Disaster Risk Assessment

The second part of the comprehensive risk assessment was to undertake a city-wide community-based risk assessment. Unlike the technical risk assessment, this assessment was undertaken largely with the input of laymen and community members. The approach followed in the community-based risk assessment was to work through the ward counsellors. The City of Cape Town has 105 wards and therefore 105 ward counsellors. Aurecon was contractually responsible for this phase as well but chose to outsource this to a third party, by Disaster Management Solutions, a private enterprise and focusing on training and coaching. The majority (53%) of respondents indicated that the level of the involvement of the communities in Disaster Risk Assessment is not adequate, while 28% of respondents thought that it is adequate.

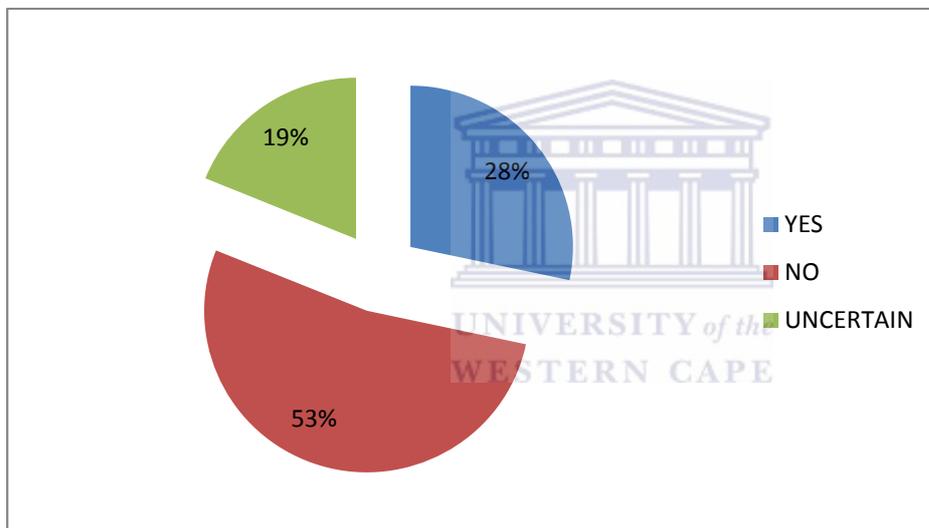


Figure 12 Adequate level of involvement by the Community in DRA

While more than 60% of the respondents felt that the City's MDMC played a leading role in educating communities about Disaster Risk Management, the analysis of the qualitative evidence presented in the respondents' narratives reveals that most of these efforts are aimed at schools. Schools often visit the City's Disaster Management Centre and during these field trips they are exposed to Disaster Risk Management talks. Quantifying the effectiveness of these efforts of Disaster Risk Assessments requires additional research.

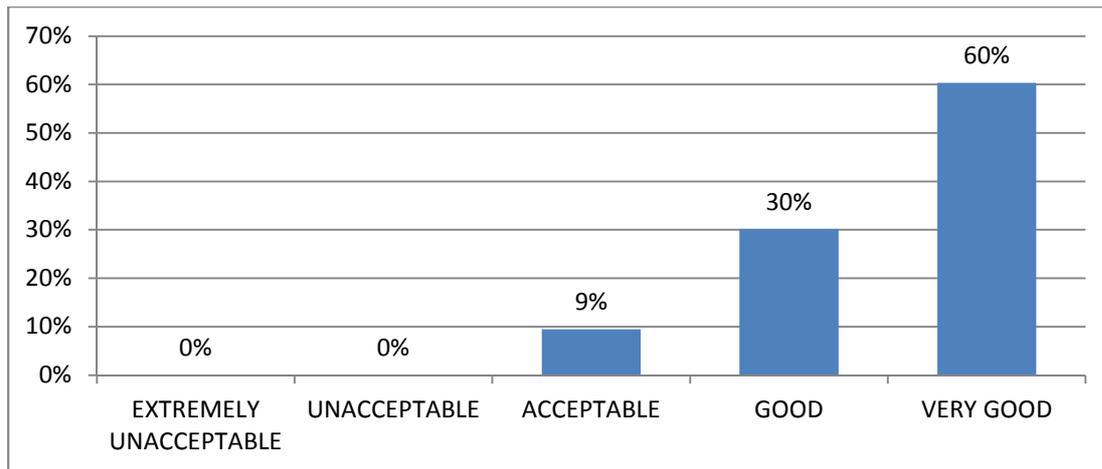


Figure 13 Extent to which City's MDMC plays a leading role in educating the Community

The results show that the interaction between the MDMC with regard to Disaster Risk Assessments, is mostly between the Ward Counsellors, NGOs & to a lesser extent with community organisations like Rate Payers Associations. Interactions with other community-based organisations are almost non-existent.

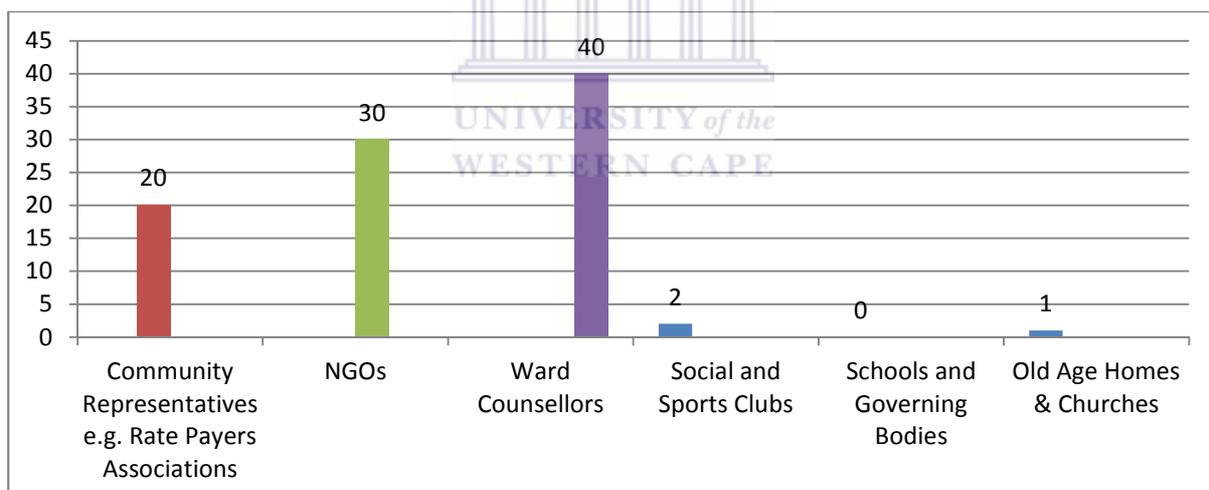


Figure 14 Analysis of involvement of communities and community-based organisations

The vast majority (82%) of respondents believe that the consultation during Disaster Risk Assessments were very good. However, observations during the telephonic interviews suggest that only 86 of the 105 wards attended the meetings arranged by the outsourced organisation. Therefore community involvement can be deepened.

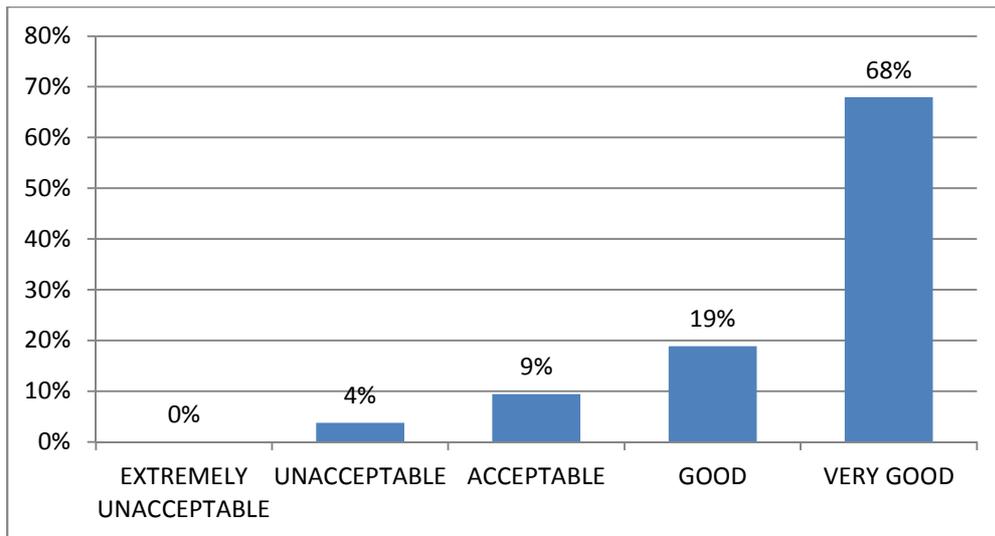


Figure 15 Perception about extent of Wards consulted during DR Assessments

The picture looks a lot less optimistic when one refers to informal projects set up in response to community-launched initiatives with only 42% of respondents agreeing that informal projects were established. While 38 % said there were no informal projects and 20% were uncertain of the status of informal projects. Community involvement can be broadened.

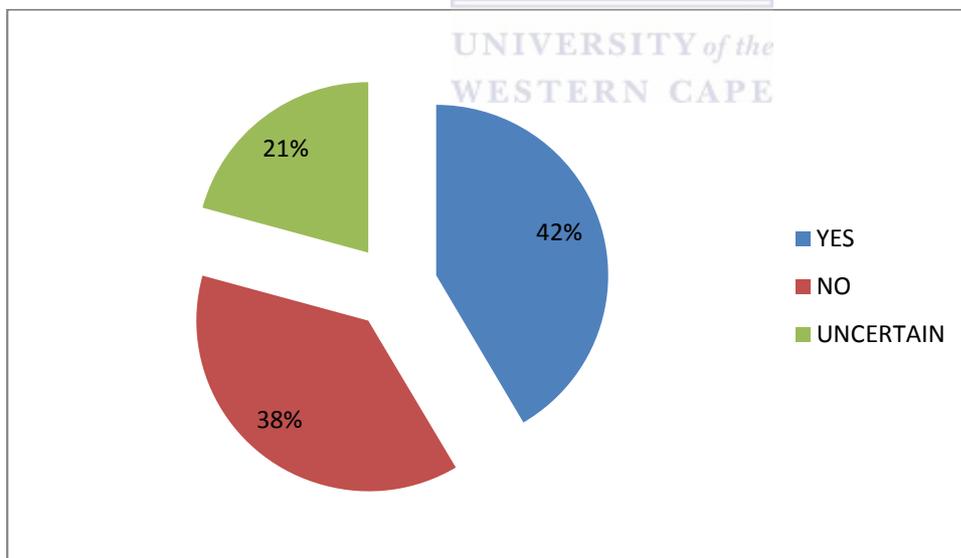


Figure 16 Launch of informal Disaster Management-related projects by communities in the City of Cape Town

In terms of their involvement of other line functions, most (81%) respondents agreed that other line functions were adequately involved in the Disaster Risk Assessment process.

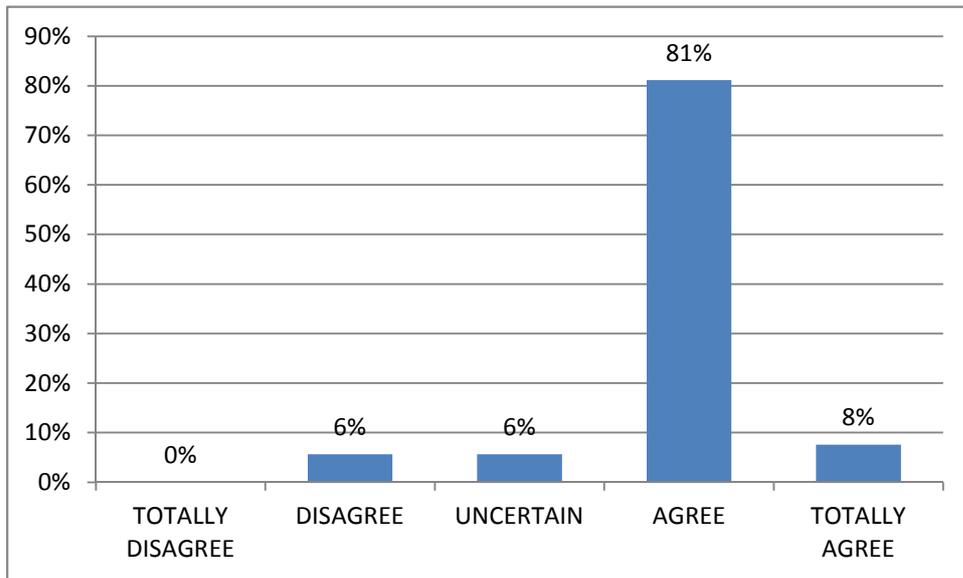


Figure 17 Adequate involvement from other line functions in the DRA process

In terms of having formal Disaster Management Projects in place, 80% of respondents agreed that the City of Cape Town has established such formal projects. There is also a formal role in the Disaster Management Centre that deals with such projects, according to the qualitative results.

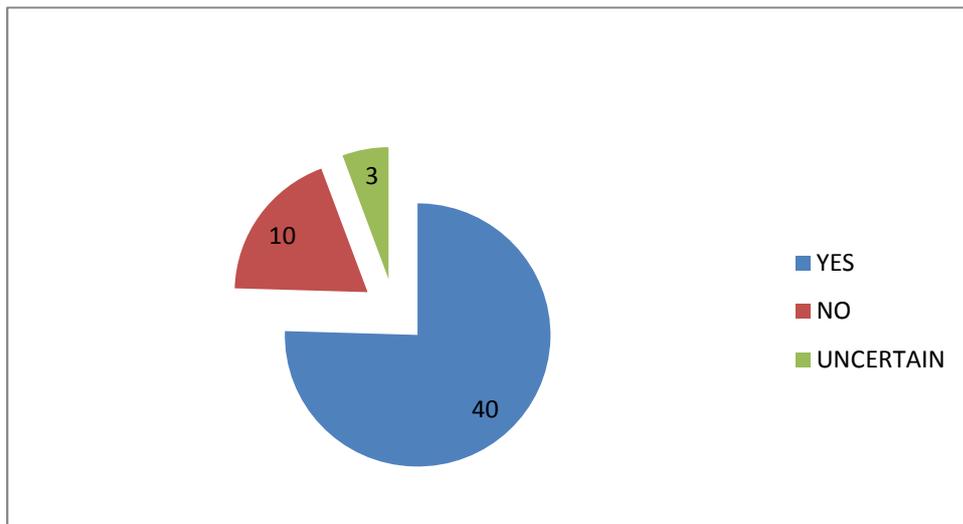


Figure 18 Established formal Disaster Management Projects

The following section describes the oversight practised during the risk assessment tender.

4.2.3 Oversight of the Disaster Risk Assessment process

The Municipal Disaster Management Advisory Forum (MDMAF) provided oversight to Aurecon and DMS during the Disaster Risk Assessment process. This forum is co-chaired by the City Manager and the Head of the MDMC. These outsourced consultant firms presented their approach to the DRMAF for approval. During the tender they had to provide regular progress reports and quarterly meetings were held. Once the Disaster Risk Assessment was complete, the Comprehensive Disaster Risk Assessment Report was presented to the Disaster Management Advisory Forum. In order to evaluate the successfulness of the risk assessment report and close the tender, the guidelines from the National Disaster Management Centre that were used to evaluate the proposals from private-sector contractors during the tender process were also used by the DRMAF to determine if the comprehensive risk assessment was successful. The tender guidelines also outlined that the hazards needed to be categorised into high, medium and low risk hazards. Furthermore, the report needed to prioritise the hazards in terms of risk priority. The report did comply with these criteria and as a result it was accepted by the Municipal Disaster Management Advisory Forum. The tender and risk assessment report were signed off by the Head of the MDMC and Co-chairperson of the DRMAF. It is interesting to note the contrast in outcomes of the technical risk assessment versus the community-based risk assessment. As one may expect in a city with regular seasonal floods and fires, these hazards were on top of the technical risk assessment, while the community-based risk assessment featured crime and disease at the top of the prioritised list. The report scope, as treated by the vendor, was far wider than the budget for mitigation and as a result, some of the hazards identified had lower priorities that would not be addressed by future disaster management plans, e.g. earthquakes in Cape Town. It is interesting to note that when researching all the hazards the city faced, the historical records were very valuable in this regard. Among other things, they provided additional information about hazards and how often they had occurred. As a result of the review of history, it was discovered that the City of Cape Town had suffered an earthquake on 4 December 1809. The earthquake measured 6.5 on the Richter scale (Retrieved 13 May 2013 from www.sahistory.org.za). This hazard as an example was present in the report but not given a high priority, despite having a high category and this is as a result of a low probability score. The final result therefore with regard to earthquakes is that it is excluded from the disaster management plans as these were focussed on the high and medium priorities only. The

following section describes what occurred after the comprehensive Disaster Risk Assessment report was presented.

4.2.4 Integration with the Disaster Management Plan

Following the risk assessment report, disaster management plans were to be drawn up. This process was overseen the Head of Corporate Planning & IDP at the Disaster Management Centre. Ultimately the plans were to form part of the City's Integrated Development Plan (IDP). The current Disaster Management Plan shows that it has been revised several times. The first Disaster Management Plan was signed off by the Head of the MDMC on 12 May 2007, following the completion of the macro risk assessment. The next revision took place on 6 May 2008, at the start of the comprehensive risk assessment. A superficial revision was signed off on 3 October 2008 as quarterly feedback came from Aurecon. The major revision was signed off on 1 March 2011 after the comprehensive risk assessment was completed. The current version was signed off on 25 April 2012 and most of its updates revolve around organisational structure with the inclusion of new directorates. The qualitative data supports the result that the City has created DMPs. The majority (81%) of respondents agreed that Disaster Management Plans had been created for the City of Cape Town.

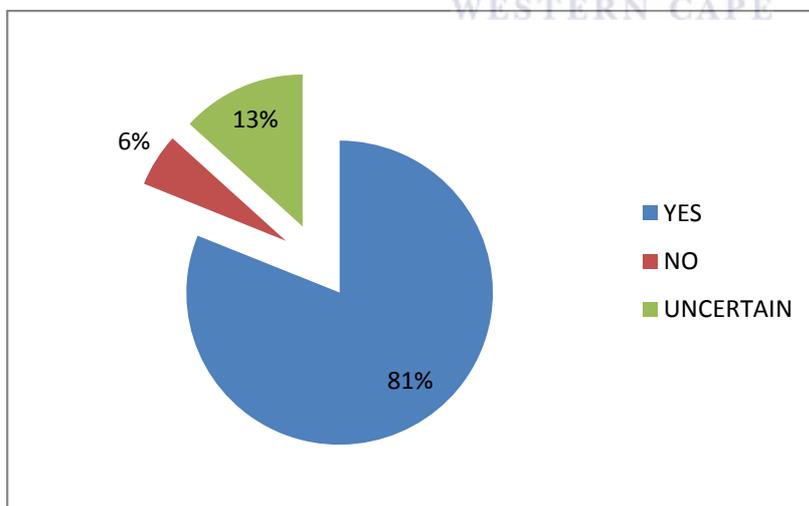


Figure 19 Creation of Disaster Management Plan (DMP)

The City of Cape Town's Disaster Management Plan is confidential and is intended to be viewed as an internal document only, but a brief discussion on its structure and contents is appropriate. The DMP consists of several sections. The introductory portions deal with the

legislative mandate, purpose and the City's approach to Disaster Management. Ensuing portions deal with the institutional arrangements. It is in this area that one can see the benefit of hosting international events like FIFA 2010 World Cup® soccer matches because several inter-departmental committees have been established to cope with FIFA requirements. There is a Safety & Security Portfolio Committee that reports to the City Manager. There is an Interdepartmental Disaster Risk Management Committee (IDRMC) that reports to the Municipal Disaster Management Advisory Forum. Below the IDRMC are two mitigation teams. Firstly, Hazard-specific Planning & Mitigation Team consisting of representatives for Koeberg Nuclear Plant, Aircraft Disaster, Major Coastal Oil Spills, Mass Events, Critical Infrastructure Electricity Distribution. The second team is the Service Discipline Disaster Planning & Mitigation Team which has representatives from the City's line functions, namely Safety & Security, Health, Transport, Roads & Storm water, Utility Services, Integrated Human Settlement Services, Strategy & Planning and Community Development. In addition, there are the teams that exist in the Disaster Management Centre, such as Disaster Operations Team running the Disaster Operation Centre, the Service Command Posts that provide tactical and operations management in the On-site Joint Operations Centre. Finally, there are the other functions that operate out of the Disaster Management Centre, namely Media Liaison and Public information.

The MDRMP then continues to describe the responsibilities of the roles within the teams and functions listed above. The plan lists the disaster funding arrangements. The next section in the municipal plan deals with service specific disaster risk management plans. The following section of the plan has the hazards, vulnerabilities as prioritised by the risk assessment. Ensuing sections include the Disaster Response Plans, classification of disasters, pre & post-disaster responsibilities, information on updates, common abbreviations used and references.

4.2.5 Disaster Risk Assessment and the IDP

The City's Integrated Development Plan (IDP) is an integral part of the Risk Assessment process because ultimately the disaster management plans are to be rolled into the IDP in terms of its overall agenda setting status for each metro and district municipality. The City of Cape Town has an IDP that makes several references to disaster management.

The IDP document states:

“In developing and reviewing the IDP, the City engages extensively with Capetonians to establish their key priorities and ensure that these are addressed in the Five-year Plan. Much of the feedback from residents has pointed to issues of housing, crime and jobs as the top priorities for most Capetonians. The IDP seeks to address these issues in a number of its key strategic focus areas, while also guiding the City in meeting its other key responsibilities, such as the provision of basic services like electricity, water, sanitation and refuse removal; the provision of primary health care; and the management of disasters, roads, storm water, sport and recreational facilities, to ensure that Capetonians enjoy a safe, clean, well-maintained and pleasant city” (Integrate Development Plan, 2012. Retrieved 30 April 2013, from www.capetown.gov.za).

As laid out in the National Disaster Management Framework, the IDP addresses the key performance areas, integrated Disaster Risk Management, Disaster Risk Assessment, Disaster Risk Reduction, Response and Recovery. It speaks of the integration of the needs of Capetonians into the 5 year plan. The engagement with Capetonians refers to the community-based risk assessment and risk reduction. It also refers directly to managing disasters.

In determining the extent to which respondents felt that the DMP were integrate with the City’s IDP, 23% of respondents believed that the Disaster Management Plans were completely integrated with 28% felt it was partially integrated. Alarminglly 40% of respondents felt that the plans are seldom integrated.

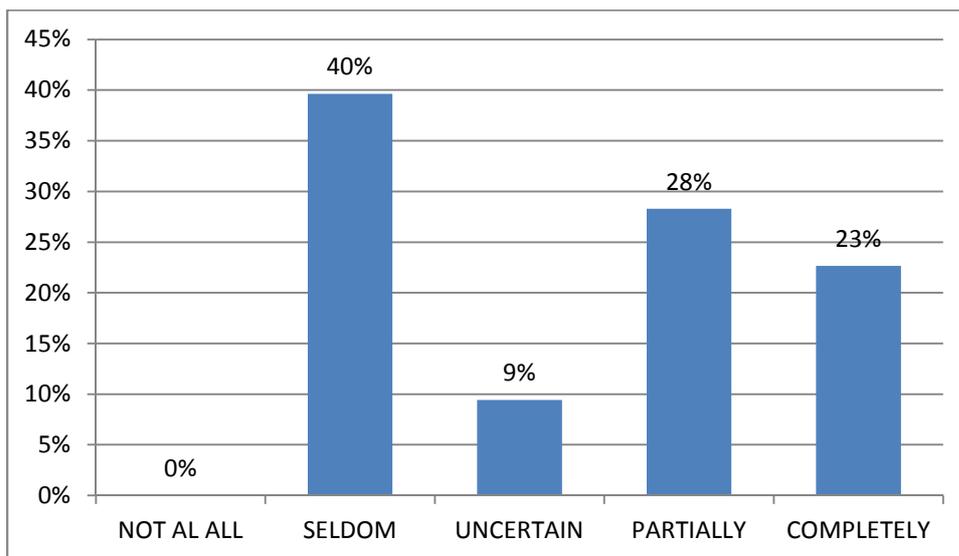


Figure 20 Extent to which the City’s DMP forms part of the City’s IDP

Interestingly, the City makes it clear in the IDP that issues such as “*education, policing and housing do not fall within the mandate of the City of Cape Town*” (Integrated Development Plan, 2012. Retrieved 30 April 2013, from www.capetown.gov.za). While true, this poses a dilemma to MDMC staff when assessing risks at community-level while the City Manager cannot effectively mitigate risks in these sectors due to unfunded mandates.

The IDP makes reference to the informal settlements and the risks that it poses to those communities: “*Cape Town’s large informal areas as well as its extensive biodiversity make it a high-risk location for disaster management*” (Integrated Development Plan, 2012. Retrieved 30 April 2013, from www.capetown.gov.za). As mentioned previously, one would expect this to feature as it is a widespread problem in the Western Cape. It also ties in with the hazards identified by the technical risk assessment process. In addition, the IDP reiterates the City’s commitment to proactive risk reduction in a statement that reads: “*Preparing for the likely impacts of natural disasters and climate change will enable the City to be proactive in its response to such emergencies makes reference*” (Integrated Development Plan, 2012. Retrieved 30 April 2013, from www.capetown.gov.za).

The majority (60% and higher) of respondents agreed or totally agreed that the City of Cape Town has a proactive approach to Disaster Management.

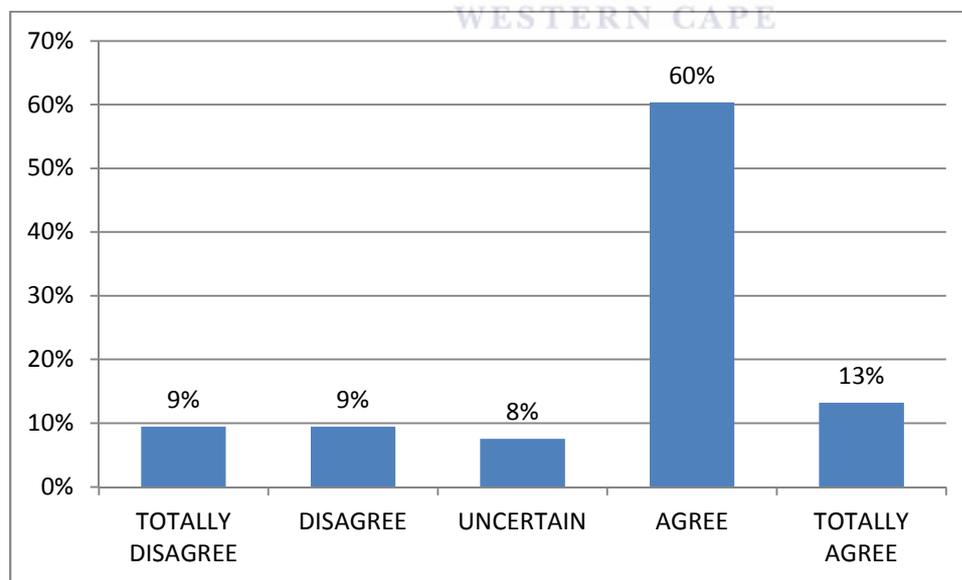


Figure 21 Approach to Disaster Management is proactive

The majority (53% and higher) of respondents agree or totally agree that the approach of the City of Cape Town is reactive. This response along with the previous response when

considered together, are contradictory. Based on these results one cannot determine that the Disaster Management Centre has shifted the perception of Disaster Management to a more balanced view between proactive vs. being reactive when compared to the mostly reactive focus of the previous civil defence era. More research on this topic is required.

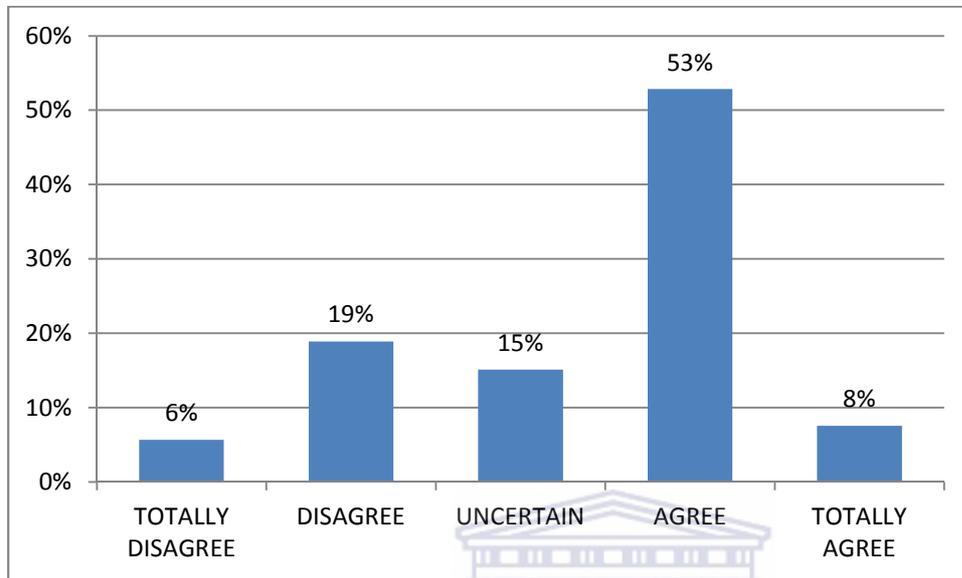


Figure 22 Approach to Disaster Management is reactive

Furthermore, the City through the IDP acknowledges that the poor are more vulnerable to disasters. *“Poor communities remain vulnerable to fire, flooding and other uncontrollable hazards, and the impacts of these events place additional strain on all resources”*, (Integrated Development Plan, 2012. Retrieved 30 April 2013, from www.capetown.gov.za). The acknowledgement by the City that the poor are more vulnerable to disasters is a well-documented theory in Disaster Management as a field of study. Poverty affects their ability to cope with disasters and therefore their vulnerability to hazards. Should disaster strike, their inability to cope puts them more at risk than more affluent communities. The IDP used information from the comprehensive risk assessment report and the macro risk assessment by Area Managers. In other words, it is not only to identify natural disasters as hazards but also the assessment of facilities. The IDP states: *“The use of the City’s halls as interim shelter in times of disasters impacts negatively on regular users”* (Integrated Development Plan, 2012. Retrieved 30 April 2013, from www.capetown.gov.za). It is therefore important to note that 202 halls in the City were identified as places of shelter should disaster strike. Using community halls presents a dichotomy to the City. On the one hand these facilities serve as disaster recovery mechanisms following a disaster but their frequent use in disasters also

impacts the City's ability to serve the rest of the community as mentioned above in the IDP. The IDP also makes reference to the City's Emergency Housing Programme. This programme provides relief to community members who have suffered housing-related disasters such as fire and flood.

“Crime and disorder are not the only safety-related threats to the city. Current levels of vulnerability to fire, flooding and other natural or human-induced hazards and the impact of these on communities and the environment, are threatening to inhibit development and growth and, in some cases, hard-won advances. The City is therefore gearing itself for an efficient emergency response” (Integrate Development Plan 2012. Retrieved 30 April 2013, from www.capetown.gov.za).

One is able to observe the acknowledgement of both the technical risk assessment and community-based risk assessment in the views expressed in the IDP as shown in the statement mentioned above because fire and floods were at the top of the risks in the technical assessment and crime and housing were at the top of the community-based assessment. With regard to mitigation the IDP refers to the City's Emergency Services Department, Disaster Management facility, Fire and Rescue divisions; again this is evidence of the macro assessment of facilities. An integral part of risk assessment is the capturing of disaster events on an on-going basis. These historic records were used during the comprehensive risk assessment when Aurecon uncovered Cape Town's low risk of earthquakes based on historical records. On-going record capture of disasters will also assist in future Disaster Risk Assessments. The IDP also displays evidence of the further updates to the Disaster Risk Assessments by providing disaster trends and statistics:

“The number of medical- and trauma-related calls received during 2009 for the City's Fire and Rescue Service has shown a marked increase from the previous year, while fire-related calls have shown a slight decrease over the last four years... During the previous financial year, the City Emergency Services maintained a high level of responsiveness and attended to a monthly average of 3 700 incidents, of which 1 250 were fires. Early 2009, in particular, saw massive wildfires in the Helderberg basin and the Devil's Peak area” (Integrated Development Plan 2012. Retrieved 30 April 2013, from www.capetown.gov.za).

In addition, the IDP also provides evidence that the Disaster Risk Assessment process has informed organisational structure with the creation of the Safety and Security Directorate. During the 2010 and 2011 financial year this directorate focussed on training and development to achieve a heightened state of efficiency. No doubt the hosting of an international sports event during that period drove some of this behaviour.

4.3 Training, Capacity and Resources

The majority (above 53%) agreed or total agreed that the staff of the Disaster Management Centre were adequately trained. However, the training issue clearly requires additional research because the findings revealed that the Disaster Management Centre staff were largely trained sufficiently to perform their role, however based on empirical evidence such as the narratives shared by respondents, this picture is not the same for stakeholders of the Disaster Risk Assessment process outside the Disaster Management Centre staff. In addition, the City employed subject matter experts to complete the Comprehensive Disaster Risk Assessment, which indicates that the skills to perform this as part of the roles within the Disaster Management Centre are lacking. Whether one will ever be able to perform the assessment in-house in a metro such as Cape Town is another matter. The level of expertise required probably means that it would always be a joint effort by the Disaster Management Centre, other sectorial stakeholders, community representatives, NGOs, Ward Counsellors and last but by no means least, private sector experts and consultants.

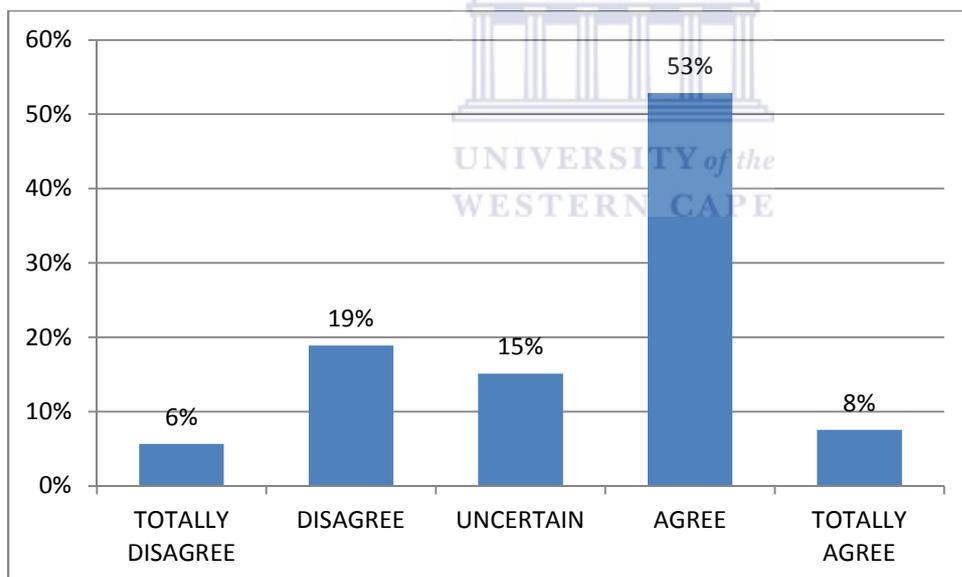


Figure 23 Sufficiently trained staff in the Disaster Management Centre

An overwhelming majority (75% and higher) of respondents voted either that they agreed or totally agreed that adequate knowledge existed of the enabling legislation. The qualitative results also indicate that the MDMC staff members in particular, are acutely aware of the enabling legislation. Several respondents said that this knowledge resides in the expertise of the MDMC staff.

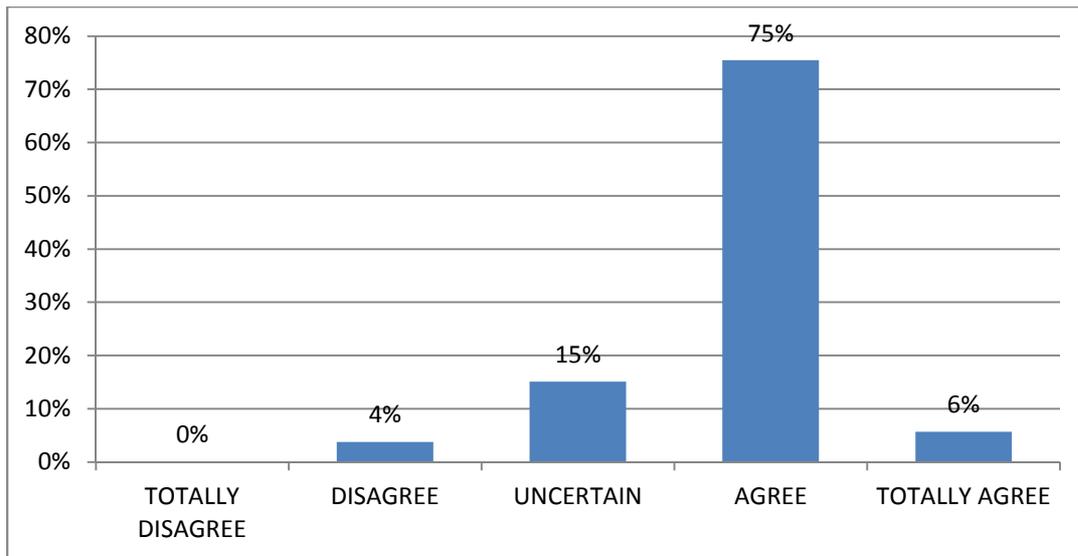


Figure 24 Adequacy of knowledge surrounding enabling Disaster Management legislation and policy

In terms of human resources, the majority (above 72%) of respondents agreed or totally agreed that the City’s Disaster Management Centre is adequately staffed (83 people).

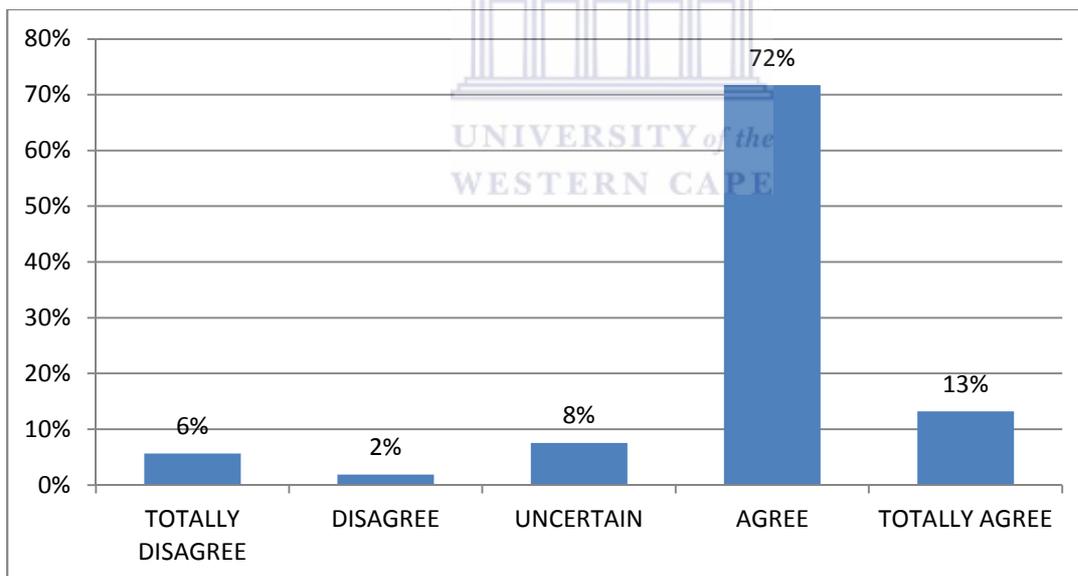


Figure 25 Adequate number of staff in the Disaster Management Centre

With regard to facilities, the majority (53%) of respondents agreed that there is an appropriate level of equipment to perform Disaster Risk Assessment and this may be as a consequence of having performed the comprehensive risk assessment discussed earlier as well as hosting international events. There was however, a significant number (34%) of respondents that did not agree that the level of equipment was adequate.

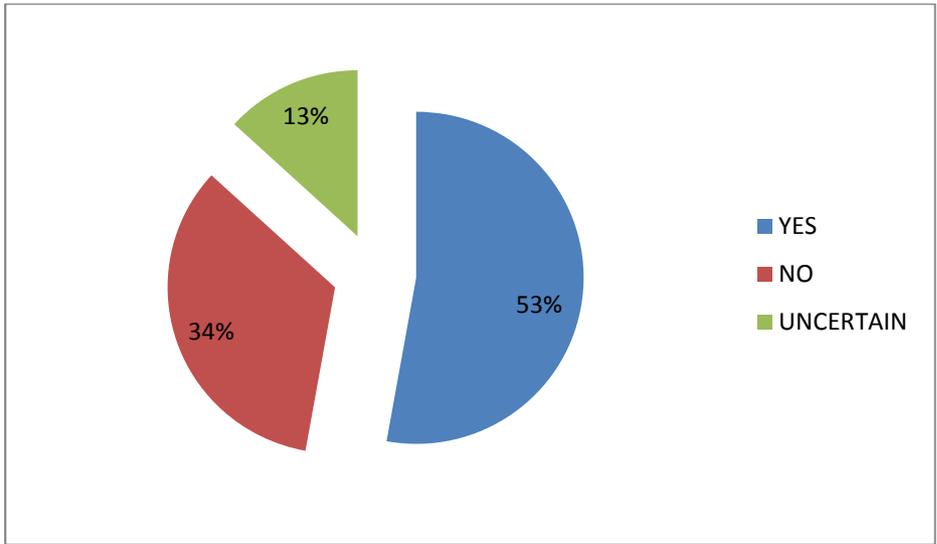


Figure 26 Appropriate level of equipment to perform Disaster Risk Assessments

With regard to financial resources, the majority (85%) of respondents agreed that the MDMC has a budget. The Disaster Management Centre has a dedicated budget based on these results and the qualitative feedback.

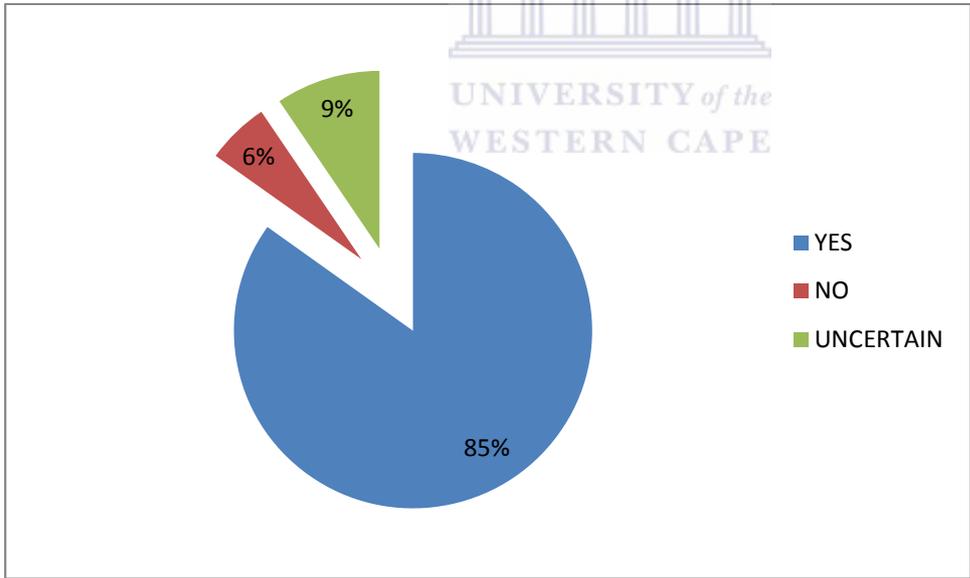


Figure 27 Budget for Disaster Management functions

Despite having a dedicated budget, the majority of respondents (66%) agreed that the budget is not adequate. Of the 21% of respondents that agreed the budget was adequate, most of them were Managers in the Centre and the City.

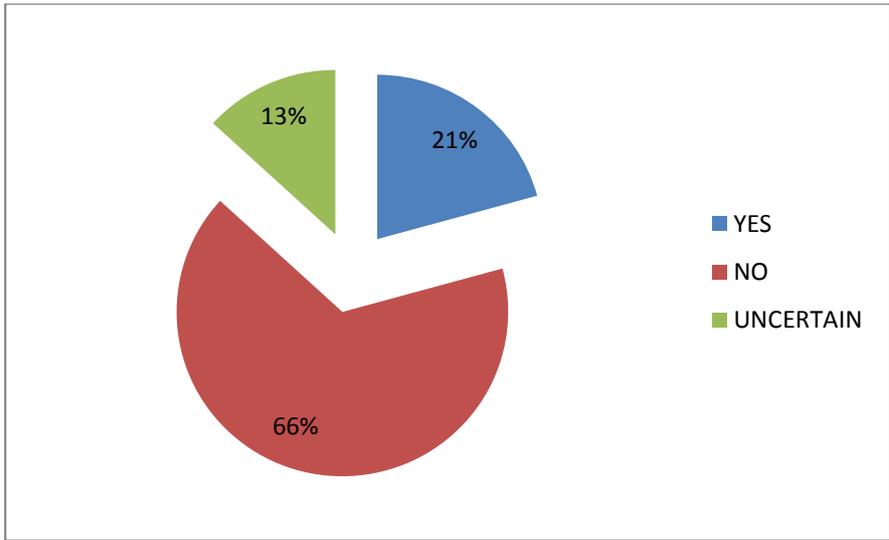


Figure 28 Adequacy of Disaster Management budget

The capacity of the municipality to perform disaster management activities is not restricted to the MDMC. The results show that 59% of respondents acknowledge that other departments do budget for Disaster Management activities. However, it must be noted that 37% of respondents did not agree.

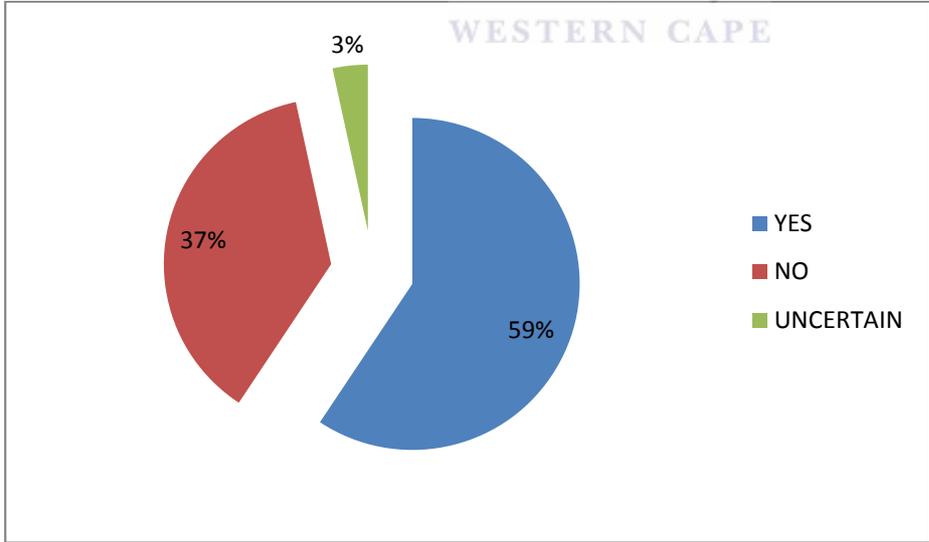
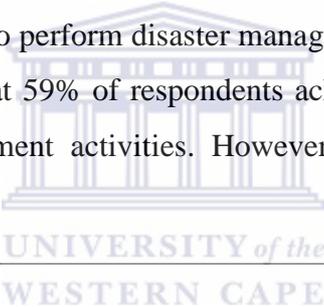


Figure 29 Other departments plan for Disaster Management activities

This result shows that other departments are less likely to budget for Disaster Risk Reduction activities, while this is expected when compared to the Disaster Management Centre itself, when viewed with the results from budget finding mentioned above, it shows that other

departments are not following through on Disaster Risk Reduction-related plans and programmes with the necessary budget to implement them.

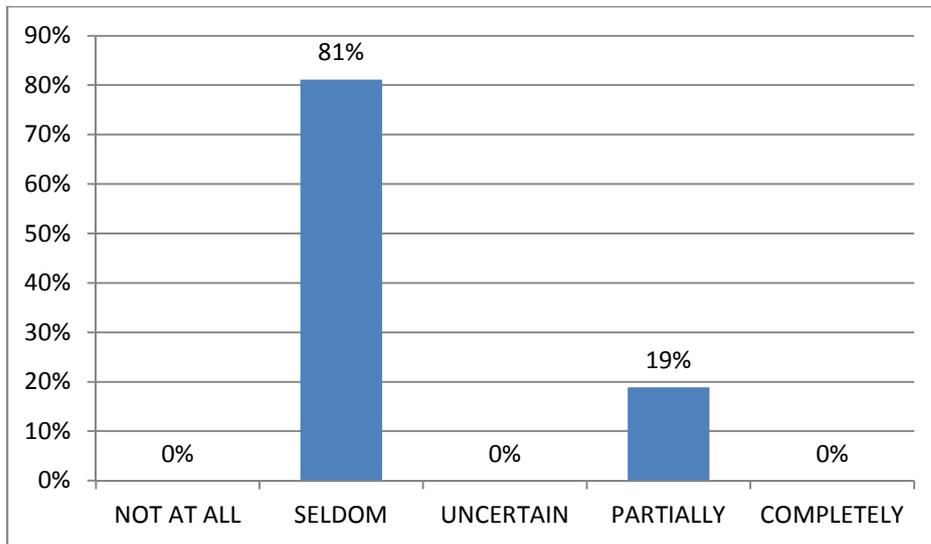


Figure 30 Extent to which other departments budget for DRR in their projects

With regard to interdepartmental capacity and cooperation, the roles and responsibilities are partially clear (75%) and more can be done to improve this position.

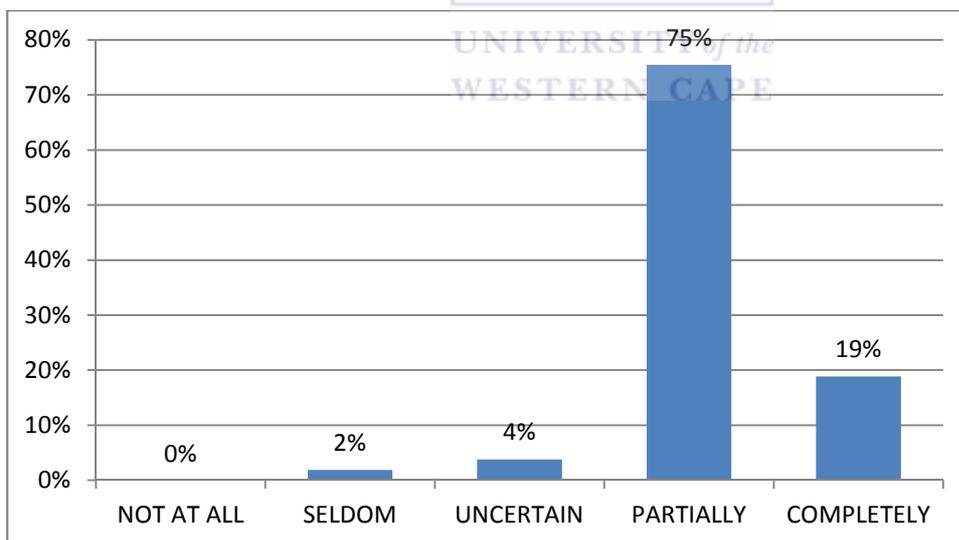


Figure 31 Extent to which there are clear roles and responsibilities between stakeholders in the City regarding Disaster Management

Most respondents felt that politicians are seldom clear on their role in Disaster Management (DM). As noted by eight respondents, the participation of politicians in the promotion of Disaster Management-related events will increase attendance and impact community-participation positively.

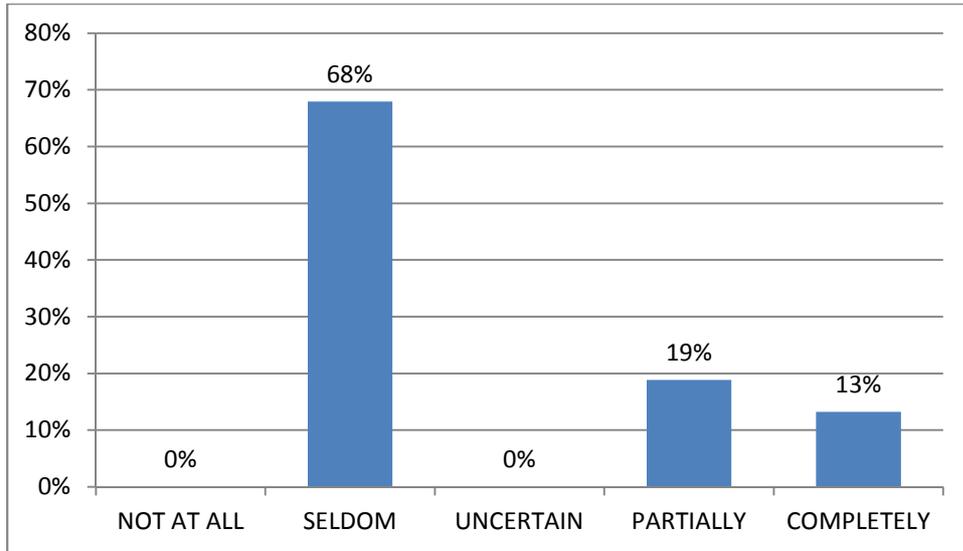


Figure 32 Perception that Politicians understand their role in Disaster Management

This concludes the section on the results. Recommendations are discussed in the next chapter.



CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The chapter deals with the conclusions as well as prospects that are in the City's favour and challenges it faces here. The chapter ends with the recommendations and areas for further study.

5.1 Conclusion

The primary research question of this study is how the City of Cape Town implemented Disaster Risk Assessment activities. The secondary questions are to determine the prospects and challenges faced and also to understand if the communities in the City participated in the Disaster Risk Assessment activities. The objectives of the study are to determine whether the City implemented the institutional arrangements required by the legislation. The data supports the following conclusions.

The City implemented Disaster Risk Assessments in phases. Firstly, it performed an internal macro assessment under the auspices of the four area managers. Secondly, the City put out a tender for a comprehensive city-wide disaster risk assessment. The Head of the Municipal Disaster Management Centre initiated both of these phases. The comprehensive disaster risk assessment has two parts, one was the technical assessment of risk by experts and the other was the community-based assessment. The formula used to prioritise the risks assessed is based on the UNISDR's formula of $\text{Risk} = (\text{Hazard} \times \text{Vulnerability}) \div \text{Capacity}$ (UNISDR, 2004). The highest risks, from the technical assessment were floods and fire, while the communities across the City rated crime and disease as their highest risks. These risks are reflected in the Municipal Disaster Management Plan and in turn in the City's Integrated Development Plan (IDP). However, it appears that the risks from the technical assessment has been given more credence as the City views crime and disease as national portfolios, when one looks at the comments in the IDP. Furthermore, in terms of the objectives, the City of Cape Town has a high degree of compliance to the institutional arrangements and outcomes required of the Disaster Management Act (No. 57 of 2002 and the National Disaster Management Framework. It has established a Disaster Management Centre, Municipal Disaster Management Advisory Forum, Interdepartmental Disaster Risk Management Committee, Disaster Management Plans, Volunteer Unit & appointed a Head of the Disaster Management Centre. In addition, the Head of the Disaster Management Centre

does not hold any other portfolio and is therefore dedicated to Disaster Management-related activities. This is significant because the SALGA study shows that in many other municipalities the incumbent in this role has other roles as well. This has a negative impact of the incumbents' ability to deliver Disaster Management-related outcomes because they have less time and are less efficient with this diluted focus. The SALGA study does not analyse what the other roles are but it does confirm that they are roles that conflict with the Head of the Municipal Disaster Management Centre role (Botha, et al, 2011). The results show that the community was involved in the risk-based assessments and the references to these findings are also prevalent in the City's Integrated Development Plan. The interaction could however be deeper i.e. beyond the Ward Counsellors. The Disaster Management Plans have been integrated somewhat into the IDP but this level of integration can be improved beyond merely quoting the hazards from the risk assessments. The discipline of budgeting and planning for Disaster Risk Reduction is not yet pervasive across all line functions of the City of Cape Town. Other departments view Disaster Management-related activities as the sole responsibility of the City's Disaster Management Centre and their staff. One cannot determine whether the City has effectively moved the approach to Disaster Management from a purely reactive one to a more balanced approach because the findings on this topic are contradictory. So while the legislation supports a shift from a previously reactive approach to a more pro-active approach, the reality in the City of Cape Town's implementation is unclear. More research is required to clarify the real position.

5.1.1 Prospects

It is interesting to note that the results show that staffing in the City's Disaster Management Centre is adequate. Again, this is in stark contrast to the SALGA study. Most municipalities report a shortage of staff. Even the Head of the Disaster Management Centre fulfils other roles (Botha, et al, 2011). For one, Cape Town is a large metro and has access to resources beyond the grants. Also, the City has hosted several international events and has probably benefited financially from the influx of tourists and increased GDP from these events and grants from national government during the FIFA 2010 World Cup®. The City therefore probably battles less from a lack of human capacity and financial resources due to these reasons.

Another factor that stands in contrast to the SALGA study is the adequacy of training and skill of the Disaster Management Centre. The results showed that skills and training of Disaster Management Centre staff are more than acceptable. This may be in part due to the dedicated Disaster Management Training Centre in Alphen Centre, Constantia. In the SALGA study, like the lack of staff, their training is also a problem. Human capacity and expertise in Disaster Management remain a problem in especially district municipalities (Botha, et al, 2011). The City of Cape Town has benefited from staff members that have Fire & Rescue Services and Emergency Medical Services backgrounds. Interestingly though, the same cannot be said for Cape Town's other line departments with regard to their Disaster Management-related skills and training. To the credit of the City Officials they have created a three-way partnership with Aurecon and DMS to plug this training gap.

Furthermore, an anomaly exists between the City of Cape Town and its dedicated budget for the Disaster Management Centre and the findings of the SALGA study. Again, the metro status of the City and its ability to draw from other revenue streams as well as hosting international events probably has impacted on this result. The City has also made Disaster Management a full directorate at the municipal level and as such, it participates in the traditional budget process of the city. Despite having a dedicated budget, the results show the level as being inadequate. This is also a double-edged sword in that the other line functions view the role of the Disaster Management Centre as singular and therefore, according to the survey results, plan for Disaster Management activities and projects but do not really budget for them, resulting in DM-related activities being somewhat mere rhetoric.

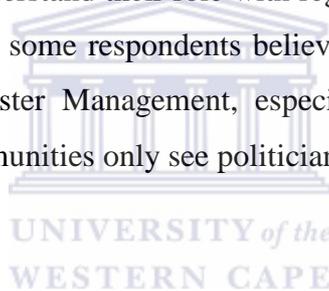
The majority (60%) of the respondents believed that the involvement of other line functions or sectors such as Housing, Water & Sanitation etc. were adequately involved in the Disaster Risk Assessment process. Based on the qualitative responses, the high percentage of agreeable results appears to be based on the comprehensive risk assessment performed by Aurecon in the past, where all line functions were interviewed. Despite this positive statistics represented above, the day-to-day involvement of other line functions is far less, outside of these specific times when Disaster Risk Assessments are performed. The interaction and consultation between the City's Disaster Management Centre and other line functions are limited to the forums set up by the Head of the Centre. The Head of the Disaster Management still has to drive these interactions. So involvement and integration of Disaster Management in other departments planning and risk reduction has positive elements in the City of Cape Town, there is room for improvement.

5.1.2 Challenges

In terms of challenges, the City's Disaster Management Centre faced a few. Firstly, the biggest challenge is the adequate level of community involvement in Disaster Risk Reduction and risk assessments, see figure 12. While many Ward Counsellors were interviewed by DMS, the involvement of community-based organisations could be much wider and deeper, see figure 14. Secondly, reconciling risks from the technical risk assessment and community-based risk assessment remains a challenge because they differ fundamentally. The technical risk assessment was conducted by technical specialists and consultants with expertise in risk and disaster management and as a result they clearly understood the objective. The hazards identified were true hazards and could also be correlated to historical events. It therefore came as no surprise that they identified floods and fires as two of the highest priorities facing the City of Cape Town. In stark contrast the community-based assessment, as intended, had input from the community and often laymen and ward counsellors were the spokesman for the community. The community contribution also did not have the benefit of the expertise in the field of disaster management and the intended outcome was not as clear to the communities as the specialists and as a result the hazards identified were more socio-economic related problems than traditional disaster risks. For example, many wards identified crime as one of the biggest risks facing several communities. Another risk that came as a surprise to the MDMC team was disease. The communities raised several problems that were near and dear to their hearts, often around the lack of service-delivery. It was interesting to observe the different views of city officials versus community members on the topic of hazards. In the example mentioned above the overwhelming feeling from the city officials was that those types of issues e.g. crime were the responsibility of the South African Police Services, while community members could not understand why these issues were not appropriate hazards. Poorer communities used the risk assessment meetings as platforms to complain and raise issues that did not necessarily related to the identification of hazards. Many communities could not understand the need for spending money on prevention of hazards becoming disaster events versus additional schools, facilities or repairs to roads. The MDMC management acknowledge that they would need to spend more time on educating the communities on disaster risk awareness. In particular, a respondent remarked that one needed to brief the community exactly on what was expected when identifying hazards. Thirdly, the MDMC team also experienced logistical issues relating to meeting with the communities. These include among others poor attendance due to a lack of transport. The MDMC often had to arrange transport despite the fact that Aurecon and DMS were

responsible for the community-based assessment. Providing an effective means of communication at the meetings, proved challenging in some wards. Affluent wards had less of these issues. For example, many affluent wards had a community website with news bulletin boards and inhabitants had the ability to pull information or even have it pushed to them because their email addresses were registered on the website. The MDMC has to deal with a wide range of income groups with varying needs when consulting them on what they believe to be hazardous in their neighbourhoods. Despite these logistical issues, the MDMC has a duty to include all wards and especially those that don't understand the terminology and can't afford to get to the meetings because the poor are the most vulnerable and therefore need their hazards identified, prioritised and mitigated. Therefore it is recommended that a communications strategy be designed to cater to especially to the poor communities.

Finally, confirmed by the qualitative results, another challenge is that respondents believe that politicians do not clearly understand their role with regard to Disaster Management. The qualitative results also show that some respondents believe that politicians can play a more active role with regard to Disaster Management, especially at a community level. One respondent commented that communities only see politicians around election time.



5.2 Recommendations

The Disaster Management Centre needs a communication strategy. Such a strategy needs to focus on communication with the community, including the Ward Counsellors and other organisations beyond just schools. It also needs to cover communication protocols with other line functions within the City of Cape Town. The MDMCs at metro level along with the NDMC need to create a forum where the lessons learnt and approach can be shared with district municipalities in a spirit of “Ubuntu” (a Xhosa word meaning humanity). To a lesser extent, it needs a communication strategy to communicate upwards to the PDMC & NDMC.

The roles of line functions, outside of the MDMC, need clearer roles and responsibilities defined, in terms of their Disaster Management-related activities. Cape Town's Disaster Management Centre needs to lobby with the City to have Disaster Management-activities incorporated into City Officials' KPIs and performance contracts. This will lead to deeper co-operation and awareness. Changing the behaviour of line functions to take ownership of their portion of Disaster Management and specifically Disaster Risk Assessments will take time

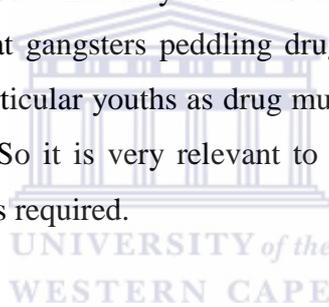
and will be aided by clearer role and responsibility definitions within the City. The primary challenge being that the other line functions in the City still view Disaster Management as the primary role of the City's Disaster Management Centre.

The City needs to do more to utilise the Disaster Management Training Facility in Alphen, Constantia in order to promote Disaster Management training among civil servants, despite the three-way partnership with the MDMC, Aurecon and DMS. The MDMC should also have City Officials attend Disaster Management training as part of their induction or "on-boarding" of new personnel. The City has the Training Centre in Alphen and should leverage this investment more. It is recommended that such training be made part of the induction and on-boarding process of staff members in the City. In addition, the performance contracts of senior staff members should include Key Performance Areas that enable budgeting and planning for Disaster Management-related activities and projects. The KPAs and Enablers from the National Disaster Management Framework give credence to this. This induction should include Ward Councillors.

The community involvement can be improved through deeper reaching educational events and more community meetings with other community-based organisations beyond the ward counsellors and schools. It must focus mainly on the poorest communities where vulnerability is at its highest. This awareness and education, as with many community-based events cannot be over-emphasized. Often the quality of the feedback from the community was proportional to the amount of educative input provided by the organisers. To this end, the City has a dedicated Communications department and the MDMC has an official dedicated to raising public awareness and communication especially with community-based organisations such as NGOs and Schools. Despite the observation of several field trips from various schools to the MDMC, awareness and education of disaster risks remains an on-going journey and ideal, as opposed to a current state of affairs. The City also needs to focus on interacting more with the community, entertain their interpretation of their highest risks of crime & disease, educate them about disaster risk reduction and the quality of output, in the form of community-based risk assessments, should lead to more community-representative disaster recovery plans. In turn, integration with the IDP and development programmes will mean that their needs and service are more likely to be met in the City of Cape Town. Clearly one can see the impact of hosting international events like the World Cup has had on the City of Cape Town because there are dedicated institutional arrangements, staff, budget & training facilities, however deep and meaningful community-participation can be improved.

5.3 Areas for further research

Research to determine to what extent the City of Cape Town has a strategy or policy on performing Disaster Risk Assessment updates may be of value as this section appears very lean in the Municipal Disaster Management Plan. In addition, an area that needs attention is the prioritisation of conflicting agendas and hazards from the technical risk assessment versus community-based assessments. Additional research is needed to provide a more informed and scientific way (model) to reconcile these risks. The limited resources available to mitigate risks demands that such a reconciliation exercise be more scientific and precise. One respondent offered this example: technical specialists may identify a fenceless playground along a major road in Delft as a risk to the health and safety of the children frequenting this playground. Once the fence was erected, the community complained that they were not consulted as the fence introduced what they felt was a greater risk, that of crime. The community leaders explained that gangsters peddling drugs in the area found the fence an effective mechanism to target particular youths as drug mules and the restricted access to the playground suited their agenda. So it is very relevant to suggest that a model to reconcile these opposing risk assessments is required.



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APPENDIX 1: TELEPHONE AND SEMI-STRUCTURED INTERVIEW QUESTIONS

1. Is there a policy governing the risk assessments (DRA) of the city?
2. If not, please describe the practice followed?
3. What legislation provides the basis that mandates DRAs?
4. Who initiates the risk assessment process?
5. What triggers the initiation of the DRA process?
6. When was the first assessment completed?
7. By who are the assessments completed?
8. When was the last risk assessment done?
9. Who is involved in the assessment process?
10. Are there distinct phases in the DRA process?
11. Can you describe an overview of the process?
12. How long does the DRA process last?
13. What is the final outcome of the DRA process?
14. If the process is completed by an outsourced party, to who is /was the report presented?
15. Who signs-off the acceptance of the final report?
16. What happens after the report is presented?
17. Who authorises the third party?
18. Who pays for the work done?
19. Is it possible to see a report of the DRA for the City?
20. How are other parties involved?
21. Is there in-house preparation involved before the DRA process begins?
22. What planning of the DRA process is undertaken?
23. Have the communities be involved in the DRA process?
24. How were the communities involved?
25. Who has been involved with interacting with the communities?
26. How was data or input collected from the communities / representatives?
27. Who collected that information?
28. When were the communities involved?
29. How many community-based events or forums were held to collect information?
30. What are the lessons learnt from involving the community?

31. What went well with the DRA process?
32. What in the Ra process needs refinement or can be improved?
33. Why do you think that CCT has been successful in performing DRAs?
34. What are the plans for the next DRA?
35. How has the process evolved since the first exercise?
36. How much money is spent on the DRA process?
37. What is the approval process to gain funds for DRAs?
38. What has the impact been on the City in performing DRAs?
39. How involved are other departments / functions / sectors in the DRA process?
40. What is the organisation hierarchy of the personnel involved in the DRC / DRAs?
41. Do the results of the DRA report inform the City's Integrated Development Plan?
42. If so, what is the process that is followed?
43. Who is involved in the IDP integration?
44. Who approves the final provisions of the IDP with regard to DRAs report outcomes and recommendations?
45. How aware are the department heads of the DRA process?
46. Would more involvement across sectors benefit the DRA process and or the DRC?
47. How would the DRA process or DRC benefit with more involvement or integration?
48. How is the performance of the DRC measured with regard to DRAs?
49. Are there new goals / KPIs in mind for future DRAs?
50. If you had a magic wand with regard to Risk Reduction or the DRC what would you change and why?
51. What actions were performed by the DRA team?
52. When were they performed i.e. time-line?
53. Who performed these actions?
54. What was the cost of the outsourcing of the DRA?
55. Was an RFP process followed in selecting the DRA vendor?
56. Please describe the roles and responsibilities of the individuals or teams involved in DRAs?
57. Are there any documents or reports describing the process followed?
58. Did the vendor present a plan of action at the tender level?
59. If so, what does that plan look like?
60. Are there definitive milestones and timelines presented or followed?
61. What was the agreed measure of success in the DRA?

62. How does the City / MDMC reconcile technical DRAs with Community-based DRAs?
63. Is there a formal process followed?
64. What of conflicting priorities in the various DRAs?
65. What works well in this process?
66. What can be improved?
67. What other lessons has the City learnt since the last DRAs?
68. What feedback loop exists in the DRA process to the stakeholders / City Management?
69. What feedback loops exist to the communities or their representatives?
70. What has the community's reception been like?
71. How does the ignorance, illiteracy, disconnectedness, poverty etc. affect the City's ability to interact productively with the community with respect to DRAs and Disaster Risk Reduction?
72. What are the challenges that face the DRC with regard to educating and interacting with the community?
73. Who has been involved with the community from the DRC/City?
74. What planning has taken place in this regard?
75. In what form does feedback to City/DRC management about DRA-related activities in the community take place?
76. What reports / articles to this extent are available?
77. Does the DRC celebrate the success?
78. What means of communicating with the larger co-opted group around DRAs are utilised?
79. If further areas or research or investigation could benefit the DRC, what would they be?

APPENDIX 2: QUESTIONNAIRE FOR QUALITATIVE SURVEY

The information received in this questionnaire is confidential. Your response cannot be linked to your identity and is therefore anonymous. Please complete the questionnaire by selecting the answer that is closest to your opinion on each question.

Question 1 Has the City of Cape Town established a Disaster Management Centre?

- Yes
- No
- Uncertain

Question 2 Has the City of Cape Town established a Municipal Disaster Management Advisory Forum?

- Yes
- No
- Uncertain



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Question 3 Has the City of Cape Town established a Interdepartmental Disaster Risk Management Committee

- Yes
- No
- Uncertain

Question 4 Has the City of Cape Town created Disaster Management Plans?

- Yes
- No
- Uncertain

Question 5 Has the City of Cape Town appointed a Head of the Disaster Management Centre?

- Yes
- No
- Uncertain

Question 6 Does the Head of Disaster Management Centre holding other portfolios?

- Yes
- No
- Uncertain

Question 7 Has the City of Cape Town established a Unit of Volunteers?

- Yes
- No
- Uncertain

Question 8 For the organisational units mentioned below indicate at what level you believe they are functioning effectively within the City of Cape Town, where 1 equals "Not at all" and 5 equals "Excellent".

Organisational Unit	1=Not at all	2=Unsatisfactory	3=Satisfactory	4=Good	5=Excellent
Disaster Management Centre					
Municipal Disaster Management Advisory Forum					
Interdepartmental Disaster Risk Management Committee					
Disaster Management Plans as part of the Integrated Development Plan for the City?					
Head of the Disaster Management Centre					
Volunteer Unit					

Question 9 Do you believe that there are adequate numbers of staff in the City of Cape Town's Disaster Management Centre?

- 5 – Totally Agree
- 4 - Agree
- 3 - Uncertain
- 2 - Disagree
- 1 – Totally Disagree

Question 10 Do you believe that the staff in the City of Cape Town's Disaster Management Centre are sufficiently trained?

- 5 – Totally Agree
- 4 - Agree
- 3 - Uncertain
- 2 - Disagree
- 1 – Totally Disagree

Question 11 Does the City of Cape Town have an appropriate level of equipment to perform Disaster Risk Assessments?

- Yes
- No
- Uncertain

Question 12 Does the City of Cape Town have a budget for the Disaster Management function?

- Yes
- No
- Uncertain



Question 13 Is the City of Cape Town's Disaster Management budget adequate?

- Yes
- No
- Uncertain

Question 14 Do other departments in the City of Cape Town budget for Disaster Management?

- Yes
- No
- Uncertain

Question 15 Do you believe that the approach of the City of Cape Town towards Disaster Management is proactive i.e. focussed on disaster risk reduction, prevention and mitigation?

- 5 – Totally Agree
- 4 - Agree
- 3 - Uncertain
- 2 - Disagree
- 1 – Totally Disagree

Question 16 Do you believe that the approach of the City of Cape Town towards Disaster Management is reactive i.e. focussed on emergency response, disaster recovery and rehabilitation?

- 5 – Totally Agree
- 4 - Agree
- 3 - Uncertain
- 2 - Disagree
- 1 – Totally Disagree



Question 17 In the City of Cape Town is there an adequate level of knowledge among the Disaster Management Centre staff of the enabling Disaster Management legislation and policy??

- 5 – Totally Agree
- 4 – Agree
- 3 – Uncertain
- 2 – Disagree
- 1 – Totally Disagree

Question 18 In the City of Cape Town is there an adequate level of involvement from other line functions and sectors in the Disaster Risk Assessment process?

- 5 – Totally Agree
- 4 - Agree
- 3 - Uncertain
- 2 - Disagree
- 1 – Totally Disagree

Question 19 What is the degree of co-operation between the Provincial Disaster Management Centre and the City of Cape Town’s Disaster Management Centre?

- 5 – Very Good
- 4 – Good
- 3 – Acceptable
- 2 - Unacceptable
- 1 – Extremely Unacceptable



Question 20 What is the degree of co-operation between the National Disaster Management Centre and the City of Cape Town’s Disaster Management Centre?

- 5 – Very Good
- 4 – Good
- 3 – Acceptable
- 2 - Unacceptable
- 1 – Extremely Unacceptable

Question 21 Is there an adequate level of involvement of the Communities in the City of Cape Town's Disaster Risk Assessment process?

- Yes
- No
- Uncertain

Question 22 For the communities and community-based organisations mentioned below indicate at what level you believe they are involved in the City of Cape Town's Disaster Risk Assessment process, where 1 equals "Not at all" and 5 equals "Very involved".

Community-based Organisations	1=Not at all	2=Unsatisfactory	3=Satisfactory	4=Good	5=Very Involved
Community Representatives e.g. Rate Payers Associations					
Non-governmental organisations (NGOs)					
Ward Counsellors					
Social and Sports clubs					
Schools and Governing Bodies					
Old Age homes and Churches					

Question 23 To what degree the City of Cape Town's Disaster Management Centre plays a leading role in educating communities about Disaster Management?

- 5 – Very Good
- 4 – Good
- 3 – Acceptable
- 2 - Unacceptable
- 1 – Extremely Unacceptable

Question 24 To what extent has the City of Cape consulted with its 105 Wards during the Disaster Risk Assessment process?

- 5 – Very Good
- 4 – Good
- 3 – Acceptable
- 2 - Unacceptable
- 1 – Extremely Unacceptable

Question 25 Has the City of Cape Town's Disaster Management Centre established formal Disaster Management projects?

- Yes
- No
- Uncertain

Question 26 Have informal projects related to Disaster Management been launched by Communities in the City of Cape?

- Yes
- No
- Uncertain

Question 27 To what extent does the City of Cape Town's Disaster Management Plans form part of the City's Integrated Development Plans?

- 5 – Completely
- 4 - Partially
- 3 – Uncertain
- 2 – Seldom
- 1 – Not at all



Question 28 To what extent are the roles and responsibilities between stakeholders in the City regarding Disaster Risk Management clear?

- 5 – Completely
- 4 - Partially
- 3 – Uncertain
- 2 – Seldom
- 1 – Not at all

Question 29 To what extent do other departments in the City of Cape Town budget for Disaster Management in their activities and projects?

- 5 – Completely
- 4 - Partially
- 3 – Uncertain
- 2 – Seldom
- 1 – Not at all

Question 30 To what extent do political appointees in the City of Cape Town clearly understand their role and responsibilities towards Disaster Management?

- 5 – Completely
- 4 - Partially
- 3 – Uncertain
- 2 – Seldom
- 1 – Not at all



End of Questionnaire

Thank you for your time and co-operation in completing this survey.

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