PROVINCIAL GUIDELINE

MINIMUM STANDARD FOR CONDUCTING A DISASTER RISK ASSESSMENT

EASTERN CAPE

Prepared By:

Sub Directorate: Disaster Risk Assessments and Risk Reduction

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Version Control

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Short description	Provincial Guideline on minimum standard for scoping of disaster risk assessments by municipalities
Applicability	Municipalities
Authority	The provincial guideline has been approved by the Head of the Provincial Disaster Management Centre, in terms of section 30(1)(b) of the Disaster Management Act, 57 of 2002.
Responsible Manager	Deputy Director: Disaster Risk Assessment and Reduction
Responsible Directorate	Disaster Risk Assessment and Reduction
Related legislation / policies / guidelines	Disaster Management Act, 57, 2002 (Act 57 of 2002), Provincial Disaster Management Policy Framework, National guideline on conduction hazard analysis.
Key words	Disaster risk assessment; Hazard; Vulnerability; Capacity; Geographic Information System; Risk reduction; Risk evaluation; Risk evaluation; Data management; Quality control.

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This serves to all officials of the PDMC, EC COGTA, MDMCs, the NDMC and members of the Technical Advisory Committee who participated in the development and validation of this guideline.

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Acronyms

Abbreviation	Explanation
CBA	Community Based Assessment
CBA	Climate Change Adaptation
DMAF	Disaster Management Advisory Forum
PDMPF	Provincial Disaster Management Policy Framework 2020
DRA	Disaster Risk Assessment
DRP	Disaster Risk Profile
GIS	Geographic Information System
IDP	Integrated Development Plan
MDMC	Municipal Disaster Management Centre
NDMF	National Disaster Management Framework 2005
PDMC	Provincial Disaster Management Centre
PSC	Project Steering Committee
TAC	Technical Advisory Committee
The Act	Disaster Management Act, 57 of 2002 as amended

List of figures and tables

Definitions

Adaptation	(a) in relation to human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities; and (b) in relation to natural systems, the process of adjustment to actual climate and its effects.
Climate change	a change in the state of the climate that can be identified by changes in the variability of its properties and that persists for an extended period, typically decades or longer.
Disaster risk reduction	either a policy goal or objective, and the strategic and instrumental measures employed for: (a) anticipating future disaster risk; (b) reducing existing exposure, hazard or vulnerability; and (c) improving resilience;
Municipal Disaster Management Centre	a Centre established in the administration of a municipality
Risk assessment	a methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.

Ecosystem	a system of relationships between animals and plants and their environment.
disaster management	a continuous and integrated multi-sectoral, multi-disciplinary process of planning and implementation of measures aimed at: (a) preventing or reducing the risk of disasters; (b) mitigating the severity or consequences of disasters; (c) emergency preparedness; (d) a rapid and effective response to disasters; and (e) post-disaster recovery and rehabilitation

Compatibility with other guidelines/standards

This standard must be used in consultation with the national guidelines and disaster management frameworks and policies of the respective municipality, sector department or organ of state. Municipalities, provincial sector departments and their entities must use this guideline as a baseline in the development of terms of reference for competitive bids for development of disaster risk assessment projects.

1. Introduction

Conducting disaster risk assessments is fundamental for the development and implementation of effective disaster risk management policies and plans in the province. All disaster risk management planning and the development and application of disaster risk reduction policies in the province's area must therefore be informed by disaster risk assessment information. Disaster risk assessment information must also be used to guide priority setting for risk reduction programmes undertaken by Provincial organs of state, municipalities and other role players in disaster risk management in the Province. A uniform approach in conducting disaster risk assessments is necessary to ensure standard development of disaster risk profiles and risk reduction measures. The process must be sound as guided by the national, provincial, municipal disaster management frameworks and this standard seek to provide that guidance.

Sections 53(1)(a)&(b) of the Act states that each municipality must—

(a) conduct a disaster risk assessment for their municipal and functional area;

(b) identify and map risks, areas, ecosystems, communities and households that are exposed or vulnerable to physical and human-induced threats;

The Eastern Cape Provincial Disaster Management Centre (PDMC) has generated a Provincial Indicative Disaster Risk Profile and is building the capability to maintain the profile's dynamic character of continuously monitoring and updating it. Disaster risk information generated by the Provincial, Municipal organs of state and research commissions in the Province have been consolidated by the EC PDMC to provide a Provincial Indicative Disaster Risk Profile (DRP) in accordance with national guidelines.

Since district, metropolitan and some local municipalities in the province have undertaken disaster risk assessments, inconsistencies in conducting those studies have been observed. This creates a challenge in the validation of findings and quality control. Sequencing of disaster risk assessment reports by municipalities are puzzled and make it difficult to analyse. The development of a standard format in

conducting disaster risk assessment studies as required by the provincial disaster management policy framework, ensure that there is uniformity and consistency with other similar studies.

2. Purpose

This standard is developed in terms of the Section 53(1)(a) & (b) of the Act and part 11 of the Eastern Cape Provincial Disaster Management Policy Framework (EC PDMPF) emphasises the commissioning of disaster risk assessments by sector departments, municipalities and state entities. The Act make it explicitly mandatory for municipalities (sec 53) and sector departments (sec 38) to commission disaster risk assessments.

This standard seeks to provide a minimum standard which guides conduct of disaster risk assessments during the commissioning of a new disaster risk assessment projects and during review of existing ones. This standard seeks to facilitate streamlining of disaster risk assessments in the province in line with the national and provincial framework. Table A below provides the stages and processes involved in disaster risk assessment.

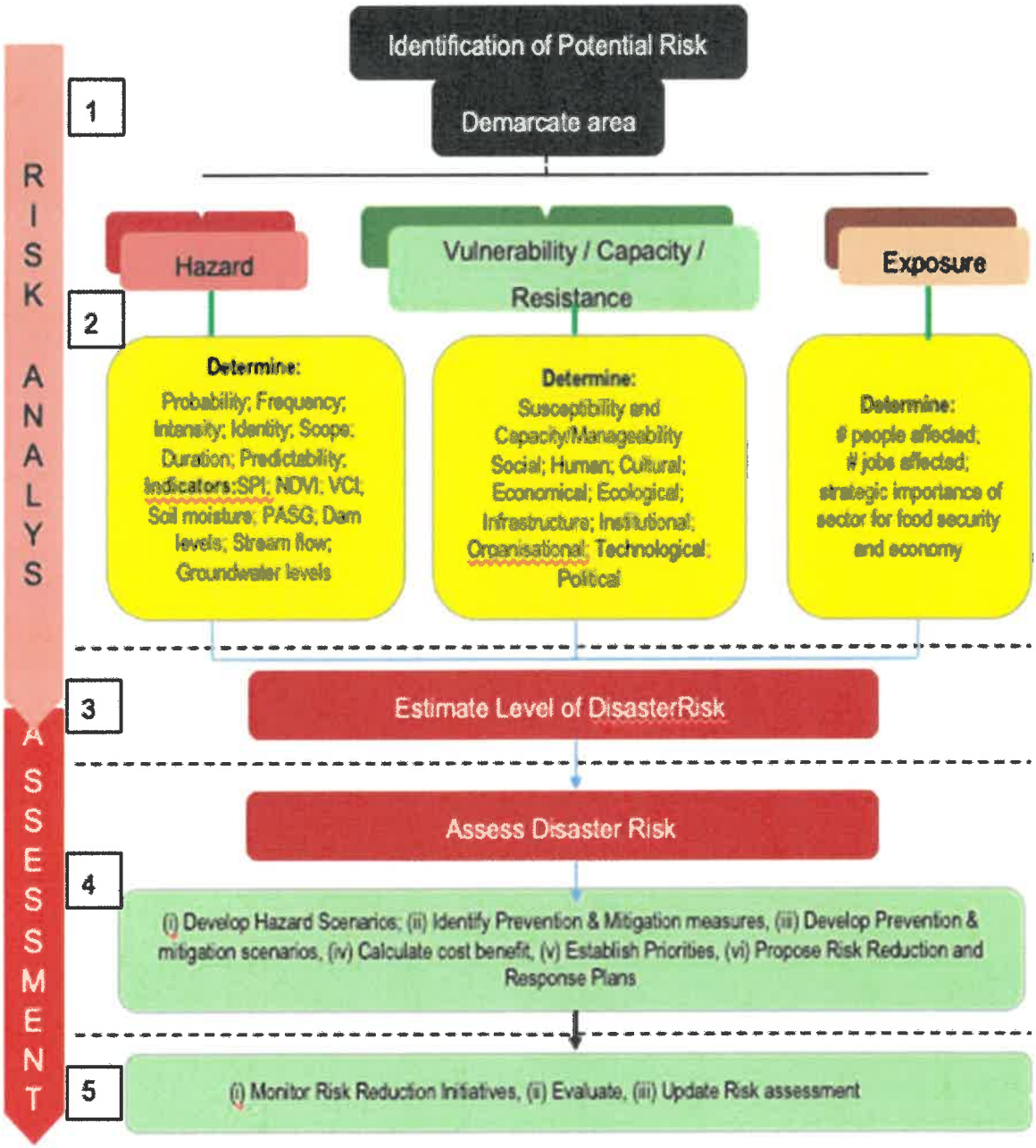

Figure 1: Disaster Risk Assessment Process.

3. Scope

This standard provides a minimum standard for conducting disaster risk assessments by municipalities and sector departments in the province. This standard does not limit a municipality or sector department in adding further areas of focus for conducting, but it serves as a minimum standard.

4. How to use this guideline

As mentioned above, this guideline serves as a minimum scoping standard for commissioning of disaster risk assessments by municipalities and sector departments within the province of the Eastern Cape. As required by sections 38 and 53 of the Act, municipalities and sector departments must undertake disaster risk assessments for their respective functional areas, /municipal areas. The assessment must focus on the identification and mapping of risks, areas, ecosystems, communities and households exposed to physical and human induced threats.

Municipalities and sector departments should align this guideline with their project terms of reference when they plan to conduct a disaster risk assessment. The provincial or municipal Technical Advisory Committee (TAC) must use this guideline as a basis for validating all commissioning disaster risk assessments in the province.

5. Stages of disaster risk assessments

5.1 Assessing disaster risk

The (*name of the Municipality, Sector Department, State entity*) must develop and adopt a standard template to conduct a disaster risk assessment project in the province which must be consistent with national guidelines.

5.1.1 Stages of disaster risk assessments

Disaster risk assessments must be conducted in four stages.

STAGE 1: Risk Analysis

Identification of the risk factor

The analysis must identify hazards based on historical information and indigenous knowledge and must determine their probability, frequency, intensity, scope, predictability or forewarning, exposure, impact, associated forces and possible knock-on effects. The analysis must include hazards of natural and technological origin as well as environmental degradation.

A vulnerability assessment must be conducted to determine and quantify economic, social, physical, environmental and political factors which contribute to the susceptibility of communities, infrastructure, services and natural resources in the district exposed to the hazards identified and their capacity to withstand, cope and recover from the impact of such hazards.

The assessment must include an estimate of the likely losses which could result from the impact of the hazard and climate change risks on vulnerable elements and to evaluate likely consequences.

STAGE 2: Estimation of levels of risk

An estimation of the level of risk of a particular hazard and climate change threat must be undertaken by comparing the probability of its occurrence with the estimated impact or consequences to compare different hazards for the purpose of determining priorities.

STAGE 3: Risk evaluation

If multiple risks have been assessed at the same level and resources are limited, provision must be made for MORE comprehensive risk assessments to enable further prioritisation.

Highly specialised multidisciplinary comprehensive assessments must be conducted by combinations of risk scientists relevant to the nature of the risks facing specific priority at-risk people, households, communities, areas, and developments identified during this stage of the assessment.

STAGE 4: Risk reduction monitoring

The municipalities, sector departments, government and municipal entities must develop and implement mechanisms for the continuous monitoring of risk reduction initiatives for their relevant functional area; the identification of changing patterns and changing risk profiles; and for the updating and disseminating of information for the purposes of disaster risk management planning.

6. Link with disaster risk management planning

A municipality, sector department or state entity must ensure that all disaster risk management planning is based on scientifically sound risk assessment information and that such planning is progressively integrated into their development initiatives, projects, programmes and plans.

7. Responsibilities for monitoring, updating and disseminating disaster risk information.

Municipal and provincial state entities must establish clear and documented mechanisms for rapid access to disaster risk information and for updating hazard and vulnerability information as well as the occurrence of significant events on their functional areas and must ensure that such information is rapidly disseminated to the relevant DMC.

Sector departments with disaster risk management responsibilities must establish clear and documented mechanisms for rapid access to disaster risk information and for updating hazard and vulnerability information relevant to their functional area and must ensure that such information is rapidly disseminated to the EC PDMC.

Municipalities must establish clear and documented mechanisms for rapid access to disaster risk information and for updating hazard and vulnerability information as well as the occurrence of significant events and disasters relevant to their jurisdiction and must ensure that such information is rapidly disseminated to the MDMC.

Municipal departments, sector departments, their entities, and MDMCs, as well as other entities with disaster risk management responsibilities, must establish and document clear mechanisms for disseminating disaster risk assessment and monitoring information for ongoing planning, as well as for managing high risk developments.

Municipalities, sector departments, their entities must establish and document clear procedures for accessing, interpreting and disseminating early warnings of both rapid and slow onset disasters. To facilitate the development of the disaster risk management information system, simultaneous geo-referencing should take place routinely wherever possible.

8. Quality control

All risk assessment reports must be submitted to the MDMC/PDMC TAC for technical review.

The MDMC/PDMC TAC must ensure that all risk assessments undertaken in municipalities and their entities, show documented evidence of capacity building, skills transfer, ground-truthing including the use of indigenous knowledge, consultation and stakeholder engagement on the design of the risk assessment and the implementation and interpretation of findings.

The methodology and results of all assessments conducted must be subjected to an independent technical review process and external validation prior to any actions based on the findings being taken. Documented evidence of technical consultation with the municipality and municipal entities must be included in all risk assessments undertaken.

SCOPE OF A DISASTER RISK ASSESSMENT

TERMS OF REFERENCE

1. Background and Orientation

This section is intended to introduce the potential Service Provider to the (*name of the Municipality, Sector Department, State entity*) area of responsibility. In order to customise it for the (*name of the Municipality, Sector Department, State entity*) a description of the location of the (*name of the Municipality, Sector Department, State entity*) in the province; its boundaries; surface area; population; neighbours; and a high level overview of the disaster risk profile must be included here.

1.1 The purpose of conducting an assessment of disaster risk in the area of the (*name of the Municipality, Sector Department, State entity*)

Severe flooding in the Cape Flats in June 1994 was the driving force behind an urgent call for legislative reform in the field of disaster risk management in South Africa. This led to wide consultation through a Green Paper process and the publishing of a White Paper on Disaster Management. The White Paper provided seven key policy proposals, which were the basis for the reform process which culminated in the promulgation of the Disaster Management Act, 2002 on 15 January 2003. The Act was further reviewed in 2015 after extensive consultation to remedy ambiguity on the role of local municipalities.

In the context of this reform, the focus of government's policy on disaster risk management has shifted from a reactive approach of dealing with disasters only once they have occurred to that of reducing disaster risk by building resilience through developmental initiatives.

In this regard the Act provides for an integrated and coordinated policy that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters, and post disaster recovery. It places primary responsibility on the (*name of the Municipality, Sector Department, State entity*) for the implementation of these provisions in its area of jurisdiction.

In terms of section 47 of the Act the (*name of the Municipality, Sector Department, State entity*) DMC is responsible to give guidance to the relevant stakeholders on ways and means of determining levels of risk; of assessing vulnerability of communities and households to disasters

that may occur; of increasing the capacity of communities and households to minimize the risk and impact of disaster that may occur; and monitoring the likelihood and state of alertness to disasters that may occur. It also requires the development and implementation of appropriate risk reduction methodologies and the integration of such methodologies into development plans, programmes and initiatives as well as the management of high-risk developments.

The critical first step in ensuring effective and focused risk reduction planning is to commission a disaster risk assessment which will inform the disaster risk management planning process of the (*name of the Municipality, Sector Department, State entity*).

Due to the extremely complex nature of the disaster risk management function; and that fact that there are two planning layers in this context; as well as the unevenness in capacity amongst the sector departments, municipalities and their entities in the province; the risk assessment process will be conducted in stages. The findings of the disaster risk assessment for the province must be linked to the relevant levels of planning in accordance with Key Performance Area 3 of the NDMF. This first stage of the assessment process must therefore take into account the requirements for level one plans for both the district and the local municipalities in the area of the (*name of the Municipality, Sector Department, State entity*) by identifying priority risks to enable focused contingency planning and the development and implementation of operational plans for response and recovery activities associated with the priority risk identified. In addition the findings must inform the strategic planning of sector departments, municipalities and their municipal entities in the province to focus their developmental planning efforts on building resilience by reducing vulnerability and increasing capacity in areas and communities at risk. The third aspect to be addressed in this stage of the assessment process is the identification of high risk developments and areas and communities at high risk due to their multiple vulnerabilities which will then become the subject of specific in depth assessments in the next stage.

1.2 Description of the working area

The aim of this section is to provide potential Service Providers with a brief overview of the current reality in the area of the (*name of the Municipality, Sector Department, State entity*) relevant to the project.

1.2.1 Introduction

Insert a list of local municipalities in the (*name of the Municipality, Sector Department, State entity*) area / (*name of the Municipality, Sector Department, State entity*) service area, and add a description of the main towns, peri urban and rural settlements

Insert a table in which a breakdown is provided of the number of municipal wards in the jurisdiction of each of the above local municipalities:

Provide a description of prevailing circumstances in the province / district municipality / metropolitan municipality as a whole under each of the following headings:

- Socio economic analysis overview
- Spatial and land-use overview
- Infrastructure overview
- Housing, service delivery and infrastructure.
- Housing
- Water
- Sanitation
- Energy
- Waste management
- Transport infrastructure
- Water Transport
- Facilities
- Education
- Healthcare
- Police Stations
- Telecommunications

2. Legal Aspects

The following section seeks to establish the legal parameters for the study.

2.1 Legislative imperatives

In the development of the Disaster Risk Assessment (DRA) for the (*name of the Municipality, Sector Department, State entity*), the Service Provider must ensure that the study is conducted and

developed within the legislative framework for disaster risk management in South Africa in accordance with the provisions of the Constitution, the Disaster Management Act, 2002, the National Disaster Management Framework (2005), The Municipal Systems Act, 2000, as well as any other relevant legislation.

2.2 Implications of flawed assessments

The Service Provider must take cognisance of the legal and other implications of producing a flawed assessment that contains incorrect or unverified risk assessment findings on which planning decisions will be made. The Service Provider must therefore ensure that the assessment is robust and that it can reliably inform risk reduction planning.

2.3 Data provision

The (*name of the Municipality, Sector Department, State entity*) will provide data, which they have at their disposal. Ownership and copyright of such data rests with the sector department, municipality, their entities, and the state.

The copyright of the data shall not be infringed for the purposes of:

- Correcting errors in the data set
- Derivative works in which the derived work(s) results in original work(s).
- Research, private study, or personal or private use
- Creating a backup copy

The service provider will make use of such data for the purpose of this project only. All value added data generated by the service provider must at the least conform to the spatial parameters of the base data, as specified under Section 6.

2.4 Data ownership and data custodianship

All data generated by the service provider in terms of the scope of this project will become the sole property of the (*name of the Municipality, Sector Department, State entity*).

The custodian of such data will be the Head of the (*name of the Municipality, Sector Department, State entity*) DMC.

2.5 Data exchange

Data related to this project may not be shared by the Service Provider with any third party, for the duration of the project or thereafter.

2.6 Data management

The Service Provider will be responsible for:

- Quality control and assurances of newly created datasets
- The content and formats of such data
- Validation of such data
- Storage and security for the duration of the project, until final delivery of the project data
- Maintenance and updates of metadata, until final delivery of the project data

With reference to the set spatial resolution, as described under Section 6, the Service Provider must take into consideration the implications of including or excluding communities in terms of risks and vulnerabilities.

3. Project Management and Reporting

3.1 Measures to ensure accuracy of the disaster risk assessment

The (*name of the Municipality, Sector Department, State entity*) must appoint a Project Steering Committee comprised of appropriately qualified and experienced officials in consultation with MDMC/PDMC will assist in the technical evaluation of tenders and the monitoring of progress with the project. The Provincial Technical Advisory Committee (TAC) comprising of nationally recognized specialists in hazard, risk and vulnerability assessment will be responsible for the validation and/or interpretation of the methods and findings generated.

Reports must include documented evidence that external validation has taken place. The external validation process must be completed prior to any reports or maps for the purposes of planning being generated.

3.2 Disputes

Any dispute arising between the TAC and the Service Provider will be dealt with in terms of a dispute resolution/ arbitration clause included in the contract agreement to be concluded between

the (*name of the Municipality, Sector Department, State entity*) and the Service Provider before the commencement of the project.

3.3 Reporting

The Service Provider must include in the project proposal a detailed account of the envisaged assessment process which includes exhaustive project management schedules reflecting specific deliverables linked to time frames and payment intervals as well as reporting intervals. The Service Provider must note that the due date for the first deliverable must be no later than _____ and that this must be clearly reflected in the Project Management Schedules.

3.4 Distribution of findings

The distribution of findings/outcomes, reports, minutes and other information or data created by the Service Provider may only be released or distributed in accordance with the instructions of the TAC and/or the (*name of the Municipality, Sector Department, State entity*) DMC. No information may be released to any stakeholder or role-player without such prior approval.

The methods adopted for the approved distribution of information/findings/outcomes must consider the capacity of relevant role players in respect of access to electronic media and must make provision accordingly.

3.5 User guides

User guides must be developed in unambiguous and easy to follow language to accompany relevant components such as applications, web services, supporting spatial and non-spatial databases and the GIS including instructions for making amendments, changes and for the purposes of updating.

The (*name of the Municipality, Sector Department, State entity*) reserves the right at any stage during the project and up to 6 months after the completion of the project, to request (written) additional guidance on a particular deliverable. Such information must be provided by the Service Provider within 30 days after the request.

The Service Provider must indicate how certain data should be interpreted. Wherever databases are incomplete or not statistically 'certain', this should be clearly stated; the limitations of use should be clearly indicated.

3.6 Review of the process, monitoring of results.

The Service Provider must undertake to fully cooperate with the external validation process and the TAC.

The Service Provider must also propose with estimated cost on development of internal monitoring and validation mechanisms that would be scientifically sound and consistent with generally accepted project management review methodologies. The Service Provider must indicate and fully explain the methods used in this regard.

Methods, conditions and recommendations for conducting follow-up research must be included in the report. The Service Provider must be available for 3 months after completion of the project for questions relating to the data management system, the GIS, and related research or assessment.

4. Consultation and Stakeholder Sensitisation

This section establishes the parameters for ensuring that the provisions of the Disaster Management Act, 2002 (*s7(2)(f)(i-iii)*) are complied with.

4.1 Stakeholder consultation and interviews

The purpose of stakeholder consultations is firstly to ensure ground-truthing of the study through field consultations with communities most at risk to the threats being assessed, and secondly for the purposes of consulting with appropriate end users in respect of the design of the study.

The study must include field consultations with the following role-players:

- Ward committees and community members
- Community Based Organisations (CBOs)
- Representatives of organised business and of large industries and businesses
- Ports and airport authorities
- Locally active relevant Non-Governmental Organisations (NGOs)

- Scientists and experts (such as, but not confined to, geologists, hydrologists, engineers, climatologists, and economists)
- Other relevant role players who may be able to contribute to the outcomes of the assessment.

Where appropriate such consultations can take place through existing representative forums such as the sector department planning committee, IDP rep forum and Disaster Management Advisory Forum (DMAF).

The Service Provider must conduct interviews with relevant key stakeholders in each stage of the assessment. The purpose of such interviews is to gather information on the formulation of questionnaires and/or the implementation of the assessment as well as on the interpretation of the findings for the functional area of a particular stakeholder. Interviews must be conducted with, but not confined to, the following stakeholders;

Provincial sector departments

- Members of the Governance and Administration cluster in the province
- Heads of departments
- Deputy Director Generals
- Chief Directors
- Directors
- CEOs of government entities in the province

Municipalities

- Mayors
- Municipal Councillors responsible for the disaster risk management portfolio
- Municipal Managers
- Heads of municipal departments and other relevant municipal entities
- The Head of the (*name of the Municipality, Sector Department, State entity*) DMC
- Disaster risk management personnel of the (*name of the Municipality, Sector Department, State entity*) DMC and local municipalities
- Relevant national and provincial organs of state
- Emergency and essential services senior officials such as emergency medical personnel, fire fighters, police, hospitals, defence force and traffic personnel
- Traditional leaders

- Relevant institutions of higher learning
- Community leaders
- Non-governmental organisations

Assessment reports submitted by the Service Provider must show evidence of all consultations and interviews conducted.

4.2 Involvement of institutions of higher learning

In order to provide the opportunity for skills transfer to students from historically disadvantaged institutions and to inculcate an understanding of disaster risk management in the various disciplines, the Service Provider must employ the services of students from such local institutions of higher learning. The advantage of this provision is that the student body from local institutions largely emanates from the Eastern Cape Province and therefore would be able to apply that local knowledge.

The service provider must ensure that project-specific training and transfer of skills takes place. Every effort must be made to ensure that students are exposed to the continuum of data acquisition, capturing and visual representation.

Students within institutions of higher learning in the province from a variety of disciplines must be used which could include the following:

- **African and Democracy studies** have the benefit of local knowledge and therefore could make a meaningful contribution to the research.
- **Micro-biology scientists** who have first-hand experience of local conditions with a primary focus on the safety of water and water supply.
- **Students in the GIS discipline** would make ideal researchers and data capturers and are experienced in the accessing of GIS-based information. They could also assist in the compilation of the GIS-based data base in respect of capturing the findings.
- **Researchers** from the agriculture and environmental science faculties at the local university who for instance have conducted many years of research to assist local communities identify their priorities and avoid the ravages of natural and unnatural occurrences.

- **Social and economic researchers** have gained several years' experience in their field and could be a useful coordinating tool in any future research project. They too have established a valuable database which could be tapped into for relevant information.
- **Health sciences** students which include nursing and social work disciplines could prove useful in the assessment of needs and priorities in the small town and rural areas.

The Service Provider can liaise with the Head of the relevant Disaster Management Centre to establish contact with local institutions of higher learning for this purpose.

The Service Provider must make provision for costs associated with training, remuneration, travelling, subsistence, and any other incidental expenses in the above regard included in the tender price.

4.3 Assessment of existing capacity (manageability analysis) (organs of state, departments, government entities and with other existing role-players)

The Service Provider must establish contact with all role-players to sensitise them to the process and to obtain cooperation. The Service Provider must conduct an exhaustive audit to ensure the identification of all relevant role-players in accordance with the Act.

The report must indicate which aspects of existing plans can be incorporated into the new disaster risk management plan(s) and structures.

4.4 Establishing contacts and building capacity.

The Service Provider must ensure that the entire process is based on the principle of stakeholder participation and capacity building. As indicated in section 5 methods of investigation must therefore include interviews and workshops with role-players and contact sessions with other stakeholders including traditional leaders and local communities. Using the Community Based Risk Assessment approach, these contact sessions must be used as an opportunity to build capacity amongst the people of the (*name of the Municipality, Sector Department, State entity*).

At every opportunity, the Service Provider must incorporate an introduction to the concepts of disaster risk management with particular emphasis on the shift in focus to disaster risk reduction.

In cases where more than one meeting is being held with the same group or individuals, the Service Provider must aim to build further understanding of disaster risk management concepts.

The goal of consultations must be primarily to collect data for the research even though it will indirectly build capacity within the people from where the research is done.

The Service Provider must apply the principle of capacity building throughout the entire process of the assessment.

5. Methods of Investigation

The methodology adopted in conducting the DRA for the (*name of the Municipality, Sector Department, State entity*) must be consistent with that described in the National Disaster Management Framework (NDMF) (2005:25-38) and the findings must provide the necessary direction to enable the (*name of the Municipality, Sector Department, State entity*), its entity(ies) and the municipalities to develop and implement disaster management plans in accordance with the provisions of the Disaster Management Act, 2002 and the NDMF (2005:50-64).

5.1 Scope of the assessment

In order to enable the (*name of the Municipality, Sector Department, State entity*) to initiate and fast-track the development and implementation of disaster risk reduction and contingency planning, the disaster risk assessment process will be conducted in two phases.

As indicated in section 1.1 the outcomes of this first phase of the assessment process must inform the first phase of the planning process in respect of:

- the development of contingency plans for known priority risks.
- the development of operational plans for all response and recovery activities associated with the priority risks identified.
- strategic developmental planning focused on vulnerability reduction and increasing capacity.
- the identification of high-risk developments and areas and communities at high risk due to their multiple vulnerabilities.

Graphic representations illustrating the planning components are included for information as annexes A and B to this document.

The research and assessments should at all stages conform to the following requirements:

5.2 Methodology

In conducting the research, the Service Provider must utilise various methods of investigation, including questionnaires, (general and in-depth) interviews, consultation of experts, workshops, and so forth. Other methods can be randomly chosen (e.g., direct observation, children's drawings used, historical profiling etc.) according to the required outcomes. The methodology for qualitative and/or quantitative research designs should be in accordance with scientific research principles that ensure trustworthiness and validity.

5.3 Ground-truthing

To correctly interpret and integrate historical facts, traditional/indigenous knowledge, capacities, and past experience(s), the investigation must be ground-truthed to ensure that the assessment accurately reflects the situation 'on the ground'.

All data must be cross checked according to scientifically sound methods.

5.4 Mechanisms for updating data

The report must include recommended methods and time intervals for the updating of all data gathered, as well as an indication of the minimum level of skills required to conduct future updates or additions to the data.

5.5 Data gathering and integration

All data gathered by the Service Provider must be made available to all relevant role-players, who in terms of the Act, have disaster risk management responsibilities. The making available of information should be in line with the requirements for the distribution of findings as set out in section 3.4.

Any data gathered must be represented in a logic and clear manner. Databases must be consistent, easily understandable, and user-friendly. The design of databases must be documented for future reference and maintenance purposes. Databases must be easily updateable.

The role of GIS must be specified in the methodology, as proposed by the service provider. Specific attention must be given to:

- The use of existing data
- Creating new datasets
- Applying formulae
- Filling out of questionnaires
- Spatial Analysis

A data-flow diagram must be compiled and updated as the project progresses, in accordance with the research methodology. Any deviation and adjustment to the methodology must be motivated and indicated in the dataflow diagram

5.6 Adaptation of methods of investigation according to outcomes

Although the tender is in line with the current reality in the (*name of the Municipality, Sector Department, State entity*), it is possible that, in the process new data could emerge that may have an influence on the further development of the assessment and the project planning. In this regard the Service Provider must indicate any adaptations or adjustments to the further planning necessitated by the emerging data. This should however not have any financial implications or influence on the timing of the whole project.

5.7 Elements of the study

The Disaster Risk Assessment (DRA) must contain an exhaustive description of the levels of risk in the (*name of the Municipality, Sector Department, State entity*). It must determine the levels of risk by analysing and describing the potential hazards and/or threats prevalent in the area and must assess the conditions of vulnerability that increase the chance of loss for particular elements at risk including environmental, human, infrastructural, agricultural, economic, and other elements that are exposed to a hazard and are at risk of loss. It must determine the levels of risk for different situations and conditions and must help to set priorities for action. It must also include a description of the available capacities to cope with those risks.

Disaster risk must be represented as a function of the following three aspects:

The Disaster Risk Equation

$$\text{RISK} = \frac{\text{Hazard x Vulnerability}}{\text{Capacity (Manageability)}}$$

The Service Provider must utilise a variety of methods of investigation to achieve a realistic and robust DRA for the (*name of the Municipality, Sector Department, State entity*). A description of the methods to be used is described in section 5.

As alluded to in section 1.1 the DRA is a process which must produce several outcomes; the following sections (5.7 to 5.9 included) give an overview of the outcomes expected from the Service Provider for each of the factors in the equation above.

In summary the DRA for a specific threat must answer the following questions[1]:

- How frequently can one expect an incident or disaster to happen?
- Which areas, communities or households are most at risk?
- What are the likely impacts?
- What are the vulnerability 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 it affects?
- 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?

5.8 Hazard analysis

The findings of the hazard analysis must include:

- The identification of all potential hazards to which the area of the (*name of the Municipality, Sector Department, State entity*) could be exposed.

[1] UNISDR. 2004. Living with risk. A global review of disaster reduction initiatives.

- The classification of the identified hazards in accordance with the uniform classification method described in the hazard classification gazetted by NDMC.
- Where possible, a quantified assessment of all the potential hazards identified in the study to establish a prioritized list of specific known hazards, which will serve to inform specific contingency planning for the (*name of the Municipality, Sector Department, State entity*). The assessment must consider probability of occurrence in a specified future period, the intensity and area of impact as well as any other relevant factors.
- The results of the assessment must include an exhaustive description of each specific known priority hazard for the area, in respect of frequency, magnitude, speed of onset, geographical location of areas affected, and duration.

In order to ensure uniformity, use should as far as possible be made of known hazard scales such as the Fujita/Beauford/Palmer Drought Index for the analysis of hazard probability/intensity/frequency.

The results of the assessment must include the presentation of hazard maps in GIS format.

5.9 Vulnerability assessment

The vulnerability assessment must describe and where possible quantify the vulnerability of people, infrastructure, services, economic activities, and natural resources exposed to the hazard. The vulnerability assessment must be expressed in the following categories:

- Economic
- Social
- Physical
- Ecological
- Political
- Technological

To provide indicators for the prioritisation of developmental planning for the province, the outcomes of the vulnerability assessment for this phase of the DRA must identify, provide an exhaustive description of, and where possible must quantify vulnerabilities commonly prevalent throughout the area as whole, and represent the identified vulnerabilities on maps using the GIS. It must also identify, quantify, and map in GIS format, high risk developments, including areas

and communities with multiple vulnerabilities, which will be the subject of more detailed risk investigations in the next phase of the DRA for the (*name of the Municipality, Sector Department, State entity*).

The findings of the vulnerability assessment must include the identification of highly vulnerable groups or categories such as the elderly, children and child headed households.

5.10 Common vulnerabilities

Common vulnerabilities refer to indicators that specify the vulnerability of a certain population in terms of their economic, social, political, environmental, and physical vulnerability (sub-categories).

The service provider must identify and assess indicators that describe common vulnerabilities in relation to vulnerability to a particular hazard. Those indicators should be a valid, ground-truthed and scientifically sound description of a factor contributing to the vulnerability of areas, communities, and households.

Common vulnerability indicators must be presented at least on the smallest demarcated geographical area i.e., on ward-level: Every ward must be awarded values according to those indicators, and a function of all the indicators should describe their 'total vulnerability' in relation to (a particular) hazard(s).

The resulting database (wards, indicators and resulting 'total vulnerability') must be represented on the GIS. The category 'political vulnerability' must be integrated into the GIS. Nevertheless, data gathered in respect of this subcategory must be presented in detail within the report.

5.11 Multiple vulnerabilities

As a preparation to Phase 2 of the DRA, the report must identify and geo-reference areas and communities that are specifically at high risk. The assessment must indicate such areas and communities, their location, the specific hazard(s), and indicate which vulnerabilities contribute to the risk. The report must make recommendations on the type of expertise necessary to participate in conducting more detailed and specific risk investigations, of which the results will inform the development and implementation of holistic risk reduction programmes and projects

to address the problem. The outcomes of the assessment must be represented in GIS format and must describe and fully motivate the methodology adopted.

In order to avoid future high-risk development, the report must identify and propose methodologies for the assessment of future developments and set standards for the identification of developments requiring assessment.

5.12 Assessing capacity

This element of the assessment embraces the following three aspects:

- Institutional (manageability) capacity
- Individual capacity
- Societal capacity

5.12.1 Assessment of institutional capacity

In conducting the assessment of existing infrastructure, the Service Provider must ensure that the assessment includes, but is not confined to gathering the information relevant to the Eastern Cape Province or the municipality to meet the provisions of sections 16(1)(2), 17(2), 32(1)(a), 46(1)(a) and (b) of the Act.

In addition, the assessment must include gathering information on the status of all other relevant infrastructure such as:

- Key installations and other critical lifeline infrastructure.
- Electricity supply and communications systems including alternate sources in the event of a breakdown.
- Information technology.
- Water supplies: distribution, dams, rivers and reservoirs.
- Major roads, access routes including bridges.
- The availability of stocks of emergency supplies such as water, food and blankets.
- Emergency and essential services and their capacity to contribute to disaster response and recovery activities such as other disaster risk management centres, policing and security services, fire services, private business institutions, non-governmental organisations and community-based organisations.

The information should be represented on a map(s) using the Geographical Information System (GIS).

5.12.2 Assessment of individual and societal capacity

A livelihoods assessment using a variety of known techniques (e.g., *Community Based Risk Assessment*) should be used to allow the service provider to identify and assess indicators that describe the capacity of areas, communities, and households to use existing resources to withstand, cope and recover from unusual and adverse conditions as a result of significant events and/or disasters. Indicators should be a valid, ground-truthed and scientifically sound description of coping capacities.

Individual and societal capacity indicators should be presented at least on a ward-level (functional area): Every ward (functional area) should receive values according to those indicators, and a function of all the indicators should describe their 'total capacity' in relation to significant events and/or disasters.

The resulting database (ward, functional area indicators and resulting 'total capacity') must be represented on the GIS.

5.13 Determining levels of risk

Levels of risk must be determined through a mathematical formula consistent with the scales and variables used to determine hazard, vulnerability, and capacity. This formula must be scientifically sound and robust and must consider climate change projections.

The risk must be represented on the GIS, at least at ward level.

6. GIS Requirements and Specifications

The purpose of using GIS in the context of this project is firstly to support the Service Provider in conducting the assessment – this implies that GIS functions will be required in all tasks, where they are appropriate – and secondly, to serve as a management and decision-making tool for disaster risk management in the (*name of the Municipality, Sector Department, State entity*).

It must be emphasised that GIS technology should not be used as a "map making tool" only, and that the service provider must be able to carry out at least the following functions:

- data sourcing
- data capturing
- data evaluation and validation
- spatial analysis
- map composition
- data management

6.1 Data Requirements

The (*name of the Municipality, Sector Department, State entity*) will provide all GIS data, which they have at their disposal. The legal implications regarding data provision, as mentioned under Section 2.3, must be noted. Before commencing with any GIS work, the data provided by the (*name of the Municipality, Sector Department, State entity*) must be assessed and evaluated in terms of the goals and objectives, as proposed by the service provider.

The following requirements apply:

- All data capturing must be conducted on an accuracy level typical to a 1:50 000 scale.
- Data categories where formulae apply must be polygon features.
- The input data for all maps generated during the course of the project, must be specified.
- All changes to existing datasets must be specified and reflected in the meta database.
- All datasets must comply to sound database principles, e.g. datasets must be free of duplicate features or records.

6.2 Technical Requirements

The following data formats are specified:

6.3 Spatial Data

Software Platform	-	ESRI ArcGIS / ArcGISPro / ArcView
Projection	-	Transverse Mercator
Datum	-	Hartbeeshoek Lo 27 (WGS84)

6.4 Metadata

ArcGIS 8 XML file, selected metadata fields requiring population to be agreed upon during project start up.

6.5 Deliverables

The final project deliverables will include the provision of the following:

6.5.1 Database for the Disaster Management Information System

The service provider must develop a comprehensive database that will be integrated into the Disaster Management Information System (DMIS) of the respective disaster management centre or organ of state, in accordance with Sections 16, 17, 46, 47 & 48 of the Disaster Management Act, 2002 and the National Disaster Management Framework.

To facilitate the development of the disaster risk management information system required by the sections of the Act referred to above, simultaneous geo referencing should take place routinely in the data collection process wherever possible.

6.5.2 Spatial Data

All newly created data that is used as input for the assessment.

All newly created data that is the result of the assessment.

All data provided by the (*name of the Municipality, Sector Department, State entity*).

6.5.3 Alpha-Numeric Data

All attribute data associated with geographic features

All attribute data that is used as input for applying formulae.

6.5.4 Metadata

Metadata must be provided for at least the following:
Existing data obtained from the (*name of the Municipality, Sector Department, State entity*)

All newly created spatial data

All newly created alpha numeric data

All changes and updates to existing data

6.5.5 Maps

All maps must be prepared on a scale and paper size, as agreed with the (*name of the Municipality*). Maps must be identified as "draft" or "final". Symbology and styles requirements, as prescribed by the GIS Manager at (*name of the Municipality, Sector Department, State entity*), must be adhered to.

An electronic version of each final map must be provided in either PDF or JPG and .mxd for each map format, in accordance with the scale and paper size of the original map.

7. General Aspects

7.1 Media

Five copies of the final report must be provided in hard copy (with hard cover) that is clearly marked for content, date, and version together with an electronic version emailed and in a flash disk.

7.2 Roles and Responsibilities

In terms of the definition of a data custodian, the (*name of the Municipality, Sector Department, State entity*) will be responsible for data maintenance and upgrading.

The service provider is required to prepare a strategic implementation document, which will:

- fully describe the product as delivered to the (*name of the Municipality, Sector Department, State entity*)
- describe and recommend actions that need to be carried in terms of the updating of data.
- state the possibilities and restrictions regarding data changes and updates.

8. Interface between DRA Findings and the Disaster Management Planning Process

The Service Provider must at all times maintain close cooperation with the Project Steering Committee (PSC) of the (*name of the Municipality, Sector Department, State entity*) and the PDMC. Progress reports and findings of this project must also be presented to the PSC for consultation and comments. The comments and recommendations by the PSC in consultation with the PDMC must be taken into consideration and relevant amendments and/or adaptations must take place accordingly.

8.1 Contingency Plans for the priority risks

The Service Provider must ensure that the findings of the assessment will enable the development by the relevant role players (sector departments, their entities, municipal departments, and other municipal entities of the district municipality; the local municipalities including the municipal departments and other municipal entities of local municipalities) of contingency plans that are consistent with national and international standards for the priority risks identified in the study.

8.2 Integration of findings into the IDP to address vulnerabilities

The report must include recommendations in respect of priorities for developmental projects and programmes to address the most prevalent common vulnerabilities for inclusion in the sector development plans and IDPs.

9. Cost Benefit Analysis

The report must include at least three possible scenarios for disaster risk reduction that can be quantified or ascertain monitory value or not too complex to ascertain their monitory value for each priority risk in the risk profile. For each scenario a cost benefit analysis (CBA) with clear calculations must be included in the report to assist in the comparing and evaluating the determining economic benefits of each risk reduction initiative. For those scenarios in which a CBA cannot be used (/alone), alternative internationally recognised tool must be used.

14. Special Financial Provisions

Provision must be made by the Service Provider in the tender amount to cover all logistical costs associated with stakeholder consultation, data collection and capacity building.

Prepared by

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Deputy Director: Disaster Risk Assessment and Reduction

Date: 13/09/2023

Approved by

Mr. Philela Mabandla

Head: Provincial Disaster Management Centre

Date: 22.09.2023

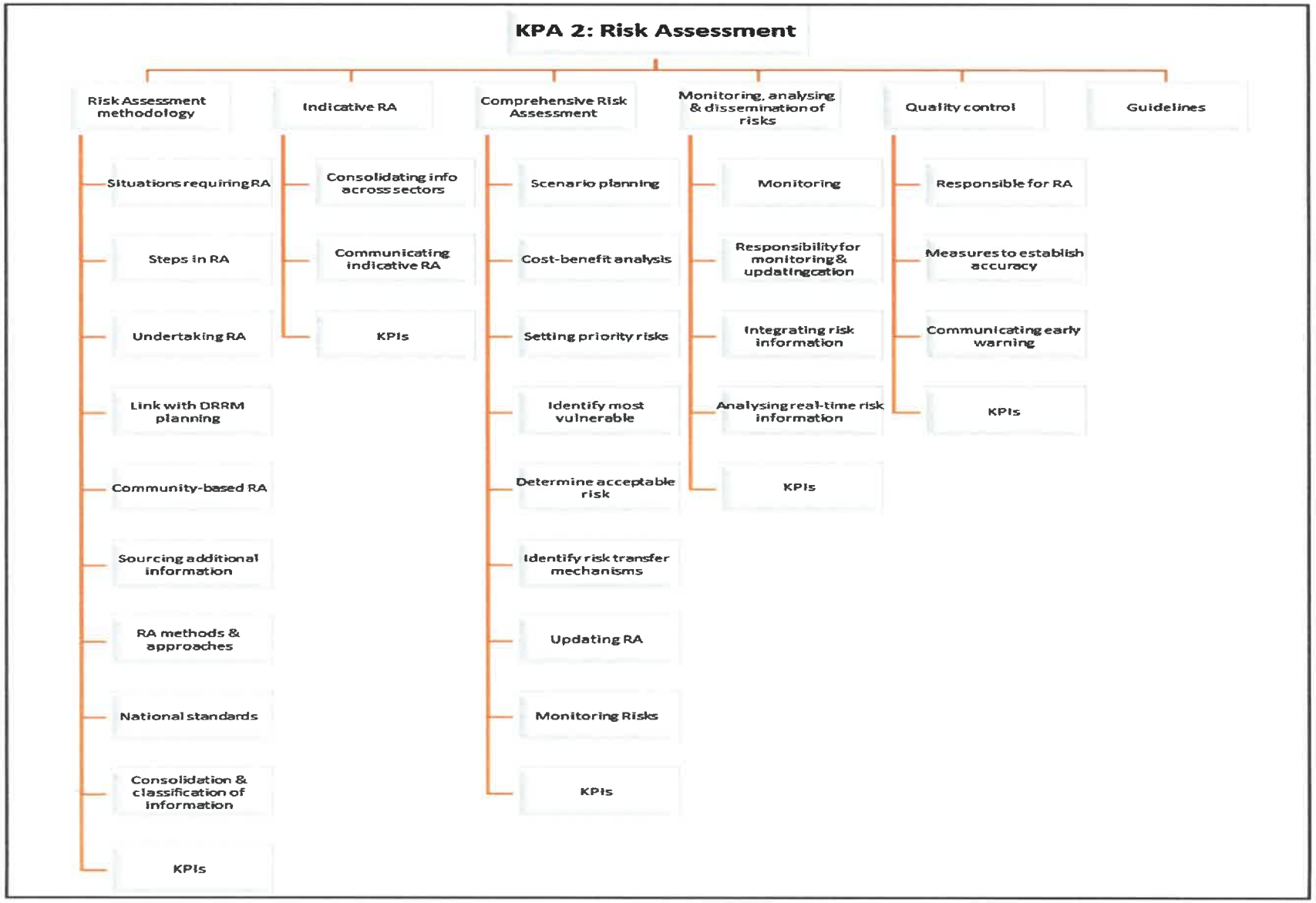

Figure 2: Scope of the Disaster Risk Assessment Portfolio.

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"Dedicated to the life and work of Ms. Pat Reid (1945 – 2012)"

Appendices