



EMERGENCY SERVICES DEPARTMENT DISASTER RISK MANAGEMENT POLICY FRAMEWORK

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CITY OF TSHWANE

DISASTER RISK MANAGEMENT POLICY FRAMEWORK

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Reviewed by the City of Tshwane: Emergency Services Department: Disaster Management Division
133 Beckett Street
Arcadia
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ABBREVIATIONS AND ACRONYMS

CBO	Community-based Organisation
COE	Common Operating Environment
DMA	Disaster Management Act, 2002 (Act 57 of 2002)
DMC	Disaster Management Centre
DMIS	Disaster Management Information System
DOC	Disaster Operations Centre
DRM	Disaster Risk Management
DRMC	Disaster Risk Management Centre
DRMPF	Disaster Risk Management Policy Framework
ESD	Emergency Services Department
EWRM	Enterprise-wide Risk Management
FFC	Financial and Fiscal Commission
FOG	Field Operations Guide
GIS	Geographical Information Systems
GPS	Global Positioning System
IDP	Integrated Development Plan
IDRMC	Interdepartmental Disaster Risk Management Committee
ISO	International Organisation for Standardisation
JOC	Joint Operations Centre
KPA	Key Performance Area
KPI	Key Performance Indicator
MDMAF	Municipal Disaster Management Advisory Forum
MDMC	Municipal Disaster Management Centre
MDRMPF	Municipal Disaster Risk Management Policy Framework
MFMA	Municipal Financial Management, 2003 (Act 56 of 2003)
MMC	Member of the Mayoral Committee
MOU	Memorandum of Understanding
NDMC	National Disaster Management Centre
NDRMPF	National Disaster Risk Management Policy Framework
NETaRNRA	National Education, Training and Research Needs and Resources Analysis
NGO	Non-governmental Organisation
NQF	National Qualifications Framework
PDMC	Provincial Disaster Management Centre
PDRMPF	Provincial Disaster Risk Management Policy Framework
PFMA	Public Financial Management Act, 1999 (Act 1 of 1999)
QMS	Quality Management System
SAQA	South African Qualifications Authority
SDBIP	Service Delivery Budget Implementation Plan
SLA	Service-level Agreement
SOP	Standard Operating Procedure
UN/ISDR	United Nations/International Strategy for Disaster Reduction

1. EXECUTIVE SUMMARY

1.1 Introduction and background

The City of Tshwane's Disaster Risk Management Policy Framework (DRMPF) aims to provide the City with a holistic and integrated framework which underpins the implementation at metropolitan level of the Disaster Management Act, 2002 (Act 57 of 2002). The DRMPF is in line with the requirements of both the National Disaster Risk Management Policy Framework (NDRMPF) and the Gauteng Provincial Disaster Risk Management Policy Framework (GPDRMPF).

The common understanding of international disaster management has constantly evolved since the 1960s. According to the Disaster Management Act, a disaster is “a progressive or sudden, widespread or localised natural or human-caused occurrence which

- (a) causes or threatens to cause –
 - (i) death, injury or disease;
 - (ii) damage to property, infrastructure or the environment; or
 - (iii) disruption of the life of a community; and
- (b) is of a magnitude that exceeds the ability of those affected by the disaster to cope using their own resources.”

Various measures and structures were created to plan for emergency relief and to manage disastrous events. An emergency is a situation that poses an immediate risk to health, life, property or an environment. Most emergencies require urgent intervention to prevent the situation from worsening or escalating into a disaster. Despite all the international effort, which aimed to reduce the impact of natural and anthropogenic (human-made) hazards on humankind, very little progress was made. Loss of life, property, infrastructure and economic livelihood are increasing with no indication of improvement. Developmental activities can in most instances be blamed for the high level of disaster risk present in communities. Very little has been done in the international arena (through a multidisciplinary approach) to ensure a developmental focus on disaster risk.

The way in which disaster risk is approached in South Africa underwent major reform since 1994, when the government decided to move away from the customary perception that disasters are inevitable and therefore can only be dealt with once they have occurred. As early as 1990, South Africa had aligned itself with global developments which focused on risk reduction strategies to build resilience and promote sustainable livelihoods amongst “at risk” individuals, households, communities and environments. A wide consultation process was embarked on, which culminated in the publication of the Green Paper in 1998 and later, in 1999, the White Paper on Disaster Management was gazetted. The White Paper consolidated the reform process in disaster management in South Africa by setting out seven key policy proposals. These proposals became the essence of the Disaster Management Act, 2002 (Act 57 of 2002), referred to as “the Act” from this point on.

In South Africa, disaster risk management (DRM) consists of a labyrinth of cross-cutting facets that require the participation of a host of sectors and disciplines, not only from within the national, national, provincial and local spheres of government, but also from the private sector, civil society, non-governmental organisations (NGOs), community-based organisations (CBOs), research institutions, and institutions of higher learning, to name but a few. In the context of DRM, none of these role players can act in isolation from the others. The cornerstone of successful and effective DRM is to integrate and coordinate all the role players and their activities into a holistic system that aims to reduce disaster risk.

To give effect to the fact that DRM is the responsibility of a wide and diverse range of role players and stakeholders, the Act emphasises the need for uniformity in approach and the application of the principles of cooperative governance. In this regard it calls for an integrated and coordinated DRM framework which focuses on risk reduction as its core philosophy and also for the establishment of disaster risk management centres (DRMCs) in the three spheres of government to pursue the direction and execution of DRM legislation and policy in South Africa. It particularly emphasises the engagement of communities and the recruitment, training and participation of volunteers in DRM.

In terms of a proclamation in Government Gazette 26228 of 31 March 2004, the President proclaimed 1 April 2004 as the commencement date of the Act in the national and provincial spheres and 1 July 2004 in the municipal sphere.

To achieve a consistent approach and uniform application, section 6 of the Act mandates the Minister to prescribe a National Disaster Risk Management Policy Framework (NDRMPF) and, in accordance with this mandate, the NDRMPF was gazetted in April 2005.

With regard to the national objective, each province as well as each district and metropolitan municipality, in terms of sections 28 and 42 of the Act respectively, is also mandated to “establish and implement a framework for DRM aimed at ensuring an integrated and uniform approach to DRM” in its jurisdiction by all provincial and municipal organs of state, statutory functionaries of provinces and municipalities, local municipalities, statutory functionaries of local municipalities in the area of the district municipality, all municipal entities operating in its area, non-governmental organisations involved in DRM, and by the private sector. Provincial and municipal frameworks must be consistent with the Act and with the NDRMPF.

The South African Disaster Management Act, 2002 (Act 57 of 2002) heralds a new era in how South Africa perceives disaster risk, hazard and vulnerability. The Act brings the function and activity of DRM into the backyard of each and every province and metropolitan, district and local municipality. It calls for the establishment of structures, frameworks, plans, procedures and strategies that cut across all government sectors. It introduces a new and exciting way to manage our complex and perilous society. It further gives the responsibility of managing disaster risk to the highest political authority in each sphere of government. That being so, the Act provides the ideal legislative framework, not only to enable a holistic approach to DRM, but also to entrench the South African government’s commitment to disaster

risk reduction through sustainable development in the spirit of cooperative governance.

The Act provides for the following:

- An integrated and coordinated DRM policy that focuses on –
 - preventing or reducing the risk of disasters;
 - mitigating the severity of disasters;
 - preparedness for disasters;
 - rapid and effective response to disasters; and
 - post-disaster recovery.
- The establishment of national, provincial and municipal disaster management centres
- Disaster management centres
- DRM volunteers
- Matters related to these issues

The Act recognises the wide-ranging opportunities in South Africa to avoid and reduce disaster losses through the concerted energies and efforts of all spheres of government, civil society and the private sector. However, it also acknowledges the crucial need for uniformity in the approach taken by such a diversity of role players and partners.

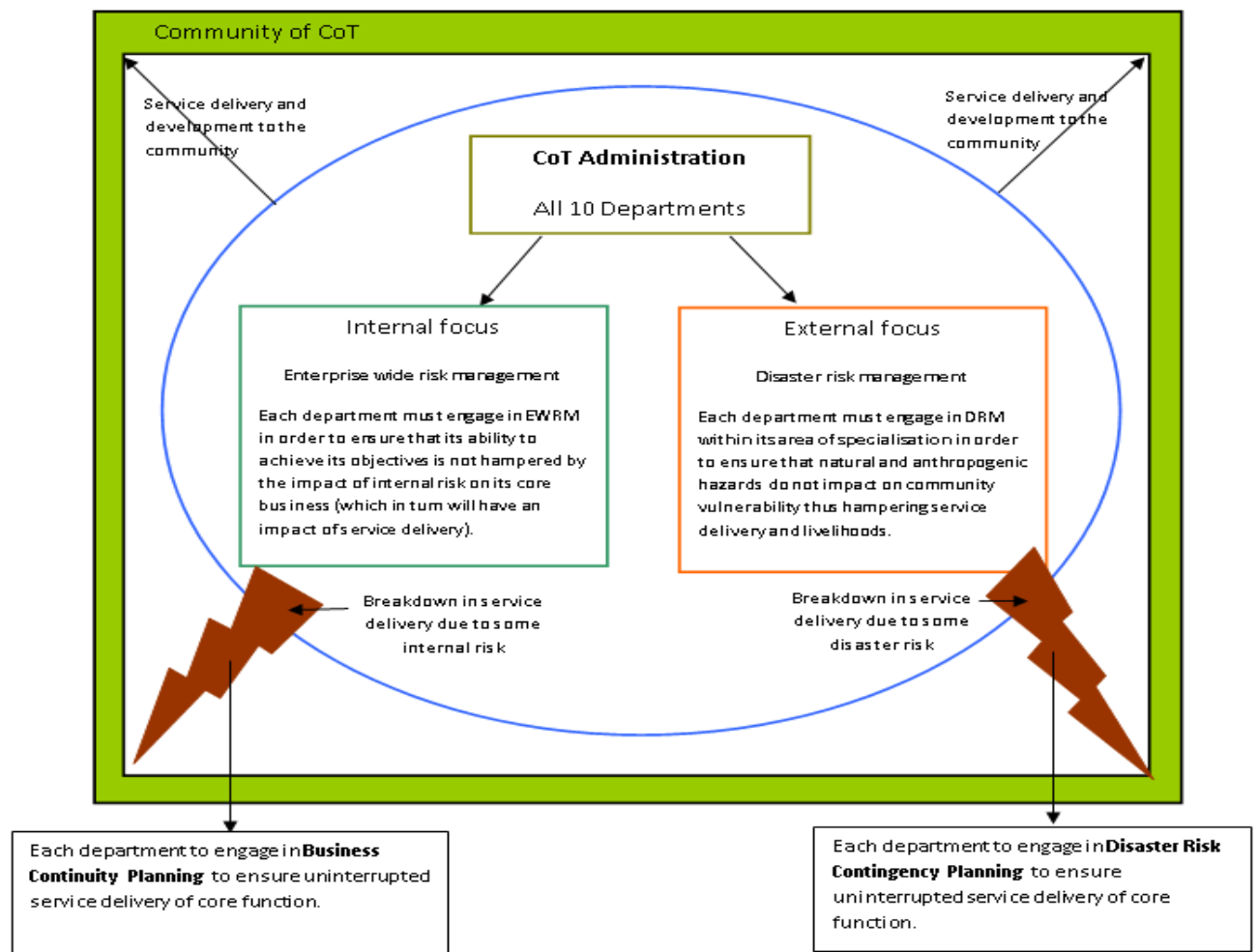
In order for the City of Tshwane to comply with the requirements set out in the Disaster Management Act, 2002 (Act 57 of 2002), as well as the NDRMPF and GPDRMPF, the City of Tshwane is required to develop a framework which will govern the multisectoral and multidisciplinary nature of DRM. This document serves as such a framework.

1.2 Linking core processes: DRM and enterprise-wide risk management

In order to limit confusion about the terms and application of this framework, it is imperative that four significant processes within the City of Tshwane are explained and their interaction made clear. From the onset, it is important to note that DRM and enterprise-wide risk management (EWRM) should not be understood as being synonymous. They are two distinct and separate processes which respectively have an external and internal focus. The following diagram explains the difference and interaction between the two.

Each department making up the City of Tshwane administration has a legislative obligation to deliver services and ensure development within the City of Tshwane's geographical area. Each City of Tshwane department is unique and was created to address a particular need within the administration to deliver a certain type of service.

Figure 1: Linking EWRM and DRM



History and experience tell us that any organisation needs to manage its risks or face failure. Within the management arena, enterprise-wide risk management aims to address the internal risks faced by organisations. EWRM typically consists of the following seven core components:

- Corporate governance
- Line management
- Portfolio management
- Risk transfer
- Risk analysis
- Data and technology resources
- Stakeholder management

It therefore remains the responsibility of the City of Tshwane to ensure that the above components are addressed. Each department will not necessarily engage in all of the aspects, but will aim to address internal risk throughout the organisation. Risk can, however, only be managed up to a certain degree. In order to ensure that an organisation addresses the residual risk (after all possible risk avoidance, assessment and transfer have been done), each department in the City of Tshwane

must compile business continuity plans. These plans focus on ensuring that the specific department can ensure “business as usual”.

DRM has a distinct external focus. The risk posed by natural and anthropogenic (human-made) hazards can have far-reaching and detrimental effects on a municipality and the inhabitants whom it aims to serve. Not only do we lose infrastructure in disasters, but we also lose developmental gains that took years and large amounts of money to secure. Similarly, the normal activities of City of Tshwane departments aim to enhance the living standard and livelihood of its inhabitants, thus addressing vulnerability. In order to ensure that disasters do not impact our development and the normal functioning of society, each City of Tshwane department must engage in DRM planning. These plans address disaster risks within the context of integrated development. For these purposes, each department has a legal obligation to draft DRM plans which underpin the disaster risk facing it. As in the case of EWRM, residual risk should be addressed through contingency plans. These plans typically aim to ensure that each department is geared to respond to the situation and alleviate the plight of those affected, should the need arise.

In terms of this framework, DRM consists of the following aspects:

- Integrated institutional capacity for DRM
- Disaster risk assessment
- Disaster risk reduction
- Response and recovery
- Information management and communication
- Education, training, public awareness and research
- DRM funding

The interaction between these four concepts should be clear. In each instance the City of Tshwane should first aim to reduce and eliminate its internal and external risks, and if this cannot be achieved with certainty, then it should produce plans that will allow the City to continue functioning and ensure the security of the community and the City as a service delivery institution.

The focus of this policy is therefore on DRM as an external focus of the City of Tshwane and how it should be implemented according to legislation.

1.3 Legislative competence with respect to DRM

The ultimate responsibility for DRM in South Africa rests with the government. In terms of section 41(1)(b) of the Constitution of the Republic of South Africa, 1996, all spheres of government are required to “*secure the well-being of the people of the Republic*”. According to Part A, Schedule 4, “*Disaster management is a functional area of concurrent national and provincial legislative competence.*”

Section 156(4) of the Constitution provides for the assignment of the administration of any matters listed in Part A Schedule 4 which relate to local government, if that matter would most effectively be administered locally and if the municipality has the capacity to administer it. However, assigning the function must be by agreement and is subject to any conditions.

In this context, it should be noted that Schedules 4 and 5 of Part B of the Constitution require local government to provide for functions which are closely allied to disaster management and that section 152(1)(d) requires local government to “*ensure a safe and healthy environment.*”

Poverty is the key factor that results in individuals, households and communities having a lack of resilience to the impact of hazards. This is of particular relevance in South Africa, with a huge legacy, left by the apartheid government, of desperately impoverished and disadvantaged communities who as a result are subject to high levels of disaster risk. It is also within these local communities where the smaller but much more frequent incidents/disasters occur and where the costs in terms of loss of lives and property and the financial burden are borne.

There is global consensus that for integrated and coordinated disaster risk reduction (which includes emergency preparedness and disaster response and recovery activities) to be effectively implemented, the administration of the DRM function must focus on local government. It is in this context that the Minister has elected to assign the function, by way of national legislation, to metropolitan and district municipalities. In terms of the Disaster Management Act, 2002 (Act 57 of 2002), the function is assigned to this Council.

1.4 Legislative imperatives

In terms of section 42(3) of the Act, the Council is required to develop and implement a framework for the metropolitan municipality which is consistent with the NDRMPF.

1.5 The consultative process

This DRMPF has been prepared in terms of section 42 of the Disaster Management Act, 2002 (Act 57 of 2002). The framework will go through a wide consultation with top management, organs of state and institutional role players. The local community will also be consulted for comments. In the process, great care is taken to ensure the coordination and alignment of the development and implementation of the framework with the policies and legislation of other organs of state and institutional role players.

Apart from direct consultation which must take place consistently with role players, this framework will be made available by public notice for viewing and comment in accordance with the requirements of the Municipal Systems Act, 2000 (Act 32 of 2000) by publication in the provincial gazette as well as the placement of a public advertisement in relevant local newspapers.

The City of Tshwane’s DRMPF contains procedures to regularly review and update the framework to ensure that the contents remain current and relevant.

1.6 The DRMPF for the City of Tshwane

Possible secondary policies will be developed by the disaster management centre (DMC) as and when the need arise.

1.7 A guiding framework for DRM

The DRMPF for the City of Tshwane guides the development of the Council's DRM arrangements for the City. As such, it is a strategic blueprint which does not describe the operational detail of the arrangements for DRM, but rather provides a framework within which the various stakeholders can meet their responsibilities, integrate and coordinate their operations, and develop and adopt joint standards of practice. It calls for the development of a comprehensive disaster risk profile for the city as a whole on which DRM planning, programmes and practices must be based, to ensure that priority is given to measures that will reduce the vulnerability of areas, communities, households and individuals who are at risk to those hazards which are likely to occur or which may occur in the Council's jurisdiction or in neighbouring jurisdictions.

1.8 The structure and key elements of the City of Tshwane's DRMPF

The Council's DRMPF consists of seven elements: four key performance areas (KPAs) and three enablers. These KPAs and enablers are in line with those of the NDRMPF. The purpose of structuring the framework in this manner is to facilitate the implementation of the Act by specifying a clear objective for each KPA and enabler by providing key performance indicators (KPIs) for each KPA and enabler which will provide the mechanisms for monitoring implementation. This approach is in accordance with section 7(2)(m) of the Disaster Management Act.

KPA 1 (Integrated institutional capacity for DRM)

This KPA details the mechanisms and structures to be established to ensure adequate integrated institutional capacity which will enable the effective implementation of DRM in the City of Tshwane, in accordance with the requirements of the Act.

It addresses the following issues:

- Mechanisms and responsibilities for policy-making for the purposes of DRM;
- Establishment of operational capacity to direct and execute the framework and legislation through setting up a metropolitan DRMC and its required infrastructure;
- The allocation of responsibilities to municipal entities for DRM planning and operations in their functional areas;
- Arrangements for coordination and integration of DRM planning and operations between the City of Tshwane's departments and administrative units;
- Arrangements based on joint cooperation and collateral support which will give effect to the principles of cooperative governance, provide mechanisms for accessing technical advice and allow wide stakeholder participation;

- Arrangements to facilitate the Council's cooperation with the government entities in the Council's jurisdiction as well as with neighbouring municipalities, provinces and the private sector;
- Mechanisms to establish joint standards of practice amongst stakeholders and with neighbouring authorities

KPA 2 (Disaster risk assessment)

This KPA establishes as its first objective the standards and parameters for disaster risk assessment. As its second objective, this KPA alludes to the generation and development of an indicative disaster risk profile for the City of Tshwane as a whole. Its third objective is the monitoring, updating and dissemination of disaster risk information which includes hazard tracking, vulnerability monitoring and disaster event tracking. Lastly, this KPA aims to conduct quality control in order to ensure accuracy in disaster risk assessment.

KPA 3 (Disaster risk reduction)

This KPA establishes as its first objective the standards and parameters for risk reduction planning. It further provides an outline for the coordination between different policies and legislation as required by the Disaster Management Act. The second objective of this KPA is to establish the relation between provincial and national frameworks and the City of Tshwane's DRMPF. The third objective provides for the development of different levels of DRM plans and the integration of DRM planning with other departments in the City of Tshwane. The fourth objective sets priorities for DRM planning in the City of Tshwane through the identification of priority risks, cross-border risks, and key strategic infrastructure. This KPA further alludes to strategic planning for DRM.

KPA 4 (Response and recovery)

This KPA addresses all issues related to disaster response and recovery. Its first objective is the establishment of a multihazard early warning system and the dissemination of early warnings. As its second objective, this KPA provides the procedures to assess, classify, declare and review a "disaster". Its third objective is to provide the mechanisms for integrated response and recovery through a multisectoral and multidisciplinary approach (including a uniform response system for the City of Tshwane as a whole). Its fourth objective is to establish the requirements for relief measures and the regulation of relief. The fifth objective of this KPA is to ensure coordinated rehabilitation and reconstruction efforts.

Enabler 1 (Information management and communication) establishes the arrangements for an information management and communication system that includes the development of a resource database, minimum standards for effective strategic communication, and the requirements for ensuring that the public of Tshwane is alert, aware and develops a culture of risk-avoidance behaviour. This enabler relates to each of the above-mentioned KPAs and therefore refers to information and communication needs in order to enable each KPA to reach its objectives.

Enabler 2 (Education, training, public awareness and research) describes the framework for ensuring access to both accredited and non-accredited training, and education by DRM stakeholders, including associated professions and schools. It

establishes the mechanisms for supporting and engaging in DRM research, for providing advisory services, and for creating good media relations. As with Enabler 1, Enabler 2 also alludes to its integration with the other KPAs.

Enabler 3 (Funding arrangements for DRM) identifies the mechanisms to access funding and the financial arrangements for the implementation of the Act in the Council's area. It provides the funding arrangements in the City of Tshwane to effectively implement the above-mentioned KPAs and enablers.

In order to facilitate the implementation of this framework, each KPA and enabler will be discussed within the City of Tshwane's institutional departments, whereby the roles and responsibilities of each department in the KPAs and enablers will be highlighted.

1.9 KPAs and enablers of each City of Tshwane service

The following section summarises the main DRM responsibilities of each City of Tshwane service. In order to effectively implement this framework and to achieve the ideals of disaster risk reduction, each KPA and enabler can be aligned to each specific service within the City of Tshwane.

The following section provides such an alignment. Each KPA and enabler is discussed in detail under its appropriate heading further on in this policy.

1.9.1 General responsibilities of each City of Tshwane service

The following general responsibilities apply to each and every City of Tshwane service. These responsibilities are the minimum requirements to give effect to the Disaster Management Act. It should be noted that these lists are not exhaustive and serve as a guide for departments to take their own initiative.

KPA 1: Integrated institutional capacity building for DRM

Each City of Tshwane service and entity must do the following:

- Ensure compliance with the City of Tshwane's DRMPF.
- Ensure adequate institutional capacity (physical and human resources) in the department to engage in DRM activities.
- Identify a focal person for DRM to serve on the appropriate DRM structures.
- Integrate DRM activities into the department's core mandate in order to ensure that disaster risk reduction takes place.
- In conjunction with the Municipal Disaster Management Centre (MDMC), identify primary and secondary responsibilities of the department in terms of specific hazards and vulnerability related to the department's core function.
- Identify and maintain a database of contractors, voluntary organisations and expertise related to the departmental functions to use for DRM purposes.
- Conduct an annual resource analysis of critical resources and communicate such analysis to the MDMC.

KPA 2: Disaster risk assessment

Each City of Tshwane service and entity must do the following:

- Conduct a (scientific) disaster risk assessment every two years according to guidelines and in line with the department's primary and secondary responsibilities as agreed with the MDMC (for example, what are the risks in terms of availability of essential services such as water and electricity?).
- Identify emerging hazards due to development in urban and peri-urban areas.
- Conduct scientific vulnerability and capacity assessments and analysis in line with the department's specific focus on development in order to identify communities that are at risk of possible disaster.
- Ensure that IDP projects directly address vulnerability indicators and sustain and enhance capacities in communities that are most at risk.
- Identify priority disaster risks for the department.
- Determine acceptable levels of risk as well as unacceptable thresholds, taking the department's capacity into consideration.
- Contribute to the development of the City of Tshwane's indicative risk profile by assisting the MDMC and providing information
- Provide annual input to changes in the indicative risk profile.
- Implement measures to ground-truth disaster risk assessment findings.

KPA 3: Disaster risk reduction

Each City of Tshwane service and entity must do the following:

- Ensure the effective integration of the service's DRM plan within the department's specific focus of the City of Tshwane's IDP.
- Integrate disaster risk reduction activities into the day-to-day planning and operations of the department.
- Identify and implement projects annually in line with the departmental mandate which will reduce risks in vulnerable communities (for example, upgrading the storm water system to reduce flooding).
- Compile a contingency and business continuity plan for the department.
- Adhere to any codes and standards (international, national, provincial and local) which relate to the reduction of disaster risk within the department's responsibilities.
- Submit an annual report (according to Template MDMC_1) on the department's risk reduction activities to the MDMC for inclusion in the annual municipal disaster risk reduction report to be submitted to the National Disaster Management Centre (NDMC) according to the DMA.

KPA 4: Response and recovery

Each City of Tshwane service and entity must do the following:

- Take ownership of, as well as responsibility for, the emergency plans for the department.

- Contribute to (and where necessary develop) multihazard monitoring and forecasting (according to the prioritised hazards and departmental responsibility).
- Ensure that early warnings are linked to contingency plan thresholds.
- Develop an effective emergency response and contingency plan for the department, taking the specific risks faced by the department into consideration. *(These plans should focus on critical aspects regarding the survival of local government in abnormal conditions. They also include the identification and recording of means, manpower and equipment. Ultimately, they are additions to the basic plan as developed by the MDMC that provide for the coordinated utilisation of resources. Thus, every line function structure must have a formal contingency and emergency response plan for a disaster as defined by the DMA. Each service should also have a formal plan and funding/budget to deal with localised incidents.)*
- Compile standard operating procedures (SOPs) in accordance with the SANS 9001 requirements and field operations guides (FOGs) in line with the requirements of the department's specific contingency plan, the guidelines of the NDRMPF and the City of Tshwane's DRMPF;
- Annually test and adapt contingency plans, SOPs and FOGs;
- Adhere to the standard for the City of Tshwane's incident management, and ensure that all response personnel are trained on the standard.
- Include mitigation measures in all development, contingency and DRM plans.
- Ensure that mitigation measures consider the secondary and knock-on effects of hazards.
- Promote disaster risk reduction in post-disaster reconstruction.
- Identify personnel to serve on post-disaster project teams *(it is imperative to ensure that these personnel are adequately trained – see Enabler 2).*
- Ensure that rehabilitation and reconstruction plans are developed in line with DRM plans.
- Ensure that rehabilitation and reconstruction plans are based on developmental challenges and are development-oriented.
- Include both physical damage and social recovery as part of reconstruction and rehabilitation plans.

Enabler 1: Information management and communication

Each City of Tshwane service and entity must do the following:

- Facilitate DRM communication and interaction between its own department and others.
- Use the mechanisms for information flow and communication established by the MDMC in order to communicate data and information related to DRM;
- Make information on priority departmental risks widely available through cooperation with other departments (specifically the MDMC) by means of public awareness campaigns, education and training.
- Establish communication links with the MDMC and at-risk communities in order to effectively disseminate early warning messages.
- Draft standard warning messages to be disseminated in the media for specific risks related to a department's core function.

- Maintain a database of experts (with contact details) in the specific field/discipline of the service.
- Maintain a database of organisations that can provide contract workers/volunteers, if necessary, for specific line function activities related to DRM (for example, type, skills, etc).
- Contribute to disaster risk data and information by means of regular contact with the MDMC.
- Provide and update data and information on disaster risks digitally.
- Diligently record all incidents, hazardous impacts and disasters in order to establish a historical record for forward planning.

Enabler 2: Education, training, public awareness and research

Each City of Tshwane service and entity must do the following:

- Conduct a DRM training needs analysis for the department on a regular basis.
- Promote active participation of its human resources in education, training and public awareness of disaster risks associated with its departmental mandate (for example, short courses, workshops, conferences, etc).
- Identify specific target groups for awareness campaigns and coordinate such campaigns with the MDMC (for example, early warning communication).
- Encourage research in DRM related to the department's main responsibility.
- Engage with other departments in multisectoral research on DRM;
- Establish learning networks with similar services in other metropolitan municipalities with the aim to enhance the service's capacity for DRM;
- Ensure public publication of any internal research findings which could contribute to learning in the areas of DRM and disaster risk reduction.

Enabler 3: Funding arrangements

Each City of Tshwane service and entity must do the following:

- Budget adequately for the service's DRM activities.
- Allocate a percentage of the annual budget to implement DRM projects (capital as well as operational).
- Include risk reduction projects related to the function in the IDP process in order to obtain funding.
- Make provision for a reserve/contingency fund.
- Promote insurance and reinsurance of public assets.
- Apply risk-spreading and risk transfer mechanisms.
- Engage in public-private partnerships for DRM.
- Co-finance disaster risk reduction projects with other departments in line with the City of Tshwane's IDP.
- Ensure appropriate gender-oriented funding for DRM.
- Develop loss identification, loss estimation and loss inventories in line with City of Tshwane guidelines.
- Allocate adequate human, technical, material, departmental and infrastructure resources to ensure disaster risk reduction in line with the City of Tshwane's indicative risk profile.

1.10 Specific responsibilities allocated to each specific service in the City

1.10.1 Office of the Executive Mayor and City Manager

Main responsibility:

The Office of the City Manager focuses on ensuring that the City of Tshwane's administration is imbued with a team spirit that supports a climate in which a high-performance culture can be created and sustained. This includes encouraging behavioural practices that promote the pursuit of the City of Tshwane's vision for the city.

DRM responsibility:

The Office of the City Manager is tasked with ensuring that DRM according to the requirements of the Disaster Management Act, 2002 (Act 57 of 2002) as well as the City of Tshwane DRM Framework are included in all City of Tshwane departments in order to ensure a coordinated and integrated approach to DRM.

KPA 1: Institutional capacity for DRM

- Establish the MDMC in the City of Tshwane's administration.
- Appoint the Head of the Disaster Management Centre.
- Ensure departmental involvement in DRM matters by identifying senior officials to serve on the City of Tshwane's DRM structures.
- Assign specific DRM responsibilities to City of Tshwane departments and ensure the inclusion of measurable DRM criteria on the scorecard of each focal person.
- Enforce the implementation of any national, provincial and municipal guidelines that relate to disaster risk reduction.
- Engage the private sector in issues related to DRM in the City of Tshwane.
- Sign memorandums of agreement and mutual assistance agreements between the City of Tshwane and relevant disaster risk reduction role players (for example, other municipalities, external aid providers, various organs of state with particular expertise in disaster risk reduction).

KPA 2: Disaster risk assessment

No specific responsibilities.

KPA 3: Disaster risk reduction

- Ensure the effective integration of the DRM plan within the City of Tshwane's IDP.
- Implement sustainable livelihood strategies as an integral part of the IDP process.
- Encourage gender sensitivity in risk reduction and development planning.
- Enforce the IDP's focus on poverty reduction strategies.
- Ensure that land reform takes place and that access to resources by the most vulnerable communities is enhanced.

KPA 4: Response and recovery

Ensure emergency funds and stocks (through memorandums of agreement with product providers).

Enabler 1: Information management and communication

Enforce effective communication between City of Tshwane departments in terms of DRM.

Enabler 2: Education, training, public awareness and research

No specific responsibilities.

Enabler 3: Funding arrangements

Ensure adequate funding for DRM.

1.10.2 Corporate and Shared ServicesMain responsibility:

This service is responsible for providing effective and efficient corporate administrative services, human resources and information technology services to facilitate the realisation of the City of Tshwane's organisational vision.

DRM responsibility:

Corporate and Shared Services is responsible for ensuring that all corporate administrative, human resources and information technology services that contribute to DRM. Corporate and Shared Services is also the focal point to coordinate business continuity.

KPA 1: Institutional capacity for DRM

- Ensure that procedures are in place to appoint temporary staff on short notice, if necessary, to execute disaster risk responsibilities.
- Ensure that the conditions of service make provision to utilise City of Tshwane staff to assist with the mitigation and response to disasters that occur or are threatening to occur.

KPA 2: Disaster risk assessment

Conduct regular assessment on information technology (IT) systems and develop mitigation measures thereof.

KPA 3: Disaster risk reduction

- Development and implementation of staffing and/or succession plans.
- Ensure the development of plans for dealing with industrial action, civil unrest and any threats related to human resources that may compromise service delivery.

KPA 4: Response and recovery

Coordinate operations in respect of matters related to business continuity and human resource management in order to limit duplication of services.

Enabler 1: Information management and communication

- Ensure that adequate continuity planning and structures are in place for information management.
- Develop, implement and update the IT Disaster Recovery plan for City of Tshwane information systems and data.
- Provide safe custody of information related to the City of Tshwane
- Continuously update policy and strategy documents that govern and guide the City of Tshwane's activities.

Enabler 2: Education, training, public awareness and research

Make City of Tshwane staff aware of the proper use and management of systems.

Enabler 3: Funding arrangements

Ensure a sufficient budget for IT infrastructure.

1.10.3 Economic Development ServicesMain responsibility:

This service's activities are aimed at ensuring economic growth to improve the lives of all communities in the Tshwane area.

DRM responsibility:

Economic Development Services is responsible for ensuring that all economic growth activities within the City of Tshwane contribute to the ideals of DRM and behaviour that avoids disaster risk.

KPA 1: Institutional capacity for DRM

Encourage the establishment of local business commerce and forums for promoting participation and interest in business among communities and enhancing livelihoods.

KPA 2: Disaster risk assessment

- Integrate the City of Tshwane's indicative disaster risk profile with all economic development programmes and projects in order to ensure no or minimal disruption of the City of Tshwane's economic development by natural and anthropogenic hazards.
- Identify vulnerable areas related to different economic activities.

KPA 3: Disaster risk reduction

- Ensure that economic growth contributes to vulnerability reduction and disaster risk avoidance within the City of Tshwane.
- Engage the private sector in disaster risk reduction measures which lead to economic development.
- Where appropriate, encourage and/or develop financial buffers and social safety nets (for example, micro-credit schemes, social funds, community saving

schemes, disaster bonds, subsidies and alternative funding arrangements) for communities that are most at risk.

- Encourage the diversification of income sources and production in at-risk communities in line with the City of Tshwane's indicative risk profile.
- Ensure that local economic developments focus on vulnerability and poverty reduction according to the risk profile.
- Facilitate and create platforms for business development sessions for at-risk communities to participate and benefit from such opportunities.

KPA 4: Response and recovery

Ensure a supply of fresh produce to affected communities.

Enabler 1: Information management and communication

- Create platforms for business development sessions for at-risk communities to participate and benefit from such opportunities.
- Communicate opportunities and empowerment intervention to vulnerable communities.
- Develop and maintain a database of long-term potential development opportunities and a corresponding database for beneficiary groups.

Enabler 2: Education, training, public awareness and research

Public awareness campaigns to communities and business on insurance encourage speedy recovery from disasters.

Enabler 3: Funding arrangements

No specific responsibilities

1.10.4 Group Financial Services

Main responsibility:

This service manages the City of Tshwane's corporate financial affairs to ensure that the best possible services are provided with the available resources. The service also provides strategic financial management and financial services for internal clients. It is responsible for compiling the municipal budget and for implementing and maintaining a control system to ensure that accurate information is obtained regarding the City of Tshwane's financial position. The service's mission is to effectively develop and provide accounting and management support services and financial information that meet the needs of internal and external clients and customers.

DRM responsibility:

As the focal point for all City of Tshwane finances, Financial Services has the following responsibilities in terms of DRM:

KPA 1: Institutional capacity for DRM

Ensure that disaster management issues are discussed and addressed in task team meetings under the guidance of the Chief Financial Officer.

KPA 2: Disaster risk assessment

No specific responsibilities.

KPA 3: Disaster risk reduction

- Enforce DRM measures as prerequisites for project funding.
- Consider the implementation of rebates and/or tax incentives to the public and private sector for their engagement in disaster risk reduction measures (for example, sponsorship of an awareness campaign by a private company).
- Where appropriate, encourage and/or develop financial buffers and social safety nets (for example, micro-credit schemes, social funds, community saving schemes, disaster bonds, subsidies and alternative funding arrangements) for communities that are most at risk.
- Consider joint programmes between the City of Tshwane and insurance companies in order to generate economic incentives for risk reduction and mass insurance.

KPA 4: Response and recovery

Implement DRM spending guidelines and mechanisms for resource mobilisation.

Enabler 1: Information management and communication

No specific responsibilities.

Enabler 2: Education, training, public awareness and research

No specific responsibilities.

Enabler 3: Funding arrangements

- Ensure adequate DRM funding in line with the requirements of the Disaster Management Act, 2002 (Act 57 of 2002) and the NDRMPF (see Tables 7.1 and 7.2 of the NDRMPF) and the Municipal Finance Management Act, 2003 (Act 53 of 2003) for the following:
 - DRM of on-going activities
 - Disaster risk reduction
 - Mitigation and preparedness measures
 - Contingency reserve
 - Disaster response, recovery and rehabilitation
 - Education, training, capacity-building programmes and research

1.10.5 Emergency Services Department (ESD)

Main responsibility:

This service provides an integrated and coordinated emergency service that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters, and post-disaster recovery.

DRM responsibility:

ESD plays a crucial role in all activities related to emergencies. The Emergency Services must:

- promote an integrated and coordinated approach to disaster management in the municipal area, with a special emphasis on preventing and mitigating disasters;
- respond to structural and non-structural fires and hazardous incidents;
- assist with all pre-approvals related to fire safety matters;
- respond to all emergency situations to treat and transport the sick and injured to the appropriate medical facilities;
- receive emergency calls and dispatch response agencies; and
- report on hospital and road closures.

(The following KPAs and enablers relate specifically to Emergency Services Department unless otherwise specified.)

KPA 1: Institutional capacity for DRM

- House and equip the emergency services as per legislation and national policy requirements.
- Serve as the focal point for all matters related to DRM in the City of Tshwane.
- Serve as the primary focal point for certain hazards, threats and vulnerabilities as identified by City of Tshwane disaster risk assessment and agreed upon in the relevant management forum.
- Act as the focal point for assigning primary and secondary responsibilities for identified risks according to the City of Tshwane's indicative risk profile.
- Coordinate and maintain the Disaster Management Advisory Forum.
- Ensure the participation of the Head of the MDMC in the appropriate IDP structures.
- Establish mechanisms to utilise volunteers for DRM purposes (for example, NGO forum, making use of existing structures, etc).
- Encourage the establishment of an emergency services structure in all City of Tshwane wards.
- Develop operational procedures, policies and guidelines to deal with emergencies and disasters.

KPA 2: Disaster risk assessment

- Play the leading role in regularly conducting a scientific disaster risk assessment and compile an indicative risk profile for the City of Tshwane.
- Ensure that scientific multihazard identification is taking place by means of a multisectoral and multidisciplinary approach.
- Liaise with agencies for early warning systems on certain hazards.
- Map all known hazards and vulnerabilities and, where appropriate, display such mapping geo-spatially.
- Promote the incorporation of hazard assessment findings in when policies are adapted.
- Conduct scientific risk profiling using probabilistic techniques.
- Include indigenous knowledge in the disaster risk assessment process.
- Liaise with research institutes to determine acceptable levels of risk as well as unacceptable thresholds (of early warning) of identified risks (in cooperation with the relevant City of Tshwane services or other organs of state).
- Prioritise risks according to the City of Tshwane's developmental profile and capacities.
- Develop the City of Tshwane's indicative risk profile.
- Monitor prioritised risks.
- Adapt and change the City of Tshwane's indicative risk profile in line with changing risk.
- Identify risks that can affect the operation of emergency medical services.
- Identify vulnerable areas that can be affected by fires.
- Identify high-accident zones.

KPA 3: Disaster risk reduction

- Compile a city-wide DRM plan by means of consultation with relevant stakeholders.
- Advocate that integrated development programmes and projects directly address vulnerability, and enhance capacities in communities that are most at risk.
- Establish municipal as well as regional disaster risk reduction networks.
- Develop and implement a monitoring system to measure effective DRM in the City of Tshwane.
- Report on all activities related to disaster risk reduction in the City of Tshwane on an annual basis.
- Coordinate and participate in simulation exercises for different risk scenarios in order to improve the level of stakeholder preparedness.
- Develop risk reduction programmes for vulnerable communities.

KPA 4: Response and recovery

- Activate and place relevant role players in the central coordination centre.
- Facilitate coordinated responses.

- Provide management information, guidance and advice.
- Activate community resources.
- Liaise with provincial and national disaster management centres.
- Implement operating procedures and guidelines.
- Liaise with the provincial Department of Health.
- Receive and dispatch emergency calls according to the norms and standards.

Enabler 1: Information management and communication

- Develop and implement a disaster management information system (DMIS) according to DMA requirements.
- Use modern information and communication systems for emergency services (for example, GIS applications, databases, interactive websites, and applications in early warnings).
- Communicate the City of Tshwane's indicative risk profile to all internal and external stakeholders.
- Communicate and celebrate International Strategy for Disaster Reduction Day to a wide audience in Tshwane.
- Ensure that at-risk communities have adequate access to information on hazards and vulnerabilities (for example in community libraries, community information centres, municipal offices, websites, etc).
- Engage with communities for DRM information and feed such information into the DMIS.
- Develop and implement various information dissemination channels.
- Establish information networks amongst multisectoral and multidisciplinary role players (for example, scientific, technical and applied information, and traditional knowledge).
- Where appropriate, use and disseminate traditional/indigenous knowledge and coping mechanisms to reduce disaster risk.
- Share knowledge about disaster risk reduction on a local, provincial and national basis.
- Ensure that a list of all stand-by personnel is available.
- Ensure good communication arrangements with private ambulances and hospitals.
- Ensure the availability of reservists' database.

Enabler 2: Education, training, public awareness and research

- Conduct studies in order to determine the historical costs of disasters and the long-term benefits of disaster risk reduction investment and communicate such findings to all City of Tshwane stakeholders.
- In partnership with the relevant City of Tshwane departments, conduct regular community awareness and education projects to communicate the City of Tshwane's indicative risk profile in order to instil behaviour to avoid risk.

- Ensure that disaster risk reduction forms an integral part of primary school education curricula by means of a multidisciplinary approach.
- Develop (in conjunction with appropriate and recognised service providers) training and education material for multiple audiences.
- Promote vocational training and learnerships in DRM in the City of Tshwane.
- Develop and implement community and volunteer training programmes.
- In partnership with other City of Tshwane departments, document case studies and lessons learned and ensure that this forms part of future education, training and awareness projects.
- Conduct awareness on fire safety tips.
- Conduct training on basic firefighting.
- Conduct training on first aid.

Enabler 3: Funding arrangements

Provide for adequate funding in the annual budget to carry out the DRM function.

1.10.6 Housing and Sustainable Human Settlement Development

Main responsibility:

The main responsibility of this service is to provide housing and project management.

DRM responsibility:

The nature of Housing Services necessitates its direct and continued involvement in matters related to DRM.

KPA 1: Institutional capacity for DRM

- Establish task teams to discuss and address housing needs in Tshwane.
- Designate a senior official to serve as a focal person for DRM issues.
- Facilitate the establishment of agencies to assist and deal with housing development backlogs.
- Integrate disaster risk reduction efforts on the departmental Service Delivery Budget Implementation Plan (SDBIP) purposes.

KPA 2: Disaster risk assessment

- Conduct risk assessment in collaboration with the Disaster Management Centre to identify vulnerable communities and housing needs.
- Ensure that houses are built in line with the indicative risk profile and that they contribute to disaster risk reduction.

KPA 3: Disaster risk reduction

- Integrate risk management in all project management activities, including the IDP.
- Facilitate the development of suitable housing for those living in urban, flood-prone areas which cannot be undertaken without a risk assessment for

development (and flood-reduction) planning. Therefore, efforts do not have to be duplicated and the development and risk reduction can occur simultaneously.

- Ensure the integration of disaster risk reduction in building codes and regulations.
- Adequately plan for emergency housing.

KPA 4: Response and recovery

- Compile a strategy to provide for alternative housing and temporary shelter in case of emergencies.
- Compile a contingency plan to provide for alternative housing during localised events and disasters. This should include criteria for circumstances when alternative housing will be provided.
- Compile a response strategy to deal with informal settlements at various levels (including illegal squatting).
- Implement relocation procedures during emergencies and disasters.

Enabler 1: Information management and communication

- Communicate information related to housing development to the MDMC and other stakeholders responsible for planning and infrastructure development, especially information on high-risk developments, in line with the spatial development framework.
- Compile a database on informal settlements.
- Compile a database of all buildings to be utilised during emergencies situations.
- Compile and update information for developments in high-risk areas (for example, flood-prone areas, etc).

Enabler 2: Education, training, public awareness and research

- Ensure regular awareness campaigns for all developers, including communities, on the importance of morals and ethics for dealing with property and the protection of its integrity.
- Keep constantly in touch and communicate with communities about available housing obligations and opportunities.

Enabler 3: Funding arrangements

- Ensure revenue enhancement by making optimum use of housing facilities in Tshwane to promote risk reduction interventions.
- Ensure that funds are available for housing, including emergency housing during disaster situations.

1.10.7 City Planning and Development Services

Main responsibility:

This service provides city planning and development information and to evaluates applications for land-use changes, building construction and outdoor advertising.

DRM responsibility:

City Planning and Development necessitates its direct and continued involvement in matters related to DRM.

KPA 1: Institutional capacity for DRM

Serve as the primary focal point for certain hazards, threats and vulnerabilities as identified by the City of Tshwane's disaster risk assessment.

KPA 2: Disaster risk assessment

- Ensure that city planning is in line with the indicative risk profile and that it contributes to disaster risk reduction.
- Assess land-use changes and spatial development plans to ensure they are in line with disaster risk reduction principles.

KPA 3: Disaster risk reduction

- Integrate risk management into all project management activities.
- Include DRM principles in spatial development frameworks.
- Ensure that disaster risk reduction is integrated into building codes and regulations.

KPA 4: Response and recovery

Enforce compliance with regulations during reconstruction efforts.

Enabler 1: Information management and communication

Communicate development-related information to the MDMC, especially information on high-risk developments.

Enabler 2: Education, training, public awareness and research

Ensure that awareness campaigns, training and education address risks in communities during the application process.

Enabler 3: Funding arrangements

Ensure that risk reductions are budgeted for.

1.10.8 Environmental Management Services

Main responsibility:

The main responsibility of this service is to manage nature reserves and conservation areas, resorts, swimming pools and parks, to provide horticultural services and cemetery services, and to do waste management, environmental resource management, and environmental planning.

DRM responsibility:

The nature of Environmental Management necessitates its direct and continued involvement in matters related to DRM.

KPA 1: Institutional capacity for DRM

Serve as primary focal point for certain hazards, threats and vulnerabilities as identified by the City of Tshwane's disaster risk assessment.

KPA 2: Disaster risk assessment

- Develop and maintain an inventory of hydrographical basins, areas of severe environmental degradation and the most fragile ecosystems (for example wetlands) and ensure that the above are considered and included in the integrated developmental process.
- Apply various forms of environmental protection and management (for example reforestation, river-basin planning, agricultural practices, soil conservation and natural hazard control techniques) and enforce adherence to the above through management meetings.
- Assess the impact of riverine disasters and threats to the agricultural sector and farming community.

KPA 3: Disaster risk reduction

- Develop and maintain a strategy to deal with hydrographical basins, areas of severe environmental degradation and the most fragile ecosystems (for example, wetlands) and ensure that the above are considered and included in the integrated developmental process.
- Integrate risk management with all project management activities.
- Apply various forms of environmental protection and management (for example, reforestation, river-basin planning, agricultural practices, soil conservation and natural hazard control techniques) and enforce adherence thereto.

KPA 4: Response and recovery

- Ensure full rehabilitation measures after clearing the disaster sites (temporary shelters, land degradation, etc) in line with regulations and applicable best-practice standards.
- Collaborate with City Planning and Housing to provide a contingency plan for alternative sites for temporary shelter during localised events, emergencies and disasters. This should include criteria for circumstances when alternative housing will be provided.

Enabler 1: Information management and communication

- Communicate information on environmental impacts of high-risk developments to the MDMC.
- Compile and update the database for environmentally sensitive areas that are protected and excluded from development (for example, wetlands, dumping sites, parks, graveyards, archaeological sites, etc).

Enabler 2: Education, training, public awareness and research

- Conduct awareness campaigns on the impact of planned and unplanned development on the environment.
- Research and recommend alternative ways to reduce the burial burden.
- Conduct awareness campaigns to interact with communities and industries concerning the minimisation of the carbon footprint that leads to global warming.

Enabler 3: Funding arrangements

- Ensure the availability of funds for risk reduction initiatives.
- Investigate possible additional funding sources to promote development and risk reduction interventions.

1.10.9 Infrastructure ServicesMain responsibility:

Providing free basic services is of paramount importance for a decent livelihood and is one of the central tenets of the Constitution, which strongly emphasises the right to a dignified life. This service therefore ensures the efficiency of water, sewerage and electricity infrastructure and services delivered to the public. The City of Tshwane goes beyond its duty by granting concessions (water and sewerage services) for certain categories of resident such as indigent, aged and disabled residents.

DRM responsibility:

Public works and infrastructure development play a leading role in the City of Tshwane's day-to-day risk reduction activities. The nature of this department contributes significantly to disaster risk reduction.

KPA 1: Institutional capacity for DRM

Ensure the establishment of relevant coordinating forums to champion a safe development agenda in line with City's vision and strategy.

KPA 2: Disaster risk assessment

- Conduct regular assessments of floods and demand for water and electricity.
- Monitor and maintain flow meters in rivers in Tshwane.
- Identify risk areas in terms of electricity provision.
- Identify critical facilities to prioritise for electricity provision (for example, hospitals, national key points, City of Tshwane systems).

KPA 3: Disaster risk reduction

- Create adequate supportive infrastructure to enhance sustainable livelihoods.
- Develop and maintain storm water infrastructure.
- Ensure a continuous water supply.
- Maintain maximum water discharge capacity in storm water infrastructure.
- Identify flood lines (indicative 100- and 200-year flood lines).
- Ensure erosion control in rivers and roads infrastructure.

- Strive to maintain a healthy balance between flood prevention and environmental conservation.
- Develop and implement an effective infrastructure maintenance programme.
- Conduct contingency planning for prolonged electricity failures.
- Ensure sustainable waste water treatment operations.
- Review, maintain and implement a flood incident management plan.

KPA 4: Response and recovery

- Provide water tankers in emergency and disaster situations.
- Provide for water to be rerouted from flooded houses and areas.
- Repair/reconstruct road damage caused by hazards.
- Provide generators in the case of electricity crises during emergencies and disasters.
- Regulate the water level of dams during floods.

Enabler 1: Information management and communication

- Develop and implement early warning systems for flooding.
- Establish communication links with disaster operations centres.
- Maintain a database of critical facilities in terms of electricity and waste water treatment operations.

Enabler 2: Education, training, public awareness and research

Launch initiatives to support awareness of safety tips in general as well as sustainable use of water catchment areas.

Enabler 3: Funding arrangements

Ensure funding for all risk reduction activities related to the service.

1.10.10 Health and Social Development Services

Main responsibility:

The mission of this service is to provide an integrated and comprehensive system of health and social services for the city's residents.

KPA 1: Institutional capacity for DRM

- Establish structures and forums to help deal effectively with social development issues in the City.
- Establish structures and forums to help deal effectively with health issues in the city.
- Engage the services of sister departments from other spheres and sectors, both in government and in the private sector.

KPA 2: Disaster risk assessment

- Identify socially vulnerable communities.

- Assess the availability of tools and supplies for running a smooth service to communities in Tshwane.

KPA 3: Disaster risk reduction

- Ensure that at-risk communities have access to basic services in line with the City of Tshwane's developmental focus and strategic objectives in order to reduce vulnerabilities.
- Continuously build health facilities to meet the demands of the growing population in the City.
- Ensure proper maintenance of health and social risk reduction initiatives to reduce risk in communities.
- Monitor epidemic outbreaks.
- Develop systems for continuous and timely supplies of pharmaceutical stock.

KPA 4: Response and recovery

- Compile an in-depth response and relief plan for all eventualities with specific emphasis on the human element.
- Develop and implement procedures to provide emergency food, blankets, medical care and shelter (in coordination with Housing Services, City Planning, Development and Regional Services).

Enabler 1: Information management and communication

- Maintain an indigent register which will contribute to identifying vulnerabilities.
- Provide information on "poverty pockets".
- Provide information on child-headed families.
- Provide information on primary health care facilities.
- Compile a database of resources.

Enabler 2: Education, training, public awareness and research

- Promote disaster risk education, public awareness and research by means of initiatives in community libraries, health facilities and direct interaction with members of the public.

Enabler 3: Funding arrangements

- Compile a billing strategy to ensure the sustainable provision of services.
- Investigate grants and financial support interventions that are available from other agencies and sister departments.

1.10.11 Sports and Recreational Services

Main responsibility:

The mission of this service is to provide an integrated and comprehensive system of recreational services for residents of Tshwane.

DRM responsibility:

Sports and Recreational Services contributes to reduce vulnerability and build capacity in the City of Tshwane as part of its institutional mandate.

KPA 1: Institutional capacity for DRM

Ensure the availability of a database of facilities that can be used as emergency shelters.

KPA 2: Disaster risk assessment

Identify vulnerable and risk-inherent sporting and recreational facilities, including their locations.

KPA 3: Disaster risk reduction

- Ensure that at-risk communities have access to basic facilities in line with the City of Tshwane's developmental focus and strategic objectives in order to reduce vulnerabilities.
- Ensure proper maintenance of facilities and compliance with regulations and standards for constructing such.
- Facilitate and coordinate drills and subsequent compliance with safety regulations and enhancement of safety at dedicated facilities.

KPA 4: Response and recovery

- Provide storage and emergency shelter for at-risk communities during disasters that occur or are threatening to occur.
- Conduct a continuous audit of strength and capabilities and provide personnel to man own facilities during disasters.

Enabler 1: Information management and communication

- Create and maintain a database of sporting and cultural facilities in the city.
- Provide information on the status of the available facilities.

Enabler 2: Education, training, public awareness and research

- Promote disaster risk education, public awareness and research through initiatives in community libraries.
- Conduct awareness campaigns about the role of facilities during disasters in order to promote optimum use of facilities by vulnerable communities during emergencies and disasters.

Enabler 3: Funding arrangements

Ensure that a budget is allocated to maintain facilities used as shelters during emergencies and disasters.

1.10.12 Transport and Roads

Main responsibility:

The mission of this service is to provide an integrated and inclusive roads and transportation system for the residents of Tshwane.

DRM responsibility:

Transport and Roads Services contributes to reduce vulnerability and build capacity in the City of Tshwane as part of its institutional mandate.

KPA 1: Institutional capacity for DRM

- Invent, design and implement integrated transportation hubs and roads in the City.
- Ensure the formation of and participation in the relevant forums for transportation and liaise with government roads agencies.

KPA 2: Disaster risk assessment

- Identify at-risk communities that result from vulnerable roads and transportation facilities.
- Conduct regular inspections on the possible disaster risk from roads and transportation infrastructure.

KPA 3: Disaster risk reduction

- Ensure that at-risk communities have access to safe and basic facilities in line with the City of Tshwane's developmental focus and strategic objectives in order to reduce vulnerabilities.
- Ensure the existence and implementation of regular maintenance plans for infrastructure and transportation.
- Maintain and implement a dolomite risk management strategy.
- Develop and implement a road safety master plan.

KPA 4: Response and recovery

- Make arrangements to provide transport for affected communities.
- Plan for mass transport during emergencies and disasters.
- Develop procedures to respond to incidents.

Enabler 1: Information management and communication

- Maintain an infrastructural database.
- Remain in constant communication with relevant affected stakeholders and communities about development and trends.
- Provide information on the status of roads, transportation and related facilities, including infrastructure.

Enabler 2: Education, training, public awareness and research

- Promote disaster risk education, public awareness and research to create resilient facilities and infrastructure.
- Encourage active participation of communities in intervention and programmes introduced by the service.

Enabler 3: Funding arrangements

- Ensure availability of funding for risk reduction and response activities.

1.10.13 Group Information and Communication Technology

Main responsibility: The mission of this service is to provide an integrated and inclusive communication infrastructure for all services within the City of Tshwane.

DRM responsibility:

Group Information and Communication Technology contributes to sound information management and capacity building within the City of Tshwane as part of its institutional mandate.

KPA 1: Institutional capacity for DRM

Ensure the availability of technicians to operate and maintain systems.

KPA 2: Disaster risk assessment

Investigate the possible vulnerabilities of shortcomings in the systems.

KPA 3: Disaster risk reduction

- Investigate and implement new trends in the market in line with the City's system requirements.
- Ensure that security is in place for properly functioning systems and physical equipment/infrastructure.
- Ensure systems compatibility within services.
- Develop strategies to regularly maintain systems for business continuity purposes.

KPA 4: Response and recovery

- Ensure adequate contingency plans for business continuity in the City.
- Ensure effective communications.

Enabler 1: Integrated information and communication management

- Ensure the creation of information databases.
- Ensure regular communication and information dissemination through existing databases.

Enabler 2: Education, training, public awareness and research

Encourage the alignment of systems in the City of Tshwane.

Enabler 3: Funding arrangements

Ensure adequate funding for activities.

1.10.14 City Strategies and Performance ManagementMain responsibility:

The mission of this service is to provide an integrated and inclusive strategy and vision and to rally all departments behind the main City of Tshwane vision.

DRM responsibility:

City Strategies and Performance Management contributes to sound information management and capacity building within the City of Tshwane as part of its institutional mandate. It is also responsible for updating the affected communities on development done during response and recovery.

KPA 1: Institutional capacity for DRM

Develop and coordinate the development of strategies that reduce disaster risk in communities.

KPA 2: Disaster risk assessment

- Assess compliance with the SDBIP of each service.
- Evaluate the relevance of strategies to maintain sustainable development.

KPA 3: Disaster risk reduction

Ensure that disaster management focus areas are implemented by all City of Tshwane services.

KPA 4: Response and recovery

Ensure that response and recovery plans form part of the SDBIP of all services in the City.

Enabler 1: Integrated information and communication management

Communicate strategies to relevant role players.

Enabler 2: Education, training, public awareness and research

No specific responsibilities.

Enabler 3: Funding arrangements

Ensure that the disaster management focal point has been budgeted for by all services within the City of Tshwane.

1.10.15 Research and Innovation

Main responsibility:

The mission of this service is to provide continuous research on basic service delivery alternatives and improvements for all departments in the City of Tshwane.

DRM responsibility:

Research and Innovation contributes to the education, training and public awareness interventions within the City of Tshwane as part of its institutional mandate.

KPA 1: Institutional capacity for DRM

Mobilise and organise the services to have a cross-cutting research and innovation committee on service delivery.

KPA 2: Disaster risk assessment

Conduct risk assessment across the service delivery tools and impediment factors and develop subsequent interventions.

KPA 3: Disaster risk reduction

- Conduct benchmarking in terms of the applicable service delivery models.
- Facilitate innovation, implementation, reporting and monitoring.
- Form partnerships with research and academic institutions.

KPA 4: Response and recovery

- Investigate lessons learned and post-disaster events, and pronounce alternative service delivery methods and intervention programmes.

Enabler 1: Integrated information and communication management

Provide proper research information management and dissemination to strategic drivers of service delivery of affected and implicated City of Tshwane services.

Enabler 2: Education, training, public awareness and research

No specific responsibilities.

Enabler 3: Funding arrangements

Continuously persuade services and agencies to invest in research and innovation and to ultimately build adequate financial capacity for such.

1.10.16 Group Legal Services

Main responsibility:

This service provides integrated and legal intervention support across all services in the City of Tshwane.

DRM responsibility:

Group Legal Services contributes to sound information management and capacity building within the City of Tshwane as part of its institutional mandate.

KPA 1: Institutional capacity for DRM

Ensure that guiding policies, submitted by each department, are legally in order.

KPA 2: Disaster risk assessment

Investigate critical decisions to be affected by the Council concerning major and critical matters in the City.

KPA 3: Disaster risk reduction

- Provide sound legal advice to sensitive issues that have the potential to expose the City of Tshwane to litigation.
- Assist services to interpret policies and legislation that mandate the Council in various areas of service delivery.
- Advise on certain legislation that requires policy development as part of securing the mutual interests between the City and its clients.
- Ensure that the Council in its entirety complies with legislation.

KPA 4: Response and recovery

- Conduct deputations and representations during litigation.
- Conduct prosecutions and court administrations.
- Assist with mutual aid agreements (MAAs) memorandums of understanding (MOUs) and service-level agreements (SLAs).

Enabler 1: Integrated information and communication management

No specific responsibilities.

Enabler 2: Education, training, public awareness and research

Conduct information sessions to empower clients on the legal obligations that affect them, including contract management.

Enabler 3: Funding arrangements

No specific responsibilities.

1.10.17 Group Audit and Risk ServicesMain responsibility:

This service provides an integrated and inclusive audit and risk prevention service across all City of Tshwane departments.

DRM responsibility:

Group Audit and Risk Services contributes to sound information management and capacity building in the City of Tshwane as part of its institutional mandate.

KPA 1: Institutional capacity for DRM

- Ensure the establishment in all departments of structures and forums for dealing with risk management.
- Ensure audit support across all other City of Tshwane departments.

KPA 2: Disaster risk assessment

- Investigate compliance with legislation and policies regarding systems, processes and capital management in City of Tshwane departments.
- Conduct risk assessments regarding the efficiency and performance of departments.

KPA 3: Disaster risk reduction

- Ensure that all departments adhere to the requirements of established policies and regulations for justification of actions and utilisation of resources by all services in the City.
- Compile a risk management strategy and distribute it to all services in the City's administrative unit.

KPA 4: Response and recovery

Ensure that all departments have business continuity plans across all services in the event of disasters and major disruptions.

Enabler 1: Integrated information and communication management

Communicate risk assessment information to implicated stakeholders throughout the City.

Enabler 2: Education, training, public awareness and research

Continuously hold sessions to emphasise the importance of complying with requirements and regulations.

Enabler 3: Funding arrangements

No specific responsibilities.

1.10.18 Regional Service Delivery Services

Main responsibility:

This department provides integrated and standardised service delivery by all City of Tshwane services.

DRM responsibility:

Regional Service Delivery contributes to all aspects of vulnerability reduction and capacity building within the City of Tshwane as part of its institutional mandate.

KPA 1: Institutional capacity for DRM

Ensure the establishment of human capital to provide decentralised services such as the following:

- Health and social development
- Sports and recreation

- Transport
- Customer care walk-in centres
- Rural enterprise development
- Farmer support programmes

KPA 2: Disaster risk assessment

- Assess the status and quality of services provided to communities.
- Conduct regular checks, monitoring and systems checks for readily available services in communities.

KPA 3: Disaster risk reduction

- Monitor the implementation of projects in regions and ensure that they reduce disaster risk.
- Build enough redundant capacity to respond to demands and large-scale events.

KPA 4: Response and recovery

Ensure the availability of resources to respond to disasters and major service delivery interventions.

Enabler 1: Integrated information and communication management

- Create and maintain a database of clients in the various regions.
- Disseminate information regarding service delivery.

Enabler 2: Education, training, public awareness and research

Conduct regular service delivery meetings and workshops with communities to educate them on their obligations, as well as on planned development and interventions.

Enabler 3: Funding arrangements

- Encourage communities and consumers to honour their financial obligations concerning rendered services.
- Compose incentive systems to encourage consumers to meet their obligations.

1.10.19 Tshwane Metropolitan Police Services

Main responsibility:

This service aims to eliminate the perceived and actual threats of crime and to improve the safety and security of all people within Tshwane and outside its boundaries by means of corporation agreements with neighbouring municipalities.

DRM responsibility:

The Metropolitan Police Services is tasked with the following DRM responsibilities:

KPA 1: Institutional capacity for DRM

- Ensure the availability of policies that deal with disaster management issues.
- Integrate disaster risk reduction activities into the departmental SDBIP.
- Ensure that sufficient personnel are available at any given time to meet the demands of service delivery across all other city services, including staffing plan, etc.

KPA 2: Disaster risk assessment

Conduct threat assessments related to social crime that can escalate into disaster risk.

KPA 3: Disaster risk reduction

- Ensure the enforcement of policies and legislation through visibility and patrols aimed at discouraging civil unrest.
- Align disaster risk reduction projects in the IDP.

KPA 4: Response and recovery

- Provide security in response to disasters and emergencies, if needed.
- Close roads that lead to hazards or disasters.

Enabler 1: Information management and communication

- Keep records of statistics and threat analysis conducted in the City.
- Disseminate such information to the City's strategic planning processes.
- Alert communities and other role players to eminent risks that could affect them.
- Integrate the City's CCTV infrastructure with all other control rooms in the City.

Enabler 2: Education, training, public awareness and research

- Conduct safety awareness campaigns that include policies and applicable by-laws that affect communities.

Enabler 3: Funding arrangements

- Enhance revenue generation and collection of debts due for the purpose of channelling funds into risk reduction efforts.

2. FRAMEWORK FOR DRM IN THE CITY OF TSHWANE**2.1 The City of Tshwane's DRM context**

As an urban growth centre in South Africa, the City of Tshwane faces increased levels of urban risk. These disaster risks include the following as listed in Table 1 below.

2.1.1 Disaster risk prioritisation methodology

The DMC considered and incorporated all inputs and comments obtained from role players through the processes mentioned above. The risks then had to be ranked in order of importance. To assist with this process, the following risk equation was applied:

The following variables were considered for the likelihood of a hazard happening:

- Onset (rapid, intermediate or slow)
- Frequency (certain, may occur or not likely)
- Magnitude (very, moderate or not very)
- Impact on social, environmental and economic aspects (high, medium and low)

The following variables were considered to determine the impact on community vulnerability:

- Human populations (high, medium and low)
- Infrastructure and critical facilities (high, medium and low)
- Economy (high, medium, and low)

The following variables were considered to determine organisational manageability:

- Skilled and trained staff (good, modest and poor)
- Availability of legislation and by-laws (good, modest and poor)
- Presence of institutional early warning systems (good, modest and poor)
- Availability of response or contingency plans (good, modest and poor)
- Preparedness plans, volunteer assistance, and MOUs (good, modest and poor)

The following variables were considered to determine community capacity:

- Presence of public awareness programmes (good, modest or poor)
- Presence of supporting legislation (good, modest and poor)
- Presence of community-level early warning systems (good, modest and poor)
- Supporting community structures (good, modest and poor)
- Community preparedness measures (good, modest and poor)

Applying the risk equation prioritised the top ten risks for the City of Tshwane as follows:

Table 1: Disaster risks

Priority	Risk
1	Dolomite resulting in sinkholes
2	Community impact of mission-critical systems failure
3	Informal settlement and veld fires
4	Pollution
5	Flooding incidents
6	Hazardous material incidents
7	Civil strife and xenophobia

8	Major transportation accidents
9	Epidemics
10	Special events incidents

Other disaster risks occurring within the City of Tshwane's jurisdiction include but are not limited to the following:

- Terrorism/weapons of mass destruction
- Hostage incidents
- Extreme heat
- Tornados
- Blight infestation
- Droughts
- Earthquakes
- Extreme cold
- Hail
- Windstorms

In the light of the above, it is imperative that the City of Tshwane embarks on a holistic and integrated programme for disaster risk reduction based on a multidisciplinary approach. Therefore, this framework sets out the roles and responsibilities of each department, organ of state and municipal entity within the City of Tshwane.

For the purpose of this chapter, the definition of the Disaster Management Act, 2002 (Act 57 of 2002) will be used as the basis for discussion. It should be noted that the definition in the Act makes provision for defining local, provincial and national disasters. From the above definition it is clear that a certain identifiable unit (affected community) is used as indicator. In terms of the Act, this smallest identifiable unit relates to a local municipality. The geographical boundaries for local municipalities are therefore the "affected community" referred to in the definition. Once a hazardous event exploits vulnerability within a municipality up to the extent that it is unable to cope using its own resources, a local state of disaster can be declared. Such is also the case for provincial and national disasters.

3. KEY PERFORMANCE AREA 1: INTEGRATED INSTITUTIONAL CAPACITY FOR DRM

Objective

The objectives of KPA 1 are the following:

- To establish integrated institutional capacity within the City of Tshwane in order to enable the effective implementation of this DRM policy and disaster management legislation within the City of Tshwane's geographical area.
- To establish procedures to develop, approve and implement an integrated DRM policy, including the making of by-laws, issuing of directions and authorisations to issue directions.

- To establish mechanisms which will provide clear direction and will allocate responsibilities to implement the Act and this framework?

Introduction to KPA 1

Section 43 of the Disaster Management Act, 2002 (Act 57 of 2002) requires the establishment of a metropolitan disaster management centre (MDMC) that is responsible for promoting an integrated and coordinated DRM policy. The Act explicitly calls for the embodiment of the principles of cooperative governance through the involvement of all stakeholders in order to reduce the likelihood and severity of hazardous impacts on vulnerable conditions (and leading to a disaster). This KPA further alludes to the interaction between the City of Tshwane and other spheres and tiers of government to reduce disaster risk.

3.1 Arrangements to develop and adopt an integrated DRM policy

3.1.1 DRM policy-making process

Recommendations on issues related to DRM policy must be submitted to the MDMC for consideration before being submitted to the Municipal Disaster Management Advisory Forum (MDMAF) and, thereafter, to the Management Committee and political structures.

To allow due consideration to be given to such recommendations, the MDMC must ensure that the financial, constitutional, human resources and interdepartmental implications of the recommendations are included in the documentation submitted to the MDMAF, the relevant Executive Council cluster committee/s (where necessary), and the Management Committee.

In view of the multisectoral nature of matters related to DRM, the MDMC must submit all memorandums containing policy proposals related to DRM legislation and implementation to the relevant portfolio committee for assessment and further recommendations before sending them to the Management Committee and thereafter to the Executive Council. (Figure 2 illustrates the DRM policy-making process.) It should be noted that in all cases the normal political decision-making process should be followed, with feedback to the DRM structures as required.

3.1.2 Key performance indicators

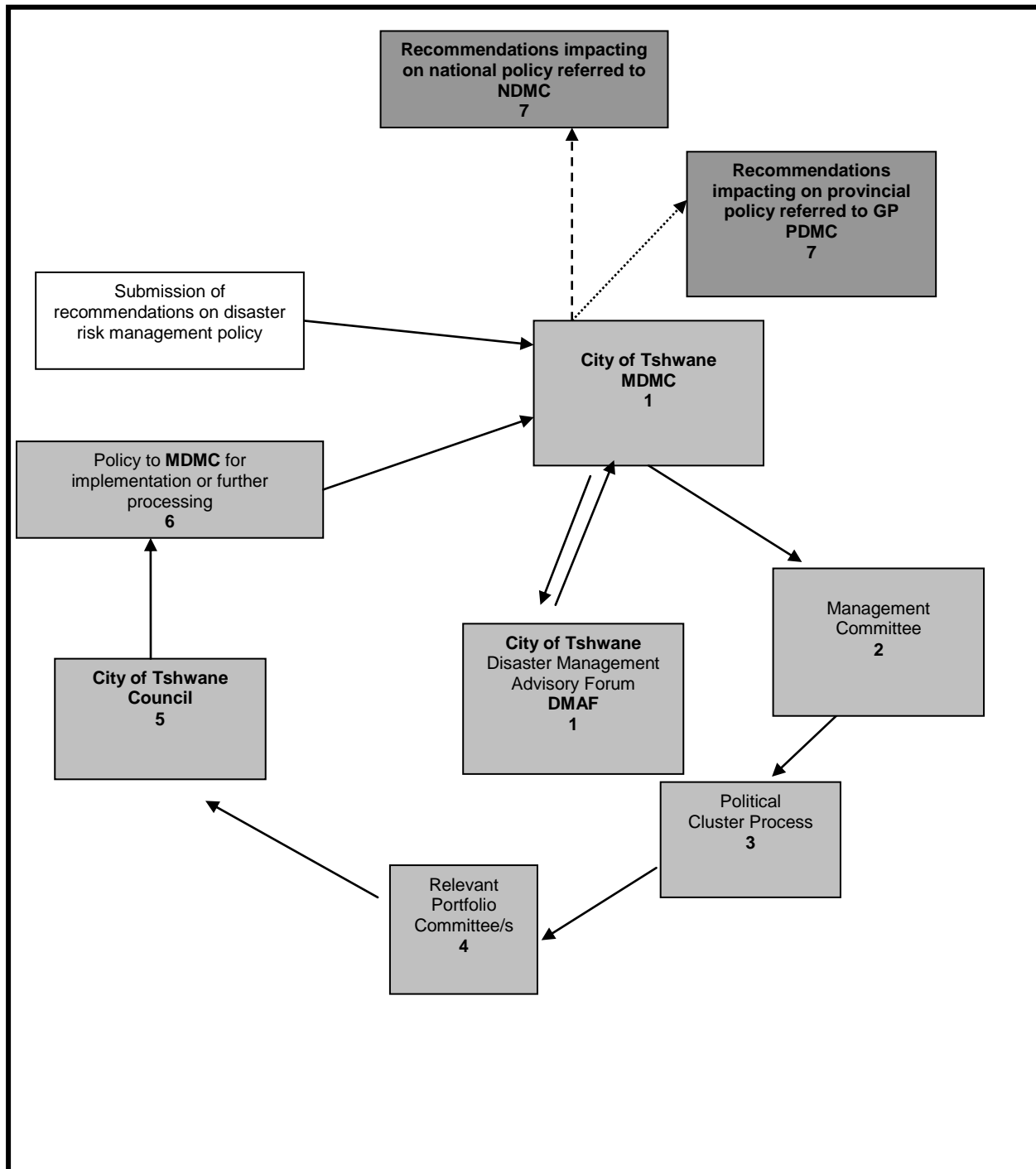
The following KPIs apply to section 4.1:

- The Management Committee has included DRM as a standing agenda item.
- Mechanisms to develop and adopt a DRM policy have been established and put into operation.

3.1.3 Arrangement to direct and implement DRM policy

The Act calls for the establishment of a municipal disaster management centre to achieve the objective of promoting an integrated and coordinated system of DRM.

Figure 2: The DRM policy-making process



3.2 The DRM Advisory Forum

In order for all relevant role players in DRM in the municipal area to coordinate their actions on matters related to DRM as prescribed in section 44 of the Act, the Council has established a DRM Advisory Forum as provided for in section 51 of the Act. The forum consists of all the relevant stakeholders and role players, including NGOs, CBOs and individuals or groups with special technical expertise.

The City of Tshwane's DRM Advisory Forum will meet at least four times a year, but is not precluded from meeting more frequently in accordance with prevailing circumstances.

This framework therefore establishes a Municipal DRM Advisory Forum (MDRMAF).

Such a forum must do the following:

- Make recommendations to the Council concerning the municipal DRM framework for the City of Tshwane, including:
 - Giving advice and making recommendations on disaster-related issues and DRM
 - Contributing to DRM planning and coordination
 - Establishing joint standards of practice
 - Implementing response management systems
 - Gathering critical information about the Municipality's capacity to assist with disasters and to access resources
 - Assisting with public awareness, training and capacity building
- Contribute to ensuring resilient individuals, households and communities who are alert and self-reliant.
- Contribute to ensuring community awareness of DRM arrangements and the importance of heeding early warnings.
- Support and contribute to the development and implementation of an information management system for the City of Tshwane.
- Possibly advise any organ of state, statutory functionary, non-governmental organisation, community or the private sector on any matter related to DRM.
- Possibly make recommendations to the Council regarding DRM policy to Council.

The MDRMAF must consist of the following members:

- The head of the City of Tshwane MDMC, who is also the chairperson.
- A senior representative of each function within the Municipality as identified by the Strategic Executive Director and designated by the Executive Mayor.
- Representatives of other DRM role players in the City of Tshwane designated by the Executive Mayor, which may include:
 - Organised business in the Municipality
 - Organised labour in the Municipality
 - Relevant community-based organisations
 - The insurance industry in the Municipality
 - Representatives of the agricultural sector in the Municipality
 - Religious and welfare organisations in the Municipality

- Medical, paramedical and hospital organisations in the Municipality
- Institutions of higher learning
- Institutions that can provide scientific and technological advice or support to DRM
- Other relevant non-governmental organisations and relief agencies in the Municipality.
- Experts in DRM designated by the Executive Mayor.
- Persons co-opted by the forum in question for a specific period or specific discussion.

3.2.1 DRM Advisory Forum Subcommittees

In order to facilitate the multitude of DRM activities necessary to implement this framework, the MDRMAF can convene subcommittees (for example, the NGO subcommittee). Such committees should develop clear terms of reference and timeframes.

3.3 Ward committees/structures

In order to give effect to the requirements of national legislation and policy in terms of DRM, it remains imperative to implement DRM at grassroots level. This policy therefore foresees that all City of Tshwane departments must, as part of their normal service delivery role, engage communities and integrate DRM into their daily functioning.

Furthermore, the MDMC must strive to establish ward DRM structures, working hand-in-glove with local councillors, community leaders and volunteers.

3.4 The CoT Disaster Management Services

The Council of the City of Tshwane must establish institutional capacity for DRM in the Municipality. Such arrangements must be consistent with national and provincial arrangements and must provide the appropriate mechanisms to allow for the application of cooperative governance to facilitate both provincial and municipal interdepartmental relations for the purposes of DRM.

The Disaster Management Centre has the fundamental responsibility to coordinate disaster risk reduction and disaster management efforts in the Municipality. It is clear that the responsibility for DRM is multisectoral. Furthermore, disaster management is not a line function division with operational responsibilities, but rather a management function with all the tasks associated with management, (planning, coordinating, leading, decision-making, controlling) specifically in the context of disasters and disaster risks.

The MDMC is the primary functional unit for DRM in the City of Tshwane. A key responsibility of the MDMC is to provide support to the Provincial Disaster Management Centre (PDMC), the NDMC and other metropolitan and district DRM

centres in Gauteng and its neighbouring provinces (should the need arise or the disaster risk profile of the City of Tshwane or bordering municipalities necessitate such interaction).

3.4.1 Key responsibilities

The MDMC must do the following:

- Establish and maintain institutional arrangements that will enable the Act to be implemented.
- Implement measures to develop progressive risk profiles to inform the City of Tshwane's IDP processes for the purpose of disaster risk reduction and to determine the effectiveness of specific disaster risk reduction programmes and projects that are undertaken.
- Facilitate the development, implementation and maintenance of disaster risk reduction strategies that will result in resilient areas, communities, households and individuals.
- Monitor the integration of disaster risk reduction initiatives with development plans.
- Develop and implement a comprehensive information management and communication system that is consistent with arrangements established by the NDMC and the PDMC.
- Facilitate the development of response and recovery plans to ensure rapid and effective response to disasters that occur or are threatening to occur and to mitigate the effects of those disasters that could not have been prevented or predicted.
- Submit copies of its DRM plans to the NDMC, the PDMC, neighbouring DRM centres and, where applicable, DRM entities in neighbouring countries (this could be necessary for diplomatic purposes due to the geographical location of most embassies and high commissions in Tshwane).
- Develop and implement mechanisms for creating public awareness to instil a culture of risk avoidance.
- Facilitate and promote DRM education, training and research in the Municipality.
- Implement and maintain dynamic DRM monitoring, evaluation and improvement programmes.
- Measure performance to evaluate the effectiveness of DRM and risk reduction initiatives and submit copies of evaluation reports to the NDMC and PDMC.
- Monitor compliance in the municipal area with the key performance indicators outlined in the Disaster Risk Management Policy Framework.
- Make recommendations regarding the funding of DRM in the municipal area and the initiation and facilitation of efforts to make such funding available.
- Compile and update draft policies and draft by-laws on disaster management if and when needed.

3.4.2 Location of the DRM function and planning

The City of Tshwane must establish institutional capacity for DRM in its area. Such arrangements must be consistent with national and provincial arrangements and must provide the appropriate mechanisms to allow for the application of cooperative governance to facilitate both intergovernmental and municipal interdepartmental relations as well as community participation for the purpose of DRM. The MDMC will compile and update draft policies and draft by-laws on disaster management if and when needed.

The MDMC is the primary functional unit for DRM in the City of Tshwane. It must provide direction for the implementation of DRM policy and legislation and for the integration and coordination of municipal DRM activities and priorities in order to ensure that national and provincial objectives are achieved. In addition, a key function of the MDMC is to provide support to the NDMC and PDMC.

In the event of a disaster that occurs or threatens to occur, the MDMC must provide support and guidance to the relevant divisions and substructures. Furthermore, it must mobilise municipal infrastructure and all other available resources to support local DRM resources.

Coordinating the DRM function – across the various service clusters, through integrated planning and programming – requires an unbiased overview. Effective coordination demands that the MDMC be granted the necessary authority to give effect to the DRM framework of the City of Tshwane and to ensure that all DRM-related activities are aligned with government policy.

For the purpose of the above, the City of Tshwane MDMC as a division is located within the Emergency Services Department.

3.4.3 Organisational structure of the City of Tshwane MDMC

The approved organisational structures of the Disaster Management Division consist of the following sections:

- Disaster Management Policy and Strategy Design
- Disaster Preparedness Design
- Disaster Response and Recovery Design

3.4.4 Disaster policy and strategy design

The Head of the MDMC is primarily responsible for ensuring that DRM plans are developed and implemented in a uniform and integrated manner. The Act places explicit responsibility on organs of state and other institutional role players involved in DRM to develop and implement DRM plans (see KPA 3 below).

Planning for disasters and DRM is a participative process involving a multitude of role players and stakeholders from across government sectors, disciplines and spheres,

the private sector, NGOs, CBOs and communities. It would therefore be necessary to cluster stakeholders into planning groups relevant to the various activities associated with disasters and DRM, for example, the development of disaster risk reduction strategies, hazard-specific contingency plans and operational plans, and guidelines for disaster response and recovery activities.

At the start of the planning process, primary responsibility must be allocated to an entity (primary entity) for each of the activities mentioned above. Responsibilities must also be allocated to those entities (support entities) that play a supportive role in the various activities identified in the planning process.

The primary entity is the custodian of the relevant DRM plans and is responsible for coordinating the development of such plans and submitting them to the MDMC. This entity is also responsible for ensuring that plans remain relevant and are aligned with changes and new developments.

3.4.5 Disaster Preparedness Design

The Section: Disaster Preparedness Design is the only section within the MDMC that functions on a regionalised basis.

Key performance indicators

- The job description and key performance indicators for the position of Head of the MDMC have been developed.
- The Head of the MDMC has been appointed.
- The MDMC has been established and is fully operational.
- All vacant positions in the MDMC have been filled with skilled and competent individuals.
- DRM focal persons have been identified by each municipal department and entity; responsibilities for DRM have been assigned and included on the scorecard of the incumbents.
- Roles and responsibilities of municipal departments and entities involved in DRM have been identified, assigned and included in the job profiles of key personnel, and are being applied effectively.

3.4.6 Operational capacity of the City of Tshwane Disaster Management Services

Arrangements must be made to establish the operational capacity of the metropolitan disaster management centre to enable the implementation of the Act in the Municipality. These arrangements must be consistent with those of the NDMC and the PDMC.

3.4.7 Infrastructure requirements

The infrastructural arrangements of MDMCs must be conducted in accordance with national guidelines for the minimum infrastructural requirements for disaster management centres developed by the NDMC.

3.5 Integrated development planning (IDP)

- In terms of the Municipal Systems Act, 2000 (Act 32 of 2000), the Disaster Management Plan is a core component of the IDP. In view of the inextricable relationship between disaster and development, it is imperative that the MDMC is represented on the relevant IDP structures.

3.6 Arrangements of stakeholder participation and the engagement of technical advice in DRM planning and operations

3.6.1 Ad hoc meetings

The Head of the MDMC may convene ad hoc meetings for planning groups, task teams and key personnel from line departments for the purpose of integrated and coordinated planning.

3.6.2 Community participation

The community is at the coalface of DRM. All other DRM activities evolve from the conditions of risk that exist in communities. It is in the community where all the operational activities related to DRM take place. All disaster risk reduction planning, development of projects and programmes, and allocation of responsibilities must be founded on the needs and priorities of communities. Disaster risk reduction is a community-driven process.

The MDMC, through the Community Preparedness Section, must involve local communities in the development of disaster risk profiles, facilitate understanding of the concepts and values of disaster risk reduction in communities, prioritise projects aimed at risk reduction in their IDPs, and facilitate community participation in training, preparedness planning and awareness programmes.

In the case of specific disaster risk reduction projects, project teams must include representation from the community. Indigenous knowledge and input from community leaders must be included in all the activities associated with ensuring informed, alert and self-reliant communities. Capacity building, education, training and research are therefore fundamental to this end.

When disasters occur or threaten to occur, the initial response to the event comes from those directly affected by it. It is only subsequently that their actions are supported by the various response and resource agencies responsible for dealing

with the disaster. In this regard, broad community participation in DRM, as well as the enrolment of individuals as volunteers, must be actively promoted and encouraged, particularly in at-risk communities.

It is also critical to establish ward DRM committees or forums. These forums must provide leadership, ensure community ownership of, and participation in, DRM and awareness programmes, and facilitate preparedness at local level.

Every effort should be made to establish units of volunteers trained in special skills in at-risk communities, in accordance with the national regulations to establish such units.

3.6.3 Participation of volunteers in DRM

In order to maintain an inclusive approach to the participation of volunteers in DRM, volunteers are classified into the following three categories:

- Units of volunteers
- General volunteers
- Spontaneous volunteers

3.6.3.1 Units of volunteers

In addition to the general provisions in the Act for the recruitment, training and participation of volunteers in DRM in all three spheres of government, Chapter 7 of the Act provides a metropolitan municipality with the option to establish a unit of volunteers to participate in DRM in the Municipality.

This category provides for the participation and registration of individuals (or groups) who wish to become more actively involved in an organised structure for DRM volunteers in the Municipality. It includes individuals, groups or organisations that already have specialised skills, as well as those who undertake to be trained in specific skills in order to participate in this category.

3.6.3.2 General volunteers

In addition to the provisions related to option in Chapter 7 of the Disaster Management Act, 2002 (Act 57 of 2002) to establish a unit of volunteers, sections 15(1)(g), 30(1)(g) and 44(1)(g) require disaster management centres to promote the recruitment, training and participation of volunteers in DRM. This allows municipalities, especially those that choose not to establish a unit of volunteers, to recruit individuals (or groups of individuals) who are prepared to assist in the event of a disaster as active volunteers on an ongoing basis.

This category provides a general pool of volunteers who can be drawn on by the Municipality to perform a variety of functions that may or may not require specialised skills. Volunteers in this category must be registered and must meet minimum criteria set down in accordance with the national standard guidelines.

3.6.3.3 Spontaneous volunteers

The Act recognises that people will always respond spontaneously in emergencies and disasters. Such humanitarian responses should not be discouraged. However, the City of Tshwane must take cognisance of the problems and complications, including the possibility of injury and damage to property that may result from the spontaneous, uncontrolled and uncoordinated actions of volunteers. The City of Tshwane MDMC must take this matter into consideration and provide for it in its planning.

3.7 Arrangements for national, provincial and inter-municipal cooperation for DRM

3.7.1 Giving effect to the principle of cooperative governance

Constitutionally, the government bears the primary responsibility for DRM (Schedule 4, Part A, Constitution of the Republic of South Africa, 1996). However, political commitment, legal imperatives and institutional processes are not always enough to ensure success. An effective and comprehensive DRM strategy cannot be achieved without participative decision making, which involves a wide range of role players. Strong policy direction and legitimacy are crucial, but it is ultimately the commitment of resources to those individuals, households and communities that are most at risk that will ensure success.

DRM is a shared responsibility which must be fostered through partnerships between the various stakeholders and cooperative relationships between the different spheres of government, the private sector and civil society. Furthermore, DRM is an intergovernmental process, with each sphere of government playing a unique role and performing a specific set of responsibilities. However, the process requires collateral support to enable the sharing of fundamental resources for disaster risk reduction and all facets of response and recovery. In turn, this interdependence implies that weaknesses or ineffectiveness in one sphere will result in the failure of the entire system.

In creating institutional arrangements for cooperative governance and coordination, the emphasis must be on facilitating cooperation and coordination among existing structures, organisations and institutions, wherever possible, and on harnessing existing skills and expertise. DRM functions normally performed by the various sectors and disciplines in the national, provincial and municipal spheres should not be duplicated. The institutional arrangements must also facilitate inclusively and their primary focus must be to capacitate and build resilience in at-risk communities.

DRM should not be construed as a line function. Instead, it is a management facility, whose purpose it is to create an enabling environment to promote and implement integrated disaster risk reduction measures and to develop institutional capacity to provide improved preparedness and response and recovery services.

3.7.2 Cooperation with national and provincial government

Issues that are fundamental to interdependence and intergovernmental relations between the three spheres of government include the following:

- Sharing of information.
- Establishment of standards to ensure that the technology required for an integrated information management and communication system is compatible across the spheres of government.
- Compilation and sharing of directories of institutional role players across the spheres of government.
- Submission of DRM plans and annual reports to other spheres and neighbouring centres.

3.7.3 Inter-municipal cooperation

Inter-municipal cooperation is crucial in view of the City of Tshwane's risk profile. This means that the City of Tshwane MDMC must strive to interact and engage with the following districts and metropolitan municipalities regarding DRM:

- Ekurhuleni Metropolitan Municipality
- City of Johannesburg Metropolitan Municipality
- Bojanala District Municipality
- Nkangala District Municipality
- West Rand District Municipality
- Waterberg District Municipality

It is recommended that representatives for the DMCs from the municipalities listed above be invited to the City of Tshwane MDRMAF should circumstances require it.

3.7.4 Mutual assistance agreements

In accordance with the Act, municipalities must establish their capacity level to deal with disaster risk reduction, response and recovery. Where necessary, and to strengthen this capacity, they must enter into mutual assistance agreements with their neighbours, the private sector, other organs of state and communities.

At municipal level, cooperation and coordination efforts must be supported by cross-boundary mutual assistance agreements (that is, between provinces and municipalities and between municipalities), and by creating partnerships within each sphere, with the private sector and NGOs through memorandums of understanding.

Mutual assistance agreements and memorandums of understanding are legal documents. Their parameters must be clearly defined and they should include details for financial arrangements, reimbursements and liability. They must also comply with the national standard guideline on mutual assistance agreements developed by the NDMC.

4. KEY PERFORMANCE AREA 2: DISASTER RISK ASSESSMENT

Objective

The objective of KPA 2 is to establish a uniform approach to assess and monitor disaster risks that will inform DRM planning and disaster risk reduction undertaken by organs of state and other role players within the City of Tshwane.

Introduction to KPA 2

In terms of Section 47, the Act sets out requirements for setting priorities with respect to disasters likely to affect local government. This section underscores the importance of disaster risk assessment to guide municipal disaster risk reduction efforts, including DRM planning. KPA 2 outlines the requirements for implementing disaster risk assessment and monitoring by organs of state within the City of Tshwane. It also shows that the outcomes of disaster risk assessments directly inform the development of DRM plans.

4.1 Disaster risk assessment and risk reduction planning

The City of Tshwane faces many different types of risk on a daily basis, including health, environmental, financial and security risks. However, disaster risk specifically refers to the likelihood of harm or loss due to the action of natural or other hazards or other external threats on vulnerable structures, services, areas, communities and households.

Disaster risk assessment is the first step in planning an effective disaster risk reduction programme. It examines the likelihood and outcomes of expected disaster events. This includes investigating related hazards and conditions of vulnerability that increase the chances of loss.

Planning for disaster risk assessment requires identifying key stakeholders, as well as consulting with them about the design and/or implementation of the assessment and the interpretation of the findings.

Disaster risk assessments, supported by good monitoring systems, are essential for the following:

- Effective DRM and risk reduction planning
- Sustainable development planning
- Identification of potential threats that can undermine a development's success and sustainability, making it possible for appropriate disaster risk reduction measures to be incorporated into the project design before implementation
- Shaping of focused disaster risk reduction programmes for specific threats
- Identification of high-risk periods and conditions
- Activation of preparedness and response actions

Relevant municipal departments and entities must execute systematic disaster risk assessments in the following instances:

- Prior to implementing any municipal disaster risk reduction, preparedness or recovery programme
- As an integral component of the planning phase for large-scale housing, infrastructure or commercial/industrial developments
- As an integral component of the planning phase for significant initiatives that affect the natural environment
- When social, economic, infrastructural, environmental, climatic or other indicators suggest changing risk patterns that increase the likelihood of significant disaster impacts

All municipal departments and entities must carry out disaster risk assessments to identify priority disaster risks relevant to their functional areas (subsection 4.1.1.2 and Annexure 3). Where possible, these should be undertaken interdepartmentally to avoid duplication of efforts and to ensure uniformity of findings.

To ensure consistency in approach, all proposed disaster risk assessments and related studies planned by municipal departments and entities must be reviewed by the MDMC before implementation.

4.1.1 Situations requiring a disaster risk assessment

Disaster risk assessments must be undertaken to –

- anticipate and plan for known hazards or disasters to prevent losses and limit endangering impacts; and
- ensure that development initiatives maximise their vulnerability reduction outcomes.

4.1.1.1 Undertaking disaster risk assessments for specific known hazards or disasters

A disaster risk assessment is required to guide disaster risk reduction efforts for specific known hazards or disasters that –

- due to their scale and magnitude are likely to affect the City of Tshwane beyond its ability to cope by using its own resources;
- are of recurrent high and medium magnitude, occur in most wards and may require municipal support and/or intervention;
- are of high magnitude and low frequency (for example, nuclear accidents and oil spills);
- occur infrequently or seasonally (for example, veld fires and flooding), have the potential to cause severe loss, and require levels of specialist support not available at municipal level; or

- affect neighbouring municipalities and have consequences for the City of Tshwane (for example, unplanned internal human movements and events that require humanitarian or other relief assistance).

4.1.1.2 Maximising vulnerability reduction outcomes

With respect to the implementation of the Act, a disaster risk assessment must be undertaken when one or more of the vulnerability reduction criteria listed in Table 2 are considered priorities in any nationally initiated project or programme.

Table 2: Situations that require disaster risk assessment

<i>Situations that require disaster risk assessment</i>	
Key vulnerability criteria To achieve:	Examples of where disaster risk assessments must be done
Increased <i>sustainability</i> of a development project or programme to support vulnerable households.	As part of the planning for an infrastructural development, for example, assessing the likelihood of weather, flooding, subsidence and other threats damaging the structure, so that these can be factored into the construction specifications.
<i>Reduction of potential harmful consequences</i> associated with industrial, commercial or other developments.	As part of environmental impact assessments for large-scale developments, including industrial, commercial and other enterprises that may increase disaster risk.
Increased <i>understanding of a rapidly changing risk</i> for improved DRM planning.	In a sinkhole-prone area that has recently experienced considerable population growth and faces increased instability.
<i>Increased robustness of development initiatives</i> in poor communities and areas.	In an informal settlement characterised by recurrent small- and medium-sized disaster losses that undermine assets and livelihoods.
<i>Management of high-risk periods and conditions</i> to ensure service and/or business continuity.	Electricity transmission lines and rail infrastructure, as well as health and emergency services, to ensure that these essential services do not “fail” under expected high-risk conditions.
Provision of appropriate support for <i>at-risk activities, services, areas, communities and households following an “alert”</i> .	Following a drought warning or cholera alert in rural areas, to identify communities and households that are most at risk and to focus on target preparedness and response actions.

4.1.2 The disaster risk assessment process

Disaster risk assessment is a process that determines the level of risk by –

- identifying and analysing potential hazards and/or threats;
- assessing the conditions of vulnerability that increase the chance of loss for particular elements that are at risk (that is, environmental, human, infrastructural, agricultural, economic and other elements that are exposed to a hazard and are at risk of loss);

- determining the level of risk for different situations and conditions; and
- helping to set priorities for action.

A reliable disaster risk assessment for a specific threat should answer the following questions:

- How frequently can one expect an incident or a disaster to happen?
- Which areas, communities or households are most at risk?
- What are the likely impacts?
- What is the vulnerability or environmental and socio-economic risk factors that increase the severity of the threat?
- What capabilities or resources exist to manage the risk?
- Is the risk becoming more serious?
- Is the risk undermining development progress in the areas, communities and households affected by it?
- If so, is the management of the risk a development priority?
- In the areas and communities affected by the risk, are there any other significant risks?

4.1.3 Undertaking a disaster risk assessment

There are many different methods for carrying out disaster risk assessments. These vary, depending on the type of risk being assessed, the specific characteristics of the at-risk population and the risks related to the area, infrastructure, service or business concerned. Methods used are also determined by the urgency of the assessment and the availability of relevant hazard and vulnerability information, as well as appropriate specialist and other resources to undertake it.

Through a consultation process, the MDMC must develop a municipal standard for conducting comprehensive disaster risk assessments, including guidelines for the application of a uniform disaster risk assessment methodology and approach, as well as the standardisation of reporting formats for disaster risk assessments.

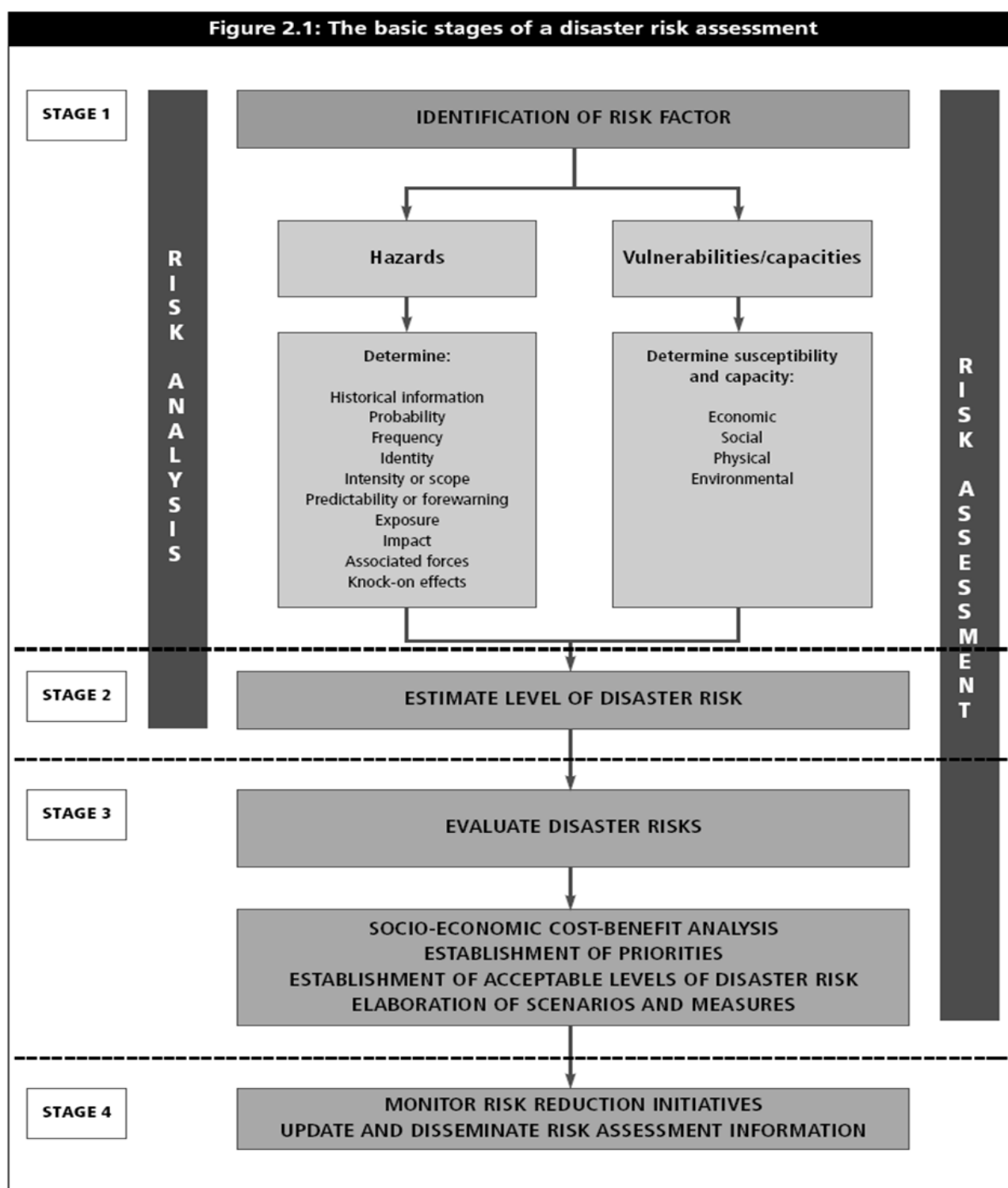
The general process for assessing disaster risk involves the following stages:

- **Stage 1:** The initial stage involves identifying the specific disaster risk to be assessed.
- **Stage 2:** The second stage involves analysing the disaster risk concerned.
- **Stage 3:** The third stage requires an evaluation of the disaster risk being assessed – usually in relation to other risks. It involves undertaking much more comprehensive assessments of specific threats and establishes priorities for action.
- **Stage 4:** The fourth stage is required to inform on going disaster risk assessment and planning. It involves monitoring disaster risks and the effectiveness of risk reduction initiatives. It also involves updating disaster risk assessment information and disseminating this information to all stakeholders.

The disaster risk assessment process must be conducted using a staged approach if the outcomes are to be synchronised with the requirements of the planning process.

4.1.3.1 Stage 1: Identify risks

Identify and describe the hazard with respect to its frequency, magnitude, speed of onset, affected area and duration.



Describe and quantify vulnerability to determine susceptibilities and capacities. This is done by describing, where possible, the vulnerability of people, infrastructure (including homes and dwellings), services, economic activities and natural resources exposed to the hazard.

Estimate the likely losses resulting from the hazard on the vulnerable in order to evaluate likely consequences or impacts.

Identify relevant capacities, methods and resources already available to manage the risk. Assess the effectiveness of these, as well as gaps, inconsistencies and inefficiencies in municipal departments and other relevant agencies.

4.1.3.2 Stage 2: Analyse the risks

Estimate the level of risk associated with a specific threat to determine whether the resulting risk is a priority or not. Estimating the level of risk is done by matching the likelihood of a hazard or disaster with its expected impact or consequences. This process allows different threats to be compared for the purpose of setting priorities.

4.1.3.3 Stage 3: Evaluate the risks

This stage involves the further prioritisation of disaster risks when there are multiple threats to assess. When several threats are assessed at the same level of risk, limited resources and budgets require that they be prioritised even further. This process, called “risk evaluation”, is necessary because it is not possible to address all disaster risks at the same time.

The priority at-risk people, areas, communities, households and developments identified during this stage of the assessment will be the subject of highly specialised multidisciplinary and comprehensive disaster risk assessments. These assessments must inform the holistic and integrated planning and implementation of focused disaster risk reduction initiatives.

This stage of the disaster risk assessment will require unique combinations of risk science expertise relevant to the particular types of disaster risk facing the specific at-risk groups, areas or developments.

4.1.3.4 Stage 4: Monitor disaster risk reduction initiatives and update and disseminate disaster risk assessment information

This stage involves on-going monitoring to measure the effectiveness of disaster risk reduction initiatives, i NDRMPF identifying changing patterns and new developments in risk profiles, and updating and disseminating information for the purpose of DRM planning.

4.1.3.5 Stage 5: Link with DRM planning

The findings of stages 1 and 2 will directly inform the development of a Level 1 DRM Plan (the first level of the planning process) as well as components of a Level 3 DRM Plan, by identifying the following:

- Known priority risks for the purpose of contingency planning
- Priorities for vulnerability reduction planning
- High-risk areas, communities and households exposed to multiple risks, and high-risk developments that require further evaluation and prioritisation through focused comprehensive disaster risk assessments

The outcomes of Stage 3 will directly inform the development of a Level 2 DRM Plan as well as components of a Level 3 DRM Plan.

The results of Stage 4 will inform the development of a Level 3 DRM Plan.

4.1.4 Community-based disaster risk assessment

In accordance with the Act's intent to increase local capacity so as to minimise the risk and impact of disasters, disaster risk assessment efforts must actively include the participation of vulnerable communities and households, including physically isolated communities and female-headed and child-led households. The information collected using more technically sophisticated methods employed by risk scientists can be significantly enhanced by local and indigenous knowledge related to DRM. In addition, the active engagement of special needs groups, such as women, children and the elderly, improves the quality of the disaster risk assessment findings and increases the likelihood of community ownership in any disaster risk reduction interventions that may follow.

4.1.5 Sourcing additional information when undertaking a disaster risk assessment

Information on specific disaster risks is often fragmented. Municipal departments or commissioned agents, in conjunction with the MDMC, who perform specific disaster risk assessments must engage in and document the following when doing an assessment:

1. Audit past significant events and events classified as disasters. A review of previous small- and medium-sized events as well as declared disasters, where relevant, can identify areas and communities that are most at risk and help to focus more detailed disaster risk assessment efforts. Reviewing newspaper articles may assist with this.
2. Consult with community members in the areas affected by past events for information on the frequency and severity of events classified as disasters, significant events and recurrent small-scale occurrences. Locate these events on the MDMC information system through the use of GIS and user-friendly maps and record them on a graph to show seasonality/change over time.

3. Consult with long-standing members of emergency services, the South African Red Cross Society, the Salvation Army or other humanitarian assistance organisations working in the City of Tshwane who can remember or have recorded ten or more years of past disaster responses.
4. Consult with specialist research commissions, universities and the private sector and obtain current or past research reports.
5. Check with the appropriate national and provincial ministries for information or relevant research that may have already been carried out or commissioned.
6. Consult with the insurance industry.

4.1.6 Selecting disaster risk assessment methods and approaches

There is a wide range of disaster risk assessment methods. These differ according to the hazards being considered, the size and character of the area being assessed, the time frame being considered and the available resources (including financial resources, risk-related data/information and access to appropriate expertise). Table 3 provides examples of different types of risk and appropriate disaster risk assessment methods.

Table 3: Types of disaster risk and disaster risk assessment

Types of risk	Possible disaster risk assessment methods	Expertise
Potential flood risk in a developed area	<ul style="list-style-type: none"> Flood hydrology and hydraulics Ecological and environmental assessment 	<ul style="list-style-type: none"> Environmental specialists Hydrological specialists
Potential cholera risk in an isolated area known to be cholera-prone	<ul style="list-style-type: none"> Epidemiological risk assessment Environmental health assessment Groundwater evaluation 	<ul style="list-style-type: none"> Public and environmental health specialists
Potential fire risk in a large informal settlement	<ul style="list-style-type: none"> Historic and seasonality review of past fire events graphed or mapped over time Aerial photographs to indicate density or other spatial changes over time Participatory rural appraisal (PRA)/livelihoods analysis/ focus group interviews Demographic and socio-economic analysis 	<ul style="list-style-type: none"> Urban development facilitators/planners Fire prevention specialists Social scientists
Potential wind storm or tornado risk in a rural area	<ul style="list-style-type: none"> Consultation with local leadership History of past events Historic climatology and seasonal analysis 	<ul style="list-style-type: none"> Indigenous knowledge Community facilitators Climate scientists
Drought risk in a rural community	<ul style="list-style-type: none"> PRA/livelihoods analysis/focus group 	<ul style="list-style-type: none"> Rural development facilitators

	interviews <ul style="list-style-type: none"> • Historic rainfall information, history of drought and impacts • Remotely sensed information on vegetation and cloud cover 	<ul style="list-style-type: none"> • Agricultural specialists • Public health specialists • Climate scientists
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4.1.7 Consolidation and classification of disaster risk information

Hazard and vulnerability assessment findings must be consolidated according to uniform classifications. This facilitates integrated multisectoral planning across municipal departments and with other partners. It also supports risk management cooperation between administrative areas (for example, two or more municipalities) affected by the same risk. An internationally recognised classification of hazards that should be used is given in Table 4. This classification is provided by the UN/ISDR.

Table 4: Classification of hazards

Classification of hazards	
Natural hazards	Examples
Geological	Landslides, rockslides, liquefaction, subsidence
Biological	Epidemic diseases affecting people or livestock, veld fires, plant infestations
Hydro meteorological	Floods, debris flows, tropical cyclones, storm surges, severe storms, drought, desertification
Technological	Industrial pollution, nuclear activities, toxic waste, dam failure, transport accidents
Environmental	Land degradation, deforestation, loss of biodiversity

Vulnerability should be assessed as social, economic, political, environmental or physical (infrastructural). Because vulnerability factors, rather than external hazard processes, are often the major drivers of disaster risk, it is critical to identify these during a disaster risk assessment. This provides important insights for developing vulnerability reduction interventions that lower disaster risk levels.

4.1.8 Key performance indicators

- A municipal standard for conducting comprehensive disaster risk assessments has been generated by the MDMC and is in line with the national and provincial standards.
- Municipal guidelines by the MDMC for application of a uniformed disaster risk assessment methodology have been generated by the MDMC.
- A municipal standard for assessing priority disaster risks has been generated by the MDMC.

- Municipal guidelines for assessing priority disaster risks have been generated by the MDMC.
- Relevant risk assessment regulations, policy and implementation guidelines by municipal departments and entities have been developed and applied.
- Documented evidence of progressive integration of risk assessment into development planning of municipal departments and entities and other role players in IDPs and annual reports was submitted to the MDMC, PDMC and NDMC.

4.2 Generating a municipal indicative disaster risk profile

The City of Tshwane must establish the necessary capability to generate a municipal indicative disaster risk profile and to maintain the profile's dynamic character by continuously monitoring and updating it.

4.2.1 Consolidating information across sectors and municipal departments

Disaster risk assessment information generated by municipal departments and research commissions must be consolidated by the MDMC to provide a municipal indicative disaster risk profile. This risk profile must include electronic maps that represent priority disaster risks affecting the City of Tshwane, as well as consolidated information on recorded losses for specific threats. It is expected that uniform assessment information on priority disaster risks will be available from the City of Tshwane's indicative disaster risk profile within five years of commencement of the Act.

In this context, geographic information systems (GIS) represent a powerful tool to spatially represent hazard, vulnerability and consolidated risk information. However, the MDMC must ensure that the information represented in GIS format is scientifically validated and sufficiently robust to be included in the profile.

The process of auditing and compiling information must be inclusive. The MDMC must contact specialist research units, private sector partners, government departments and committees, and other sources for relevant scientific reports and data on hazard and vulnerability patterns. It must also consult with NGOs, CBOs and community structures on historical and changing risk patterns.

4.2.2 Key performance indicators

- Mechanisms to consolidate documents and make information accessible on the City of Tshwane's priority risks have been established by the MDMC.
- Priority risks of municipal significance have been identified and documented by the MDMC.
- Procedures to consolidate, map, update and make information accessible on the municipal priority risks have been established and documented by the MDMC.

4.3 Monitoring, updating and disseminating disaster risk information

4.3.1 Monitoring disaster risks

Just like other risks, disaster risks are not static. They change seasonally and over time. To recognise such changes, and to strategically adjust programmes accordingly, all municipal departments must have monitoring systems in place that are relevant to their specific functional responsibilities.

These systems form the basis for sounding timely warnings of, or alerts for, impending significant events or disasters. They are also essential for monitoring the effectiveness of on-going disaster risk reduction efforts.

Risk monitoring systems involve the following:

- Hazard tracking
- Vulnerability monitoring
- Disaster event tracking

4.3.1.1 Hazard tracking

Hazard tracking systems monitor the physical phenomena that can trigger disaster events. They include systems that provide seasonal and early warning information on approaching adverse weather conditions. For example, systems that track the seasonal build-up of grass fuels over large areas provide critical warning information on potential veld fire conditions.

4.3.1.2 Vulnerability monitoring

Vulnerability monitoring systems track the ability of areas, communities, households, critical services and natural environments to resist and withstand external threats. Censuses, regular poverty surveys, nutritional surveys and information collected from health clinics provide important insights into changing social vulnerability patterns in at-risk communities (for example, an increase in the number of child-headed households or elderly adults with dependants). As this information is often routinely collected by government services, special surveys or parallel monitoring initiatives are not usually required to gather it.

These quantitative data must be supported by qualitative information that tracks local capabilities to absorb recurrent shocks and stresses, as well as local capacities to resist and recover from external threats. Community-based DRM procedures must be introduced in order to ensure that the information mentioned above is collected on a regular basis and fed into the City of Tshwane's DRM information system.

4.3.1.3 Disaster event tracking

Disaster event tracking systems monitor changing patterns in disaster risk. Increasing or decreasing frequencies of unclassified disaster incidents are sensitive indicators of changing risk patterns in at-risk areas. For instance, a rising incidence pattern of small and medium-sized informal settlement fires may represent an early

warning of accumulating risks, which may result in a more serious and destructive fire event. It also signals a call for urgent measures to avert the impending disaster.

Information on small and medium “undeclared” events can be found in many different sources, including local newspapers, fire and DRM reports, and records of the relevant department of social development and the South African Red Cross Society. Such information must be sourced and included in the City of Tshwane’s DRM information system.

4.3.2 Updating a comprehensive disaster risk assessment

Disaster risk is driven by a combination of hazard and vulnerability processes, including changing land-use patterns, infrastructure development/maintenance, urban growth and settlement densification. Similarly, household size and composition, health status and level of livelihood security affect the potential loss for households. Some risks, particularly those triggered by climate processes, must be reviewed seasonally before the rainy season or hot summer months. Other risks, such as riverine flood risks, require extensive flood hydrology investigations, and may be undertaken once during a 20-year period. Municipal departments and entities must seek technical advice from recognised risk specialists (at provincial and national level) to determine the need for updating a comprehensive assessment for a specific threat.

Municipal departments and entities with responsibilities to reduce and manage specific risks must annually review the municipal indicative disaster risk profile for their functional areas, to determine if risk conditions have changed detrimentally. If physical, atmospheric, environmental, health or socio-economic conditions have worsened considerably, or if there are increasing disaster losses reported from small- and medium-sized events, the assessment and profile must be updated.

4.3.3 Responsibility for updating and monitoring disaster risk information

Municipal departments and entities and other specialist role players with responsibilities to reduce and manage disaster risks in the City of Tshwane must have clear mechanisms for –

- accessing and updating relevant hazard and vulnerability information on disaster risks specific to their functional areas; and
- making this information available to the MDMC.

In addition, the MDMC must –

- establish clear mechanisms for to access, consolidate and update relevant information on hazards, vulnerability and disaster occurrence from specialist government and non-governmental partners responsible for monitoring specific disaster risks, including fire, drought and epidemics;
- develop and implement clear mechanisms to disseminate disaster risk assessment and monitoring information for ongoing planning as well as to manage conditions of heightened risk;

- establish clear procedures to access, interpret and disseminate timely weather information, particularly when this is associated with potentially endangering rapid-onset storms, hot dry temperatures, strong winds, heavy rainfall or hail, ice or fog conditions; and
- ensure that the disaster risk information management systems implemented by the MDMC are managed by skilled individuals with both information technology capabilities and disaster risk analysis skills.

4.3.4 Key performance indicators

- Municipal departments with responsibilities to reduce and manage disaster risks specific to their functional areas have established clear and documented mechanisms to rapidly access and update relevant hazard and vulnerability information based on the national risk assessment standard, and to rapidly make this information available to the MDMC.
- The MDMC as well as all departments and entities have established and documented clear mechanisms to access, consolidate and update relevant hazard, vulnerability and disaster occurrence information from partners responsible for monitoring specific risks.
- The MDMC as well as all departments and entities have established and documented clear mechanisms to disseminate risk assessment and monitoring information for ongoing planning, as well as to manage conditions of heightened risk.
- The MDMC has established and documented clear procedures to access, interpret and disseminate timely early warning information for both rapid- and slow-onset hazards.

4.4 Conducting quality control

Disaster risk assessments must be robust and reliable in order to inform disaster risk reduction planning.

4.4.1 Responsibilities in disaster risk assessment

Disaster risk assessments almost always require specialist input. This applies to both the process of characterising the hazard conditions that can trigger loss and understanding the vulnerability factors that increase the severity of the impact.

There are many research institutions, government departments and private companies in South Africa with expertise in assessing and managing different types of risk. When working with technical specialists, the commissioning municipal departments and entities must define terms of reference that specify feedback, consultation, skills transfer and capacity-building processes by the commissioned specialists. This is particularly important given the complex character of hazard and risk science for non-specialists, and the serious legal and other implications of disseminating incorrect or unverified disaster risk assessment findings which then inform planning decisions.

In the City of Tshwane, disaster risks are more significantly shaped by social, economic and environmental conditions than by external threats. It is therefore

critical that disaster risk assessments should be ground-truthed (that is, based on the actual situation “on the ground”), with field consultations in areas and communities that are most at risk.

Field consultation increases the accuracy of the disaster risk assessment findings, provides insight into the vulnerability conditions that can potentially be reduced, and builds a greater sense of responsibility for “sharing the risk” among the affected communities. In this context, it is critical that in order to build a cooperative partnership the assessment process includes respectful pre-assessment consultation with the affected communities before the arrival of external assessment teams.

4.4.2 Measures to establish the accuracy of disaster risk assessments

The following two mechanisms must be used to ensure the accuracy of the disaster risk assessment that is undertaken to inform municipal area planning:

- Establishment of a technical advisory committee
- External validation or external peer review of methods and findings.

4.4.2.1 Technical advisory committee

The relevant municipal departments and entities that commission the disaster risk assessment must appoint a technical advisory committee consisting of nationally recognised specialists on the hazards, vulnerabilities and disaster risks being assessed. A technical advisory committee is particularly necessary when complex disaster risk assessments are being carried out. This committee can assist with the development of terms of reference, the monitoring of progress, and the validation and/or interpretation of the findings.

4.4.2.2 External validation process for methods and findings

At a minimum, all assessments carried out in the City of Tshwane should be externally validated with respect to the methods used and the findings generated.

This external validation process should be undertaken before any programmes are implemented or before any maps or reports for planning purposes are published or disseminated, where such programmes, maps or reports are based on the assessment findings.

External validation of the findings should be undertaken with the input of recognised specialists who may be drawn from specialist departments or ministries, research institutions, NGOs or the private sector.

4.4.3 Key performance indicators

- Disaster risk assessments undertaken show documented evidence of the following:
 - Capacity building with respect to the commissioning authority

- Ground-truthing (that is, based on the actual situation “on the ground” or verified by those being assessed), through field consultations in the areas and communities most at risk from the risk(s) being assessed
- Consultation with appropriate governmental and other stakeholders about the design and/or implementation of the assessment, as well as the interpretation of the findings
- There is documented evidence in disaster risk assessments undertaken of external validation before –
 - the publication or dissemination of hazard, vulnerability or risk maps and/or reports for planning purposes; and
 - the implementation of risk reduction or other initiatives based on the assessment results.
- Disaster risk assessments undertaken show documented evidence of technical consultation with the City of Tshwane’s MDMC prior to implementation.

5. KEY PERFORMANCE AREA 3: DISASTER RISK REDUCTION

Objective

KPA 3 aims to ensure that all DRM stakeholders develop and implement integrated DRM plans and risk reduction programmes in accordance with approved frameworks.

Introduction to KPA 3

The successful implementation of the Act critically depends on preparing and aligning disaster management frameworks and plans for all spheres of government. The legal requirements to prepare disaster management frameworks and plans by municipal departments and entities are specified in section 52 of the Act. This KPA addresses requirements for DRM planning within the City of Tshwane. It gives particular attention to the planning for and integration of the core disaster risk reduction principles of prevention and mitigation into ongoing programmes and initiatives.

5.1 DRM planning

The MDMC must ensure that coherent and relevant DRM planning is undertaken by municipal departments and entities, municipal entities and other institutional role players.

5.1.1 Relation of the City of Tshwane DRMPF to other frameworks

The Disaster Risk Management Policy Framework and plans are the strategic mechanisms through which action for DRM is coordinated and integrated across all functions of the City of Tshwane (see Figure 4).

5.1.1.1 National and provincial DRMPF

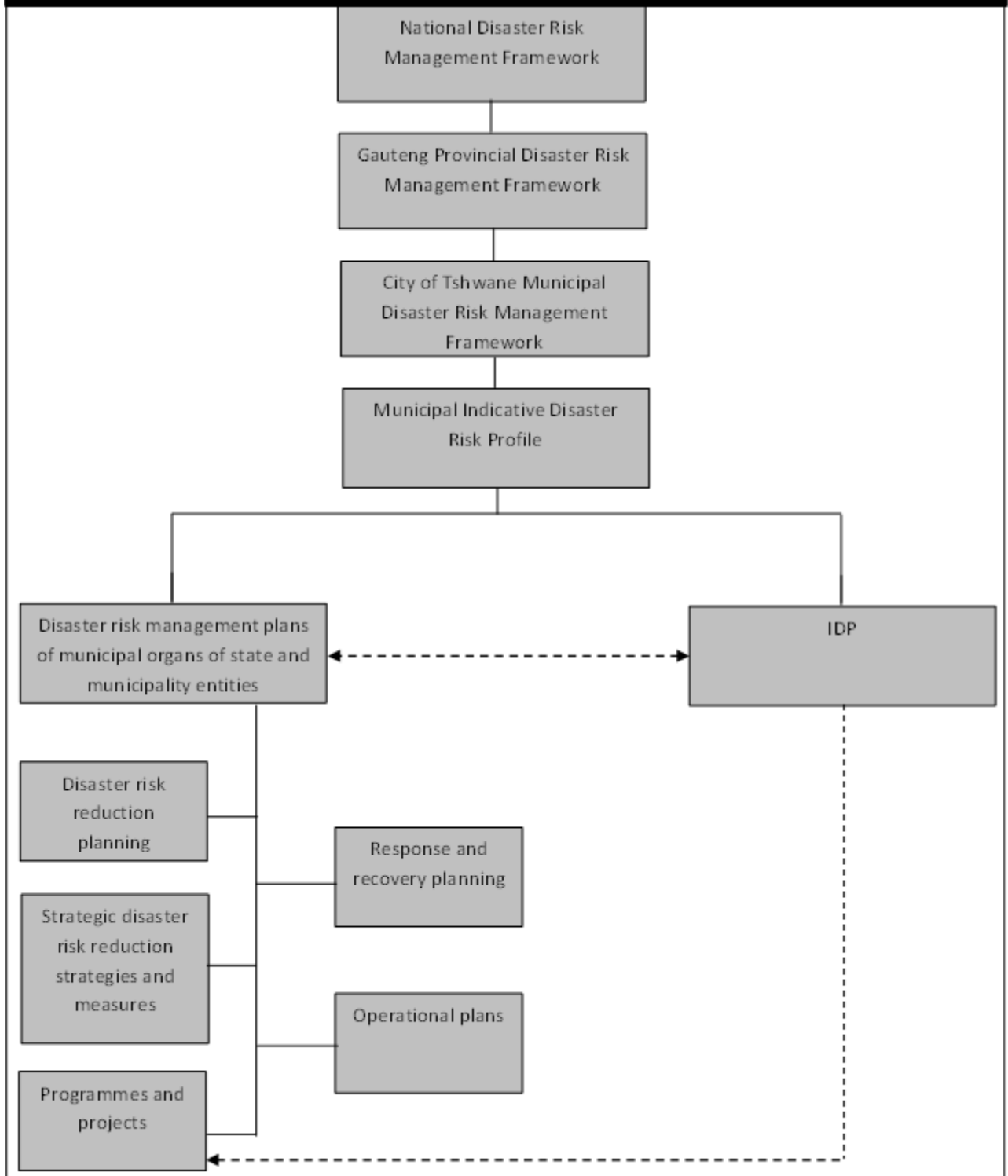
The Act requires the development of one national DRM framework, a provincial disaster risk management policy framework for each province, and DRM frameworks for all district and metropolitan municipalities.

The City of Tshwane's municipal DRMPF must be consistent with the national and provincial DRM frameworks.

5.1.1.2 DRM plans

All municipal departments and entities, as well as other institutional partners identified as key role players in DRM are required to prepare and complete DRM plans.

Figure 6.1: National, provincial and municipal disaster risk management frameworks and disaster management plans in the CoT



Although the Act specifies clear requirements for completed DRM plans, the following is also recognised:

- There is considerable unevenness in DRM planning capacity and experience.
- Municipal departments and entities that engage seriously with DRM for the first time will need to carry out careful consultation before developing a comprehensive DRM plan.

To address this wide range of DRM planning capabilities, the national and provincial DRM frameworks provide for a phased approach to DRM planning and implementation. It comprises three progressive steps from a Level 1 DRM Plan to a Level 3 DRM Plan. The completion of each level of DRM plan will yield indicative information about common vulnerabilities in communities, local areas or provinces. This information should be incorporated into IDP planning processes and projects.

The requirements for each level of DRM plan and the steps to be taken to develop the different levels are detailed in priority guidelines distributed to all stakeholders by the NDMC and PDMC. The implementation of these plans will form an integral part in the implementation strategy of the Act.

5.1.1.2.1 Level 1 DRM Plan

A Level 1 DRM Plan applies to municipal departments and entities that have not previously developed a coherent DRM plan. It focuses primarily on establishing foundation institutional arrangements for DRM, putting in place contingency plans for responding to known priority threats as identified in the initial stages of the disaster risk assessment, identifying key municipal and other stakeholders, and developing the capability to generate a Level 2 DRM Plan.

5.1.1.2.2 Level 2 DRM Plan

A Level 2 DRM Plan applies to municipal departments and entities that have established the foundation institutional arrangements, and are building the essential supportive capabilities needed to carry out comprehensive DRM activities. It includes establishing processes for a comprehensive disaster risk assessment, identifying and establishing formal consultative mechanisms to develop disaster risk reduction projects, and introducing a supportive information management and communication system and emergency communications capabilities.

5.1.1.2.3 Level 3 DRM Plan

A Level 3 DRM Plan applies to municipal departments and entities that have established both the foundation institutional arrangements for DRM and essential supportive capabilities. The plan must specify clear institutional arrangements to coordinate and align the plan with other governmental initiatives and the plans of institutional role players. It must also show evidence of informed disaster risk assessment and ongoing disaster risk monitoring capabilities, as well as relevant developmental measures that reduce the vulnerability of disaster-prone areas, communities and households.

The DRM plans developed by municipal departments and entities must be incorporated into the City of Tshwane's IDP, funding and implementation processes.

5.1.2 Integration of the City of Tshwane DRM Services with other DRM centres

The City of Tshwane's MDMC plays an important strategic role in integrating DRM plans and actions across sectors and with other role players in the Municipality.

The MDMC must –

- ensure that the municipal disaster management framework is consistent with the national and provincial disaster management frameworks, as well as the priorities, strategies and objectives specified in the City of Tshwane's IDP;
- ensure that the Municipality's DRM plans inform and are aligned with those of other municipal departments, entities and role players; and
- consult the MDRMAF regarding the development of DRM plans as well as guidelines.

5.1.3 Key performance indicators

- A municipal disaster management framework has been developed and is consistent with the NDRMPF and GP DRMPF, and has been submitted to the PDMC and NDMC.
- DRM planning guidelines have been developed and disseminated by the MDMC.
- DRM plans have been submitted to the MDMC by all relevant municipal departments and entities.
- The City of Tshwane's municipal DRM framework and plans are revised at least every two years, as evidenced by annual reports submitted to the PDMC and NDMC.

5.2 Setting priorities for DRM planning

Although the City of Tshwane faces a broad range of disaster risks, it is not possible, given resource constraints, to address all potential threats at once. Effective DRM planning by all municipal departments and entities as well as other role players requires careful identification of priority disaster risks and the communities and households that are most vulnerable to these risks. The process to identify priority disaster risks is critically informed by the disaster risk assessment findings obtained by taking the steps described in KPA 2.

Disaster priority setting is informed by the following three important considerations:

- The expected magnitude for specific disaster types (variously referred to as “impact”, “severity” or “consequences” of a disaster).
- The expected frequency of specific types of disaster (variously referred to as “the probability” or “likelihood” of a disaster).

- The expected manageability of specific types of disaster at municipal level (which refers to “how difficult” it is to manage a disaster event, including the level of cross-sectoral management effort involved to reduce the risk).

While a wide range of different disaster events can occur at municipal level, they are relevant as a priority for municipal DRM planning only when a disaster risk assessment and/or ongoing risk monitoring processes indicate the following:

- A specific disaster risk exceeds the capabilities of the City of Tshwane to manage it effectively.
- A disaster risk results in the same type of disaster event occurring repeatedly and at different times in the City of Tshwane with significant cumulative impacts on lives, property and the natural environment, but these are not necessarily classified as local disasters.

In this context, City of Tshwane DRM priorities must focus on averting or limiting the impact of the following disaster risks:

- Wide-area events that, due to their scale and magnitude, is likely to affect the City of Tshwane beyond its capacity to cope.
- Recurrent high- and medium-magnitude events that occur in the City of Tshwane and bordering municipalities and which may require provincial support and/or intervention. These include veld, urban fringe or large informal settlement fires. They can also include destructive windstorms, rainstorms and communicable disease outbreaks that affect people or livestock.
- Low-frequency/rare high-magnitude disaster risks with potential for severe loss and which require levels of specialist support possibly not available within the City of Tshwane. These include nuclear accidents, earthquakes, sinkholes and major transport disasters.
- Disaster risks that affect neighbouring municipalities and provinces and have consequences for the City of Tshwane.

5.2.1 Identifying cross-border priority municipal risks

As part of the provincial DRM structures and in line with municipal and provincial protocol, the City of Tshwane MDMC must ensure that it establishes links and cooperation with neighbouring municipalities that could, due to their indicative risk profile, pose a significant threat to the City of Tshwane. For this purpose, the City of Tshwane MDMC must seek to engage neighbouring DRM centres in order to identify cross-border priority municipal risks.

The MDMC must also, after identifying priority risks for the City of Tshwane, determine whether these risks pose a significant threat to neighbouring municipalities and communicate such information to the relevant stakeholders through the proper channels.

5.2.2 Identifying most critical infrastructure, vulnerable areas, communities and households

The City of Tshwane, as a major urban centre in Gauteng, must strive to protect its most critical infrastructure. The MDMC, in collaboration with the relevant municipal departments and entities, must identify critical infrastructure, the disaster risk to this infrastructure, as well as possible prevention, mitigation and contingency measures to protect it.

Not all areas, communities and households face the same disaster risks. In undertaking DRM planning, priority must be placed on those areas, communities and households that are exposed to natural or other threats and have the least capacity to resist and recover from the resulting impacts. These are called at-risk areas, communities or households.

5.2.3 Priorities for focusing disaster risk protection efforts

For DRM planning purposes, all municipal departments and entities must, according to their functional area or area of jurisdiction, give priority to protecting the following:

- Strategic infrastructure or lifeline services whose damage or disruption during disaster events would result in serious and widespread consequences.
- Critical economic, commercial, agricultural and industrial zones or sites whose damage or disruption would have serious and widespread consequences.
- Fragile natural ecosystems and environmental assets that offer protective environmental services and which, if damaged or destroyed in a disaster event, would result in serious natural and economic losses.
- Communities in areas exposed to extreme weather and/or other natural and technological hazards and which are therefore likely to sustain serious human and property losses in the event of a disaster.
- Poor and underserved rural and urban communities, including informal settlements, especially those located in fragile ecological areas that sustain repeated losses from recurring small, medium and large disaster events, and that lack insurance coverage to facilitate recovery.
- Highly vulnerable households in at-risk areas with limited capacity to resist or recover from external shocks, particularly child-headed households, those headed by the elderly, or households affected by chronic illness.

5.2.4 Strategic planning for disaster risk reduction

To keep with the Act's emphasis on vulnerability reduction and the use of international best practices in this regard, strategic planning must focus efforts on reducing disaster risks. This includes identifying strategies and measures that lessen the likelihood of harmful losses by avoiding hazards or reducing vulnerability, as well as those that increase capacity to prepare for and enable timely response and recovery.

DRM involves a wide range of role players, especially since it requires both developmental efforts that reduce the risk of disasters and strengthened capabilities for preparedness, response and recovery. In this context, the DRM plans of different

municipal departments and entities will necessarily differ in their emphasis on disaster risk reduction or on more operational response issues, depending on their respective functional areas.

5.2.4.1 Core disaster risk reduction principles of disaster prevention and mitigation

All DRM plans must explicitly prioritise the core principles of disaster prevention and mitigation. Internationally, disaster prevention, mitigation and preparedness are referred to as disaster risk reduction measures, because they lessen the likelihood of harmful losses by avoiding hazards or reducing vulnerability. In this way, prevention and mitigation are central to achieve the goal of disaster risk reduction, in which vulnerabilities and disaster risks are reduced and sustainable development opportunities strengthened.

It is often difficult to decide whether an intervention is preventive or mitigative. For this reason, it is more practical to refer to them jointly as disaster risk reduction measures, because both minimise the risk of disasters.

5.2.4.1.1 Disaster prevention

Disaster prevention refers to actions that provide “outright avoidance” of the adverse impact of hazards and related environmental, technological and biological disasters.

Many disasters can be prevented through effective land-use planning, basic public works and effective municipal services that factor in the frequency and severity of natural or other hazards as well as human actions. Examples include the following:

- Replanting indigenous grasses or trees on a recently burned slope near roads or dwellings to stabilise the soil and prevent damaging land subsidence
- Cutting dry grass and constructing fire breaks in the dry season
- Carefully positioning and maintaining storm water drainage, along with protecting natural wetlands, to prevent destructive flooding during heavy rain

Unfortunately, many small, medium and large disaster events cannot completely be prevented. However, their severity can be reduced through ongoing disaster mitigation efforts.

5.2.4.1.2 Disaster mitigation

Disaster mitigation refers to 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. These efforts can target the hazard or threat itself (for example, a fire break that stops a fire from spreading to residential areas). This is often referred to as “structural mitigation”, since it requires infrastructure or engineering measures to keep the hazard away from those who are at risk.

Disaster mitigation efforts can also target people who are at risk by reducing their vulnerability to a specific threat (for instance, promoting community responsibility for

controlling fire risk in an informal settlement). This is often called “non-structural mitigation”, because it promotes risk-avoidance behaviours and attitudes.

5.2.5 Operational planning: preparedness, response and recovery

DRM plans must also incorporate elements of preparedness, response and recovery that are appropriate to the respective functional areas of different municipal departments and entities.

5.2.5.1 Preparedness

Preparedness contributes to disaster risk reduction through measures that are taken in advance to ensure effective response to the impact of hazards, including timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

Preparedness enables municipal departments and entities as well as other institutions involved in DRM, the private sector, communities and individuals to mobilise, organise and provide relief measures to deal with an impending or occurring disaster or with the effects of a disaster.

Preparedness differs from prevention and mitigation because it focuses on activities and measures taken in advance of a specific threat or disaster.

Preparedness actions include the following:

- Planning for seasonal threats, such as heavy rainfall, flooding, strong winds, veld or informal settlement fires, and communicable disease outbreaks.
- Anticipating and planning for the potential dangers associated with large concentrations of people at sporting, entertainment or other events.
- Establishing clear information dissemination processes to alert at-risk communities of an impending seasonal threat, such as a potential outbreak of cholera during the rainy season.
- Specifying evacuation procedures, routes and sites in advance of expected emergencies, including the evacuation of schools in areas exposed to flash floods.
- Defining clear communication processes and protocols for different emergency situations in advance, including the dissemination of an early warning for an impending extreme weather threat to isolated or remote communities.

These actions are key components of the contingency plans that should be developed for specific threats as part of the City of Tshwane’s municipal DRM plan.

5.2.5.1.1 Disaster response

Disaster response refers to the provision of assistance or intervention during or immediately following a disaster to meet the life preservation and basic subsistence needs of the people affected. It can have an immediate, short-term or protracted duration (see KPA 4).

5.2.5.1.2 Disaster recovery

Disaster recovery (including rehabilitation and reconstruction) focuses on the decisions and actions taken after a disaster to restore lives and livelihoods, services, infrastructure and the natural environment. In addition, by developing and applying disaster risk reduction measures at the same time, the likelihood of a repeated disaster event is reduced.

Disaster recovery includes the following:

- Rehabilitation of the affected areas, communities and households
- Reconstruction of damaged and destroyed infrastructure
- Recovery of losses sustained during the disaster event, combined with the development of increased resistance to similar occurrences in future

Disaster recovery initiatives present excellent opportunities to incorporate disaster risk reduction actions. Following a disaster event, there are usually high levels of awareness about the risk factors that increased its impact. This presents opportunities to introduce disaster risk reduction efforts in consultation with the affected communities and key stakeholders in order to reduce the likelihood of future loss (see KPA 4).

5.2.6 Key performance indicators

- Municipal priority risks have been identified and mapped by the MDMC.
- Specific priority areas, communities and households within the City of Tshwane have been identified and mapped.
- Focused initiatives to reduce priority risks have been identified by municipal departments and entities.

5.3 Scoping and development of disaster risk reduction plans, projects and programmes

5.3.1 Eight key planning points for disaster risk reduction projects or programmes

There are eight key planning points or requirements that must be applied and documented by all municipal departments and entities when planning disaster risk reduction initiatives. These enhance the established principles and approaches detailed in existing guidelines for integrated development planning.

5.3.1.1 Planning point 1: Use disaster risk assessment findings to focus planning efforts

Disaster risk reduction efforts must be informed by a reliable disaster risk assessment. This is essential for providing insights into the frequency, seasonality, severity and spatial extent of recurrent threats. It also provides detailed information on the social, environmental and economic vulnerability factors that increase losses.

5.3.1.2 Planning point 2: Establish an informed multidisciplinary team with capacity to address the disaster risk and identify a primary entity to facilitate the initiative

Disaster risk reduction planning must be multidisciplinary and must draw on appropriate expertise. DRM is highly multidisciplinary, because it requires both technical expertise in hazard processes as well as understanding of the complex social and economic conditions that drive disaster risk in vulnerable communities.

5.3.1.3 Planning point 3: Actively involve at-risk communities or groups

Planning for disaster risk reduction must always involve constructive consultation between at-risk groups and/or communities and external service providers. Risk reduction initiatives are more effective when they are discussed and implemented in collaboration with those affected, because this allows local knowledge and expertise to be included.

5.3.1.4 Planning point 4: Address multiple vulnerabilities wherever possible

Multiple vulnerabilities can be addressed by the following:

- Improving socio-economic conditions and building community cohesion
- Ensuring the continuity of protective environmental services
- Increasing resilience and/or continuity of public services and infrastructure to better respond to expected external shocks

Disaster risk reduction projects and programmes must add value to other development initiatives. Risk reduction is a value-adding capability, because it aims to reduce disaster losses in vulnerable areas and groups. It is therefore more effective to implement broadly defined disaster risk reduction initiatives that add value to development programmes rather than specific “disaster management” projects.

5.3.1.5 Planning point 5: Plan for changing risk conditions and uncertainty, including the effects of climate variability

Disaster risk is extremely dynamic and is driven by many rapidly changing environmental, atmospheric and socio-economic conditions. This requires that plans are not only robust enough to manage anticipated and expected threats but also sufficiently adaptive to minimise the impact of unexpected events or processes.

5.3.1.6 Planning point 6: Apply the precautionary principle to avoid inadvertently increasing disaster risk

Effective disaster risk reduction planning efforts must apply the precautionary principle of “do no harm”. This is because well-intentioned disaster risk reduction projects can inadvertently increase the potential for disaster loss by reconfiguring and accelerating risk processes. The likelihood of negative consequences is reduced if a

Careful disaster risk assessment actively informs the planning process, a competent multidisciplinary team is established, and mechanisms for transparent community consultation are put in place.

5.3.1.7 Planning point 7: Avoid unintended consequences that undermine risk-avoidance behaviour and ownership of disaster risk

The disaster risk reduction planning process must anticipate and manage unintended consequences that increase disaster risk. Well-intentioned disaster risk reduction programmes that “deliver” external services to at-risk areas, communities and households can inadvertently reward behaviour that promotes risk and so undermine existing capabilities.

For example, the repeated distribution of relief for recurrent threats such as fire, flood and drought can discourage ownership of disaster risk by reinforcing the expectation of external support and transferring individual and/or household risk onto governmental and humanitarian assistance agencies.

5.3.1.8 Planning point 8: Establish clear goals and targets for disaster risk reduction initiatives, and link monitoring and evaluation criteria to initial disaster risk assessment findings

Disaster risk reduction plans must define clear monitoring and evaluation criteria for measuring their effectiveness. These must be linked to initial assessment findings to demonstrate the effectiveness of the specific initiative in reducing vulnerability or reducing disaster loss. Assessment findings must also be used to highlight learning points for future projects and programmes.

5.3.2 Research

Disaster risk reduction initiatives must be preceded by transparent research and careful planning and must provide evidence of the relevance or likely effectiveness of the planned intervention(s).

Robust research carried out as a prerequisite for any risk reduction intervention increases the likelihood of a successful programme. It also improves coordination across services and reduces the chance that resources are wasted over the long term (see Enabler 2).

5.3.3 Monitoring effectiveness and disseminating results

As part of the annual reporting requirements specified in the Act, the City of Tshwane MDMC must include documented accounts of the disaster risk reduction projects, programmes and initiatives that are planned and implemented, including those aiming to reduce vulnerability and loss for defined priority disaster risks.

5.3.4 Key performance indicators

- Case studies/lessons learned about risk reduction measures and initiatives have been disseminated and documented by the MDMC.
- Documentation, which is accessible to stakeholders, demonstrates the effectiveness of risk reduction measures for different risk scenarios.
- Guidelines to incorporate disaster management programmes and initiatives into the activities of other provincial organs of state and key institutional role players have been developed and implemented.

5.4 Inclusion of disaster risk reduction efforts in other structures and processes

5.4.1 Integration of disaster risk reduction with spatial development planning

Disaster risk is driven by both hazard and vulnerability factors that are reflected in spatial development frameworks. In addition, disaster risk assessment findings, along with ongoing monitoring information on disaster occurrence, are directly applicable to spatial development planning. For this reason, the City of Tshwane MDMC must establish mechanisms, in association with spatial planners, to ensure that relevant spatial information informs disaster risk reduction planning. They must also ensure that verified risk information is incorporated into spatial development plans and maps.

5.4.2 Incorporation of disaster risk reduction planning into integrated development planning

Because disaster risk reduction efforts are medium- to long-term multisectoral efforts focused on vulnerability reduction, they must be incorporated into ongoing IDP projects, processes, programmes and structures. Effective and adaptive disaster risk reduction interventions in the municipal sphere are best planned and implemented as development initiatives through IDP mechanisms and phases.

In addition, municipal departments and entities must also test and evaluate specific disaster risk reduction initiatives before these are undertaken and implemented. This is to foster innovation and cross-sectoral linkages at a small or local scale. It also provides for assessment of the vulnerability reduction potential, appropriateness, cost effectiveness and sustainability of previously untested disaster risk reduction strategies prior to a more widespread roll-out or “scaling-up” of the programme.

Focused pilot projects apply particularly when investigating ways to –

- add value to an existing municipal programme (for example, weather-proofing homes and critical infrastructure in engineering projects planned for areas regularly exposed to extreme weather systems);
- protect a specific at-risk group (for example, establishing evacuation procedures for school children attending schools in areas repeatedly exposed to fire, flood or extreme weather systems);

- introduce a new initiative or project to address a specific risk scenario (for example, the introduction of small-scale rainwater harvesting initiatives in areas repeatedly exposed to drought);
- integrate disaster risk reduction with relief or recovery actions, to identify opportunities for changing the underlying drivers of risk as well as possible unintended consequences (for example, the spatial reconfiguration of informal settlements to provide fire breaks after large fires); and
- investigate new approaches to promoting risk-avoidance attitudes and behaviour (for example, exploring a system of community or household incentives for “well-managed” risks rather than creating dependence on external relief).

5.4.3 Risk-avoidance enforcement mechanisms

Critical components of effective disaster risk reduction are regulations, standards, by-laws and other legal enforcement instruments that discourage risk-promoting behaviour and minimise the potential for loss.

Municipal departments and entities must assess the DRM component of their existing policies, regulations, by-laws and other relevant legal instruments for their functional areas and introduce measures to ensure alignment with the requirements specified in the Act.

Within the City of Tshwane, this may involve the following:

- Amendment of urban planning standards
- Amendment of land-use regulations and zoning
- Amendment of minimum standards for environmental impact assessments
- Introduction of standards for “risk-proofing” lifeline services and critical facilities from known priority disaster risks
- Introduction of by-laws to implement extraordinary measures to prevent an escalation of a disaster or to minimise its effects

5.4.4 Key performance indicators

- Mechanisms to disseminate experience from pilot and research projects that explore the vulnerability reduction potential, appropriateness, cost-effectiveness and sustainability of specific risk reduction initiatives have been established.
- Risk-related information has been incorporated into spatial development frameworks.
- Risk reduction-related projects and initiatives have been included in IDPs.
- Regulations, standards, by-laws and other legal instruments that encourage risk-avoidance behaviour have been enforced by municipal departments and entities and documented in annual reports to the PDMC and NDMC.

5.5 Implementation and monitoring of disaster risk reduction programmes and initiatives

5.5.1 Effective implementation of disaster risk reduction programmes

The eight planning points outlined in subsection 5.3.1 above must also be applied when implementing disaster risk reduction programmes and initiatives. The monitoring processes and evaluations for disaster risk reduction initiatives specifically targeting at-risk communities must include both qualitative and quantitative outcomes to reduce vulnerability.

In addition, projects should demonstrate close compliance with the goals, objectives, time frames and resource requirements identified in the planning process. Mechanisms must also be established to allow the project to be adapted and adjusted for unforeseen conditions and opportunities.

The City of Tshwane MDMC must include in its annual report documented accounts of the disaster risk reduction projects, programmes and initiatives that are planned and implemented. These include reports that document the effectiveness of disaster risk reduction pilot projects and research initiatives, as well as initiatives that aim to reduce vulnerability and loss for defined priority disaster risks.

5.5.2 Measurable reductions in small-, medium- and large-scale disaster losses

The Act specifies that municipal disaster management centres must incorporate in their respective annual reports, as well as in a DRM information system, a report on disaster risk reduction initiatives that are undertaken. They are also required to report on disasters that occurred within their specific areas of jurisdiction.

In this context, the City of Tshwane MDMC must report on the frequency and severity of small-, medium- and large-scale disaster events, especially those in communities and areas identified as high risk through disaster risk assessment processes. Significant changes in frequency and severity, type or location of occurrences must also be reported, including systematic accounts of recorded loss.

5.5.3 Reduced need for social relief in disaster-prone and economically vulnerable communities

While effective social relief is an important component of disaster response and recovery, the Act explicitly gives priority to vulnerability reduction in disaster-prone areas, communities and households. Annual reports generated by the Social Development Department and its national and provincial counterparts must include an account of the number of households receiving social relief assistance. This information must be further differentiated by location, date, disaster type and amount provided. An important benchmark to monitor the effectiveness of disaster risk reduction initiatives in the most vulnerable communities will be changing demands for social relief assistance.

5.5.4 Generation and dissemination of case studies and best-practice guides in disaster risk reduction

The promotion of a “culture of prevention” is practically enabled by access to best-practice examples of disaster risk reduction. In addition to adopting the measures outlined in subsection 5.4, the MDMC must develop, as a component of its education, training and capacity-building strategy, mechanisms to disseminate information on best practice in disaster risk reduction for Gauteng and South Africa. This includes the development of learning materials and support guides for different risk scenarios and contexts (see Enabler 2).

5.5.5 Progressive application of disaster risk reduction strategies, techniques and measures by municipal departments and entities and other key stakeholders

In consultation with other municipal departments and entities, the MDMC must develop monitoring indicators for tracking the application of disaster risk reduction strategies, techniques and measures in all spheres. These include indicators to track shifts in policies, planning and project implementation, generation of standards, regulations, by-laws and other risk-avoidance enforcement mechanisms.

5.5.6 Key performance indicators

- Disaster risk reduction programmes, projects and initiatives have been implemented by municipal departments and entities and other key role players.
- Measurable reductions in small-, medium- and large-scale disaster losses have been recorded.
- A measurable reduction in social relief in disaster-prone economically vulnerable communities has been recorded.
- Case studies and best-practice guides on disaster risk reduction, facilitated by the MDMC, have been generated and disseminated.
- There is evidence that disaster risk reduction techniques and measures by municipal departments and entities have been progressive applied, as reported in annual reports submitted to the PDMC and NDMC.

6. KEY PERFORMANCE AREA 4: RESPONSE AND RECOVERY

Objective

The objective of KPA 4 is to ensure effective and appropriate disaster response and recovery by:

- Implementing a uniform approach to the dissemination of early warnings;
- Averting or reducing the potential impact in respect of personal injury, health, loss of life, property, infrastructure, environments and government services;
- Implementing immediate integrated and appropriate response and relief measures when significant events or disasters occur or are threatening to occur; and

- Implementing all rehabilitation and reconstruction strategies following a disaster in an integrated and developmental manner.

Introduction to KPA 4

The Act requires that the City of Tshwane MDMC have an integrated and coordinated policy that focuses on rapid and effective response to disasters and post-disaster recovery and rehabilitation. When a significant event or disaster occurs or is threatening to occur, there should be no confusion as to roles and responsibilities and the procedures to be followed by the different municipal role players. This section addresses key requirements for effective planning for disaster response and recovery as well as for rehabilitation and reconstruction.

6.1 Early warnings

6.1.1 Early warning system

As part of the DRM information system, the MDMC must ensure a robust multihazard, integrated early warning system as per Enabler 1.

6.1.2 Dissemination of early warnings

Early warnings are designed to alert areas, communities, households and individuals to an impending or imminent significant event or disaster so that they can take the necessary steps to avoid or reduce the risk and prepare for an effective response.

The MDMC must prepare and issue hazard warnings of municipal significance in a timely and effective manner (taking into account early warnings from the NDMC and PDMC) and ensure that the warnings are disseminated to those communities known to be most at risk, including those in isolated and/or remote areas. Warnings of impending or imminent significant events and/or disasters must include information and guidance that will enable those at risk to take risk avoidance measures to reduce losses.

The MDMC must identify and establish strategic intersectoral, multidisciplinary and multi-agency communication mechanisms, including emergency communication mechanisms accessible to communities at risk, for the purpose of disseminating early warnings. The MDMC must also identify communication links and mechanisms for the dissemination of early warnings through the media (television, radio, electronic and printed media).

Figure 5: Disaster response and recovery

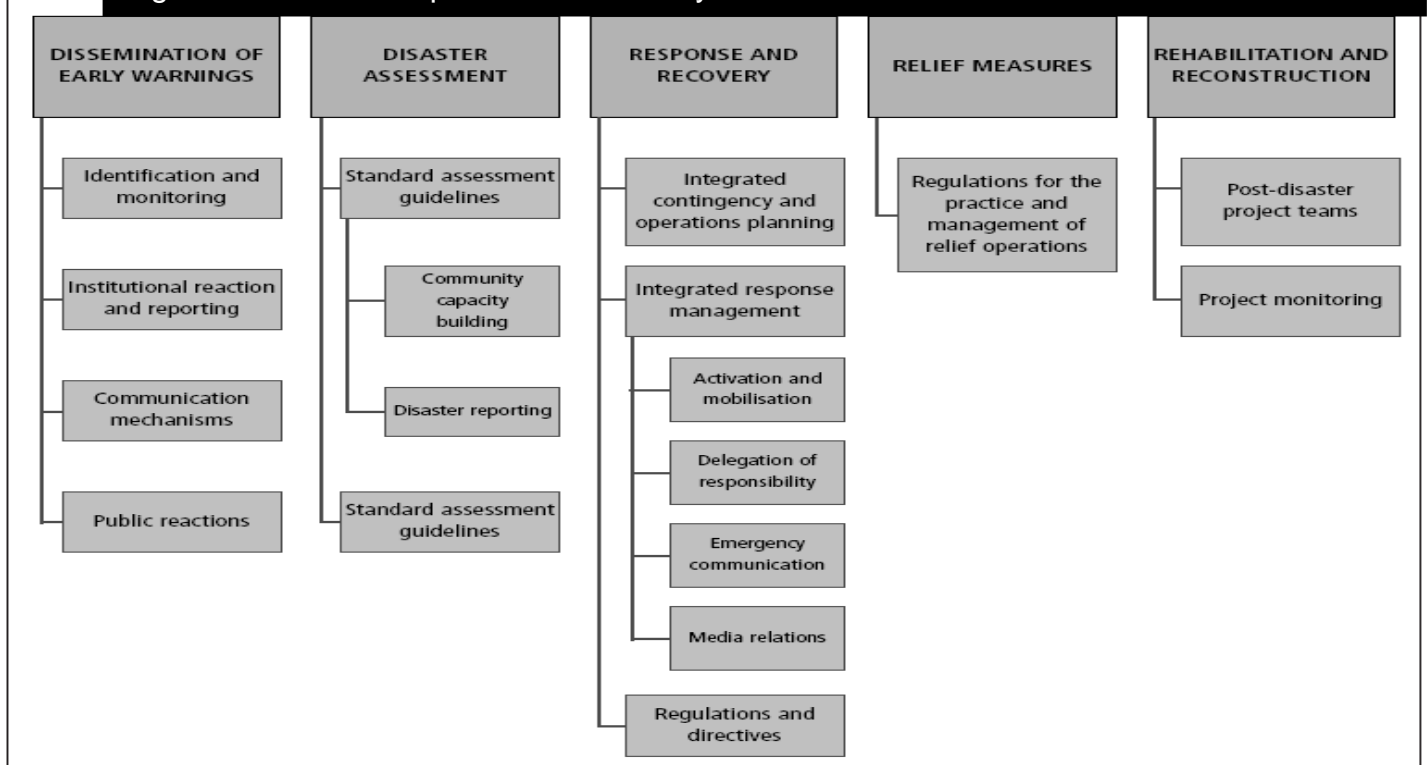


Figure 5 indicates the different components of disaster response and recovery that the City of Tshwane MDMC must take into consideration.

6.1.3 Key performance indicators

Effective and appropriate early warning strategies and systems have been developed and implemented and the information has been communicated to stakeholders to enable appropriate responses.

6.2 Assessment, classification, declaration and review of a disaster

To ensure immediate and appropriate response and relief actions when significant events or disasters occur, or are threatening to occur, clear guidelines for the measures that have to be taken need to be established.

6.2.1 Assessment of a disaster

Uniform methods and guidelines for conducting initial on-site assessments of both damage and needs when significant events or disasters occur or are threatening to occur are critical tools for informed decision-making. Typically, on-site assessments would include establishing what resources are necessary to ensure the delivery of immediate, effective and appropriate response and relief measures to affected areas and communities and to facilitate business continuity.

Municipal departments and entities tasked with primary responsibility for dealing with disasters (see KPA 1) as a result of a particular hazard or significant event must prepare operational guidelines for initial assessments in respect of the extent of the

area affected and the damage to critical infrastructure, lifeline facilities, property and the environment.

Those agencies tasked with primary responsibilities for coordinating specific activities associated with disaster response and relief efforts, such as emergency medical care, search and rescue, evacuation, shelter and humanitarian relief, must prepare operational guidelines for initial assessments of the immediate needs of those affected.

The City of Tshwane MDMC must ensure that the information contained in the guidelines is also disseminated to the relevant role players in communities and/or areas at risk. The dissemination of the guidelines must be complemented by training and capacity building to ensure their correct application.

The guidelines must include protocols for the inclusion of the results of initial assessments in reports of significant events and events classified as disasters to the MDMC as well as the PDMC and NDMC. It is critical that these assessments show evidence that due consideration has been given to the implications of sections 56 and 57 of the Act.

On the whole, limited information is available about the costs associated with disasters or significant events in South Africa. Disaster reviews must therefore include information about the costs of significant events and disasters to inform planning, budgeting and evaluation. To capture this information, a template for the collection of the relevant data must be produced by the MDMC, and this should be in line with the requirements of the PDMC and NDMC.

6.2.2 Classification of a disaster and the declaration of a state of disaster

With the exception of a security-related event, the responsibility for strategic coordination in responding to a local disaster or significant event that occurs or is threatening to occur rests with the Head of the MDMC.

The Head of the MDMC must make recommendations to the appropriate municipal service cluster and entities or statutory functionary on whether a local state of disaster should be declared in terms of section 55 of the Act.

The MDMC must establish uniform mechanisms and develop guidelines to facilitate the rapid and effective processing of disaster classifications and declarations.

6.2.3 Disaster reviews and report

Comprehensive reviews must be conducted routinely after all significant events and events classified as disasters. The reviews will provide the information against which to assess the application of the principles of sections 56 and 57. The findings will directly influence the review and updating of DRM plans and will also serve as valuable training aids.

To maximise the benefits gained from regular reviews of significant events and disasters, such a review programme should include:

- Guidelines for the process and procedures to be followed in conducting reviews of significant events and events classified as disasters, including the principles specified in section 56 and the requirements outlined in section 57 of the Act;
- Appointment of review panels with the relevant expertise;
- A mechanism for reporting on the actual performance in a disaster situation with the aim of improving performance;
- Mechanisms to ensure that post-disaster reviews and reports are disseminated to stakeholders;
- Mechanisms to ensure that, immediately following a significant event or disaster, DRM plans are reviewed and, based on the outcomes of post-disaster reviews, appropriate amendments are made; and
- Mechanisms to ensure that learning occurs.

The MDMC is responsible for providing guidance on the review process. When conducting a review, the appointed review team must take into account local conditions, DRM plans implemented before the significant event or disaster, and existing DRM plans.

6.2.4 Key performance indicators

- Guidelines and uniform methods, including templates, have been developed for the assessment and costing of significant events or disasters.
- Mechanisms have been established for the rapid and effective classification of a disaster and the declaration of a state of disaster.
- Mechanisms have been developed and implemented for conducting disaster reviews and reporting, including mechanisms to enable assessments that will comply with and give effect to the provisions of sections 56 and 57 of the Act.
- Review and research reports on significant events and trends are routinely submitted to the MDMC and disseminated to stakeholders.
- Review reports on actual disasters are routinely submitted to the PDMC and NDMC.

6.3 Integrated response and recovery

6.3.1 Coordination of response and recovery efforts

Responsibility for coordinating response to specific known rapid- and slow-onset significant events and disasters must be allocated to specific municipal departments and entities. For example, flood response and recovery efforts would involve the combined efforts of many stakeholders, but the primary responsibility must be allocated to a specific municipal department and entities, with the other stakeholders assuming supportive responsibilities. In the case of urban floods, for example, the Service Delivery cluster could bear primary responsibility. In the case of fires, Fire Brigade Services could be the primary agency, and in the case of extreme weather events, the MDMC could assume primary responsibility.

The operational plans and guidelines of the various response agencies that contribute to field operations must be considered when allocating responsibilities for response and recovery. In this regard, primary and secondary responsibilities must be allocated for each of the operational activities associated with disaster response, for example evacuations, shelter, search and rescue, emergency medical services and firefighting.

Response and recovery operations must also make provision for the delegation of responsibilities of the Head of the MDMC as well as twinning agreements or memorandums of understanding between the City of Tshwane and neighbouring MDMCs as a contingency in the event that the City of Tshwane MDMC itself is affected and unable to continue to operate.

6.3.1.1 Resources

Mechanisms for the activation and mobilisation of additional resources for response and recovery measures must be clearly set out in operational plans.

6.3.1.2 Volunteers

Mechanisms for the deployment of volunteers must be outlined in operational plans.

6.3.2 Municipal standard response management system

Incidents and emergencies handled on a daily basis by emergency and essential services personnel are routinely managed by an incident commander of a particular agency. However, in the case of significant events and disasters that occur or are threatening to occur, a response management system must be implemented to ensure a systematic approach to the effective utilisation of facilities, personnel, equipment, resources, procedures and communication. A response management system provides for the clear allocation of responsibilities, mechanisms for strategic, tactical and operational direction and a participative approach to the management of the event (see Enabler 1).

The City of Tshwane MDMC must adhere to the national regulations for the implementation of a national standard response management system. The City of Tshwane system must identify specific roles and responsibilities for each response and recovery activity included in the operational plans of the various organs of state participating in response and recovery efforts. It must also provide for mechanisms to determine the level of implementation of response and recovery measures according to the magnitude of the event or disaster and the capacity of an agency to deal with it. It should also make provision for the development of partnerships between agencies involved in response and recovery and the private sector, NGOs, traditional leaders, technical experts, communities and volunteers for the purpose of enhancing capacity.

Each agency identified in the response management system must establish standard operating protocols or procedures (SOPs) for coordinating response and recovery

operations and for ensuring government/business continuity. The SOPs must be consistent with the requirements of relevant legislation, regulations and standards.

The response management system must use common terminology for the identification of stakeholders responsible for direction, control and coordination of an event at the operational, tactical and strategic level as well as for the title used for each level. For example, the tactical level (field operations) from where the event is being coordinated could be referred to as the Joint Operations Centre (JOC). Where strategic intervention is also required, for example in the case of a significant event, the Head of the MDMC will be responsible for activating the Disaster Operations Centre (DOC) located in the centre of the relevant sphere.

The system must take into account conditions in Tshwane where frequent significant events occurring on a daily basis require extraordinary measures but do not necessarily justify the declaration of a local state of disaster.

The system must provide for a mechanism to track escalation of incidents and facilitate the reporting of “trigger” indicators. “Trigger” indicators must be clearly identified and must be reported to the disaster management centres in the various spheres. Examples include the routine reporting of all veld fire incidents to the MDMC when fire danger rating indices are at certain levels, or the reporting of all incidents that require a predetermined level of response.

6.3.3 Emergency communication system

In view of the critical role of interagency communication in the management of incidents, significant events and disasters, the MDMC must give priority attention to the development of an emergency communication system for this purpose (see Enabler 1).

6.3.4 Media relations

Responsibilities and protocols for media liaison, including press releases and media interviews, in the event of a local disaster occurring or threatening to occur, must be determined by the MDMC and the Offices of the Executive Mayor and City Manager.

6.3.5 Regulations and directives for response and recovery operations

The MDMC must adhere to regulations and directives to standardise and regulate the practice and management of response and recovery operations.

6.3.6 Key performance indicators

- The municipal departments and entities that bear primary responsibility for contingency planning and the coordination of known hazards have been identified and allocated such responsibility.
- Stakeholders that bear secondary responsibility for contingency planning and the coordination of known hazards have been identified and allocated such responsibility.

- Contingency plans for known hazards have been developed by municipal departments and entities.
- Response and recovery plans are reviewed and updated annually.
- Field operations guides (FOGs) for the various activities associated with disaster response and recovery have been developed and are reviewed and updated annually.
- A municipal standard incident management system has been developed in line with national requirements and is reviewed and updated annually.
- SOPs and checklists have been developed and are understood by all stakeholders in their respective fields of responsibility.
- Regulations and directives for the management of disaster response and recovery operations that have been developed and gazetted or published are adhered to.

6.4 Relief measures

6.4.1 Regulation of relief measures

Relief operations following significant events and/or events classified as disasters must be coordinated, and relief assistance and donations equitably distributed.

The MDMC must adhere to the regulations to standardise and regulate the practice and management of relief operations as developed by the NDMC.

6.4.2 Key performance indicators

- Regulations for the management of relief operations that have been developed and gazetted are adhered to.
- Progressive monitoring and annual reviews of regulations for the management of relief operations, based on lessons learned are conducted.

6.5 Rehabilitation and reconstruction

In order to ensure a holistic approach to rehabilitation and reconstruction in the aftermath of a significant event or disaster, the municipal departments and entities tasked with primary responsibility for a known hazard must facilitate the establishment of project teams for this purpose.

Checks and balances must be effected to ensure that projects and programmes maintain a developmental focus. Project teams established for this purpose must determine their own terms of reference and key performance indicators and must report on progress to the MDMC.

6.5.1 Key performance indicators

- Post-disaster project teams for rehabilitation and reconstruction have been established and operate effectively.
- Mechanisms for the monitoring of rehabilitation and reconstruction projects have been established and regular progress reports are submitted to the MDMC.

7. ENABLER 1: INFORMATION MANAGEMENT AND COMMUNICATION

Objective

The objective of Enabler 1 is to guide the development of a comprehensive information management and communication system for the City of Tshwane and establish integrated communication links with all DRM role players throughout Tshwane.

Introduction to Enabler 1

DRM is a collaborative process that involves all spheres of government, NGOs, the private sector, a wide range of capacity-building partners and communities. It requires capabilities to manage risks on an ongoing basis, and to effectively anticipate, prepare for, respond to and monitor a range of natural and other hazards.

Integrated DRM depends on access to reliable hazard and disaster risk information as well as effective information management and communication systems to enable the receipt, dissemination and exchange of information.

It requires systems and processes that will:

- Provide an institutional resource database, including a reporting and performance measurement facility;
- Facilitate information exchange between primary interest groups;
- Facilitate risk analysis, disaster risk assessment, mapping, monitoring and tracking;
- Guide and inform focused risk management and development planning and decision-making;
- Facilitate timely dissemination of early warnings, public awareness and preparedness, especially for at-risk people, households, communities, areas and developments;
- Enable timely and appropriate decision-making to ensure rapid and effective response and recovery operations;
- Facilitate integrated and coordinated multi-agency response management;
- Record and track real-time disaster response and recovery information;
- Facilitate education, training and research in DRM; and
- Facilitate funding and financial management for the purpose of DRM.

The system must have the capabilities to acquire, sort, store and analyse data for the purpose of targeting information for primary interest groups. In addition, it must include GIS (geographical information systems) mapping and information display applications, as well as standardised multimedia communication capabilities.

7.1 Establishing an information management and communication system

Sections 16 and 17 of the Act envisage an integrated and uniform DRM system that provides for information exchange between all the relevant interest groups in all three spheres of government, in communities and in the private sector through a variety of

communication mechanisms and media. The system must provide for the receipt, storage, analysis and dissemination of information.

In addition, the information management and communication system must include the establishment of communication links, which will enable the receipt, transmission and dissemination of information between those likely to be affected by disaster risks as well as other role players and stakeholders involved in DRM. In this regard, the design of the system must take into account the lack of technological infrastructure in areas and communities most at risk, as well as telephonic system failures during disasters.

The MDMC serves as an information clearing house for DRM related matters in Tshwane. The City of Tshwane MDMC must also assist the NDMC with the development and maintenance of information management and communication systems relevant to their areas of responsibility. The City of Tshwane's DRM system must be compatible with the provincial and national system and must conform to the requirements of the NDMC.

7.2 Integrated information management and communication model

An integrated information management and communication system must be established to achieve the objectives of the KPAs and enablers outlined in this framework. Such a system must encompass the following primary functionalities:

- Data acquisition system (data gathering and collection).
- Support for KPAs:
 - Institutional capacity;
 - Disaster risk assessment;
 - Disaster risk reduction; and
 - Response and recovery.
- Support for the enablers:
 - Education, training and research; and
 - Funding.
- Additional functionalities required:
 - Integrated DRM database and information management; and
 - Information dissemination and communication links to facilitate information flow between role players.

Responsibility for the different components of the integrated information and communication system needs to be assigned to specific role players. This will ensure that the functionalities required to support the system are developed and maintained. The components must be integrated into a single standardised system that is user-friendly, scalable per component, and easy to maintain and upgrade.

7.3 Data acquisitions (data collection and capturing)

The MDMC must perform a detailed analysis of the data needs of each KPA and enabler to ensure the objectives of the Act and this municipal DRM framework are met. To this end, it must identify both the inputs and data sources (data custodians/data owners) that will be required to ensure effective support for the implementation of the Act and the MDRMPF.

The following types of data, among others, will be required:

- Base data (for example topographical, census, land cover, infrastructure, deeds and environmental data);
- Dynamic data (for example contact and other relevant details of all role players);
- Field data (for example, features of buildings, infrastructure);
- Situational reporting system (for example incidents, local conditions);
- Research and historical data (for example research reports, data on historical incidents);
- Hazard tracking (for example weather conditions, flood, fire hazard conditions, droughts); and
- Early warnings.

Data obtained in the field, whether electronically recorded (for example with electronic hand-held devices and differential GPS applications for real-time data capture) or paper-based (for example questionnaires), must be uploaded to the integrated DRM database using standardised input forms or templates to ensure uniformity of data-capturing formats. The internet, via wireless communication, could also be used to obtain access to source data.

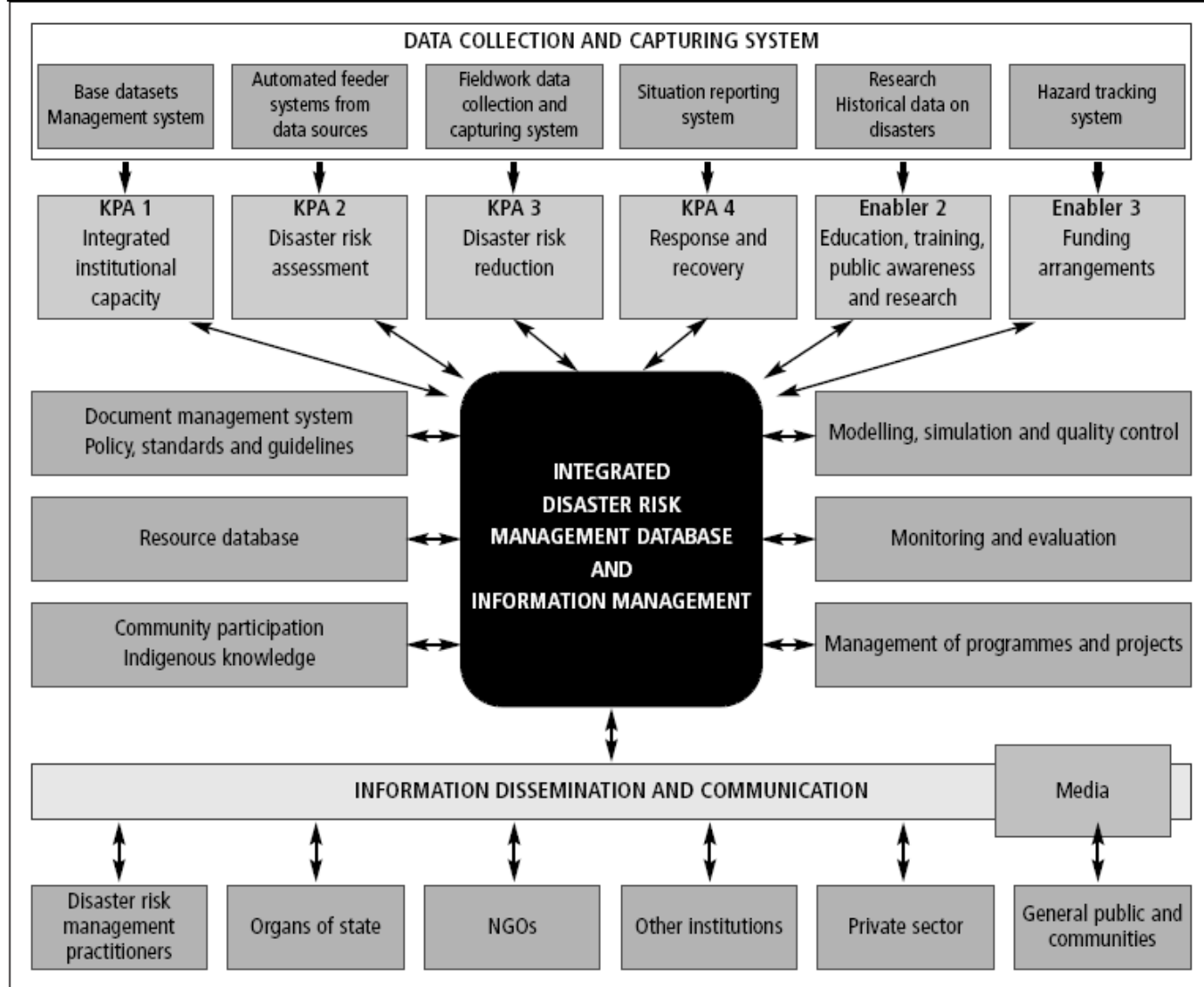
To obtain access to data required for DRM activities, provision must be made for importing data from identified existing databases and GIS applications owned and used by other organs of state and organisations to perform their primary activities (for example topographical datasets owned and maintained by the Department of Land Affairs, census data owned by Statistics South Africa). The MDMC must negotiate agreements with all identified data custodians for access to the relevant datasets and the management and maintenance of such datasets to ensure quality and reliable data inputs. The MDMC must also assign responsibility to the respective data custodians with regard to the provision of access to data and the quality and reliability of the data provided.

7.3.1 Key performance indicators

- Data needs have been defined by the MDMC.
- Data sources have been identified by the MDMC.
- Data collection and capturing methodologies have been developed and implemented.
- The responsibilities of the respective data custodians have been defined and assigned.

- Agreements with identified data custodians have been negotiated to ensure availability, quality and reliability of data.

Figure 6: Model of an integrated disaster risk management information management and communication system



7.4 Information management and communication support of key performance indicators and enablers

This section describes the basic information management and communication system features required to support the KPAs and enablers described in this DRM framework.

7.4.1 Key performance area 1: Integrated institutional capacity for disaster risk management

KPA 1 deals with the establishment of integrated institutional capacity to give effect to the Act. In this regard, it outlines a number of functions that have to be performed by the information management and communication system. These are listed below.

- A directory of the names, contact details and roles and responsibilities of all key role players in municipal departments and entities involved in DRM must be developed and maintained.
- A directory of the names, contact details and roles and responsibilities of all key role players in the Interdepartmental Disaster Risk Management Committee (IDRMC) must be recorded and regularly updated.
- The names, contact details and roles and responsibilities of all members of the MDRMPF, as well as mechanisms for accessing emergency resources under their control, must be recorded and updated regularly.
- A record of decisions and recommendations made by the IDRMC and the MDRMPF must be disseminated to all role players affected by the decisions.
- A directory of the names and contact details of all members of planning project teams initiated by the MDRMPF must be established and maintained. Minutes of meetings must also be recorded and records kept.
- A central communication centre, with a central 24-hour communication facility for reporting purposes as well as for managing the dissemination of early warnings, must be established. A reflexive facility for confirming or acknowledging receipt of early warnings should be part of the system. The MDMC must also allow for the coordination of response measures in the case of significant events and disasters.
- Memorandums of understanding, mutual assistance agreements and twinning agreements must be recorded and updated.
- An accurate record-keeping system, incorporating DRM, disaster risk reduction and contingency plans, plans for specific projects, minutes, reports, memorandums and correspondence, must be established and maintained.
- Comprehensive records of units of volunteers, including skill levels and capabilities, must be maintained.
- A directory of the names of community participation structures and the contact details of the participants must be established and maintained.
- A record of performance measurement and monitoring of the MDMC and primary entities tasked with DRM responsibilities must be kept.

7.4.2 Key performance area 2: Disaster risk assessment

Critical analysis and assessment of the implications of natural or technological hazards and environmental degradation depend on both spatial and non-spatial information. Such information assists in:

- Identifying hazards and their potential impacts;
- Mapping of hazards and disaster risks;
- Planning appropriate disaster risk reduction measures;
- Monitoring and tracking hazards for the purposes of early warnings and updating this information; and
- Facilitating response management when significant events or events classified as disasters occur, assessing and tracking the damage caused by hazards, and planning appropriate response and recovery measures.

The disaster risk assessment component of the information management system must therefore be able to produce electronic GIS-based risk profiles generated from standardised data inputs. Such inputs may be drawn from a range of sources, including hazard and disaster event tracking, vulnerability monitoring, historical reviews of significant events and disasters, scientific and specialist research, and field consultations in areas and communities most at risk. Data and information captured and used also need to be included in the information management system. To develop comprehensive profiles, the information management system is required to reflect changes in status through the use of predefined and customisable parameters.

The hazard and vulnerability functionality must allow for disaster risk assessment information to be represented as GIS-based risk maps, with different layers holding data about particular features of the map. Maps must be produced for different types of hazard, including, amongst others, fire, flood, drought, major transport incidents and infrastructure collapse. In addition, they should provide information on political boundaries, transport networks, settlements and natural resources. These maps must make provision for layers of data containing basic location information about hazards with thematic support maps displaying data about specific features such as population distribution, infrastructure, geological information, landforms, drainage, land use/land cover and soils.

The vulnerability of communities, businesses and infrastructure must be determined by overlaying different risk maps on base maps to evaluate and analyse the potential impacts of identified hazards and risks. These hazard and vulnerability maps must also be disseminated or displayed for orientation and training purposes.

7.4.3 Key performance area 3: Disaster risk reduction

7.4.3.1 Disaster risk reduction planning component

Once the indicative disaster risk profile of Tshwane has been developed, an integrated planning functionality will be required to assist role players in the City of Tshwane with the development and updating of DRM plans. Such a component would need to draw on the risk profile and a detailed resource database and would have to facilitate both risk reduction planning and contingency planning.

7.4.3.2 Disaster risk reduction component

This component must facilitate the inclusion of disaster risk reduction strategies in the City of Tshwane IDP and other development initiatives and programmes. It must enable tracking of the status of these initiatives, programmes and plans and storage of related documentation and correspondence. Planning templates must facilitate standardised planning and recording of programmes and plans and must be linked to GIS for easy retrieval and updating.

7.4.4 Key performance area 4: Response and recovery

7.4.4.1 Response and recovery component

This component is intended to facilitate the management of response and recovery operations and the recording, retrieval and updating of specific real-time information during single and multiple significant events and/or disasters. It must also allow for direct links with the communication system to provide the information required for mobilisation.

The response and recovery component must include the following:

- The area affected (indicating the specific and surrounding affected areas and links to all the spatial and other relevant data associated with the area);
- The type of event (classification by type, magnitude and severity);
- Analysis of status of critical lifeline infrastructure;
- Analysis of reported impacts and monitoring of progress with recovery operations in accordance with standard assessment and situation report formats;
- Situation reporting, tracking and analysis of status of critical disaster operations, such as search and rescue, emergency medical care, access routes and fire suppression;
- Response and recovery resource database, including:
 - Primary agency (contact details of the primary agency, response and recovery plans and SOPs applicable to the specific area and event);
 - Resources and support agencies (contact details of the support agencies, response and recovery plans and SOPs applicable to the specific activity); and
 - Relevant service providers (listing of all other related services that may be required to assist with response and recovery operations in a specific area).

The response and recovery features should be designed as templates and drop-down menus to make the information easily accessible for use by all role players during a disaster or significant event.

Provision must be made for real-time manipulation of data related to the event or disaster gathered during the planning phase. The component must also be linked to the resource database to assist in identifying the location of local resources and to facilitate and record the management and allocation of resources during a significant event or disaster. The DOC must be able to access this information in order to track the deployment of resources and the progress of response activities.

Specialist GIS-based applications must facilitate computer-aided management of response and recovery operations by allowing for simulated or real-time modelling, tracking and situational reporting in an affected area. These applications must be linked to the information management system.

7.4.4.2 Mobilisation and communication component

The primary system requirements for mobilisation and communication are an on-site automated dialling and/or message delivery system and two-way radio communication facilities that call designated small or large groups of people,

community members, volunteers and response agencies where required. The method of communication should be determined in consultation with various role players.

The system must be able to use standard landline telephones, cellular telephones connected to all available networks, and telephony-enabled radio systems. It must relay digitally recorded voice messages to and request responses from recipients, who must be able to use the telephone keypad to send signals in reply. All details of all calls must be logged and reports generated from this information. The system must also be capable of sending messages to pagers (alpha and digital) and sending emails and faxes.

7.4.4.3 Event logging and tracking management component

The system must allow for the recording and logging of all messages received and sent, all decisions made, and instructions or directives communicated during a significant event or disaster. Recording devices must allow for the recording and storage of voice, pictures and documents as well as their retrieval “on the fly” for management and evaluation purposes.

7.4.5 Enabler 2: Education, training, public awareness and research

To support the education, training, public awareness and research enabler, the following functionalities are required:

- The content of education and training programmes as well as records of participants (professionals, volunteers, communities, learners) and the education and training programmes they attended must be recorded.
- A register and records need to be kept of all accredited service providers as well as accredited facilitators to ensure that minimum standards set by Sector Education and Training Authorities (SETAs) are met.
- Research programmes and projects need to be registered and monitored and the information disseminated to relevant stakeholders.
- Initiatives related to an integrated awareness programme need to be recorded to minimise duplication and to ensure synergy among stakeholders.

The NDMC is responsible for the development of such a system. The City of Tshwane MDMC as well as municipal departments and entities must use the system to record information related to DRM training, education, awareness and research.

7.4.6 Enabler 3: Funding arrangements for DRM

Provision must be made for a database that contains data relating to all funding matters. The funding mechanisms for different aspects of DRM, budgets, applications for funding, approvals and spending need to be recorded to ensure proper use and management of available funding.

7.4.7 Key performance indicators

- An integrated information management and communication system has been designed and implemented to support:
 - Integrated institutional capacity;
 - Disaster risk assessment;
 - Disaster risk reduction programmes and plans;
 - Response and recovery operations;
 - Education, training, public awareness and research; and
 - Funding mechanisms and financial controls.

7.5 Specialised systems functionality

7.5.1 Document management system

A comprehensive document management system must be developed to allow for classification, storage and retrieval of all documents on DRM policies, standards, regulations and guidelines for the City of Tshwane. The system must also provide for the classification, storage and retrieval of all documents on institutional capacity (minutes of meetings, agreements), disaster risk assessments (risk assessment reports), disaster risk reduction programmes, plans and operational activities (action plans, SOPs, memorandums). This would facilitate ease of access for all users in the City of Tshwane. It would also facilitate the inclusion of relevant information in the training and information systems. The system must accommodate text, video, digital, electronic and voice formats.

The NDMC is responsible for developing a uniform document management system, which must be used by all national, provincial and municipal departments and entities to submit records and retrieve documents related to DRM. The City of Tshwane DRM information system must adhere to these requirements.

7.5.2 Resource and capacity database

A comprehensive, uniform and easily updateable resource and capacity database must be developed and implemented to support the activities described in the KPAs and enablers. To this end, data on the following matters must be captured:

- Infrastructure and facilities;
- Human resources; and
- Equipment and material.

The database must be accessible to all municipal departments and entities as well as NGOs. These users must be able to access, record and update their data sections, which should include the resources and capacities they have available for the purpose of DRM. It is therefore necessary to assign responsibility for the updating and maintenance of the respective sections of the database to designated officials in the relevant municipal departments and entities. The MDMC must ensure that the system is maintained and the information is available to all role players.

7.5.3 Modelling and simulations functionality

The functionality to perform modelling and simulation of risks related to different scenarios and the probability that specific events would occur must be provided in order to ensure a continuous situational awareness and the effective allocation of resources.

Furthermore, simulations can also be used in training programmes aimed at developing and evaluating skills and competencies in particular roles. The effectiveness of specific courses of action in real-life situations can also be determined through the use of modelling and simulations. Such models can be used to ensure that policies and procedures to address specific situations or events follow best practice.

7.5.4 Monitoring and evaluation system

The Act and the National Disaster Risk Management Policy Framework emphasise the role of the NDMC, PDMCs and MDMCs in monitoring and measuring performance and evaluating the status of all DRM activities in their respective areas of jurisdiction. To facilitate a uniform approach and simplify reporting on the status of DRM by organs of state in all spheres of government, one integrated monitoring, reporting and evaluation system must be developed and implemented. The NDMC is responsible for the development and implementation of such a system. All organs of state in all spheres of government must use the system to report on the status of their programmes, plans and operations.

The key performance indicators outlined in the National Disaster Risk Management Policy Framework must be used as a basis for the monitoring and evaluation system. Annual reports submitted by the NDMC, PDMCs and MDMCs, as required by the Act, must also be included in the system.

7.5.5 Management of DRM programmes and projects

An integrated portfolio (homogeneous grouping of programmes or projects and programmes per KPA, or department), programme and project management system must be implemented by the MDMC. Features that need to be included in this component are:

- DRM planning;
- Mechanisms to monitor progress with the preparation and regular updating of DRM plans; and
- Mechanisms to track the status of projects.

The portfolio, programme and project management system must allow all role players in the City of Tshwane involved in implementing DRM programmes and projects to view information related to their respective programmes and projects. These role players must also have secure access to the system, allowing them to register new projects, update existing information, and view and track progress and cost information.

7.5.6 Quality management system

A quality management system (QMS), which will form an integral part of the DRM database, must be established. The purpose of the QMS is to ensure the quality of management and operational processes conducted by municipal departments and entities involved in DRM. It will ensure the integrity and effectiveness of the information management and communication system on an ongoing basis and in a planned and systematic manner.

The QMS must conform to the requirements of ISO 9001 – the standard for quality management systems set by the International Organisation for Standardisation (ISO). The MDMC must establish, document, implement and maintain a QMS and continually improve its effectiveness in accordance with the requirements of ISO 9001.

A designated person within the MDMC must be assigned responsibility for performing the quality management function and must report directly to the Head of the MDMC.

All municipal departments and entities involved in planning and implementing DRM projects, either as primary agencies or as members of project teams, must use the system to record and update their project plans.

7.5.7 Key performance indicators

- A uniform document management system has been developed and implemented and is used by all role players.
- A comprehensive, uniform and easily updateable resource and capacity database has been developed and implemented and is used by all role players.
- A modelling and simulation application has been developed and is used by all role players.
- An integrated monitoring and evaluation system has been developed and implemented and is used by all role players.
- A uniform programme and project management tool has been developed and is used by all role players involved in DRM programmes and projects.
- A quality management system has been developed and implemented, and designated individuals in relevant municipal departments and entities have been assigned responsibility to administer the system.

7.6 Development of an integrated information management and communication system

The initial step in developing an integrated information management and communication system for DRM is to integrate the data in existing databases and information management systems, as well as the databases developed for each KPA and enabler (as described in this enabler), into a coherent database (using a tool appropriate for the purpose). In addition, shortcomings and problem areas must be identified and addressed to ensure that the system meets the requirements detailed in the NDRMPF, the Gauteng DRMPF as well as the City of Tshwane DRMPF.

A comparative analysis to identify the difference between the actual or current system and the desired, future system described in the MDRMPF must be undertaken to inform the development process. The analysis must incorporate relevant standards and inputs from all stakeholders.

7.6.1 System requirements

The minimum system requirements for an information management and communication system are listed below.

- The development and management of the information management and communication system must occur within the context of the objectives identified in the Act and the MDRMPF.
- The information management and communication system must be designed in such a way that it can be built, implemented, maintained and modified in a modular, flexible, evolutionary and incremental manner.
- The various components and functionalities of the information management and communication system must provide the platform for a single, shared DRM Common Operating Environment designed for use in the field of DRM. The Common Operating Environment (COE) must facilitate:
 - Interoperability between systems and system components;
 - Sharing of common system components;
 - Common infrastructure components and common data/information; and
 - Re-use and customisation of system solutions or components.
- A critical aspect of the COE, and, by extension, the entire information management and communication system, is the need for improved, high-performance communications solutions.
- Clear roles and responsibilities for the provision and governance of an information management and communication system for DRM must be identified and assigned to the appropriate primary and support agencies and stakeholders involved in DRM.
- Users and user communities must carefully formulate their own requirements with regard to management information requirements.
- Secure access remains a crucial concern. Users must be able to trust the information management and communication system.
- The information management and communication system must accommodate a management information component for the production of reports as required by the Act.
- The information management and communication system must be designed to keep pace with the constantly increasing flow of data, information and intelligence resulting from greater use of computer systems as well as the ongoing development of high-performance data communications and powerful sensor systems.
- Appropriate and ongoing training in working with new digital tools must be provided.

7.6.2 Key performance indicators

- A DRM information and communication system for Tshwane has been established and implemented.
- The DRM information and communication system supports the key performance areas and enablers in Tshwane.
- The municipal information management and communication systems are fully compatible with the national system and are part of a single integrated network.

7.7 Information dissemination and display system

To ensure access to and widespread use of DRM data and information, an effective information dissemination and display system needs to be developed and implemented by the NDMC in consultation with PDMCs and MDMCs. The identification and definition of the information needs of all role players as well as the identification of the most appropriate channels of communication are an integral part of this process.

Section 17(3) of the Act requires the NDMC to take reasonable steps to ensure that DRM information is electronically available to any person free of charge. To this end, the MDMC must develop, implement and maintain an interactive website to provide controlled access to the information management system based on defined information needs.

A public information service that makes provision for two-way communication within communities and among individuals by providing information on disaster risk reduction, preparedness, response, recovery and all other aspects of DRM, is required. Such a service must provide communities with the mechanisms for obtaining access to assistance in the event of a significant event or disaster and for reporting important local information to the relevant Disaster Management centre. A facility for the purpose of information dissemination to the media must also be included in the service.

This information dissemination and display system must make provision for the dissemination of visual, electronic and hard-copy information. Links to all components in the information management and communication system must be created to obtain the required information. Links must also be established with the recipients of information to facilitate an easy-to-use reporting and publishing function. The system must also allow for the visual display of GIS-related information and for functionality to connect to and publish information on the internet.

7.7.1 Key performance indicators

- Information dissemination programmes and channels of communication between all municipal departments and entities, communities and the media have been established.
- DRM information is easily accessible to all at no charge.

8. ENABLER 2: EDUCATION, TRAINING, PUBLIC AWARENESS AND RESEARCH

Objective

The objective of Enabler 2 is to promote a culture of risk avoidance among stakeholders by capacitating role players through integrated education, training and public awareness programmes informed by scientific research.

Introduction to Enabler 2

Sections 15 and 20(2) of the Act specify the encouragement of a broad-based culture of risk avoidance, the promotion of education and training throughout the Republic, and the promotion of research into all aspects of DRM. This enabler addresses the requirements for adherence to the national education, training and research needs and resources analysis and a national DRM education and training framework, the development of an integrated public awareness strategy, including effective use of the media, the development of education and training for DRM and associated professions, and the inclusion of DRM in school curriculums. It also outlines mechanisms for the development of a disaster risk research agenda.

8.1 Municipal education, training and research needs and resource analysis, and adherence to the national DRM education and training framework

A national education, training and research needs and resources analysis must be conducted to determine the DRM education, training and research needs of those involved in DRM across sectors, levels and disciplines. All municipal education, training and research needs and resource analyses are to form the foundation of the national analysis. For this purpose, the City of Tshwane MDMC must conduct the analysis concerned.

The needs and resources analysis must include an audit of existing resources. The design of the analysis must be based on scientific research principles and methods and not on perceived needs.

8.1.1 Key performance indicators

- The City of Tshwane participated in a scientific national education, training and research needs and resources analysis that has been completed within two years of the implementation of the National Disaster Risk Management Policy Framework.
- The City of Tshwane participated in the national education, training and research needs and resources analysis that serves as the foundation for the development of a municipal DRM education and training framework.
- The national education, training and research needs and resources analysis informs the development of appropriate DRM education and training programmes within the City of Tshwane that not only build on existing strengths but are responsive to changing municipal DRM needs.

8.2 DRM education

DRM education programmes must be designed as part of the formal education system and must be in line with the national education, training and research needs and resources analysis (NETaRNRA), the national education and training framework and SAQA and NQF requirements.

8.2.1 Integration of disaster risk reduction education in primary and secondary school curriculums (NQF levels 1–4)

Disaster risk reduction education must be integrated in primary and secondary school curriculums. Schools should be regarded as focal points for raising awareness about DRM and disaster risk reduction. The risk reduction component of DRM education should be linked to broader education programmes on development and the environment.

8.2.2 Key performance indicators

- A municipal DRM education and training framework has been developed and directs the implementation of all DRM education and training in Gauteng.
- All DRM education and training standards and qualifications comply with the requirements of the South African Qualifications Authority Act, 1995 (Act 58 of 1995) and the guidelines prescribed in the National Qualifications Framework.
- The City of Tshwane utilises the accreditation and registration system that has been established.

8.3 Training programmes for DRM

DRM training programmes must be designed in line with the NETaRNRA, the national education and training framework and, where appropriate, SAQA and NQF requirements.

8.3.1 Types of training

Training outside of the formal primary, secondary and tertiary education systems has a pertinent role to play in the drive to transfer skills and to capacitate DRM stakeholders and other interested persons.

Such training programmes may include accredited interventions registered with the NQF that may earn trainees credits towards a registered qualification, as well as programmes that are not accredited.

Training interventions may include the following:

- Modular courses
- Short courses
- Workshops
- Conferences

- Seminars
- Mentorships
- In-service training
- Learnerships
- Self-teaching, experiential training
- Mass communication
- Indigenous knowledge
- Drills, exercises and rehearsals

The MDMC must make every effort to utilise only training programmes registered with the relevant SETAs, such as short courses and workshops, so that they can count as credits towards formal qualifications.

8.3.2 Training for officials and policy makers

Training programmes for government officials and policy makers must cover disaster risk reduction and other relevant areas, which may include development planning, hazard identification and assessment, communicable diseases, dry land agriculture, participatory rural appraisal, applied climate science and GIS. Such training programmes must embrace the multidisciplinary and interdisciplinary dimensions of disaster risk reduction and should be informed by the relevant indicative risk profile. The training of municipal councillors and officials should take place within the context of the national education and training guidelines provided by the Skills Development Act, 1998 (Act 97 of 1998), the Skills Development Levies Act, 1999 (Act 9 of 1999) and the South African Qualifications Authority Act, 1995 (Act 58 of 1995). The provisions contained in these Acts will have a direct bearing on the qualifications and career paths of officials involved in DRM.

8.3.3 Training for communities

Training programmes for communities must focus on disaster risk awareness, disaster risk reduction, volunteerism and preparedness. Local indigenous knowledge needs to be incorporated with training programmes aimed at local communities. Where appropriate, communities must be given the opportunity to modify and enhance training programmes through the inclusion of indigenous knowledge, practices and values, and the incorporation of local experience of disasters and DRM. Indigenous knowledge must also be harnessed and incorporated with needs analyses and course development processes.

8.3.4 Training of volunteers

Special training programmes must be developed for persons interested in volunteering their services. These programmes should address issues such as disaster risk reduction, vulnerability assessments, greater awareness of risks and hazards, and general preparedness and response. Training of community trainers should be emphasised in order for them to serve as “force multipliers” by, in turn, training others. In this regard, special consideration must be given to the costs of training, provision of protective clothing, travel expenses, insurance and incentives. The MDMC must maintain a record of all volunteers trained in such programmes for submission to the NDMC for inclusion in the national database.

8.3.5 Training of trainers and facilitators

Training programmes must facilitate the development of accredited trainers and facilitators in the field of DRM so that they can transfer improved skills and knowledge to relevant organisations and/or communities at risk. Such programmes must be in line with the education and training framework and informed by the NETaRNRA.

8.3.6 Learnerships

DRM learnerships must be developed and promoted within the City of Tshwane. These should include mentorship programmes that involve the transfer of skills from experienced officials to young inexperienced learners. Such learnerships must be in line with SAQA and NQF requirements. Existing learnership programmes covering aspects of DRM should also be explored, both for training purposes and to augment DRM learnerships.

8.3.7 Responsibility for the development of training programmes

Municipal departments and entities must plan, organise and implement training programmes relevant to their respective areas of responsibility in consultation with local communities and in line with the NETaRNRA.

NGOs and private sector institutions should be encouraged to plan, organise and implement DRM training programmes for clients, suppliers, service providers and the general public.

8.3.8 Monitoring and evaluation

The MDMC must utilise the established service provider register of the NDMC.

8.3.9 Key performance indicators

- Ongoing training interventions, including short courses, workshops, seminars and conferences, are available to stakeholders.
 - Training programmes that have been developed are implemented.
 - Facilitators, instructors and presenters have become qualified and have been accredited.
 - Approved service providers have been registered and are offering training services and products.
 - Widespread community-based DRM training (in line with national training standards) is taking place.
- DRM learnerships have been developed and are operational.

8.4 Creating awareness, promoting a culture of risk avoidance and establishing good media relations

8.4.1 Integrated public awareness strategy

An integrated public awareness strategy must be developed and implemented by the City of Tshwane to encourage risk avoidance behaviour by all role players, including all departments in the City of Tshwane, and especially in schools and communities known to be at risk. Such a strategy is necessary for the promotion of an informed, alert and self-reliant society capable of playing its part in supporting and cooperating with the government in all aspects of disaster risk and vulnerability reduction. The Municipal Indicative Disaster Risk Profile and the NETaRNRA must inform the integrated awareness strategy. The awareness strategy must further support the strategic objectives of the City of Tshwane.

The DRM public awareness and information service will be a critical interface between the information management system, the emergency communication system, all municipal departments and entities involved in DRM and the general public. This should also support the risk profile and identified critical vulnerable areas in Tshwane.

The development of a user-friendly public website with relevant and up-to-date information on disasters, disaster risk and key institutional role players is a critical component of such an information service. The employment of qualified resource personnel to take responsibility for functions, for example materials development, external consultation processes and liaison with the media (print, radio and television), will be necessary to ensure the success of the service.

In order to inculcate risk avoidance behaviour among all stakeholders, public awareness campaigns aimed at raising consciousness about disaster risks must provide information on how to reduce vulnerability and exposure to hazards. Such campaigns could include:

- Organised and planned awareness programmes aimed at communities, officials, politicians and other stakeholders, using the media, posters, videos, publications and any other innovative means;
- Participation in planned conferences of the City of Tshwane MDMC, with participation by the relevant intergovernmental relations structures;
- Imbizos (the participation of volunteers at such meetings is recommended);
- Awareness campaigns conducted at least 30 days before a change of season or climate;
- Annual recognition and celebration of World Disaster Risk Reduction Day (the first Wednesday in October);
- Rewards, incentives, competitions and recognition schemes to enhance awareness of and participation in risk reduction activities; and
- Dissemination of information to all role players, especially those at risk, through the use of communication links and early warning systems.

Public information should be disseminated through radio, television, print and electronic media and schools. Information centres and networks should also be established.

8.4.2 Schools

The MDMC must seek to establish links with existing awareness creation programmes in schools for the purpose of disseminating information on DRM and risk avoidance. The creation of programmes in schools, focusing on relevant and appropriate aspects of DRM, must be encouraged.

The City of Tshwane MDMC must play an active part in engaging schools to ensure a practical approach to awareness programmes. School awareness programmes must be conducted, assessed and adapted on an annual basis.

8.4.3 Role of the media

Communication about disaster risk reduction, preparedness, response and recovery activities is important to ensure that information is passed on to communities and those involved in early warning, response and recovery efforts. The role of the media during disasters must be defined and managed through a consultative process involving the media, role players involved in response and recovery efforts, and communities often affected by disasters or impending disasters.

Informed publicity about DRM initiatives and achievements will increase public awareness and support. In order to achieve this, the MDMC must establish and manage ongoing relations with relevant local media in cooperation with the Media Liaison Section of the Operational Support and Support Services Division of EMS as well as the corporate communication division.

Organised promotions and positive reinforcement of disaster risk reduction programmes through the media must be initiated in order to ensure public participation in, and support for, such programmes. The objectives, benefits and major activities of disaster risk reduction programmes must be communicated to all role players and specifically to communities who are directly affected by disaster risks.

The following has to be monitored on a regular basis:

- Positive and negative publicity;
- Effectiveness of media communication, especially in communities at risk; and
- Continuous research on the most effective method of communication within a particular community. This may vary from community to community.

8.4.4 Responsibility for an integrated public awareness strategy

The MDMC must plan, organise and initiate a municipal public awareness strategy that is informed by robust disaster risk assessment findings and consultation with relevant stakeholders. It is the responsibility of the MDMC to ensure that programmes aimed at creating awareness and encouraging risk avoidance behaviour

by stakeholders are developed and implemented. The MDMC must also establish good media relations to ensure balanced media coverage and publicity to increase public awareness and understanding of DRM.

Each municipal department and entity must formulate and implement appropriate public awareness programmes that are aligned with the municipal strategy. Communities, NGOs and the private sector must be consulted about the design of such programmes. The use of volunteers to assist with the roll-out of awareness creation programmes should be encouraged to ensure ownership of and participation in public awareness programmes.

Each municipal department and entity and the MDMC must assign responsibility for managing media relations to a specific functionary or office. Where possible, the MDMC should be informed in advance about electronic broadcasts, the publication of press reports or the public appearance of officials in respect of DRM issues.

8.4.5 Key performance indicators

- An integrated municipal public awareness strategy based on the Municipal Indicative Disaster Risk Profile and the municipal education, training and research needs and resources analysis has been developed and implemented.
- Disaster risk reduction is the focus of all DRM awareness programmes.
- Awareness of DRM is promoted at schools and in communities known to be at risk.
- Awareness of DRM is widespread, and risk avoidance behaviour is integrated with the day-to-day activities of all stakeholders.
- There is widespread evidence of balanced media reports and coverage on hazards, disasters and DRM issues.
- Articles on DRM are regularly published in the media.
- Good relationships with media representatives have been established and are maintained.
- Disaster risk reduction is included as a standard agenda item for consideration at executive meetings of all role players and stakeholders.

8.5 Research programmes and information and advisory services

The aims of a research programme and information and advisory services are to:

- Create additional applied knowledge and information on disaster risk;
- Provide access to DRM and related information to all stakeholders and role players; and
- Provide an organised and value-added advisory service to all stakeholders.

8.5.1 Research

The Act calls for ongoing research into all aspects of disaster risk reduction and management. The MMC, through a process of consultation, must develop a strategic disaster risk reduction research agenda to effectively inform DRM planning and implementation by the City of Tshwane. Research initiatives should also be linked to

the IDP processes of the Municipality. Research is the responsibility of each and every role player in the DRM arena.

8.5.2 Information provision

In order to provide a comprehensive information service, the MDMC must undertake the following:

- Develop an information database;
- Establish a library or resource centre on disaster risk reduction; and
- Make provision for easy access to the information database.

8.5.3 Responsibility for establishing a research programme and information and advisory services

The MDMC must create an organised municipal research programme and establish an information and advisory service.

All municipal departments and entities must participate in the gathering and provision of information relating to DRM in their respective functional areas for inclusion in the City of Tshwane's DRM information management system.

8.5.4 Monitoring and evaluation

The MDMC must monitor and evaluate all research projects under its management to ensure that municipal research objectives are met.

8.5.5 Key performance indicators

- A strategic disaster risk research agenda has been established.
- Research institutions participate in the research programme on an organised basis.
- A link between scientific research and policy exists (evidence-based policy and policy-oriented research).
- National exchange, cooperation and networking occur on a regular basis.
- DRM research contributes to technology development.
- All stakeholders have access to a comprehensive research database.
- All stakeholders have access to a comprehensive advisory service.

9. ENABLER 3: FUNDING ARRANGEMENTS FOR DRM

Objective

The objective of Enabler 3 is to establish mechanisms for the funding of DRM in the City of Tshwane.

Introduction to Enabler 3

Section 7(2)(k) of the DMA requires that the National Disaster Risk Management Policy Framework makes provision for “*a framework within which organs of state may*

fund disaster risk management with specific emphasis on preventing or reducing the risk of disasters, including grants to contribute to post-disaster recovery and rehabilitation and payment to victims of disaster and their dependants”.

Given the provisions of the Act, funding arrangements must be designed in a manner that ensures that DRM activities are funded adequately and in a sustainable way. This enabler describes the DRM funding arrangements for City of Tshwane departments.

Enabler 3 builds on the recommendations of the Financial and Fiscal Commission (FFC) on funding arrangements in its *Submission on the Division of Revenue 2003/04*.

9.1 Legislative framework for funding arrangements

The following primary legislation provides the context within which funding arrangements for DRM should be designed:

- Constitution of the Republic of South Africa, 1996;
- Disaster Management Act, 2002 (Act 57 of 2002);
- Public Finance Management Act, 1999 (Act 1 of 1999) (PFMA);
- Municipal Finance Management Act, 2003 (Act 53 of 2003) (MFMA); and
- Municipal Systems Act, 2000 (Act 32 of 2000).

The Constitution assigns exclusive or concurrent functions to different spheres of government. Schedule 4 of the Constitution designates DRM as a concurrent national and provincial competence. However, the Act places the responsibility for certain DRM activities squarely within the local government sphere. For example, section 23(7) of the Act states that until a disaster is classified as either a national or a provincial disaster, it must be regarded as a local disaster.

In terms of section 10A of the Municipal Systems Act as amended, the DRM function imposes new constitutional obligations on local government. These obligations are that the responsible Cabinet member, MEC or other organ of state must take appropriate steps to ensure sufficient funding and capacity-building initiatives as may be needed for the performance of the assigned function. Since DRM at municipal level encompasses a wide range of activities (including disaster risk reduction, preparedness, response and recovery), funding mechanisms must be designed to allocate optimal resources to each of these activities.

Chapter 6 of the Disaster Management Act outlines two principles that should be applied to funding the cost of a disaster when such an event is declared. Firstly, section 56(2) of the Act states that in the event of a disaster, “national, provincial and local organs of state may financially contribute to response efforts and post-disaster recovery and rehabilitation”. Secondly, the Act assigns the responsibility for repairing or replacing infrastructure to the organ of state responsible for the maintenance of such infrastructure. Section 57 of the Act, however, provides some leeway for a municipality to request financial assistance for recovery and rehabilitation from provincial and/or national government.

The Act attempts to encourage budgeting for disaster recovery and rehabilitation through threshold funding. Section 56(3) allows the Minister to prescribe a percentage of the budget of a municipal department and entities as a threshold for accessing national funding for disaster response efforts. The extent to which an organ of state has implemented disaster risk reduction efforts will be taken into account when requests for disaster response and post-disaster rehabilitation funding are considered.

The broad funding guidelines set out in sections 56 and 57 of the Act make access to disaster recovery and rehabilitation funding contingent on organs of state earmarking funds for disaster risk reduction activities. This principle reduces the risk of moral hazard behaviour on the part of municipal departments and entities by ensuring that they budget for all DRM activities. In this way, national government does not implicitly guarantee the provision of financial assistance to organs of state for disasters that could have been reasonably prevented or reduced in some way.

Apart from the Act, there are other legislative provisions that govern the release of funds for disaster recovery and rehabilitation. Sections 16 and 25 of the PFMA allow the Minister of Finance or relevant MEC to appropriate funds from their respective revenue funds for use in emergency situations. Funds released in terms of these provisions must be reported to the provincial legislature and to the Auditor-General within 14 days of their authorisation. In addition, these funds must be attributed to a vote when the adjustments budget is passed.

Similarly, section 29 of the MFMA allows the mayor of a municipality to authorise unforeseeable and unavoidable expenditure in an emergency. Such expenditure must be ratified by the council in an adjustments budget within 60 days of the expenditure having been incurred. Furthermore, section 29(2)(b) of the MFMA states that unforeseeable and unavoidable expenditure may not exceed a percentage of the budget prescribed by National Treasury in regulations. This restricts the amount of funds available for responding to emergencies.

9.2 Principles underpinning funding arrangements

Any funding arrangement must be consistent with the principles set out in the DMA and any other related legislation. It should be borne in mind that DRM has certain unique characteristics that differ markedly from those of public services such as education and street lighting. By their very nature, disasters are unpredictable and require an immediate and decisive response. It is vital, therefore, that a balance is struck in the financing framework between the need for financial controls and oversight and the need to ensure that rapid response and recovery are not compromised. Section 214(2)(j) of the Constitution explicitly mentions “the need for flexibility in responding to emergencies or other temporary needs” as one of the criteria for the equitable division of nationally collected revenue among the three spheres of government.

9.3 Overview of funding arrangements

Funding arrangements for DRM must be based on the legislative framework outlined in section 10.1 above and take into account the various criteria for an optimal funding mechanism.

9.3.1 Funding options for DRM

The responsibilities imposed by the Act on municipal departments and entities require substantial start-up costs, including investments in infrastructure for municipal disaster management centres as well as funding for capacity building. The MDMC of the City of Tshwane as part of Emergency Management Services has already established itself as a functioning division in the City of Tshwane. The start-up costs associated with the MDMC have therefore already been covered by the normal budgeting process of the City of Tshwane. The incorporation of DRM within other City of Tshwane services, however, still requires attention and provision should be made for any costs incurred in this institutional capacity-building exercise.

The DMA assigns responsibility for the management of local disasters to municipalities. If municipalities are unable to perform this function because of a lack of institutional capacity, then responsibility for managing the disaster is escalated to provincial level. However, the relevant municipality is generally the organ of state closest to the disaster, and can, therefore, often respond the fastest. Lack of funding will thus create inefficiencies in the system by limiting the ability of municipal departments and entities to respond effectively to disasters.

9.3.2 Funding arrangements in the City of Tshwane

Each municipal department must include DRM activities as part of their annual budget. All aspects and responsibilities described in this framework must be taken into consideration when budgeting for DRM. Each department and division should ensure that their budgets for DRM are aligned with the strategic objectives of the City of Tshwane. Such alignment must also aim towards the reduction of duplication and/or address the lack of appropriate budgeting for DRM.

9.4 Key performance area 1: Integrated institutional capacity for DRM and Enabler 1: Information management and communication

KPA 1 focuses on creating the institutional capacity within all City of Tshwane departments for the purpose of DRM. It describes the various intergovernmental structures that facilitate consultation on issues relating to DRM, key responsibilities of the MDMC and the minimum infrastructure requirements for the establishment of the MDMC.

Enabler 1 focuses on the establishment of a comprehensive information management and communication system to ensure that all role players have access to reliable hazard and disaster risk information for the purposes of effective DRM and risk reduction planning. The National Disaster Risk Management Policy Framework requires that the cost of developing an information management and communication system be included in the start-up costs for disaster management centres.

9.4.1 Funding options

To establish integrated institutional capacity to enable the effective implementation of a DRM policy and legislation, funding will be required for the ongoing operations of the MDMC. This will be budgeted for through the normal municipal budgeting process.

9.4.2 Key performance indicators

- The MDMC has an adequate allocated budget for ongoing DRM activities in the City of Tshwane and it complies with legislative requirements and municipal policies.

9.5 Key performance area 2: Disaster risk assessment

9.5.1 Funding options

Disaster risk assessments should be funded through the budgets of the relevant municipal department and entity. Section 20 of the Act requires the NDMC to provide guidance to organs of state on ways of determining levels of risk and vulnerability. Similarly, section 33 enjoins the PDMC to provide guidance to organs of state on disaster risk assessments. In the same manner the MDMC must provide guidance to municipal departments and entities on conducting disaster risk assessments. The use of a standard format for disaster risk assessments will help reduce the variability of costs across the various municipal departments and entities. Costs involved in updating disaster risk assessments must be budgeted for on a regular basis.

Expenditure incurred in monitoring disaster risk must be part of the routine operation of the relevant municipal department and entity and the MDMC, and must be budgeted for accordingly.

9.5.2 Imperatives

Disaster risk assessments must be funded through the recurrent budgets of municipal departments and entities. The costs of initial disaster risk assessments undertaken by municipal departments and entities must be included in the start-up costs and funded through the local government conditional grant.

9.5.3 Key performance indicators

- The disaster risk assessment is budgeted for and is a cost item on the budget of each municipal department and entity.

9.6 Key performance area 3: Disaster risk reduction

In terms of funding arrangements, this KPA can be divided into DRM planning and DRM implementation. The Act requires all spheres of government to develop disaster risk management policy frameworks that guide DRM activities, including planning and implementing disaster risk reduction projects and programmes.

9.6.1 Funding options

DRM planning must be included in the IDP of the City of Tshwane. Sectoral plans must also include specific DRM plans for the relevant departments within the Municipality. These planning processes must be funded through the budgets of the relevant municipal departments and entities. If DRM planning is integrated with general IDP processes, then little or no additional budgetary allocation for DRM will be required.

Municipal departments and entities must include risk reduction as part of their broader strategy to reduce the overall risk and fiscal exposure of their organisations. In addition, risk reduction activities, including preparedness, must be part of the operational activities of the various municipal departments and entities and must be reflected in their plans and budgets. Any new infrastructure developments should include the costs of structural mitigation measures.

When additional expenditure is required to develop structural mitigation infrastructure, municipal departments and entities must establish whether they could fund such projects from their own resources. If they lack funds to implement these projects, they must include the costs of structural mitigation infrastructure in their three-year capital plans. The City of Tshwane must prioritise these projects in its IDP.

Section 19 of the MFMA requires that a municipality conduct a feasibility study before it budgets for a capital project. The feasibility study must include disaster risk assessment findings and recommendations for disaster risk reduction. If the project goes ahead, the cost estimate of mitigation infrastructure or measures should be included in the total cost of the project. Funds can be accessed either through the B component grant for basic services infrastructure, or through the P component grant for any additional funds required to reduce risks associated with existing infrastructure. The benefit of this option is that the conditionality of the grant can help to ensure that disaster risk reduction is integrated with infrastructure development, thus reducing the risk of disasters in the long term.

In the case of activities or projects aimed at preventing or reducing a national priority disaster risk, municipal departments and entities may apply for additional funding from the NDMC. The NDMC may choose to place a limit on the funding available per project.

9.6.2 Preparedness

Section 53(j) of the Act states that municipal disaster management plans “must facilitate maximum emergency preparedness”. The Act prescribes one of the means through which this can be done in section 58(1), which provides metropolitan or district municipalities with the option of establishing units of volunteers to participate in disaster management. The FFC has noted that there are costs involved in emergency preparedness, such as the costs of recruiting, training and mobilising volunteers. Since disaster management is deemed to be a new constitutional function for local government, strong arguments can be made for funding the costs associated with preparedness, including the recruitment and training of volunteers, through an increase in the equitable share. Alternatively, the costs may be funded

through the budgets of municipal departments and entities. However, a drawback of this option is that preparedness activities may be underfunded. In addition, municipalities may not have sufficient resources to fund the extra costs associated with preparedness.

9.6.3 Imperatives

Expenditure on routine DRM activities must be funded through the budgets of the relevant municipal departments or entities.

Preparedness must be funded through the budgets of municipal departments and entities as part of their routine DRM activities.

Additional structural mitigation infrastructure must be funded through local government conditional infrastructure grants.

9.6.4 Key performance indicators

- Budgets in all municipal departments and entities include the costs of routine disaster risk reduction measures and activities.
- Preparedness actions are funded through the recurrent budgets of all relevant municipal departments and entities.
- Feasibility studies for capital projects include information drawn from disaster risk assessments and appropriate disaster risk reduction measures.
- Capital budgets clearly reflect the cost of disaster risk reduction.

9.7 Key performance area 4: Response and recovery

Chapter 6 of the Act governs funding arrangements for disaster response and recovery and rehabilitation and reconstruction. Section 56(3) requires that organs of state set aside a percentage of their budgets for post-disaster recovery efforts. Access to national funding is dependent on whether the organ of state affected by the disaster has taken sufficient risk reduction measures to reduce the severity and magnitude of the disaster.

9.7.1 Funding options

The main activities within the broad scope of disaster response and recovery include:

- Early warnings;
- Disaster response and recovery operations;
- Relief measures; and
- Rehabilitation and reconstruction.

9.7.1.1 Early warning

The development, implementation and dissemination of early warnings form part of the routine planning processes undertaken by municipal departments and entities and must therefore be funded through their existing budgets. The MDMC plays a

significant role in identifying and monitoring potential hazards and disseminating early warnings. These activities must be funded through the MDMC budget.

9.7.1.2 Disaster response and recovery operations

The importance of rapid response in the event of a disaster cannot be underestimated. Funds need to flow quickly to support response and recovery efforts. Rescue efforts, provision of immediate basic services, emergency health services and critical infrastructure repair all form part of response and recovery.

Currently there are no dedicated funding mechanisms for disaster response and recovery operations, and resources are not released quickly enough to maximise the effectiveness of response activities. The use of section 16 of the PFMA as a mechanism to release emergency funds from the central contingency fund is problematic, as it requires ministerial authorisation, which increases the lead time between the declaration of a disaster and access to emergency funds.

9.7.1.3 Funding response and recovery

The fundamental principle underpinning provisions relating to funding in the Act is that all municipal departments and entities must budget for costs involved in disaster response and recovery. This principle places the onus for funding the initial costs associated with a disaster on the municipal departments and entities involved in response and recovery operations. Once budgets for response and recovery activities have been exhausted, the relevant municipal departments and entities may request financial assistance from provincial and/or national government. Financial assistance will only be provided after taking into account the disaster risk reduction measures taken before the onset of the disaster.

The Act entrenches this principle of self-funding by allowing the minister designated to administer the Act to prescribe a percentage of the budget of a municipal department and entity that will act as a threshold for accessing future funds from the central contingency fund.

The National Disaster Risk Management Policy suggests that the City of Tshwane allocates a threshold of 0,5% of its total budget to fund response and recovery (see Table 7.2 in the National Disaster Risk Management Policy Framework).

This threshold must be viewed within the context of the magnitude and extent of a disaster. The threshold must be reviewed at least two years after the publication of the framework, once information on the costs of different disasters is available.

Once the City of Tshwane has exhausted its thresholds, it should request financial assistance from the Gauteng government. If the equitable share increases, then the basis for the determination of the threshold percentages can be changed to the total revenue received by the Municipality.

Departments must ensure that mechanisms are put in place by which funding can be accessed from the City of Tshwane central contingency reserve. Such mechanisms

must be linked to strict guidelines and should only be accessible once a disaster has been declared in terms of the DMA.

9.7.1.4 Relief measures

The aim of relief measures is to provide immediate access to basic necessities for those severely affected by disasters. The National Disaster Fund, currently administered by the National Disaster Relief Board, disburses funds for emergency relief to communities.

These funds are budgeted for in the Department of Social Development's vote. Provincial departments of social services and poverty alleviation also provide relief to affected communities. The City of Tshwane must establish a mayoral discretionary fund aimed at providing relief to local communities.

9.7.1.5 Rehabilitation and reconstruction

The Act places the onus for rehabilitation and reconstruction of infrastructure on the municipal departments and entities responsible for maintaining such infrastructure. However, rehabilitation is not limited to infrastructure repair, as it also includes rehabilitation of the environment and communities. Rehabilitation and reconstruction projects can be funded through:

- Own budgets;
- Conditional grants;
- Reprioritisation within existing capital budgets; and
- Access to the central contingency fund.

The methods of funding rehabilitation and reconstruction are complementary rather than competing. Ideally, municipal departments and entities should fund their expenditure on rehabilitation and reconstruction from their budgets up to the threshold. The next alternative should be to reprioritise within their capital budgets. The use of funds from the contingency reserve should be considered only as a last resort.

Own budgets

Thresholds are applicable not only to response and recovery operations but also to rehabilitation and reconstruction. Depending on the extent of infrastructure damage, municipal departments and entities may be able to fund rehabilitation and reconstruction from their own budgets up to the threshold. Rehabilitation and reconstruction costs are generally high, so municipal departments and entities may need to fund these costs from a combination of sources, including own budgets, reprioritisation and the central contingency fund.

Conditional grants

Municipalities can access funding through the Municipal Infrastructure Grant (MIG). The MIG formula differentiates between new and rehabilitated infrastructure at a ratio of 80:20. Since the MIG augments the capital budget as a whole and is not a project-

by-project grant, it is possible for municipalities to use part of the allocation for post-disaster rehabilitation purposes.

9.7.2 Imperatives

The dissemination of early warnings must be funded through the budgets of municipal departments and entities as part of their routine DRM activities.

Measures need to be implemented to ensure that disaster response and recovery operations are funded through the budgets of municipal departments and entities up to the prescribed threshold. Once the threshold is reached, additional funding will have to be accessed through the central contingency fund.

Funding mechanisms for relief measures need to be reviewed in order to reduce the time it takes victims of disasters to gain access to relief assistance.

As far as possible, municipal departments and entities must fund rehabilitation and reconstruction projects from their own budgets and conditional grants.

Mechanisms for the rapid release of funds from the central contingency reserve must be developed for the reconstruction of basic service infrastructure where infrastructure is needed to safeguard lives and livelihoods.

9.7.3 Key performance indicators

- The development, implementation and dissemination of early warnings are funded through the recurrent budgets of the relevant municipal departments and entities.
- The percentage of the budget of a municipal department or entity has been established and implemented as a threshold for accessing additional funding from provincial and national government for response and recovery efforts.
- Response and recovery efforts are funded through budgeted threshold allocations.
- A mechanism has been developed to ensure rapid access to national funds for disaster response.
- Municipal departments and entities have budgeted for threshold allocations.
- People, households and communities affected by a disaster have immediate access to relief measures.
- Financial thresholds have been set for rehabilitation and reconstruction funding.
- Rehabilitation and reconstruction efforts are funded through a combination of own budgets, reprioritisation, budgeted threshold allocations and conditional grants.

9.8 Enabler 2: Education, training, public awareness and research

Education, training, public awareness and research are crucial to the success of DRM and disaster risk reduction strategies. It is envisaged that education, training and research initiatives as well as broad-based public awareness programmes will be undertaken by a range of municipal departments and entities and other institutions.

9.8.1 Funding options

The various initiatives within the scope of this enabler are broadly grouped as follows:

- Education and training;
- Integrated public awareness; and
- Research programme and information and advisory services.

Education and training

The MDMC must make budgetary provision for the implementation of a national needs and resources analysis to determine the DRM education, training and research needs of those involved in DRM across sectors, levels and disciplines in the City of Tshwane.

Integrated public awareness strategy

The MDMC is responsible for developing an integrated public awareness strategy to encourage a culture of risk avoidance in all municipal departments and entities and in communities. In addition, municipal departments and entities are required to set up appropriate public awareness campaigns within the framework of the integrated public awareness strategy. The MDMC must budget for the development and implementation of such a strategy.

Line departments involved in public awareness programmes must budget for the development and implementation of programmes relevant to their functional areas. In addition, they must be able to access funds from the MDMC for specific programmes aimed at creating awareness around municipal priority disaster risks. The City of Tshwane must include public awareness campaigns in community participation processes. In this way, they will not require additional funds for these programmes.

The City of Tshwane should also forge links with CBOs, NGOs and the private sector in order to share costs for dedicated public awareness programmes that focus on priority risks.

Research programme and information and advisory services

Once the MDMC has developed its research agenda, it should approach various other government departments, international donor organisations, private companies, research foundations and NGOs to fund DRM research. The MDMC must also allocate a portion of its budget to research activities and routine post-disaster reviews. Technical line departments that are regularly affected by disasters must budget for research on priority risks and disaster risk reduction.

The content of the information management database must be electronically accessible to any person free of charge. The cost of information provision and advisory services should be kept to a minimum and funded through the budget of the MDMC awareness programmes that focus on priority risks.

9.8.2 Imperatives

The costs associated with accredited education and training must be recovered through SETAs. This should be seen as the funding mechanism of choice. The costs associated with education and training programmes that are not accredited must be funded through the budgets of the relevant municipal department or entity.

The cost of research must be funded through the budgets of the MDMC and by the private sector, research foundations, NGOs and donors.

9.8.3 Key performance indicators

- There is documented evidence of an increase in expenditure on accredited education and training programmes.
- Municipal departments and entities recover their expenditure on accredited education and training from the relevant SETAs.
- The conditions of the Municipal Systems Improvement Grant (MSIG) have been extended to cater for DRM education and training programmes.
- All municipal departments and entities involved in public awareness budget for integrated public awareness programmes.
- Partnerships between municipal departments and entities and the private sector, NGOs and CBOs exist for the purpose of funding public awareness programmes and projects.
- Funds are available from government departments, international donor organisations, private companies, research foundations and NGOs for research programmes.

10. GLOSSARY OF TERMS

a. Municipal departments and entities

An organ of state means:

- (a) Any department of state or administration in the national, provincial or local sphere of government; or
- (b) Any other functionary or institution
 - (i) Exercising a power or performing a function in terms of the Constitution or
 - (ii) Exercising a public power or performing a public function in terms of any provincial constitution; or legislation, but does not include a court or a judicial officer.

b. Disaster (risk) reduction

The terms “disaster reduction” and “disaster risk reduction” have elicited some discussion and confusion over the past decade (Ritchie, 2003). Jeggle (2003a) is of the opinion that in essence both terms refer to the same phenomenon, and that the International Strategy for Disaster Reduction (ISDR) of the United Nations does not making any significant distinction between the two terms.

The concept of disaster risk reduction is more widely used than disaster reduction, as it indicates an emphasis on what is being reduced as opposed to “disaster reduction” which might increase the perception that the main focus of disaster (risk) reduction is disasters, rather than hazards and conditions of vulnerability. With the above in mind, disaster risk reduction and disaster reduction will be used as synonyms in this chapter. Disaster risk reduction will however be distinguished from DRM.

The ISDR (2002:25) defines disaster risk reduction as “the systematic development and application of policies, strategies and practises to minimise vulnerabilities and disaster risks throughout a society, to avoid (prevent) or to limit (mitigate and prepare) adverse impacts of hazards, within the broader context of sustainable development”. The United Nations Development Programme (UNDP) (2004:135) concurs with this definition. The World Bank (2004) simply states that [disaster] risk reduction is to avoid hazards and reduce vulnerability.

From the definition it is clear that disaster risk reduction entails a wide variety of issues on a strategic level. Disaster risk reduction aims to implement certain strategic initiatives (policies, strategies and practices – see Kroon, 1990) that will ultimately reduce or eliminate conditions of hazard and vulnerability at the local level¹. Reducing risk requires that all stakeholders change their perception and behaviour to place a high priority on safety in planning and development (World Bank, 2004). The World Bank further indicates that measures such as land use planning, structural design, construction practices and standards and disaster warning systems are examples of risk reduction. The term disaster risk reduction uses sustainable development as its basis of understanding, in other words, it can only be successful within the context of sustainable development. Some of the key terms underlying this definition of disaster risk reduction will also be discussed to provide clarity.

The term [disaster] risk is multidisciplinary and may be used in a variety of contexts (UNDP, 1992). Kelman (2003:6) is of the opinion that various disciplines define risk in different ways, and that the definition of risk depends on the observer. In the case of disaster risk reduction, disaster risk has a specific focus (UNDP, 1992). On perusal of the literature defining risk it is clear that varied opinions exist but that some commonality can be identified.

Risk is usually associated with human inability to cope with a particular situation. Risk embraces exposure to dangers, adverse or undesirable prospects, and the conditions that contribute to danger (Hewitt, 1997:22). Helm (1996:4-7) as well as Sayers *et al* (2002:36-38) define risk as the probability of an event occurring linked to its possible consequences. Tobin and Montz (1997:282) differ slightly from Helm and argue that risk is the product of the probability of an occurrence and expected loss due to vulnerability to the occurrence. These authors express risk as:

Risk = Probability of Occurrence x Vulnerability

Blaikie *et al* (1994:21) differ partially from Tobin and Montz and indicate that risk is a complex combination of vulnerability and hazard. The ISDR (2002:24) defines

¹ It is widely accepted that in order for disaster risk reduction to be successful it should be applied at the local or community level – this issue is discussed in more depth in subsequent chapters.

disaster risk as the probability of harmful consequences, or expected losses (lives lost, persons injured, damage to property and/or the environment, livelihood lost, and the disruption of economic activities or social systems) due to the interaction between humans, hazards and vulnerable conditions. Cardona (2003:2) and Granger *et al* (1999) agree with this definition.

Risk could therefore be viewed as the possibility that a particular hazard (of certain magnitude within a certain timeframe) might activate a particular vulnerability (of a certain type within a specific timeframe). It is the product of the possible damage caused by a hazard due to the vulnerability within a community. It should be noted that the effect of a hazard (of a particular magnitude) would affect communities differently (due to different levels and types of vulnerabilities) (Von Kotze, 1999a:35). This is also true because of the different coping mechanisms within a particular community. In general, poorer communities are more at risk (and less resilient) than communities with coping capacities (be they social, economic, physical, political or environmental).

Increased emphasis is now placed on risk, and an acceptance that disaster, development and environmental problems are inextricable. As with the definition of disaster risk reduction, the UNDP (2004:136) and ISDR (2002:25) agree on the following definition of disaster risk:

Risk = Hazards x Vulnerability

Capacity/Manageability

Lewis (1999:8) and Bethke, Good and Thomson (1997:10-11) concur with the above and are of the opinion that risk is therefore the product of hazard and vulnerability. Risk is a statistical probability of damage to a particular element which is said to be “at risk” from a particular source or origin of hazard.

Disaster risks exist, or are created, within social systems (ISDR, 2003:24). The social context in which risks occur should therefore be heeded, and the fact that people do not share the same perceptions of risks and their underlying causes due to their differing social circumstances (UNISDR, 2004b). Rather than merely responding to the consequences of disasters (Lewis, 1993:37), communities, governments, civil society and professionals from various fields are increasingly recognising the value of sustained efforts to reduce the social, economic and environmental costs associated with disasters (ISDR, 2003:15), by addressing disaster risk.

c. Hazard

A hazard can be defined as a potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, damage to property, social and economic disruption or environmental degradation. Hazards can include hidden conditions that may represent future threats; they may also have different origins. Hazards include natural (geological, hydro meteorological and biological) processes and/or processes induced by humans (environmental degradation and anthropogenic hazards) (ISDR, 2002:24).

Hazards may be single, sequential or combined in their origin and effects. Each hazard is characterised by its location, intensity and probability. Typical examples of hazards may include the absence of rain (leading to drought) or the abundance thereof (leading to flooding). Chemical manufacturing plants near settlements may also be regarded as hazards. Similarly, incorrect agricultural techniques will in the long run lead to an increase in crop failure risk. Hazards may either be a creation of humans or nature. Although man-made hazards are easier to prevent than natural hazards, the management of the hazard will in both cases remain the same. The UNDP (2004:16) defines natural hazards only: “natural processes or phenomena occurring in the biosphere that may constitute a damaging event”.

d. Vulnerability

Vulnerability is a set of prevailing or consequential conditions resulting from physical, social, economic and environmental factors that increase the susceptibility of a community to the impact of hazards (ISDR, 2002:24). It may comprise physical, socio-economic and/or political factors that adversely affect the ability of communities to respond to events (in particular hazards) (Jegillos, 1999). Blaikie *et al* (1994) are of the opinion that vulnerability involves the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impact of a hazard. Vulnerability may be expressed as the degree of loss (expressed, for example, as a percentage) resulting from a potentially damaging phenomenon or hazard. Vulnerability thus refers to the extent to which a community will suffer when exposed to a specified set of hazardous conditions.

Vulnerability has some distinct underlying causes. The magnitude of each disaster, measured in deaths, damage or costs (for a given developing country) increases with the increased marginalisation of the population. This is caused by a high birth rate, problems of land tenure and economic opportunity, poverty and the misallocation of resources in an expanding population.

e. Disaster risk management

The ISDR and UNDP define DRM as the systematic process of using administrative decisions, organisation, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activity, including structural and non-structural measures to avoid (prevent) or to limit (mitigate and prepare for) adverse effects of hazards (UNISDR, 2004b).

The Institute for Disaster Risk Management (IDRM, 2004) is of the opinion that DRM is a developmental approach. This approach focuses on underlying conditions of the risks that lead to disaster occurrence. The objective is to increase capacities to effectively manage and reduce risks, thereby reducing the occurrence and magnitude of disasters.

Gratwa and Bollin (2002:19) define DRM as a series of actions (programmes, projects and/or measures) and instruments expressly aimed at reducing disaster risk

in endangered regions, and mitigating the extent of disasters. To them DRM includes risk assessment, disaster prevention and mitigation and disaster preparedness.

DRM is therefore a more tactical and operational embodiment of strategic decisions (policy, strategies and programmes). For all means and purposes it would be accurate to argue that DRM is aimed at addressing the disaster risk problem within the resources and constraints imposed by the strategic focus of disaster risk reduction at the tactical and operational levels.

f. Disaster management

Crucial to this study is the definition of disaster management. Jeggle (2003a) says that disaster (and emergency) management is the organisation and management of resources and responsibilities for dealing with all aspects of emergencies, in particular preparedness, response and rehabilitation. "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."

Coburn, Spence and Promonis (1991:67) are of the opinion that disaster management is a collective term encompassing "all aspects of planning for and responding to disasters, including both pre- and post-disaster activities. It refers to the management of both the risks and the consequences of disasters."

Disaster management in the South African context is defined by the Disaster Management Act (South Africa, 2003) as:

"a continuous and integrated multi-sectoral, multi-disciplinary process of planning and implementation of measures aimed at: preventing or reducing the 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".

When considering and comparing the mentioned definitions it becomes obvious that the "internationally accepted" definition of disaster management and that of the South African Government is not totally consistent. The South African definition combines what was previously defined as DRM with Jeggle's definition of disaster management.

The South African definition emphasises a multisectoral and multidisciplinary approach. Therefore disaster management is not seen as the responsibility of one implementing agency only, as is the case of disaster management in the international arena. The fact that the South African definition also emphasises the implementation of measures [to reduce risk], clearly indicates that it is in actual fact referring to DRM.

g. Disaster

The definition of disaster is a contentious issue in modern literature (Quarantelli, 1998; Smith, 2002:28). Authors and organisations differ on the exact definition of the

term. It is also not uncommon to find varying definitions of the term within one discipline. However, to understand DRM, the term must be defined.

Gunn (1993:17) defines disaster as the result of a vast ecological breakdown in the relationship between humans and their environment. He says that disaster is a serious and sudden event of such a scale that the stricken community needs extraordinary efforts to cope with it, often with outside help or international aid.

The ISDR (2002:25) is of the opinion that a disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.

Benson and Clay (2004:5) say that a disaster is the “occurrence of an abnormal or infrequent hazard that affects vulnerable communities or geographic areas, causing substantial damage, disruption, and perhaps casualties and leaving the affected communities unable to function normally. From an economic perspective, a disaster implies some combination of losses, in human, physical, and financial capital, and a reduction in economic activity such as income generation, investment, consumption, production, and employment in the ‘real’ economy. There may also be severe effects on financial flows such as the revenue and expenditure of public and private bodies.”

The South African Disaster Management Act, 2002 (Act 57 of 2002) indicates that disaster is a serious disruption of the functioning of a society, causing or threatening to cause widespread human, material or environmental losses that exceed the ability of the affected community to cope using its own resources only (South Africa, 2002).

An emergency situation is an incident that immediately threatens life, health, property or the environment; has already caused loss of life or health detriments, property damage or environmental damage; or has a high probability of escalating to cause immediate danger to life, health, property or the environment.

11. ANNUAL REPORT TEMPLATE

11.1 Annual report by a municipal department or entity on its DRM-related activities

Purpose: The purpose of this template is to guide municipal departments and entities in compiling an annual report for submission to the City of Tshwane Council, the Gauteng Provincial Disaster Management Centre as well as the National Disaster Management Centre. This annual report is a legislative requirement in terms of section 50 of the Disaster Management Act, 2002 (Act 57 of 2002). The template is attached as Annexure A.

Usage: Each municipal department and entity is required to follow the following format in compiling their annual report. Each heading is briefly described. Any uncertainties should first be referred to the MDMC for clarification.

12. CONTINGENCY PLANNING

12.1 Contingency plan development

Purpose: The purpose of this template is to guide municipal departments and entities in compiling contingency plans for priority risks as identified by the indicative risk profile of the City of Tshwane. The template is attached as Annexure B.

Usage: Each task team, department or municipal entity must use the following template to develop a contingency plan for their specific actions in terms of the identified priority risks. Each heading is briefly described. Any uncertainties should first be referred to the MDMC for clarification.

13. DISASTER RISK ASSESSMENT

13.1 Disaster risk assessment of a municipal entity and/or department

Purpose: The purpose of this template is to guide municipal departments and entities in conducting a disaster risk assessment of all possible hazards and vulnerabilities within their area of responsibility. The disaster risk assessment is attached as Annexure C.

Usage: This template should be used together with KPA 2 of the City of Tshwane DRM Framework. Each municipal department and entity is required to follow the following format in conducting a disaster risk assessment. Each heading is briefly described. Any uncertainties should first be referred to the MDMC for clarification.

Necessary knowledge: In order to assess disaster risk, three known variables should be present: a hazard, a vulnerability to this hazard and a certain capacity or resilience to cope with the hazard in question. For all means and purposes the following “equation” is used to explain the interaction between these aspects:

$$R=(H \times V)$$

$$C/M$$

Where:

R = Disaster risk

H = Hazard

V = Vulnerability

C = Coping capacity or resilience

M = Manageability

This interaction therefore tells us that disaster risk is dependent on an identified hazard (e.g. flooding) which will be of a magnitude/intensity that will have a direct impact on a given area (e.g. an informal settlement) due to its vulnerability (e.g. poorly constructed houses) to the forces (e.g. water runoff, inundation or ponding of water) associated with the hazard. For example, a poorly built structure is more vulnerable to collapse during heavy rains than one built according to building

standards.

Resources: Indicative Disaster Risk Profile of the City of Tshwane as generated by the MDMC.

14. CUSTODIANS OF THE DRMPF

The Chief of Emergency Services and the Head of the DMC are the custodians of the DRM framework as well as of the –

- DRM plans of the departments and administrative units in the City of Tshwane; and
- disaster management plans of other municipal entities in the jurisdiction of the City of Tshwane.

The Head of the City of Tshwane Disaster Management Centre (Disaster Management Services) is also responsible for ensuring the regular review and updating of this framework and that of the DRM plans.

15. REVIEW INTERVALS FOR THIS POLICY FRAMEWORK DOCUMENT

The framework will only be reviewed when changes in the environment necessitate revision. The latest approved framework will remain applicable to all planning and operational processes within the City of Tshwane until the Council adopts a revised framework.

16. APPROVAL OF THE POLICY FRAMEWORK

The success of the DRMF needs commitment from and approval by relevant key role players so as to deal with eminent disaster risks within Tshwane. The key role players are listed in the table below. Their signatures will confirm their commitment to and approval of the framework for the City of Tshwane's Disaster Risk Management Policy.

NO.	NAME	DESIGNATION	SIGNATURE	DATE
1	Mr Sam Nkosi	Head:Disaster Management		
2	Ms Joan de Beer	Chief: Emergency Services		
3	Mr Jason Ngobeni	City Manager		
4	Cllr Kgosientso Ramokgopa	Executive Mayor		

Annexure D1

ANNUAL REPORT TEMPLATE

Template MDMC_1:

Annual report by a municipal department or entity on its disaster risk management related activities

Purpose: The purpose of this template is to guide municipal departments and entities in compiling an annual report to the CoT Council, the Gauteng Provincial Disaster Management Centre as well as the National Disaster Management Centre. This annual report is a legislative requirement as per section 50 of the Disaster Management Act 57 of 2002.

Usage: Each municipality department and entity is required to follow the following format in compiling their annual report. Each heading is briefly described. Any uncertainties should first be referred to the municipal disaster management centre for clarification.

ANNUAL REPORT OF THE [NAME OF MUNICIPALITY DEPARTMENT AND ENTITY] ON DISASTER RISK MANAGEMENT ACTIVITIES FOR THE YEAR 20__

1. EXECUTIVE SUMMARY

Each annual report should contain an Executive summary of no more than a ½ - ¾ page. This Executive Summary should contain a synopsis of the annual report.

2. DISASTER RISK MANAGEMENT ACTIVITIES DURING THE YEAR

In this section each municipal department and entity should briefly indicate their disaster risk management related activities during the year. Typically these activities must be grouped according to the KPAs and Enablers as explained within the MDMF.

3. RESULTS OF PREVENTION AND MITIGATION INITIATIVES

In this section, each municipal department and entity should describe their sectoral specific prevention and mitigation activities in relation to the priority risks identified by the MDMC. For example, if urban flooding is a priority risk prevention and mitigation actions relating to this specific risk from the activities of the municipal department and entity should enjoy attention. In such a case the Service Delivery Department might report on their improvement of the storm water system whereas the Social Service Department might report on a community awareness campaign focused on cholera prevention.

4. INVOLVEMENT IN CLASSIFIED AND DECLARED DISASTERS

The specific involvement of a municipal department and entity in classified and declared disaster must be stipulated. This will relate to aspects such as response, recovery, rehabilitation and reconstruction during and after the disaster event. Please note that this is only for classified and declared disasters. If no disaster was declared in the CoT during this year then this section can be left out.

5. EFFECTS OF CLASSIFIED AND DECLARED DISASTERS

This section should contain information on the effects of the classified and/or declared disasters in relation to the specific responsibilities and normal operations of the municipal department and entity.

6. PROBLEMS EXPERIENCED

Each municipal department and entity should clearly indicate any problems which they have experienced during the past year in relation to the implementation and maintenance of the Disaster Management Act, the KPAs and Enablers as specified in the MDMF, the provincial DMF and National DMF (where applicable). Problems in the implementation of line/discipline specific disaster risk management should be included.

7. ADDRESSING PROBLEM AND RECOMMENDATIONS

In this section each municipal department and entity should indicate how the above-mentioned problems were addressed (successfully or not). This section should also contain any recommendations which the municipal department and entity wish to make in order to ensure the betterment of the disaster risk management system in the CoT, GP or nationally.

8. DISASTER RISK MANAGEMENT FRAMEWORK AND PLAN

This section relates to section 52 and 53 of the Disaster Management Act. Each municipal department and entity must report on their involvement in the updating of the municipal disaster risk management framework and plan.

9. EVALUATION OF THE IMPLEMENTATION OF THE DISASTER RISK MANAGEMENT PLAN

This section should contain information on the implementation of the Disaster Risk Management Plan of the CoT with specific reference to the activities of each municipal department and entity. This should be a critical evaluation of the implementation of the Disaster Risk Management Plan and its constraints and challenges faced by municipal departments and entities.

10. RECOMMENDATIONS

This section should contain any recommendations by the municipal department and entity in order to improve disaster risk management within the CoT, GP or nationally.

Annexure D2

CONTINGENCY PLAN TEMPLATE

Contingency Plan Development

Purpose: The purpose of this template is to guide municipal departments and entities in compiling contingency plans for priority risks as identified by the indicative risk profile of the CoT.

Usage: Each task team/department/municipal entity must use the following template to develop a contingency plan for their specific actions in terms of the identified priority risks. Each heading is briefly described. Any uncertainties should first be referred to the municipal disaster management centre for clarification.

CONTINGENCY PLAN

PRIORITY RISK *[NAME OF RISK HERE]*

1. AIM OF THE PLAN

The aim should clearly spell out the focus area of this plan i.e. *“The aim of this contingency plan is to ensure a proactive and timely response to urban flooding hazards occurring within any given CoT community.”*

2. SCOPE OF THE PLAN

The scope of the plan should set clear boundaries as to the applicability of this contingency plan i.e. *“This plan applies to the occurrence of urban flooding within the municipal area of the CoT which is of such a nature that the agreed threshold for this specific hazard is been breached.”*

This section should further clearly spell out the different agreed thresholds which must be breached in order for this plan to become effective e.g.:

“This plan applies to the following circumstances:

- a. Forewarning (through the CoT, GP or a national early warning system) is of such a nature that timely intervention is needed immediately in order to mobilize additional resources to ensure this event does not turn into a disaster.*
- b. The responsible municipal department or entity is convinced that their current resources will soon be depleted.*
- c. Rapid urban flooding has already breached the agreed upon threshold for normal operations.*
- d.*
- e.”*

Furthermore this section should also provide information on the circumstances in which this plan does not apply e.g. *“This plan does not apply in the event that the Gauteng Provincial Disaster Management Centre or the National Disaster Management Centre have activated one of their contingency plans pertaining to this specific hazard type, circumstances and geographical area”*

3. PRIMARY RESPONSIBILITY

This section should give the detail of the municipal department or entity which has primary responsibility for this particular hazard. This section should also contain the contact information of the responsible person(s) within this department i.e.:

“The Department of Roads and Storm Water has primary responsibility in the coordination of urban flooding hazards. The following persons should be contacted immediately once the agreed thresholds for this hazard have been breached:

Line of management	Name	Designation	Cell no	Work no	Home no	E-mail	Other
1st order							
2nd order							
3rd order (NOTE: can be more than 3)							

4. SECONDARY RESPONSIBILITY

This section should give the detail of the municipal department or entity which has secondary responsibility for this particular hazard. This section should also contain the contact information of the responsible person(s) within this department i.e.:

“The CoT Disaster Management Centre has secondary responsibility in the coordination of urban flooding hazards. The following persons should be contacted immediately once the agreed thresholds for this hazard have been breached:

Line of management	Name	Designation	Cell no	Work no	Home no	E-mail	Other
1st order							
2nd order							
3rd order (NOTE: can be more than 3)							

[NOTE: Each of the responsible persons above must have access to a Field Operations Guide (FOG) which clearly spells out the actions which they need to follow. These FOGs must be linked to a Standard Operating Procedure (SOP) which must be managed by the Emergency Call Centre.

5. SPECIAL CONSIDERATIONS AND KNOCK-ON EFFECTS

This section should contain any special considerations or knock-on effects (if any) pertaining to this hazard which will be useful for first responders and immediate decision-making e.g. procedures/prevention mechanisms to communicate to first responders in the event of flood water contamination in an industrial area, or the consequences of an earthquake in an urban area (such as expected fires and explosions, loss of water resources etc).

6. PHASES OF ACTION

This section should contain information on all possible phases of action associated with this hazard. Each phase should contain a description of all the possible actions which all role-players must take in order to:

- Ensure that the hazardous impact or the threat does not lead to a disaster/further disaster(s);
- Ensure that the main aim of each phase is on risk reduction;
- Ensure the optimal utilization of CoT resources;
- Ensure timely counter-measures; and
- Ensure the successful completion of the phase in question thus ensuring continuity.

One can typically expect the following phases to any given hazard response:

6.1 Forewarning phase

This section should contain information on the different variables of the hazard/risk in question being assessed on a constant basis by the CoT and other early warning systems (e.g. the SAWS constantly monitors weather patterns and provides role-players with information). This section should further contain a detailed description of the different thresholds being monitored, which is responsible, and the typical actions which need to be taken in this phase. The table below can be used as a guideline (content of table only for illustrative purposes and assumes forewarning for urban flooding).

The question for this phase to be answered is: **“What variables/thresholds should this department/municipal entity monitor in order to give effective and appropriate forewarning in terms of the hazard in question to the relevant role-players?”**

6.2 Threshold breaching phase

The “threshold breaching phase” goes hand in glove with the forewarning phase. The forewarning phase provides the impetus to this phase. This phase becomes active once any of the agreed thresholds are breached. The “threshold breaching phase” is characterized by the activation of SOPs and FOGs by the responsible individuals. These SOPs and FOGs will depend on which threshold was breached and which appropriate action is needed in order to mitigate the risk. It should be noted that any hazardous impact will not necessarily always follow a linear path of intensity but could breach a threshold 3 from its first impact.

The question for this phase to be answered is: **“Which SOPs and FOGs for this department/municipal entity must be implemented due to the breaching of a specific threshold?”**

Variable	Responsibility	Contact information	System	Threshold 1	Actions	Threshold 2	Actions	Threshold 3	Actions
Rainfall	SAWBS		Own	20mm in one hour	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 1 breached. 	40mm in one hour	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 2 breached. 	60mm in one hour	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 3 breached.
Storm water drainage maintenance	Dept of Transport and roads and storm water division)		Maintenance system	Report of blocked drains (10%) at beginning of rainy season	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 1 breached. 	Visible evidence of limited urban flooding due to blocked drains	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 2 breached. 	Continuous callouts to unblock drains in rainy season	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 3 breached.
Dam levels	DWA		Own	Level of dams @ 90%	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 1 breached. 	Level of dams @ 100%	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 2 breached. 	Level of dams @ 110%	<ul style="list-style-type: none"> Disaster Management centre to inform primary and secondary role-players Role-players follow SOP and FOG for Threshold 3 breached.

6.3 Prevention and mitigation phase

The “prevention and mitigation phase” must contain information and actions towards the total prevention of the foreseeable event or lessening the effect of the event. The appropriate actions will be defined in terms of the threshold which was breached, linked to the capacity of the affected population (including all municipal departments and entities, the community, NGOs, FBOs and CBOs and the private sector), to prevent or mitigate the event.

The question for this phase to be answered is: **“Which actions should this department/municipal entity take in order to ensure that the event does not escalate and increase the risk of a disaster occurring?”**

6.4 Response phase

The “response phase” includes all actions by responding agencies to the event in question in order to safeguard lives, livelihoods, infrastructure (or critical facilities) and property. A response to an event means that the actions in the previous two phases were insufficient taking into consideration the intensity and severity of the hazard in question. The response phase will be characterized by the establishment of forward command posts and/or a joint operation centre (should the severity and nature of a hazard necessitate this). This section should therefore spell out the specific response actions of the municipal department or entity.

The question for this phase to be answered is: **“Which response actions should this department/municipal entity take in order to safeguard lives, livelihoods, infrastructure (or critical facilities) and property?”**

6.5 Relief phase

The “relief phase” overlaps in most instances with the response phase. During the relief phase the municipal department or entity aims to address the immediate needs (shelter, food and safety) of the affected community. This is in essence actions aimed at the human element of a disaster.

The question for this phase to be answered is: **“What actions are needed by this department/municipal entity in order to ensure the safety, shelter and food of the affected?”**

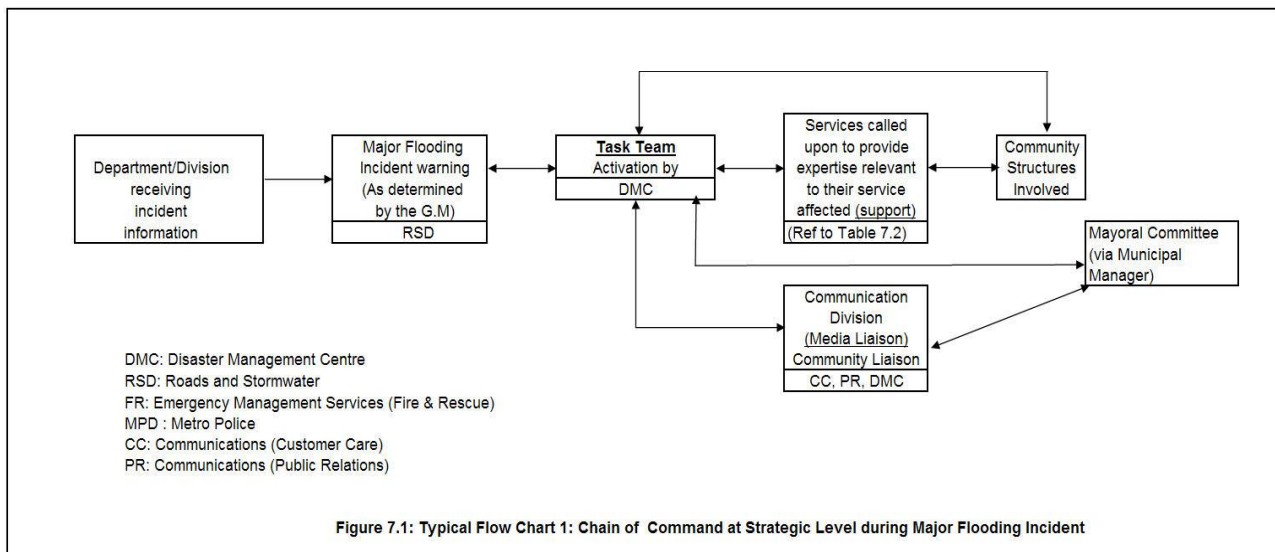
6.6 Rehabilitation and reconstruction phase

The “rehabilitation and reconstruction phase” aims to rehabilitate the affected communities back into society, and to reconstruct damaged property, the environment and infrastructure. This phase should include all relevant rehabilitation and reconstruction measures aimed at disaster risk reduction. It is therefore incorrect to refer to this phase at the “return to normality” phase. This phase should aim to enhance the resilience of the affected community in order to better mitigate and prevent a future hazardous impact of similar nature.

The question for this phase to be answered is: **“Which actions are needed by this department/municipal entity to integrate the affected population into society and how do we reconstruct the damaged property, environment and infrastructure to withstand a similar hazard in future?”**

7. CHAIN OF MANAGEMENT (also referred to “chain of command”)

This section should clearly spell out the chain of management of the hazard in question. This chain of management must be linked to all phases as described above. Diagrams (such as the one below) can be used to facilitate understanding and decision-making.



8. COMMUNICATION

This section should give clear guidance as to the lines of communication relating to the hazard in question. This section must contain a list of contact details (24 hour basis) of all the relevant role-players which needs to be contacted taking into consideration the escalation of the hazardous event into different phases. This communication structure should be directly linked to the incident management model employed by the CoT.

9. LOGISTIC SUPPORT

Logistical support entails any special considerations which will be necessary for the effective implementation of this contingency plan. Such support might relate to pre-arrangements with external role-players (e.g. for the provision of food and shelter). Aspects included under this section should assume that these resources will be available once called upon by the department/municipal entity.

10. TRAINING AND EXERCISES

This section must contain information on the training and exercise of this contingency plan, e.g. *this contingency plan must be implemented through a simulated exercise at least once each year or as part of a simulated exercise.*

11. PLAN EVALUATION

This section should contain information on the evaluation necessary for this plan. This might include the involvement of different stakeholders in order to ensure all the possible aspects relating to the hazard in question has been covered and that duplication between different department/municipal entities does not occur e.g.: *“This plan must be evaluated by all role-players as mentioned in sections 3, 4, 7 and 8.”*

12. PLAN UPDATE

This section must give a clear indication of the time period of updating this plan e.g.: *“This plan must be updated after each simulation exercise or at least once a year.”*

ANNEXURE D3

ANNEXURE D3

DISASTER RISK ASSESSMENT TEMPLATE

Template MDMC_3:

Disaster Risk Assessment for a municipal entity and/or department

Purpose: The purpose of this template is to guide municipal departments and entities in conducting a disaster risk assessment of all possible hazards and vulnerabilities within their area of responsibility

Usage: This Template should be used in conjunction with KPA2 of the CoT Disaster Risk Management Framework. Each municipality department and entity is required to follow the following format in conducting a disaster risk assessment. Each heading is briefly described. Any uncertainties should first be referred to the municipal disaster management centre for clarification.

Necessary knowledge: In order to assess disaster risk three known variables should be present, one being a hazard, the other a vulnerability to this hazard, and lastly a certain capacity or resilience to cope with the hazard in question. For all means and purposes the following “equation” is used to explain the interaction between these four aspects:

$$R = \frac{H \times V}{C}$$

Where:

R = Disaster risk

H = Hazard

V = Vulnerability

C = Coping capacity or resilience

This interaction therefore tells us that disaster risk is dependent on an identified hazard (i.e. flooding) which will be of a magnitude/intensity that will have a direct impact on a given area (e.g. an informal settlement) due to its vulnerability (e.g. poorly constructed houses) to the forces (e.g. water runoff, inundation or ponding of water) associated with the hazard. For example: A poorly built structure is more vulnerable to collapse during heavy rains than one built according to building standards.

Needed resources: Indicative Disaster Risk Profile of the CoT as generated by the MDMC.

DISASTER RISK ASSESSMENT OF THE [NAME OF DEPARTMENT AND ENTITY]

1. DESCRIPTION OF CORE BUSINESS

This section must contain a concise description (no more than 2 paragraphs) of the core business of the municipal entity or department.

2. DISASTER RISK(S) IDENTIFICATION

In the light of the “Necessary Knowledge” above disaster risk identification need to take into consideration all known hazards, vulnerabilities and capacities in the CoT. The following types of assessment methods can be employed in order to assess a specific hazard.

Types of risk	Possible disaster risk assessment methods	Expertise
Potential flood risk in a developed area.	<ul style="list-style-type: none"> • Flood hydrology and hydraulics. • Ecological and environmental assessment. 	<ul style="list-style-type: none"> • Environmental and Hydrological specialists.
Potential cholera risk in an isolated area known to be cholera-prone.	<ul style="list-style-type: none"> • Epidemiological risk assessment. • Environmental health assessment. • Groundwater evaluation. 	<ul style="list-style-type: none"> • Public and environmental health specialists.
Potential fire risk in a large informal settlement.	<ul style="list-style-type: none"> • Historic and seasonality review of past fire events graphed or mapped over time. • Aerial photographs to indicate density or other spatial changes over time. • Participatory rural appraisal (PRA)/livelihoods. Analysis/focus group interviews. • Demographic and socio-economic analysis. 	<ul style="list-style-type: none"> • Urban development facilitators/planners. • Fire prevention specialists. • Social scientists.
Potential wind storm or tornado risk in a rural area.	<ul style="list-style-type: none"> • Consultation with local leadership. • History of past events. • Historic climatology and seasonal analysis. 	<ul style="list-style-type: none"> • Indigenous knowledge. • Community facilitators. • Climate scientists.
Drought risk in a rural community.	<ul style="list-style-type: none"> • PRA/livelihoods analysis/focus group interviews. • Historic rainfall information, history of drought and impacts. • Remote-sensed information on vegetation and cloud cover. 	<ul style="list-style-type: none"> • Rural development facilitators. • Agricultural specialists. • Public health specialists. • Climate scientists.

Where budget and time does not permit to conduct a scientific assessment the process as described below should be followed.

2.1 Hazard identification

All known hazards must be identified under this section. It is suggested that each municipal entity or department use the brainstorming technique in order to generate a lists of hazards which could impact on the operations and service delivery of the municipal entity or department in question. The listing below of known hazards and their origin can be used to guide the discussions.

ORIGIN	PHENOMENA/EXAMPLES
Natural hazards	
Geological hazards	<ul style="list-style-type: none"> • Earthquakes • Tsunamis (also called tidal waves) • Volcanic activity and emissions • Mass earth movements e.g. landslides, rockslides, rock-falls, liquefaction, submarine slides • Subsidence, surface collapse, geological fault activity
Hydro meteorological hazards	<ul style="list-style-type: none"> • Floods, debris and mudflows • Tropical cyclones, storm surges, thunder / hailstorms, rain and windstorms, blizzards and other severe storms • Drought • Desertification

ORIGIN	PHENOMENA/EXAMPLES
Natural hazards	
	<ul style="list-style-type: none"> • Veldt / bush or wild fires • Heat waves • Sand or dust storms • Permafrost • Snow avalanches
Biological hazards	<ul style="list-style-type: none"> • Outbreaks of epidemic diseases • Plant or animal contagion • Extensive infestations
Technological hazards	
	<ul style="list-style-type: none"> • Industrial pollution • Nuclear activities • Toxic waste • Dam failure • Transportation accidents
Environmental hazards	
Environmental degradation	<ul style="list-style-type: none"> • Land degradation • Deforestation • Loss of biodiversity

The Indicative Disaster Risk Profile of the CoT can further be used to guide the discussions. It is therefore imperative to communicate with the MDMC after the identification of hazards in order to ensure that the phenomenon identified falls within the legislative definition of a hazard.

Once each hazard has been identified it is important to describe the hazard with respect to the following criteria:

- **Magnitude or severity** (maybe consider linking your description to a known hazard scales if applicable e.g. the Beaufort scale for measuring wind intensity or rainfall);
- **Frequency** in a given calendar year (historical data);
- **Predictability or forewarning** (what can be used in order to obtain forewarning to this hazard e.g. utilising data and information from the SA Weather Service to predict severe weather conditions OR a custom-made system to monitor and warn of urban flooding);
- **Speed of onset** (rapid/slow);
- **Affected geographical area** (link with GIS system of the MDMC and CoT);
- **Probability** (how likely is it that this hazard of various magnitudes will occur in the following 1, 5, 10, 20, 50 and 100 years?);
- **Duration** (if the hazard of known magnitude impacts on the CoT for how long will the direct impact have an effect on the municipality? E.g. drought vs. an airplane crash);
- **Knock-on effects** (what additional hazards can the different magnitudes of the hazard provoke e.g. fires after an earthquake of a certain magnitude or flooding associated with heavy rains).

For the purpose of illustration the Beaufort Rainfall Scale for measuring rainfall intensity will be used. The scale is as follows:

- Force 0: Complete Dryness
- Force 1: Mist
- Force 2: Individual drops

- Force 3: Fine Rain
- Force 4: Visible Light Shower
- Force 5: Drizzle
- Force 6: Downpour
- Force 7: Squally, Gusty Rain
- Force 8: Torrential Rain
- Force 9: Cloudburst
- Force 10: Cyclone

For this example only Force 5-9 will be used due to the fact the Force 0-4 will not contribute significantly to the increase in disaster risk. Force 10 is also excluded due to the fact the cyclones will not occur in the CoT.

NOTE: The MDMC recognise the fact that all hazards do not necessarily have an acceptable and recognised hazard rating scale (e.g. cholera). In such an instance the appropriate risk assessment method must be used and the relevant expertise must be co-opted.

The table below can be used in order to assess the full extent of all known scale ratings of the hazard linked to the various criteria as discussed above.

(example only)	Magnitude of severe rain hazard (linked to scale)				
	Force 5	Force 6	Force 7	Force 8	Force 9
Frequency	Every year (October-February)	Every year (October-February)	Once every 2 years (October-February)	Every 5 years (October-February)	Every 10 years (October-February)
Predictability	Through SAWS	Through SAWS	Through SAWS	Limited through SAWS	Limited through SAWS
Speed of onset	Medium	Medium	Medium	Medium	Medium
Affected geographical area	Limited urban areas (see Map1234)	Urban areas especially informal settlements (see Map1234)	All low lying informal settlements (see Map1234)	All informal settlements and certain urban areas (see Map1234)	20% of the CoT (see Map1234)
Probability	1:1	1:5	1:10	1:50	1:100
Duration	1-3 days	3-5 days	3-5 days	3-14 days	3-14 days
Knock-on effects	none	Limited urban flooding and health issues	Urban flooding and health issues in most affected areas	Hail and mudflows	Severe hail and landslides

2.2 Vulnerability description

This section should describe all known vulnerabilities to the identified hazard linked to the hazard scale as described above. The table below can be used to describe the different vulnerabilities.

(example only)		Magnitude of severe rain hazard (linked to scale)				
Criteria A	Criteria B	Force 5	Force 6	Force 7	Force 8	Force 9
Vulnerability of people	Social vulnerability	Community awareness inadequate.	Education in risk reduction lacking.	Elderly, women and children need special attention	Inadequate risk perception; special attention to poor communities	Social structures at risk; risk perception inadequate; marginalised people most at risk
	Economic vulnerability	none	Some interruption of informal trading	Definite interruption of informal trade and loss of livelihoods	Informal trade is impossible. Subsistence farmers can lose crops.	Direct impact on formal and informal trade. Loss of livelihoods is likely.
	Physical vulnerability	none	none	Drowning may occur in river and streams.	Health issues may arise.	Major displacement of people in informal settlements
	Environmental vulnerability	none	Loss of topsoil around houses and dwellings	Unstable ground in certain areas is visible.	Risk of sinkholes forming increases.	Sinkholes form and significant impact on environmental integrity.
Infrastructure	Homes/dwellings	none	Ponding of water in informal settlements, light damage to shacks.	Urban flooding occurs in low-lying areas and shacks are affected.	Significant loss of informal settlements and temporary shelters will be needed; insured losses occur.	Massive relief and temporary housing might be necessary; significant insured losses occur.
	Critical facilities	none	none	none	none	Slight damage to critical facilities.
	Services	Could lead to mud and debris washed over certain roads.	Limited interruption of service delivery in certain areas	Interruption of services is likely.	Significant interruption of services.	Continued interruption of certain services and damage to service infrastructure occur.
Economic activities		none	none	none	Local economy becomes affected by interruption.	Significant interruption of economic activities in the CoT.
Natural resources		none	Some riverbank can overflow.	Rivers burst their banks and effect vegetation.	Change in river planes might occur.	Landslides can affect environmental integrity.

2.3 Estimate losses of vulnerable communities

This section must describe the possible losses resulting from the different severities of the hazard under assessment as it pertains to your departmental (or municipal entity's) area of responsibility in relation to this hazard. This can be done by focusing on the possible losses associated with:

- Human losses (injuries and fatalities);
- Economic/financial losses;
- Physical/infrastructural losses;
- Natural/environmental losses; and
- Social losses.

2.4 Capacity identification

This section must identify capacities, methods and resources already available to manage this risk. Assess the effectiveness of these as well as gaps, inconsistencies and inefficiencies in your department or municipal entity.

3. RISK ANALYSIS

The risk analysis process involves the estimation of the level of risk associated with the hazard in question taking into consideration the vulnerability to this hazard as well as the coping capacity. Estimating the level of risk is done by matching the likelihood of a hazard or disaster with its expected impact or consequence. This process allows different threats to be compared for the purpose of priority setting.

The following tables can be used in conducting the risk analysis. A scale rating is given to each event in order to obtain a value. These values must obviously be linked to your hazard identification above. This risk analysis must be done for each magnitude rating (hazard scale) which is unacceptable to the department/municipal entity. In the example above it would make sense to only do the risk score for the rain fall hazard for Force 7-9.

The following formula will be used to calculate the risk scope:

$$\text{Risk} = (\text{Frequency} + \text{Area Impact}) \times \text{Potential Damage}$$

Frequency scale (after considering the hazard identification)	
Frequency	Scale rating
No data	0
At least once every 25 years (and more)	1
At least once between every 25 years and 10 years	2
At least once between every 10 years and 5 years	3
At least once between every 5 years and 1 year	4
At least once every year	5

Area impact scale (after considering the vulnerability description)	
Area Impact	Scale rating
Household/ dwelling level	1
Settlement level	2
Regional level	4
Municipality/Metro level	3
Provincial	5

Potential Damage/Losses Scale (after considering the vulnerability description and capacity identification)	
Potential Damage Scale	Scale rating
Damage/loss is insignificant	1
Damage/loss is significant; effected people/municipal department can cope	2
Damage/loss is significant; effected people/municipal department struggling to cope	3
Damage/loss is extreme; effected people/municipal department struggling to cope	4
Damage/loss is extreme; effected people/municipal department cannot cope	5

EXAMPLE:

Force 7 in the example above

$$\begin{aligned}\text{Risk} &= (4 + 2) \times 1 \\ &= (6) \times 1 \\ &= 6\end{aligned}$$

Force 8 in the example above

$$\begin{aligned}\text{Risk} &= (4 + 3) \times 2 \\ &= (7) \times 2 \\ &= 14\end{aligned}$$

Force 9 in the example above

$$\begin{aligned}\text{Risk} &= (3 + 4) \times 4 \\ &= (7) \times 4 \\ &= 28\end{aligned}$$

In the example above it is therefore clear that the risk of this particular hazard increases as its scaled magnitude does. This exercise must be completed for each and every hazard identified in section 2 above as it relates to your specific department or municipal entity.

4. RISK EVALUATION

In the case where there are multiple hazards to be assessed for any given geographical area, the risk associated with these hazards must be prioritised. When several threats are assessed at the same level of risk, limited resources and budgets require that they be prioritised even further. This process, called 'risk evaluation', is necessary because it is not possible to address all disaster risks at the same time (see section 5.2 of the CoT Disaster Risk Management Framework).

The priority at-risk people, areas, communities, households and developments identified during this stage of the assessment will be the subject of highly specialised multidisciplinary, comprehensive disaster risk assessments. These assessments must inform the holistic and integrated planning and implementation of focused disaster risk reduction initiatives.

This stage of the disaster risk assessment will require unique combinations of risk science expertise relevant to the particular types of disaster risk facing the specific at-risk groups; areas or developments (typically refer to the table under section 2 above).

An agreed risk score threshold may be set for all hazards and their magnitudes.

EXAMPLE:

Threshold 1: 0-10

Threshold 2: 11-15

Threshold 3: 16-20

Threshold 4: 21-25

Threshold 5: 125+

5. RISK MONITORING

This stage involves on-going monitoring to measure the effectiveness of disaster risk reduction initiatives, identify changing patterns and new developments in risk profiles, and update and disseminate information for the purpose of disaster risk management planning.

6. DEVELOPMENT / DISASTER RISK REDUCTION PROJECTS

This section must consider how different developmental projects within this department/municipal entity are already addressing the reduction of the disaster risk. As far as possible the department/municipal entity must aim to link its on going developmental activities with the risk profile of the CoT. The following table can be used:

Department/Municipal entity:				
Prioritised risk	Current projects addressing hazard impact reduction	Current projects addressing vulnerability reduction	Current projects aimed at capacity building	Possible future projects aimed at disaster risk reduction
1.....				
2.....				
3.....				

7. LINK WITH DISASTER RISK MANAGEMENT PLANNING

The findings of section 2 and 3 above will directly inform the development of a Level 1 Disaster Risk Management Plan (the first level of the planning process) as well as components of a Level 3 Disaster Risk Management Plan, by identifying:

- Known priority risks for the purpose of contingency planning;
- Priorities for vulnerability reduction planning; and
- High-risk areas, communities and households exposed to multiple risks, and high-risk developments requiring further evaluation and prioritisation through focused comprehensive disaster risk assessments.

The outcomes of section 4 above, will directly inform the development of a Level 2 Disaster Risk Management Plan as well as components of a Level 3 Disaster Risk Management Plan.

The results of section 5 above, will inform the development of a Level 3 Disaster Risk Management Plan.