DISASTER RISK MANAGEMENT PLAN
FOR
ELIAS MOTSOALEDI LOCAL MUNICIPALITY 2026/2027

Contents

LEGISLATIVE MANDATES

- Disaster Management Act No 57 of 2002 as amended
- National Disaster Management Framework of 2005
- National Environmental Management Act 107 of 1998
- Fire Brigade Services Act No. 99 of 1987
- The Constitution of the Republic of South Africa, 1996 and Regulations
- Municipal Systems act 32 of 2002

TERMINOLOGY

Adaptation means the adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Capacity means the combination of all the strengths, attributes and resources available within a community, society or organisation that can be used to achieve agreed goals.

Climate Change means a change in the state of the climate that can be identified by changes in the viability of properties and that persists for an extended period, typical decades or longer.

Contingency Plan means a management process that analyses specific potential events or emerging situations that might threaten society or the environment and establish arrangements in advance to enable timely, effective and appropriate responses to such events and situations.

Coping Capacity means the ability of people, organisations and systems using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

Critical means the primary physical structures, technical facilities and systems which are socially, economically or operationally essential to the functioning of the community, both in routine circumstances and in the extreme circumstances.

Disaster means a progressive or sudden, widespread or localised, natural or human caused occurrence which:

- causes or threatens to cause-
- Death, injury or disease.
- Damage to property, infrastructure or the environment; or
- Disruption of the life of a community; and
- Is of the magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources.

Disaster management means a continuously 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 of disasters.
- emergency preparedness.
- a rapid effective response to disasters; and
- post-disaster recovery and rehabilitation.

Disaster risk reduction means the concept and practice of reducing disaster risk through systematic efforts to analyse and manage the casual factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property wise management of land and the environment, and improved preparedness for adverse events.

Early warning means the set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities, and organisations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce he possibility of harm or loss.

Hazard means a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage

Mitigation means the lessening of the potential adverse impacts of physical hazards, including those that are human induced, through actions that reduce hazards, exposure and vulnerability.

Preparedness means the knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to and recover from, the impacts of likely, imminent or current hazard events or conditions.

Prevention means outright avoidance of adverse impacts of hazards and related disasters.

Public awareness means the extend of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce the exposure and vulnerability to hazards.

Recovery means the restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster affected communities, including efforts to reduce disaster risk factors.

Resilience means the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Response means the provision of emergency services and public assistance during and immediately after a disaster to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Risk means the combination of the probability of an event and its negative consequences.

Risk assessment means a methodology to determine the nature and extend of risk by analysing potential hazards and evaluating existing conditions of vulnerability that

together could potentially harm exposed people, property, services, likelihoods and the environment on which they depend.

Vulnerability means the conditions determined by the physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact hazards.

INTRODUCTION

Risk assessment is the initial stage towards sustainable development. It is a process that determines the level of risk by analysing potential hazards, assessing the conditions of vulnerability that affect social, economic and environmental factors.

Nineteen (19) risks have been identified, assessed through community leaders and stakeholders consultative meeting, in terms of vulnerability, manageability and capacity to prevent and reduce the impact of the hazards. The risk assessment process has resulted in the determination of priority risks for each ward in the municipality. Community participation is essential on the process to achieve sustainable livelihoods. The document will then guide the municipality on prioritisation of projects, programmes and plans to build sustainability of vulnerable communities.

OBJECTIVE

To build resilient community in Elias Motsoaledi Local Municipality.

EXECUTIVE SUMMARY

Elias Motsoaledi is one of the local municipalities within Sekhukhune District. It is situated in the South Easten parts of the Limpopo province. The municipality is mostly rural in nature and is administered by the Traditional Authorities. Allocation of human settlement in rural areas is the day-to-day duty of traditional Authorities. Most of the settlements around the municipality are at risk, built along the flood and storm prone areas. Most of the households are built on wetlands due to improper land allocation by tribal authorities. These areas do not have proper sanitation.

Waste management only covers Groblersdal and a few townships, Illegal dumping of waste is a concern and has a negative social, economic and environment impact.

Illegal dumping is a huge problem in the municipality as there are not enough skip bins. Two skip loaders serving 60 skip bins, No waste removal services in Rural areas. Resulting in Polluted environment, water contamination, diseases, loss of livestock. The community of Elias Motsoaledi depends mostly on subsistence farming, both crop and livestock which is prone to erratic rainfall due to climate change conditions.

The roads are mostly gravel, while few are tarred. Most motorists drive through Elias Motsoaledi Local Municipality. Local area of jurisdiction to reach their respective destinations. Road accidents are a major concern especially along the R25, N11, R33, R555, R579, R574 and R573. There is a high influx of Unregulated hazmat trucks passing Groblersdal at night, illegally transporting hazardous substances.

Human diseases like HIV/AIDS are common within the municipality. “Within Limpopo province, the provision of health facilities is generally inadequate in comparison with other provinces. More especially access to health facilities within Elias Motsoaledi Municipality itself is poor. Poor health facilities cause high death rate that leads to orphanage & crime such as crime from drug abuse (Nyaope).

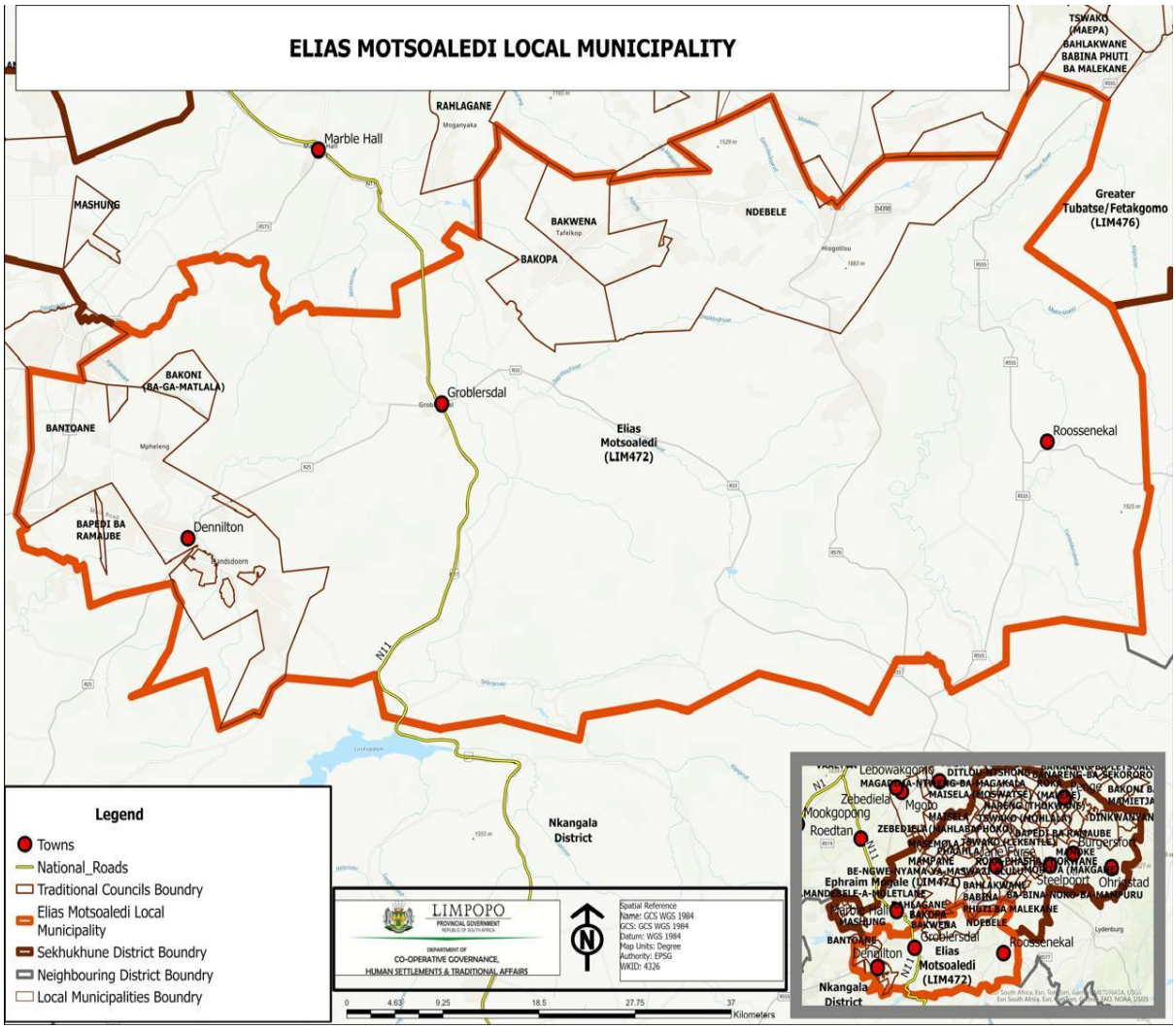
The municipality has a relatively high level of illiteracy, with almost 28% of the population having no formal school education. The level of literacy impact on the economic growth of Elias Motsoaledi Local Municipality as it dictates the level of skills, and determines the type of employment, and as such people with no skills are not employable.

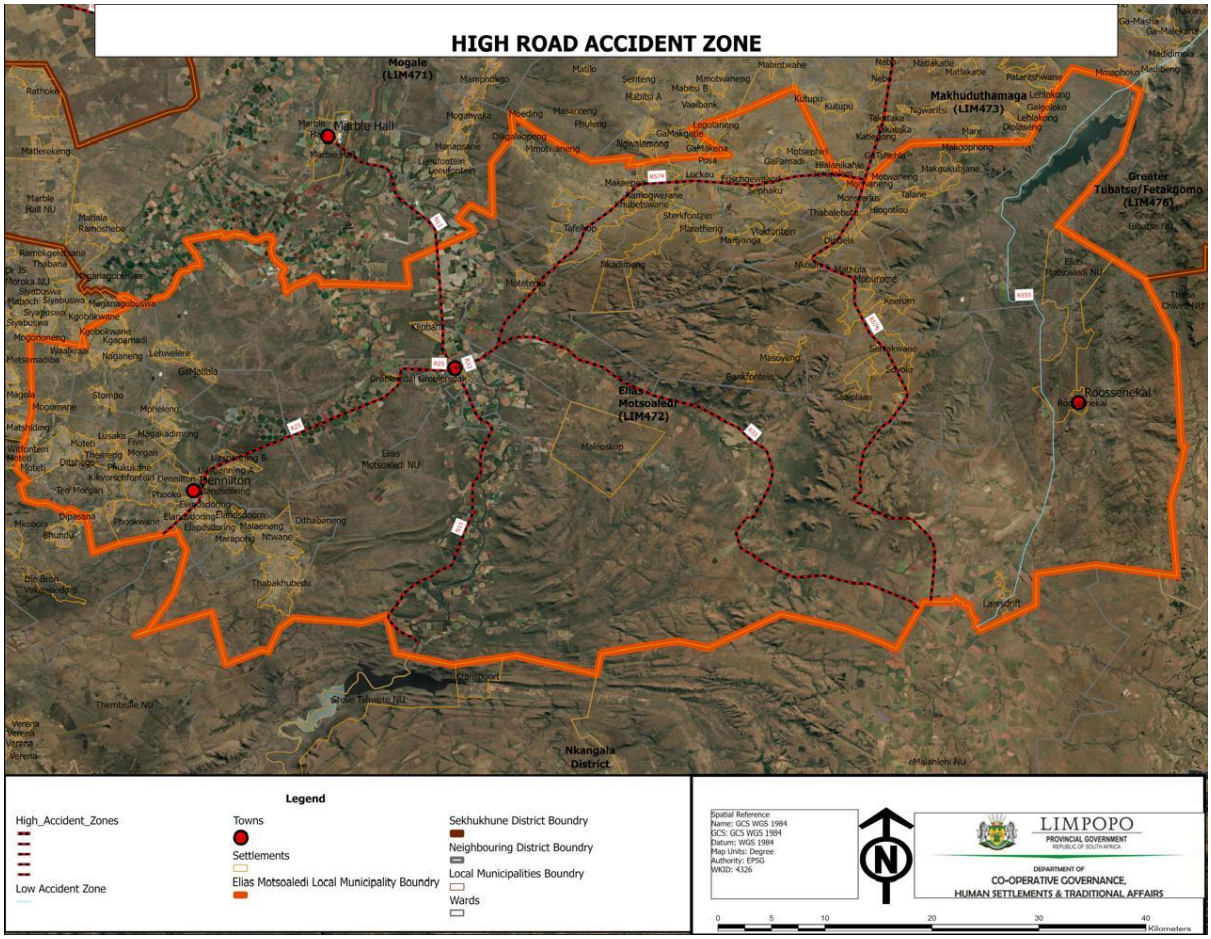
Community protests are common in the Municipality where infrastructure become vandalised. Tire burning is one of the causes for air pollution in the municipality. The infrastructure becomes dilapidated even reach its expiry before it has served its life span.

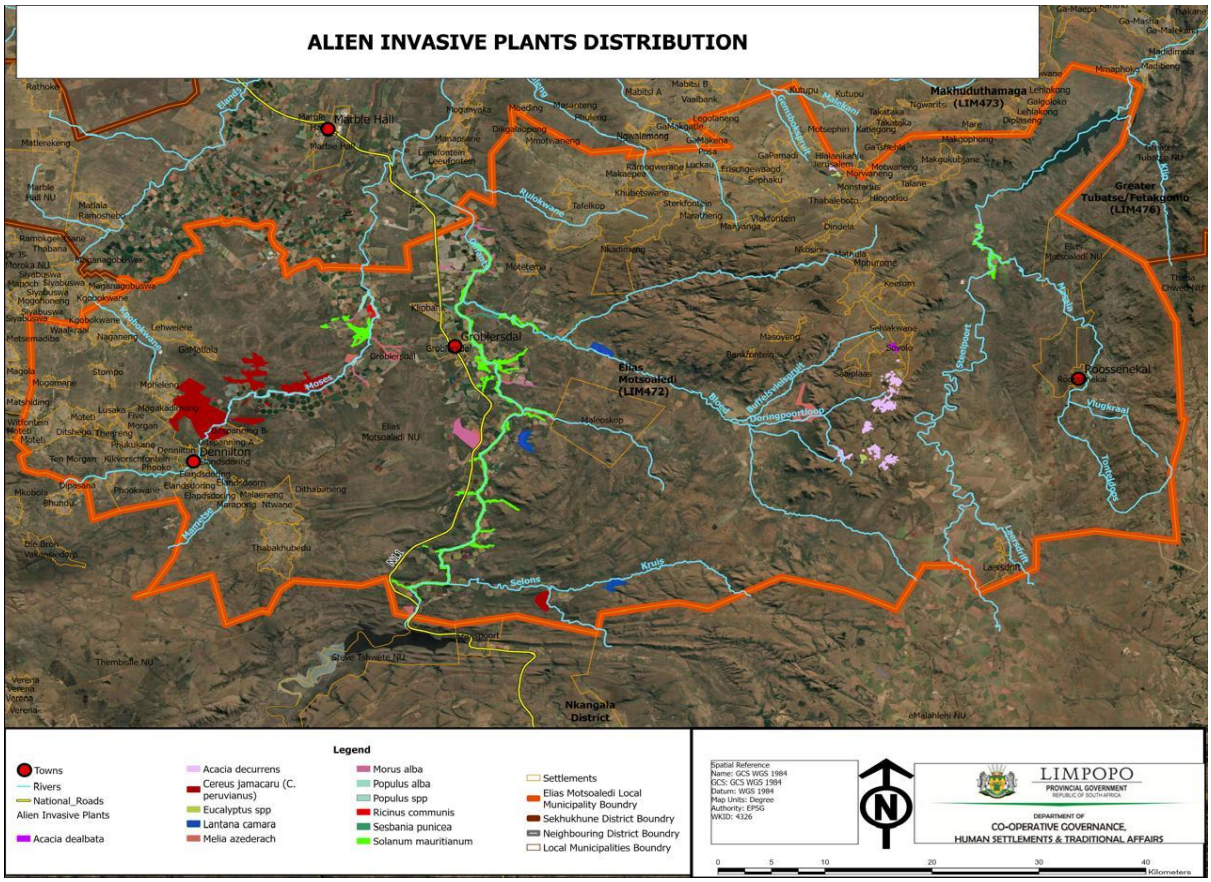
Structural fires are predominant in the informal settlement’s due illegal electrical connections. Veld fires are also a concern as they cause deforestation and erosion. Within the municipality, illegal sand mining is a cause for concern as children are drowning in the borrow pits during rainy season.

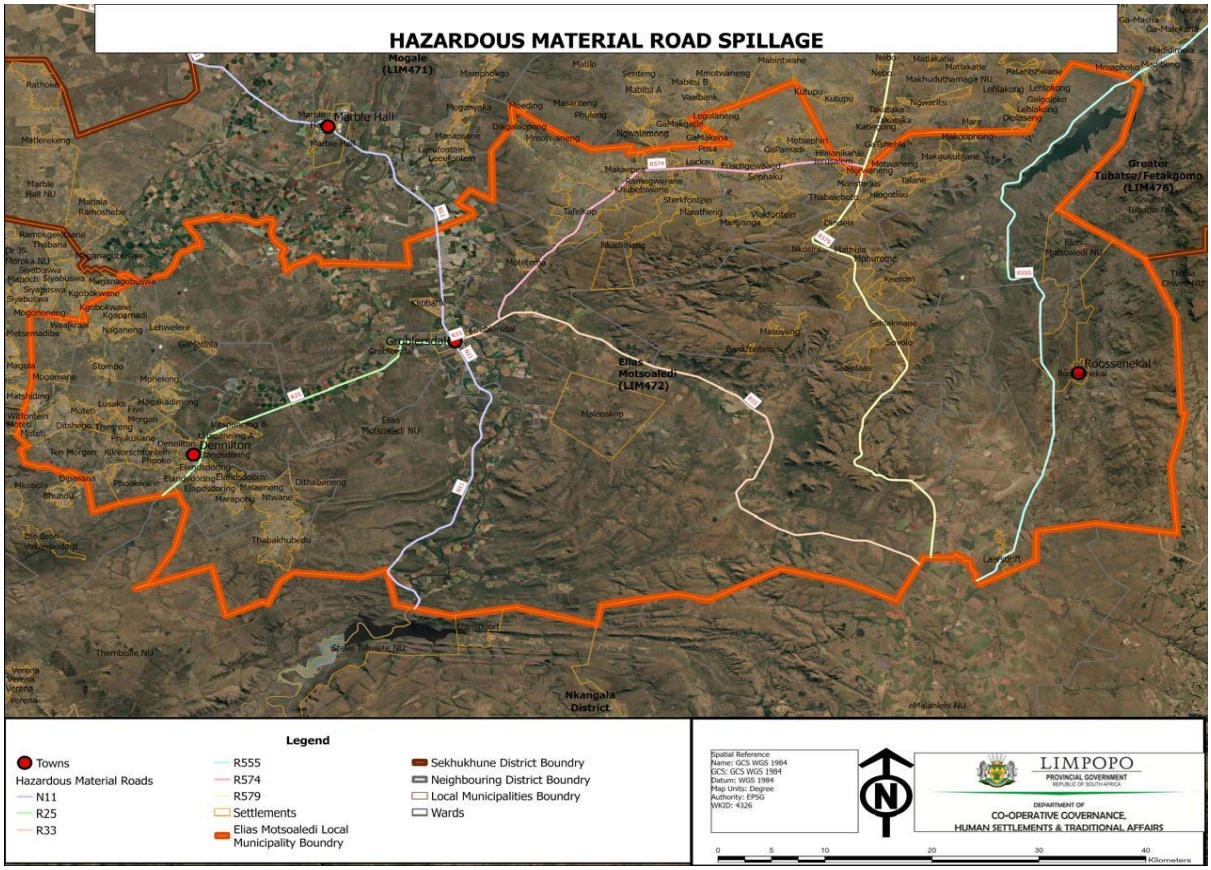
Some parts of the municipality are characterised by alien plants, for example Mokorokorwane and fence trees that reduce food security and underground water table.

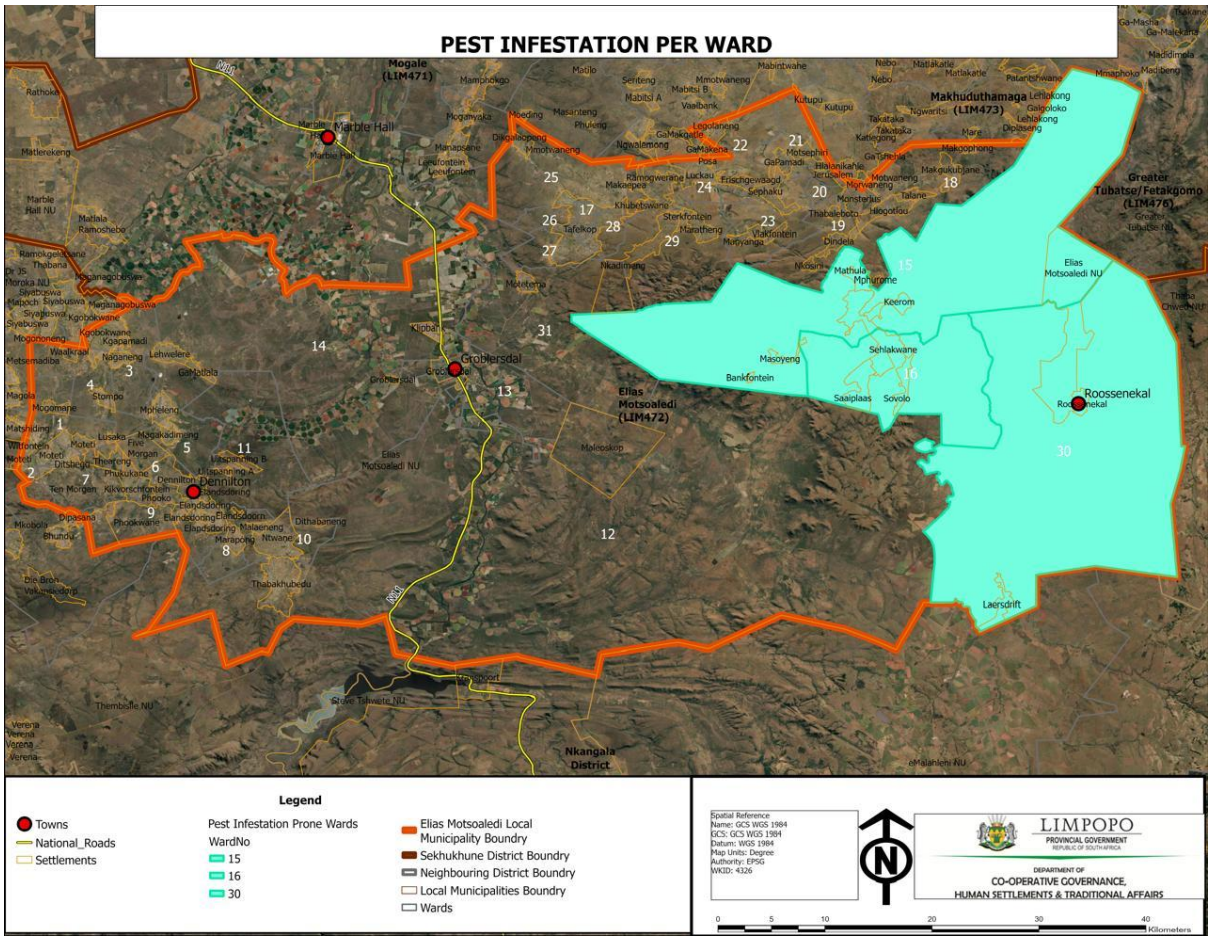
ELIAS MOTSOALEDI MAP

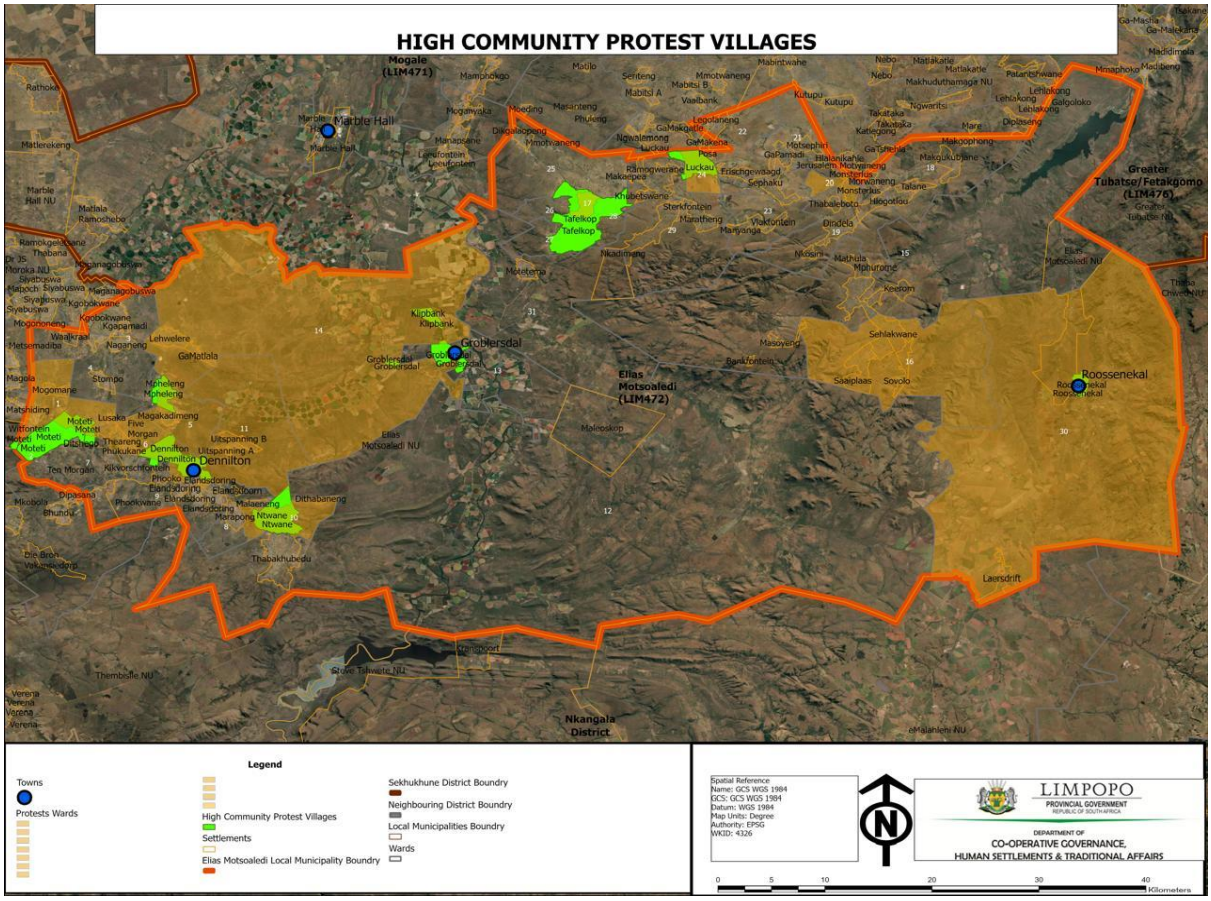


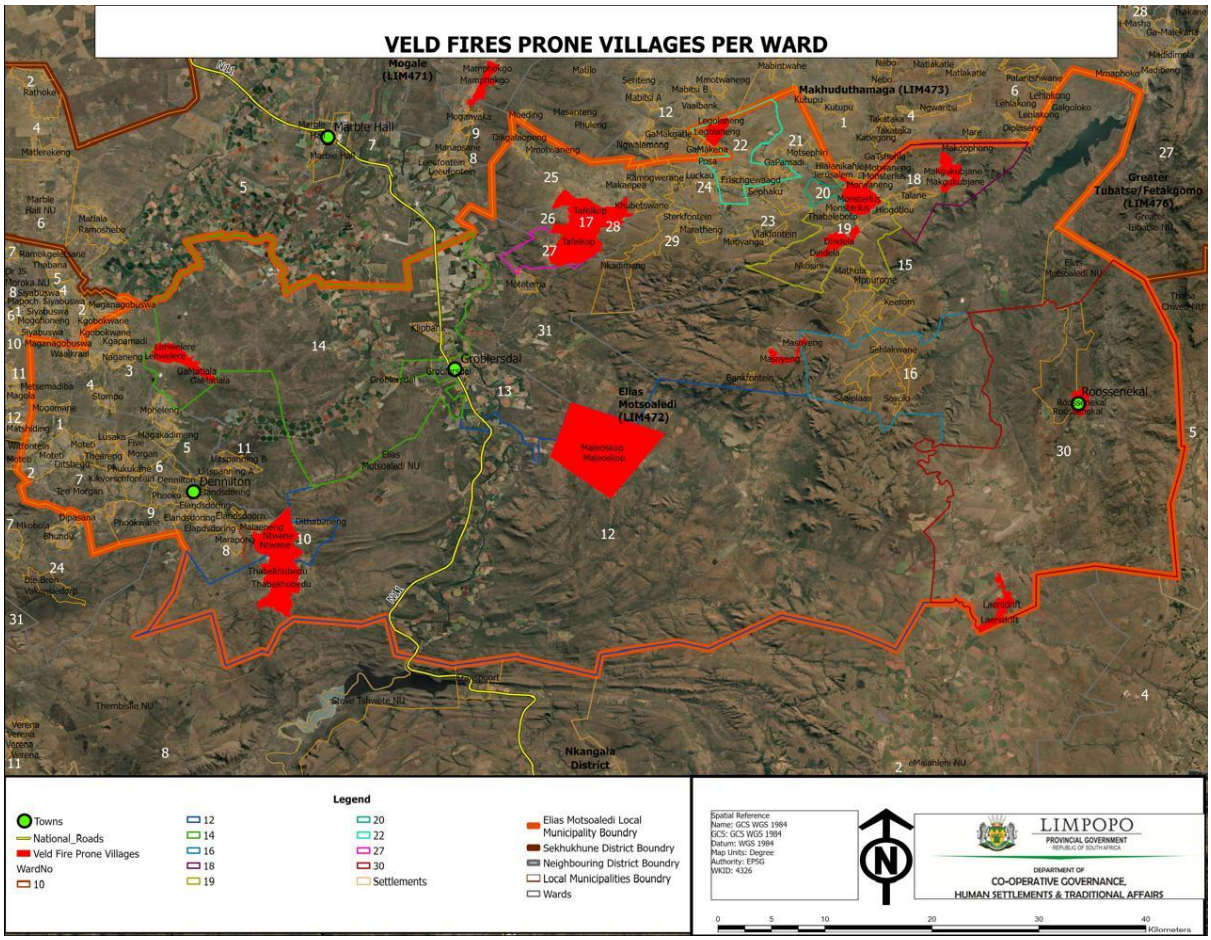

HIGH ROAD ACCIDENT ZONE
Mogale (LIM471)
Marble Hall
Makhuduthamaga (LIM473)
Greater Tubatse/Fetakgomo (LIM476)
Elias Motsoaledi (LIM472)
Groblersdal
Roossenekal
Dennilton
Nkangala District
Legend
High_Accident_Zones
Low Accident Zone
Towns
Settlements
Elias Motsoaledi Local Municipality Boundry
Sekhukhune District Boundry
Neighbouring District Boundry
Local Municipalities Boundry
Wards
Spatial Reference
Name: GCS WGS 1984
GCS: GCS WGS 1984
Datum: WGS 1984
Map Units: Degree
Authority: EPSG
WKID: 4326
LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF
CO-OPERATIVE GOVERNANCE,
HUMAN SETTLEMENTS & TRADITIONAL AFFAIRS
0 5 10 20 30 40
Kilometers


ALIEN INVASIVE PLANTS DISTRIBUTION
Marble Hall
Makhuduthamaga (LIM473)
Greater Tubatse/Fetakgomo (LIM476)
Elias Motsoaledi (LIM472)
Groblersdal
Roossenekal
Dennilton
Nkangala District
Legend
Towns
Rivers
National_Roads
Alien Invasive Plants
Acacia dealbata
Acacia decurrens
Cereus jamacaru (C. peruvianus)
Eucalyptus spp
Lantana camara
Melia azederach
Morus alba
Populus alba
Populus spp
Ricinus communis
Sesbania punicea
Solanum mauritianum
Settlements
Elias Motsoaledi Local Municipality Boundry
Sekhukhune District Boundry
Neighbouring District Boundry
Local Municipalities Boundry
Spatial Reference
Name: GCS WGS 1984
GCS: GCS WGS 1984
Datum: WGS 1984
Map Units: Degree
Authority: EPSG
WKID: 4326
LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF
CO-OPERATIVE GOVERNANCE,
HUMAN SETTLEMENTS & TRADITIONAL AFFAIRS
0 5 10 20 30 40
Kilometers


HAZARDOUS MATERIAL ROAD SPILLAGE
Legend
Towns
Hazardous Material Roads
N11
R25
R33
R555
R574
R579
Settlements
Elias Motsoaledi Local Municipality Boundry
Sekhukhune District Boundry
Neighbouring District Boundry
Local Municipalities Boundry
Wards
LIMPOPO
PROVINCIAL GOVERNMENT
DEPARTMENT OF
CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS & TRADITIONAL AFFAIRS
Kilometers


PEST INFESTATION PER WARD
Legend
Towns
National_Roads
Settlements
Pest Infestation Prone Wards
WardNo
15
16
30
Elias Motsoaledi Local Municipality Boundry
Sekhukhune District Boundry
Neighbouring District Boundry
Local Municipalities Boundry
Wards
LIMPOPO
PROVINCIAL GOVERNMENT
DEPARTMENT OF
CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS & TRADITIONAL AFFAIRS
Kilometers


HIGH COMMUNITY PROTEST VILLAGES
Mogale (LIM471)
Marble Hall
Greater Tubatse/Fetakgomo (LIM476)
Groblersdal
Elias Motsoaledi (LIM472)
Roossenekal
Dennilton
Nkangala District
Legend
Towns
Protests Wards
High Community Protest Villages
Settlements
Elias Motsoaledi Local Municipality Boundry
Sekhukhune District Boundry
Neighbouring District Boundry
Local Municipalities Boundry
Wards
LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF
CO-OPERATIVE GOVERNANCE,
HUMAN SETTLEMENTS & TRADITIONAL AFFAIRS
Kilometers


VELD FIRES PRONE VILLAGES PER WARD
Mogale (LIM471)
Makhuduthamaga (LIM473)
Marble Hall
Greater Tubatse/Fetakgomo (LIM476)
Groblersdal
Elias Motsoaledi (LIM472)
Roossenekal
Dennilton
Nkangala District
Legend
Towns
National_Roads
Veld Fire Prone Villages
WardNo
10
12
14
16
18
19
20
22
27
30
Settlements
Elias Motsoaledi Local Municipality Boundry
Sekhukhune District Boundry
Neighbouring District Boundry
Local Municipalities Boundry
Wards
LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF
CO-OPERATIVE GOVERNANCE,
HUMAN SETTLEMENTS & TRADITIONAL AFFAIRS
Kilometers

CLIMATE CHANGE

INTRODUCTION

Evidence shows that rainfall variability in the region has notably changed since the 1960s, with increased inter-annual variability, predominantly in the form of more intense and widespread droughts; and large parts of South Africa have experienced a significant shift toward increasing probabilities of extreme rainfall events. These climatic changes are likely to have a wide range of impacts in sectors including water, agriculture (food production) and health, some of which are already being felt.

Poor communities often live on marginal land, with limited productive capacity and inadequate infrastructure, and are therefore more exposed to stresses such as droughts and floods. Living with few physical and financial assets, limited income and poor access to services such as health care means that poor people are likely to be more significantly affected by environmental stress than those that have, for example, insurance and greater financial capital**.**

Within Elias Motsoaledi Local Municipality, these changes are already impacting key sectors such as water resources, agriculture, human health, and infrastructure. Climate change therefore represents a critical driver of disaster risk and must be systematically integrated into disaster risk management planning.

CLIMATE CHANGE AND VULNERABILITY

Communities within the municipality are particularly vulnerable to climate change due to:

- Settlement in flood-prone and marginal areas
- Limited infrastructure and service delivery
- Dependence on subsistence agriculture
- High levels of poverty and limited adaptive capacity
- These conditions increase exposure to climate-related hazards such as droughts, floods, and heatwaves.

CLIMATE CHANGE IMPACTS BY SECTOR

Sector	Key Impacts
Human Health	Waterborne diseases (e.g. diarrhoea, bilharzia), vector-borne diseases, increased air pollution impacts
Agriculture	Reduced crop yields, pest outbreaks, livestock stress, reduced food security
Water	Declining water quality, reduced availability, increased contamination risks
Biodiversity & Environment	Loss of grasslands, land degradation
Human Settlements	Increased displacement, isolation of rural communities

CLIMATE CHANGE AND HAZARD LINKAGES

Hazard	Climate Driver	Impact on Municipality	Affected Areas
Riverine flooding	Increased rainfall intensity	Infrastructure damage, displacement	Olifants River, floodplains
Stormwater flooding	Extreme rainfall events	Drainage failure, road damage	Tafelkop, Motetema, urban areas
Drought	Reduced rainfall variability	Water shortages, crop failure	All wards
Heatwaves	Rising temperatures	Health risks, reduced productivity	Informal settlements
Air pollution	Increased temperatures	Respiratory illness	Farming areas, towns
Veld fires	Dry conditions	Environmental degradation	Communal land

HUMAN HEALTH IMPACTS

Waterborne Diseases

Increased contamination of water sources during floods.

Higher incidence of diarrhoeal diseases, typhoid, and hepatitis.
Overcrowding during displacement increases disease transmission.

Vector and Rodent-Borne Diseases

Expansion of malaria and other vector-borne diseases due to temperature changes.
Increased rodent infestations linked to flooding and poor waste management.

Heat-related illnesses

heat exhaustion and heatstroke, particularly impacting vulnerable populations such as children, the elderly, and outdoor workers.

Air Pollution

Increased exposure to pollutants such as particulate matter and nitrogen oxides
Higher risk for vulnerable groups (children, elderly, and those with respiratory conditions).

CLIMATE CHANGE INTEGRATION INTO DISASTER MANAGEMENT

1. Prevention: Protect wetlands and regulate land use
2. Preparedness: Early warning systems and awareness programs
3. Response: Climate-triggered emergency protocols
4. Recovery: Climate-resilient reconstruction

CLIMATE ADAPTATION ACTIONS

1. Establish a Climate Change Technical Team
2. Strengthen health monitoring systems
3. Improve climate data and awareness
4. Conduct public education campaigns
5. Identify vulnerable communities
6. Improve environmental health strategies
7. Implement air quality monitoring

12.8 POLICY STATEMENT

Elias Motsoaledi Local Municipality shall integrate climate change considerations into all disaster risk management processes to enhance resilience and reduce risk.

THE MUNICIPAL DISASTER MANAGEMENT FRAMEWORK

Elias Motsoaledi Local Municipality disaster management framework should comply with the following Acts:

The National Disaster Management Framework of 2005.

The Disaster Management Act 57 of 2002 as amended.

The framework clarifies vulnerability, reduction, mitigation and prevention principles regarding communities and households exposed to disasters.

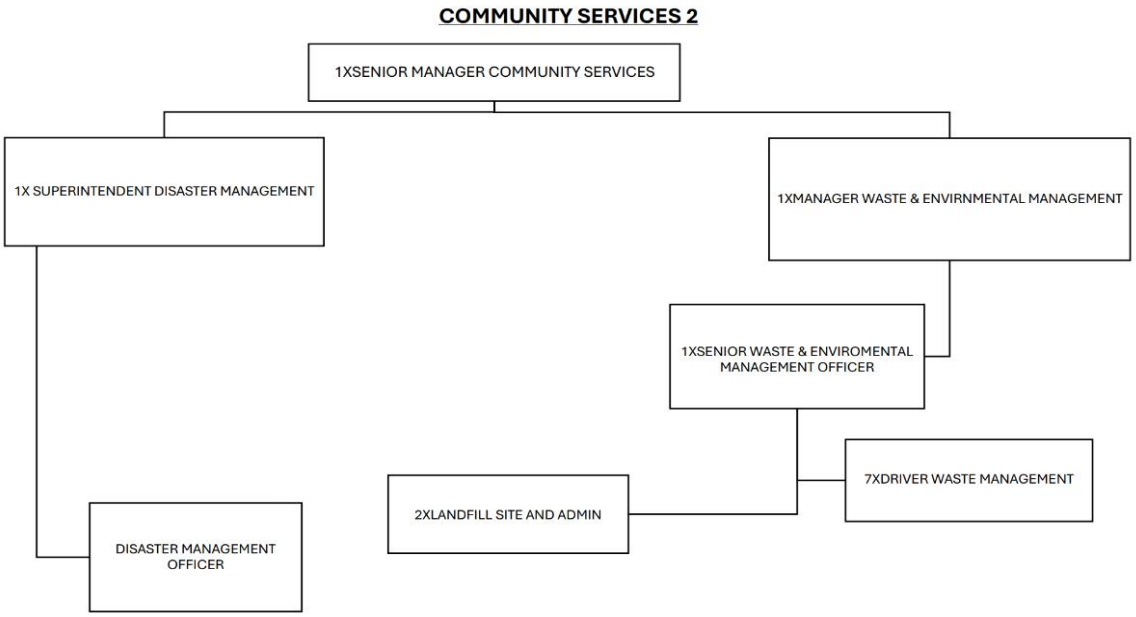
South African National Disaster Management Framework of 2005.

KPA1: Integrated Institutional Capacity

Objective: Establish integrated institutional capacity within the spheres of government to enable the effective implementation of disaster risk management policy and legislation.

- ✓ e.g. advisory forum members appointed, functional, seating per quarter.
- ✓ Conduct risk assessment for the development of disaster management plan for the whole municipality.
- ✓ And, for specific hazards e.g. in winter conduct assessment for the development of winter contingency plan, due to fires prone in the municipality.
- ✓ In summer do assessment for the contingency for summer season for either rain related nor drought as all depend on the advice from South African Weather Services.
- ✓ Conduct awareness campaign the vulnerable communities and schools.
- ✓ In response issue warning to the communication services, Mayor's office, councillors, traditional leaders to reach the vulnerable communities. Evacuate those in need to the identified area like community halls, churches…,
- ✓ Conduct impact assessment in partnership with sector departments like Public Works, Social Development. sector depts do costing to be submitted to district and PDMC.

Institutional structure of Disaster

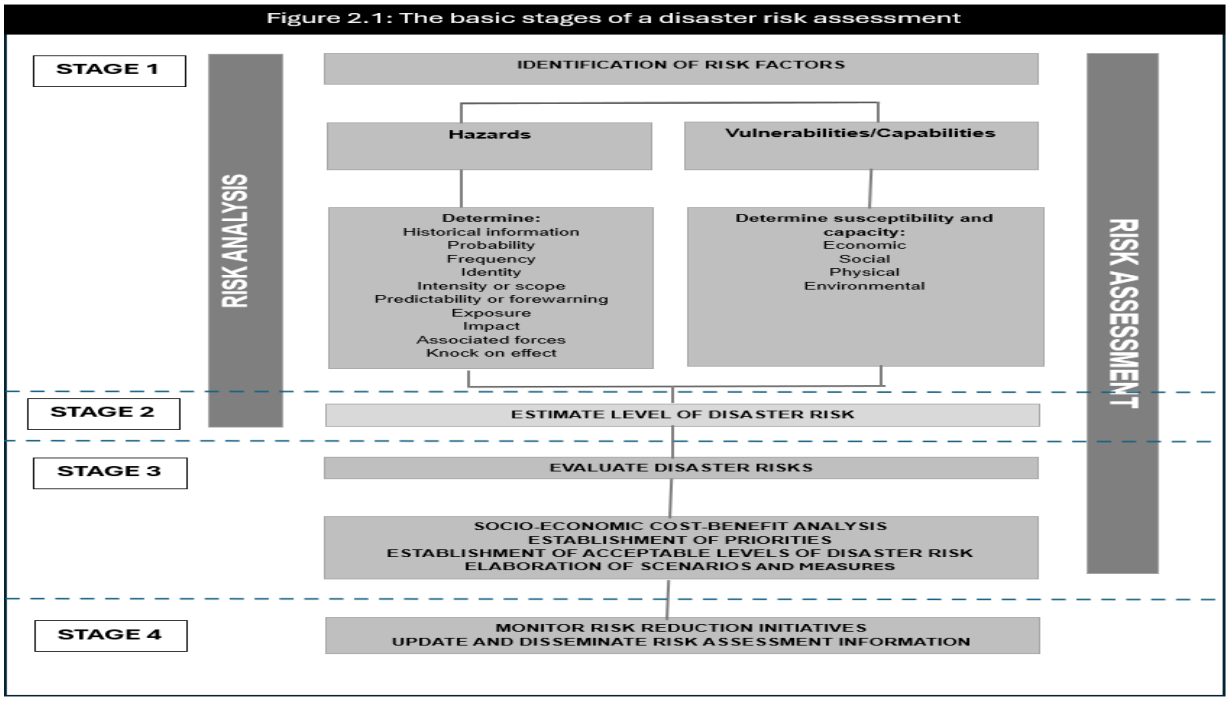


KPA2: Disaster Risk Assessment

Objective: Establish a uniform approach to assessing and monitoring disaster risks that will inform disaster risk management planning and disaster risk reduction undertaken by organs of state and other role players.

- ✓ Stakeholder engagement on disaster
- ✓ Community consultation on disaster hazards.

Figure 2.1: The basic stages of a disaster risk assessment



Source: South African Disaster Management Framework 2005

KPA 3: Disaster Risk Reduction

Objective: Ensure all disaster risk management stakeholders develop and implement integrated disaster risk management plans and risk reduction programmes in accordance with approved frameworks.

- ✓ Conducting disaster awareness campaigns which are informed by the risks identified (disaster risk profile) and the incidents cases reported.

KPA 4: Response and Recovery

Objective: 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 governments services

Implementing immediate integrated and appropriate response and relief measures when significant events or disasters occur or are threatening to occur.

- ✓ Disaster incidents are responded to within 48hours
- ✓ Conduct incident assessment and household needs analysis.
- ✓ Provide relief material according to the outcome of the needs analysis.
- ✓ Engagement of other stakeholders for further assistance
- ✓ Coordinating municipal disaster recovery grant

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

ENABLERS

Enabler 1: Information management and communication

Objective: Guide the development of a comprehensive information management and communication system and establish integrated communication links with all disaster risk management role players.

Enabler 2: Education, training, public awareness and research

Objective: Promote the culture of risk avoidance among stakeholders by capacitating role players through integrated education, training, and public awareness programmes.

Enabler 3: Funding

Objective: Establish mechanisms for the funding of disaster risk management in Elias Motsoaledi Local Municipality. Municipal Disaster Recovery Grant.

ELIAS MOTSOALEDI RISK ASSESSMENT

HAZARD ASSESSMENT

List hazards, and then rank them according to frequency of occurrence, magnitude and severity of the hazard. In each column circle one of the ratings in each column, finally add and divide columns:

LEGEND: **3 = HIGH** **2= MODERATE** **1= LOW**

Hazard	Affected areas	Root causes & Impact	Frequency the chance that this hazard will occur	Magnitude the scale of spread by this hazard	Severity strong or severe is this hazard	Calculate	Reduction Measures
Veld fires (communal land)	Sehlakwana ward 16, Magokubjane ward 18, Dindela ward 19, Matlala A Lehwelere ward 14, Tafelkop Ward 27, Magagamatala ward 12, De Wagen drift, MaleoSkop, Thabakhubedu ward 12, Legolaneng ward 22, Ntwane ward 10, (Laersdrift 30, Tonteldoos, Maphoch gront, Rosenekal, StoffBerg, Tigers Hoek, Dehoop ward 30), Masoying ward, Monsterlus ward 20, Mountainous areas.	Stock theft, hunting, Cigarette stompies, poor housekeeping, unattended fires, **Impact:** Commercial and informal farmers, livestock, Loss of income, crops. **Challenge:** The land where the informal farmers stay is owned by government, so there is no accountability.	3	2	2	2.33	Public Awareness. Planned fire breaks, Fire bylaws should be adhered to. Adequate resources to respond in time.
Sanitation	Motetema municipal satellite offices Masakaneng Groblersdal town next to fire station water plant Canal blockage Ben Viljoen.	Sewerage leaking, Unfinished sewage line, Water plant causes bad smell Leakage of sewage into canal. **Impact:** Affect grape farmers (Australian import contracts threatening to be cancelled due to contaminated canal water), Cause disease.	3	3	3	3	Public Awareness, implement municipal bylaws. The district to complete sewage infrastructure at Masakaneng.

Hazard	Affected areas	Root causes & Impact	Frequency the chance that this hazard will occur	Magnitude the scale of spread by this hazard	Severity strong or severe is this hazard	Calculate	Reduction
Land degradation	Whole Municipality.	Unregulated land or (tribal land, Unproductive land,) Over grazing, deforestation, Bush encroachment. **Impact:** animals die from famine, e.g. thorny bush at Bloom Poort. Lack grazing land.	3	3	3	3	Public Awareness. Need budget to remove bush encroaching plant. Afforestation
Severe Storms	(Whole Municipality) ward 1-31	Natural hazards, insufficient trees, Climate change. **Impact:** damages Infrastructure, Loss of life and Injuries. Loss of income. Social impact.	3	3	3	3	Public Awareness Tree planting Indigenous Knowledge Early warning alert distribution.
Flood	(Whole Municipality)	Natural hazard, Outdated storm water control channels, Improper land distribution. **Impact:** Death, damage to infrastructure e.g. bridges, storm water drainage, roads, schools, houses. Soil erosion.	3	3	3	3	Public Awareness, Regular maintenance of drainage system, Spatial planning.
Wetlands	All 29 wards except ward 5 and 8.	Natural hazard, Improper land distribution, **Impact**: Collapsing houses and Infrastructure, Death and injuries	3	3	3	3	Public Awareness, Apply spatial planning, Proper allocation of land.
Solid waste disposal/illegal dumping	Whole municipality	Not enough skip bins. Two skip loaders serving 90 skip bins, there is inadequate waste removal services. **Impact**: Pollute environment, water contamination, diseases, loss of livestock.	3	3	3	3	Public Awareness, Budget for development of drop off centres/ waste transfer stations Request budget to purchase additional skip bins Encourage and promote onsite recycling

Hazard	Affected areas	Root cause & impact	Frequency the chance that this hazard will occur	Magnitude the scale of spread by this hazard	Severity strong or severe is this hazard	Calculate	
Pest infestation	Rosenekal and Stoff Berg ward 30, Masoying ward 15, Zaaiplaas ward 16, (Maize areas).	Fall army worms **Impact:** Loss of crops for farmers, loss of income, threatens food security.	2	2	2	2	Public Awareness, Cultural early, Crop rotation, Chemical control. Integrated Pest Management (IPM).
Water Pollution	Whole Municipality	Illegal Dumping, Taxis being washed next to the water canal, leaking sewage, People doing laundry in the canal and rivers, 2014/15 USAID study: when eating fish rivers from rivers exposed to farm chemical develop breast. **Impact:** Diseases, damage to Environment and destroying of habitats, loss of livestock, and income, Cancellation of Australian Grape Import contracts due to contaminated water.	3	3	3	3	Awareness and education to farmers and communities.
Sand mining	Whole municipality	Unrehabilitated land by Sand miners. **Impact:** Drowning, losing beauty of area, unhabitable	3	3	3	3	Public Awareness, Enforcement of DMR laws and licencing permits. Enforcement concurrent rehabilitation during mining.
Air Pollution	Whole Municipality	Tyre burning in a plot at N11 next to Agricultural Hall during the night, Households rural areas during winter season. **Impact:** air contamination, respiratory diseases (asthma, tuber colossi's etc), degrades air quality	2	2	2	2	Public Awareness and Education. Increase enforcement on tire regulation. Bylaws

Hazard	Affected areas	Root causes & Impact	Frequency the chance that this hazard will occur	Magnitude the scale of spread by this hazard	Severity strong or severe is this hazard	Calculate	Reduction
Hazmat (regulated)	N11, R555, R25, R33. R579, R574	Unregulated hazmat Trucks, high influx of hazmat trucks at night, Crime and Illegal transportation of Hazardous substances e.g. Agricultural chemicals, petroleum fuel, mining chemicals. Illegal filling station. **Impact:** Death, pollution, diseases. Chemical spillage. **Challenge:** Lack of Hazmat trailers and specialised technicians in most regions of Limpopo.	3	3	3	3	Increase law enforcement. Public Awareness and education. Proper Signage and storage. All farmers should have a proper chemical disposal facility and have certificates. All trucks should comply with regulations and make prior arrangements with Fire and Traffic to plan routes,
Drought	Whole municipality	Global warming/Climate change **Impact:** Affect food security, high rate of mortality of livestock. Loss of crops for farmers, loss of income.	2	3	3	2.66	Public Awareness and Education, Adhere to irrigation schedules, Proper water storage/rain harvesting Adhere to water use regulations. Planting drought resistant seeds.
Structural fires Formal/Informal	Mostly in informal settlement. Also, in rural and urban. Whole municipality	Illegal filling station not adhering fire regulation, Firecrackers sold in improper areas, Illegal electricity connections, negligence, Arsen (domestic violence), poor housekeeping, clustered areas **Impact:** Injuries, death, damage to property.	3	2	3	2.66	Multi hazard awareness. (Fire & Rescue, SAPS, Eskom to lead). Social relief of distress.
Alien plants,	Whole municipality except ward 13	Bringing alien plants from other countries (Zimbabwean species, etc) e.g. (Mokorokorwane aka Moparafini, Black wattle, queen of the night) **Impact**: Diminishes grazing land, outcompeting indigenous species.	3	3	3	3	DFFE is embarking on ward 22 and 23 to remove the plant. Public Awareness and education.

Hazard	Affected areas	Root causes & Impact	Frequency the chance that this hazard will occur	Magnitude the scale of spread by this hazard	Severity strong or severe is this hazard	Calculate	Reduction
Community protests	Tafelkop, Zaaiplaas ward 16, Rosenekal ward 30, Groblersdal Dennilton ward 6, Luckau ward 24, Blompoort ward 11, Masakaneng Ward 14, Moteti ward 1, Mpheleng ward 5, Ntwane ward 10.	Service delivery, Politics, Public and Private companies. **Impact:** Damage infrastructure, affect economy activities, Death, injuries. Theft and Looting.	2	2	2	2	Public Awareness and education, Provide service delivery to communities.
Drug abuse (Nyaope)	Whole municipality	Poverty, Social ills. Parental separation, Peer pressure, sexual abuse, emotional abuse, incarcerated household member. **Impact:** Suicide, Crime, Medical conditions, Abusive, over dosage, death.	3	3	3	3	Public Awareness Education. Need rehabilitation centres. Tvet vocational training
Road accident	Whole municipality, N11 Loskop to Groblersdal, R25 Groblersdal to Dennilton, R33 Stofberg to Groblersdal, N11 Groblersdal to Marble Hall, R574, R579 Stofberg to Sehlakwana	Seasonal visits, People flocking the area during holiday season, Easter holidays and festive season, not adhering to traffic regulations, poor road maintenance and infrastructure, unroad worthy vehicles, Drinking and driving, Speeding, lack of law enforcement **Impact:** Death, injuries, damage to infrastructure, economic losses, chemical spillages, damage to environment.	3	3	3	3	Awareness and public education, Arrive alive programs, Increased Law enforcement.
Crime (Livestock theft, Business and house breaking, rape, cable theft, theft out of vehicles, Assault, Murder)	Whole Municipality (Voortrekker Street, Van Riebeeck in Groblersdal, Masakaneng, N11 Loskop Road farms)	Unemployment, Liquor, Illegal immigrants, Poverty, Drugs, **Impact:** Social Impact, death, injuries, loss of income, loss of livestock,	3	3	3	3	Public Awareness and education. Co-operation between SAPS and Community. Neighbourhood Patrol

ELIAS MOTSOALEDI VULNERABILITY ASSESSMENT

Vulnerability assessment is a susceptible feature that could be damaged by a hazard, the size or the amount of damage that can result from the hazard. In each column circle one of the ratings in each column, finally add and divide columns:

LEGEND: **3= H= High,** **2= M=MEDIUM/MODERATE** **1= L=Low**

Hazard	Societal	Economical	Environmental	Critical facilities	Calculate
Veld fires	1	3	2	2	2
Sanitation	3	3	3	3	3
Land degradation	3	2	3	2	2.5
Severe storms	3	3	3	3	3
Floods	3	3	3	3	3
Wetlands	3	3	3	3	3
Solid waste disposal/ illegal	3	3	3	3	3
Pest infestation	2	3	3	1	2.25
Water Pollution	3	3	3	3	3
Sand mining	3	3	3	3	3

Hazard	Societal	Economical	Environmental	Critical facilities	Calculate
Air Pollution	2	2	2	2	2
Hazmat	3	3	3	3	3
Drought	3	3	3	3	3
Structural fires formal and informal	3	3	2	2	2.5
Alien plants, e.g. mokorokorwane/Black wattle	3	3	3	3	3
Community Protest	3	3	3	3	3
Drug abuse	3	3	3	3	3
Road accident	3	3	3	3	3
Crime	3	3	3	3	3

ELIAS MOTSOALEDI CAPACITY ASSESSMENT

Capacity refers to the populations' capacity to prevent, mitigate, and cope with the effects of the hazard. Public participation process is important in ensuring that the community is not only aware of the hazard of their area, but how to address it and provide information as well as coping measures. In each column circle one of the ratings in each column, finally add and divide columns:

LEGEND: **3=GOOD** **2= MEDIUM** **1= LOW**

Hazard	How good is the legislation that governs this hazard?	What is the overall awareness of the public?	How good is the early warning?	How well does the government prepare resources?	How well does the government respond to the event?	Calculate
Veld fires (communal land)	3	3	3	1	2	2.4
Sanitation	3	1	1	1	1	1.4
Land degradation	3	2	2	2	1	2
Severe storms	3	3	3	2	2	2.6
Flooding	3	3	3	2	2	2.6
Wetlands	3	3	1	1	1	1.8
Solid waste disposal/ illegal	3	3	1	1	1	1.8
Pest infestation	3	3	1	2	2	2.2
Water Pollution	3	2	2	1	1	1.8
Sand mining	3	1	1	2	2	1.8

Hazard	How good is the legislation that governs this hazard?	What is the overall awareness of the public?	How good is the early warning?	How well does the government prepare resources?	How well does the government respond to the event?	Calculate
Air Pollution	3	2	1	1	1	1.6
Hazmat	3	1	2	1	1	1.6
Drought	3	3	3	2	2	2.6
Structural fires formal and informal	3	3	3	2	2	2.6
Alien plants, e.g. mokorokorwane	3	2	1	2	2	2
Community Protest	3	1	1	3	3	2.2
Drug abuse	3	3	1	2	2	2.2
Road accidents	3	3	1	3	3	2.6
Crime	3	3	1	3	3	2.6

ELIAS MOTSOALEDI MANAGEABILITY ASSESSMENT

Disaster management includes prevention, mitigation, preparedness, response and recovery and rehabilitation

In each column circle one of the ratings in each column, finally add and divide columns:

LEGEND: **3= GOOD** **2= MEDIUM** **1= POOR**

Hazard	How good is the legislation that governs this hazard?	What is the overall awareness of the public?	How good is the early warning?	How well does the government prepare resources?	How well does the government respond to the event?	Calculate
Veld fires (communal land)	3	3	3	1	2	2.4
Sanitation	3	1	1	1	1	1.4
Land degradation	3	2	2	2	1	2
Severe storms	1	3	3	2	3	2.4
Flooding	1	3	3	1	1	1.8
Wetlands	2	2	1	1	1	1.4
Solid waste disposal/ illegal dumping	2	3	1	2	2	2
Pest infestation	3	2	1	2	2	2
Water Pollution	3	2	1	2	2	2
Sand mining	3	1	1	2	3	2

Hazard	How good is the legislation that governs this hazard?	What is the overall awareness of the public?	How good is the early warning?	How well does the government prepare resources?	How well does the government respond to the event?	Calculate
Air Pollution	2	2	1	1	1	1.4
Hazmat	2	1	2	1	1	1.4
Drought	3	3	3	2	2	2.6
Structural fires formal and informal	2	3	2	2	2	2.2
Alien plants, e.g. mokorokorwane	3	2	1	2	2	2
Community Protest	3	1	1	3	3	2.2
Drug abuse	2	3	1	2	2	2
Road accidents	3	3	1	3	3	2.6
Crime	3	3	1	3	3	2.6

ELIAS MOTSOALEDI RISK EQUATION

Enter the above scores. Apply the formula Risk = Hazard x Vulnerability /Manageability x Capacity

Hazard	**Hazard assessment**	**Vulnerability assessment**	**Capacity assessment**	**Manageability assessment**	**Calculate**
Veld fires	2.33	2	2.4	2.4	**2.33X2/2.4X2.4=0.81**
Sanitation	3	3	1.4	1.4	**3X3/1.4X1.4=4.59**
Land degradation	3	2.5	2	2	**3X2.5/2X2=1.875**
Severe storms	3	3	2.6	2.4	**3X3/2.6X2.4=1.44**
Floods	3	3	2.6	1.8	**3X3/2.6X1.8=1.92**
Wetlands	3	3	1.8	1.4	**3X3/1.8X1.4=3.571**
Solid waste disposal/illegal dumping	3	3	1.8	2	**3X3/1.8X2=2.5**
Pest infestation	2	2.25	2.2	2	**2X2.25/2.2X2=1.022**
Water Pollution	3	3	1.8	2	**3X3/1.8X2=2.5**
Sand mining	3	3	1.8	2	**3X3/1.8X2=2.5**
Air Pollution	2	2	1.6	1.4	**2X2/1.6X1.4=1.78**
Hazmat	3	3	1.6	1.4	**3X3/1.6X1.4=4.017**
Drought	2.66	3	2.6	2.6	**2.66X3/2.6X2.6=1.180**
Structural fires formal and informal	2.66	2.5	2.6	2.2	**2.66X2.5/2.6X2.2=1.162**
Alien plants, e.g. mokorokorwane	3	3	2	2	**3X3/2X2=2.25**

Community Protest	2	3	2.2	2.2	**2X3/2.2X2.2=1.239**
Drug abuse	3	3	2.2	2	**3X3/2.2X2=2.04**
Road accidents	3	3	2.6	2.6	**3X3/2.6X2.6=1.33**
Crime	3	3	2.6	2.6	**3X3/2.6X2.6=1.33**

ELIAS MOTSOALEDI PRIORITISATION

	PRIORITY LIST	RATINGS
1.	Sanitation	4.59
2.	Hazmat	4.0
3.	Wetlands	3.57
4.	Solid waste disposal/ Illegal dumping	2.5
5.	Water Pollution	2.5
6.	Sand mining	2.5
7.	Alien plants, e.g. mokorokorwane	2.25
8.	Drug abuse	2.05
9.	Floods	1.92
10.	Land degradation	1.87
11.	Air Pollution	1.78
12.	Severe storms	1.44
13.	Road accidents	1.33
14.	Crimes	1.33
15.	Community protest	1.24
16.	Drought	1.18
17.	Structural fires formal/informal	1.16
18.	Pest infestation	1.02
19.	Veld fires	0.81

REDUCTION MEASURES & RECCOMENDATIONS

In Elias Motsoaledi adaptation to climate change could be best supported by focusing on adaptation in the water sector. What also emerged, is that focusing on small projects at the village level, might not be the best approach to supporting adaptation if it is expected that climate change will be widespread and therefore impact large areas covering multiple villages where once-off projects to cope with climate change will not be enough.

Approaches to supporting adaptation to climate change could therefore benefit from engaging with institutions at the municipal and district level. This research highlighted the need for an improved understanding of issues related to governance and institutions, such as the relations between traditional and elected leaders and the need for participation in government decisions of direct consequence to local people. This lesson can be applied more broadly, as much research on adaptation to climate change has tended to focus on local projects or national priorities.

- *Sanitation* – to reduce this risk; bylaws need to be reviewed. Leaking sewage needs to be attended immediately to avoid lawsuit and cancelation of citrus export contracts. Incomplete sewage infrastructure at Masakaneng township needs to be completed.
- *Hazmat* – all hazmat trucks should comply with regulations and make prior arrangements with fire and traffic to plan their routes. There is a high influx of hazmat trucks at night mostly unregulated, increase law enforcement night times to reduce the high number of illegal transportations of hazardous goods. Companies transporting these goods should have a hazmat technician on standby to deal with any spillage that may occur. All trucks adhere to traffics laws and have proper signage. Farmers using these chemicals should have proper chemical disposal facility and compliance certificates.
- *Wetlands* – Proper allocation of land away from wetlands and spatial planning
- *Air pollution* – Public awareness and education, increase enforcement on tire regulation and bylaws

- *Solid waste disposal/illegal dumping* – budget for development of drop off centre/waste transfer stations, budget to purchase additional skip bins, encourage and promote onsite recycling, public awareness campaign.
- *Water pollution* – public awareness campaign, update fine and enforce bylaws.
- *Sand mining* – enforcement of DMR laws with concurrent rehabilitation during mining. All sand miners should have a mining permit. Public awareness and education.
- *Floods* – Recommend project to upgrade storm water drainage system in Groblersdal town and Groblersdal Hospital.
- *Alien plant* – public awareness and education. DFFE to embark on the removal of the species.
- *Drug abuse* – public awareness and education, the need for rehabilitation centres and Tvet vocational training.
- *Land degradation* – need budget for the removal of bush encroaching plant at Blompoort, afforestation and public awareness campaign.
- *Severe storms* – establish early warning alert distribution system, increase the number of trees being planted, Indigenous knowledge should be recorded in public documents for future reference.
- *Road accident* – Increased law enforcement, arrive alive programs and public awareness
- *Crime* – co-operation between SAPS and community through neighbourhood Patrol.
- *Community protest/demonstrations* – provide service delivery to community.
- *Drought* – People should adhere to irrigation schedules, proper water storage/rain harvesting, planting drought resistance seeds and public awareness
- *Structural fires formal/informal* – recommend multi hazard awareness that will be led by Fire & Rescue, SAPS and Eskom.
- *Pest infestation* – (Agriculture) Integrated Pest Management (IPM), Public awareness and education, crop rotation and chemical control.
- *Veld fires* – Planned fire breaks through Fire Prevention Association (FPA), Fire bylaws should be adhered to. Need budget to purchase adequate resources and Assign Working on fire crew to Elias Motsoaledi area of due restriction.

REVIEW AND UPDATE OF THE MUNICIPAL DISATER RISK MANAGEMENT PLAN.

Elias Motsoaledi municipality will conduct a regular review and update its disaster risk Management plan every two years as required by Sec 53 of the Disaster Management Act 57 of 2002 as amended.

REFERENCES

- Fauchereau1, N, Trzaska1, S, Rouault2, M. and Richard1, Y,2003, *Rainfall Variability and Changes in Southern Africa during the 20th Century in the Global Warming Context*, University of Cape Town.
- Letsoalo, A 2013, *Limpopo Green Economy Plan including Provincial Climate Change Response*, Limpopo Economic Development Environment and Tourism, Polokwane.
- Matshoge, BAJ 2015/16-2019/20, *Strategic Plan*, Limpopo Department of Agriculture and Rural Development, Polokwane.
- South African Government 2002, Disaster Management Act, Government Gazette, Pretoria.
- South African Government 2005, *National Disaster management Framework*, Lexis Nexis, Johannesburg.
- South African Statistics (SSA) 2011, *Census,* Pretoria,
- United Nations International Strategy for Disaster Reduction (UNISDR) *2009, Terminology on Disaster Risk Reduction,* United Nations, Geneva.
- Wisner, B, Blaikie, P, Cannon, T & Davis I*,* 2003, *At Risk*, Routledge, London.
- Ziervogel, G, Bharwani, S, and Thomas E, 2006, *Adapting to climate variability: Pumpkins, People and Policy. Natural Resources Forum*, Downing Blackwell Publishing, USA