ZULULAND DISTRICT MUNICIPALITY DISASTER MANAGEMENT SECTOR PLAN

May 31

2019

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1. INTRODUCTION

The municipal Integrated Development Plans (IDPs) are reviewed and updated annually to ensure relevance. Each unit, sector or municipal entity is required to give its input to a broader IDP to be implemented during a particular financial year in terms of planned programmes, targets and the budget thereof. Hence this document outlines the input from the Zululand Disaster Management Section, mainly focusing on Disaster Risk Reduction (DRR) programmes and strategies planned for the financial year 2018/2019, as well as the response and recovery mechanisms.

2. LEGAL REEQUIPMENT

Section 53 of Disaster Management Act No. 57 of 2002 “DM Act” requires each municipality to prepare a **Disaster Management Plan** according to the circumstances prevailing in its area. Besides requirements of the DM Act, Section 26 (g) of the Municipal System Act No. 32 of 2000 also requires Municipal Disaster Management Plans to form an integral part of the municipality’s **Integrated Development Plan (IDP)**.

The Disaster Management Act No. 57 of 2002 requires the Zululand Disaster Management Section to take the following actions:

- To prepare a Municipal Disaster Management Plan for its area according to the circumstances prevailing in the area and incorporating all municipal entities as well as external role-players;
- To co-ordinate and align the implementation of its Municipal Disaster Risk Management Plan with those of other organs of state, institutional and any other relevant role-players; and
- To regularly review and update its Municipal Disaster Management Plan (refer to Disaster Management Act No. 57 of 2002 - Section 48).

Until recently, the approach to Disaster Management has been reactive and relief centric. A paradigm shift has now taken place from the relief centric pattern to holistic and integrated approach with emphasis on prevention, mitigation and preparedness.

3. BACKGROUND

Since 1994 the South African government's approach to dealing with disasters has changed significantly (National Disaster Management Centre, 2008). The change in legislation governing disasters prior 1994 was driven by several factors. One of the main reasons was the need to bring the law into the modern era so that it would be in line with international best practice in the field of disaster risk management. In addition, the government intended to systematically mainstream disaster risk reduction into developmental initiatives at national, provincial and municipal levels.

The Zululand District Municipality approach to disaster and disaster risk management activities is primarily based on ethos of the Disaster Management Act No. 57 of 2002 and relevant policy frameworks.

The Zululand District Municipality Risk Management Centre is the custodian of the Municipal Disaster Risk Management Plan. Individual Services / Directorates, Departments and other role-players / entities will be responsible for the compilation and maintenance of their own Service's / Entity's Disaster Management plans. Along with the various specific Hazard Disaster Risk Management Plans, the Service / Entity Disaster Risk Management Plans will be considered as integral parts of the Municipal Disaster Risk Management Plan.

4.STATUS OF MUNICIPAL INSTITUTIONAL CAPACITY

4.1 Municipal Disaster Management Centre

In terms of the Disaster Risk Management Act 2002, (Act No.57 of 2002), Section 43-50 outlines the establishment and functions of the Centre in order to ensure an integrated and co-ordinated approach to Disaster Risk Management within the district.

Zululand District Municipality does not have the Disaster Management Risk Centre but they are operating the Prince Managosuthu Airport at Ulundi, 24 hours a day, 7 days a week.

This is not sufficient for Disaster Management Offices, the site to establish the Disaster Management Centre has been identified at the Abaqulusi Local Municipality area (Vryheid)

The call Centre Number (035 870 1130)

4.2 STAFFING

In terms of section 45(1) of the Act, the municipal council must appoint a suitably qualified person as head of the municipal disaster risk management centre. The appointment is subject to the applicable provisions of the Local Government: Municipal Systems Act No. 32 of 2000 (known as the Systems Act). The head of the centre should be appointed / situated at senior management level.

The head of the Zululand Municipal Disaster Risk Management Centre is responsible for the exercise by the centre of its powers and the performance of its duties. In this regard, the head takes all the decisions of the centre, except decisions taken by another person as a result of a delegation by the head of the centre. The head performs the functions of office in accordance with section 44 of the Act.

The head of the centre performs the functions of office:

- in accordance with the NDMF and the key responsibilities prescribed in the NDMF;
- in accordance with the disaster risk management policy framework of the KZN Province;
- subject to the municipal council's IDP and other directions of the council; and
- in accordance with the administrative instructions of the municipal manager.

Suitably qualified disaster risk management and other technical staff, including risk scientists, risk reduction specialists, planners, information management and communication specialists and administrative staff, must be appointed to support the head of the centre, execute the requirements of the DM Act, the national and provincial disaster risk management frameworks and the National Disaster Risk Management Guidelines, and achieve the key performance areas (KPAs) of disaster risk management in the municipal council's area of responsibility.

The four KPAs and three associated enablers of the municipal disaster risk management centre are listed below:

Portfolio	KPA/Enabler cluster
• Strategic direction and integrated institutional capacity for disaster risk management	• KPA 1 and Enabler 3
• Integrated risk reduction planning and practice	• KPA 2 and KPA 3
• Integrated response and recovery planning and practice	• KPA 4
• Information management and communication systems	• Enabler 1
• Disaster risk management education, training, public awareness and research	• Enabler 2

Although specific individuals must be tasked with the responsibility for managing each of the five portfolios listed above, there will inevitably be crosscutting responsibilities relevant to the other portfolios, particularly in respect of the enablers.

The follow table shows the staff and resource in terms of the National Disaster Management Framework KPA 1 Integrated institutional capacity for disaster risk management

4.3 RESOURCES AND VEHICLES

MUNICIPALITY	VEHICLES	PERSONNEL	EQUIPMENT
Zululand District	3X Land Cruiser 4X4 with fitted rescue equipment; 2X S/Cab Bakkies; 2X Disaster utility Trucks (3 in 1) and 1X fire engine.	09 which comprises of:- • 1X Head of Disaster; • 1X Centre Manager; • 1X Admin Officer; • 6X Fire Fighters.	3X Sets of Jaws of life; 2X Prisma Lights and Fire Rescue.
Abaqulusi	1X Bakkie; 2X Fire Engine 1X Rescue and 1X Tanker.	1X Acting Disaster Management Assistant Manager and 1X Acting Disaster Officer	1X Jaws of Life and Fire Equipment
Edumbe	1X Truck; 1X Bakkie Sakkie; 1X Tanker.	• 1X Head of Disaster; • 1X Centre Manager; • 2X Fire Fighters.	1X Jaws of Life and Fire 15X Fire Beaters

uPhongolo	1X Utility vehicle 1X Skud Unit	• 1X Head of Department; • 1X Unit Head of Fire; Disaster; • 3X Disaster Officer; • 1X Utility Driver and • 7X Fire Fighters.	None
Nongoma	1X Truck; 1X Bakkie; 1X Skud unit	• X1 Head of Department; • 1X Disaster Officer and • 6X Fire Fighters.	15X Fire Beaters and 6X Back pumps.
Ulundi	1X Bakkie; 2X Skud unit	• X1 Head of Department; • X1 Disaster Officer • X1 Admin Officer and • 09 Fire Fighters.	23X Fire Beaters

4.4Municipal Disaster Management Policy Framework

Section 42 of the Disaster Management Act (Act 57 of 2002) states that each metropolitan and each district municipality must establish and implement a framework for disaster management in the municipality aimed at ensuring an integrated and uniform approach to disaster management in its area.

The Zululand District municipality does not have Disaster Management Framework but it has been budgeted for 2018/19 financial year.

The framework will in line with the National and Provincial frameworks and deals with each of the four Key Performance Areas as well as the three enablers. Key performance indicators to been set for each of the KPA's as well as the three enablers.

4.5Municipal Disaster Management Plan

In terms of the Disaster Risk Management Act 2002, (Act No.57 of 2002), Section 53, each municipality must prepare a disaster risk management plan for its area according the circumstances prevailing in the area.

The Zululand district municipality, through a service provider, compiled a district disaster management plan in 2009.All relevant stakeholders were involved in the compilation of the plan, the said plan in due for review.

4.6 Municipal Disaster Management Inter-Departmental Committee

The Zululand District Municipality is in the in the processes established a municipal Disaster Management Inter-Departmental Committee. That will include the following department:

- Disaster Management Unit
- Mayor's Office
- Technical Services Department
- Corporate Services Department

4.7Municipal Disaster Management Advisory Forum

Section 51 of the Disaster Management Act (Act 57 of 2002) states that district municipalities may establish a municipal disaster management advisory Forum.

The Zululand District Disaster Risk Management Advisory Forum was established in 2009. According to subsection (1) a forum is a body in which the municipality and other key stakeholders consult one another and co-ordinate their actions on matters relating to disaster management in areas under their jurisdiction.

The Zululand District municipality advisory forum is made up of all relevant stakeholders within the district who may be involved in issues related to disaster management. One of the challenges faced by the forum is non attendance of key stakeholders at the meetings, the forum meets quarterly.

Zululand District Municipality - Advisory Forum meetings

- 23 August 2018
- 23 November 2018
- 21 February 2019
- 22 May 2019

Zululand District Municipality – Disaster Management Practitioners Meeting

- 14 August 2018
- 16 November 2018
- 14 February2019
- 08 May 2019

5. DISASTER RISK ASSESSMENT

5.1 List of Priority Risks (Hazards)

Risk priorities have been allocated a numerical value from one to five with five being the highest.

These risks have been identified during risk analysis workshops with communities throughout the district as well as historical data gathered from incident assessments over the past five years.

Zululand District Municipality Risk rating are shown below:

Hazard Name	Risk
Hydro-meteorological Hazards - Severe Storms (Wind, Hail, Snow, Lightning, Fog)	**Higher Priority**
Disease / Health - Disease: Human (HIV/AIDS & TB)	
Fire Hazards - Formal & Informal Settlements / Urban Area	
Fire Hazards - Veld/Forest Fires	
Disease / Health - Disease: Human (Other Disease)	
Hydro-meteorological - Drought	
Infrastructure Failure / Service Delivery Failure - Water	
Hydro-meteorological Hazards - Floods (River, Urban & Dam Failure)	
Infrastructure Failure / Service Delivery Failure - Electrical	
Civil Unrest - Crime	
Civil Unrest - Demonstrations / Riots	
Civil Unrest - Refugees / Displaced People	
Hazardous Material - Hazmat: Fire/Explosion (Storage & Transportation)	
Civil Unrest - Xenophobic Violence	
Infrastructure Failure / Service Delivery Failure - Sanitation	
Infrastructure Failure / Service Delivery Failure - Information Technology	
Infrastructure Failure / Service Delivery Failure - Gas	
Transport Hazards - Road Transportation	
Geological Hazards - Subsidence	
Environmental Degradation - Erosion	
Geological Hazards - Landslides/Mud flows	
Hydro-meteorological Hazards - Extreme Temperatures	
Geological Hazards - Earthquake	
Geological Hazards - Rock-fall	
Infrastructure Failure / Service Delivery Failure - Transport	
Pollution - Water Pollution (Fresh and Sea)	
Civil Unrest - Armed Conflict (Civil/Political War)	
Infestations - Insect Infestation	
Disease / Health - Disease: Animal	
Hazardous Material - Hazmat: Spill/Release (Storage & Transportation)	
Infestations - Animal Infestation / Over Population	
Pollution - Land Pollution	
Transport Hazards - Rail Transportation	
Infestations - Plant Infestations (Intruder Plants)	
Major Event Hazards (Cultural, Religious, Political, Recreational, Commercial, Sport)	
Civil Unrest - Terrorism	
Transport Hazards - Water Transportation	
Structural Failure - Dam failure	
Environmental Degradation - Land Degradation	
Environmental Degradation - Deforestation	
Disease / Health - Disease: Plants	
Structural Failure - Building Failure	
Transport Hazards - Air Transportation	
Pollution - Air Pollution	

Structural Failure - Bridge Failure	
Hydro-meteorological Hazards - Desertification	
Environmental Degradation - Loss of Biodiversity	
Infestations - Algal Bloom (Red Tide)	
Oceanographic – Tsunami, Sea Level Rise (Climate Change), Storm Surge	

a) DROUGHT

In 2014/15 the severe water crisis being experience at Zululand District Municipality the Technical Services Department received correspondences and calls from Nongoma, uPhongolo, Ulundi, Abaqulusi and eDumbe municipalities requesting support with facilitation to disaster in areas of high impact within these four municipalities. It is worth mentioning that numerous cases of impeding dry conditions have been reported in various areas.

According to recent data received from the SA Weather Service, most of these areas have been constantly receiving less than average rain fall in the past five years. As a result of the reduction in rainfall, there has been a constant reduction in crops yielded by farmers as well as a steady decline in water reserve sources. In view of the above and taking into account hydrological studies by the Department Water Affairs and reports from the Department of Agriculture the identified affected areas are indeed experiencing hydrological drought. Hydrological drought is simply defined as the deficiencies in the surface and subsurface water supplies which is measured stream flow, reservoirs, and groundwater levels.

Drought is assessed by using indicators that are based on meteorological and hydrological variables, such as precipitation, soil moisture, stream flows, reservoir storage, groundwater levels and vegetation conditions. Indicators are variables used to describe the magnitude, duration, severity, and spatial extent of drought. The dry conditions that may lead to the drought situation is assessed using water supply sources and focusing in the following areas:

- Seasonal Rainfall
- Dam Levels (Farm Dams, Major Supply Dams)
- Borehole Levels (Test holes, Springs/wells)
- Stream/River Flow Levels

- Water Restrictions
- Drought vulnerabilities, and
- Potential impacts

Indicator values are used to distinguish between drought threshold levels,and determine when management actions should begin and end. Most of the above-mentioned information is received from various stakeholders who are custodians of the information, such as the South African Weather Service (SAWS), Departments of Agriculture, and Water Affairs. Five general Drought Threshold Levels are utilized to describe drought conditions, namely normal; advisory; watch; warning; and emergency.

Impact of Drought

The lack of water as a result of dry conditions experienced over the past few months is affecting the lives of the people and their livestock in Zululand District Municipality. It has been reported that the situation is getting worse day by day; therefore an urgent intervention is required by government to assist the affected communities.

Meteorological Drought occurs when moisture supply i.e. rainfall or other forms of precipitation such as snow or mist, at a given place is consistently below a climatically appropriate level;

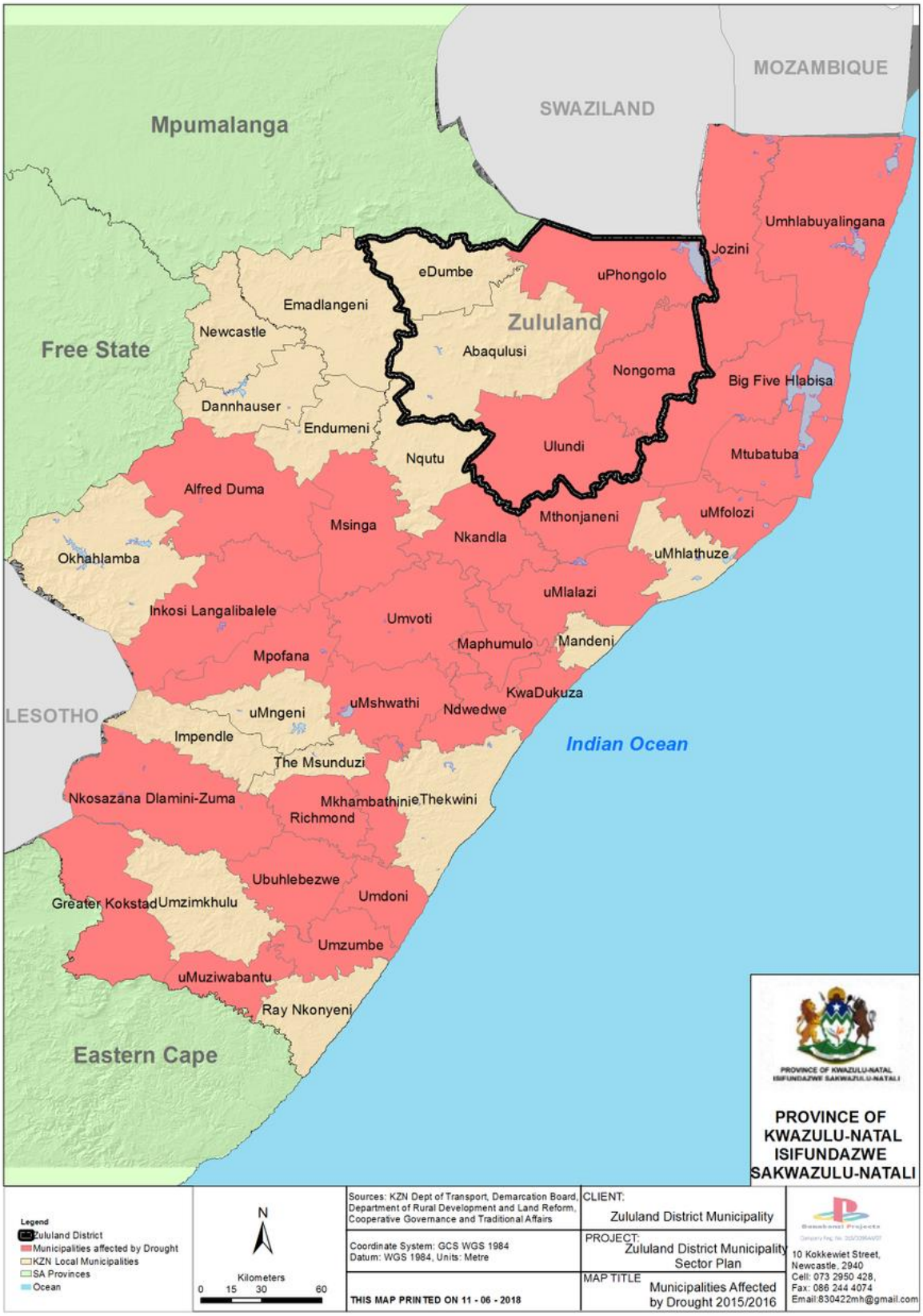
Agricultural Drought occurs when moisture is inadequate to meet the needs of a particular crop, livestock or other dry land agricultural operation and generally occurs during or after a meteorological drought, and

Hydrological Drought occurs when deficiencies in surface and sub-surface water supplies occur and can be measured as stream flow, dam levels and groundwater levels and generally occurs after agricultural drought.

The impacts of drought could be classified into 3 groups, as follows:

- ***Economic Impact*** relates to costs and losses to agricultural, livestock and timber producers, recreation and tourism, decline in food production and to water providers, revenue shortfalls, and increased cost of water transport and of supplemental water resource development.
- ***Social Impact*** relates to deterioration in health, increased conflicts over water, reduced quality of life, changes in lifestyle and re-evaluation of social values, and
- ***Environmental Impact*** relates to damage to animal species and hydrological effects such as lower water levels in dams, reduced flow from boreholes, reduced stream flow, loss of wetlands, estuarine impacts (e.g. changes in salinity levels), land subsidence, reduced recharge, water quality effects (e.g. salt concentration, increased water temperature, pH, dissolved oxygen, turbidity) (KwaZulu-Natal Drought Report 2004).

  The rural areas of northern KZN such as Umzinyathi, Umkhanyakude, Sisonke, and Zululand are affected by hydrological drought situation due to depressed water resource levels. Many of these rural people often exist on the margin of subsistence and thus lack the reserves needed to adequately cope (or cope at all) with the serious disruption that a drought brings. Although the main focus during a drought is often on drinking water and production losses, such as crops and livestock as this form a vital part of a rural household's food source, there are more consequences with longer-term impacts.



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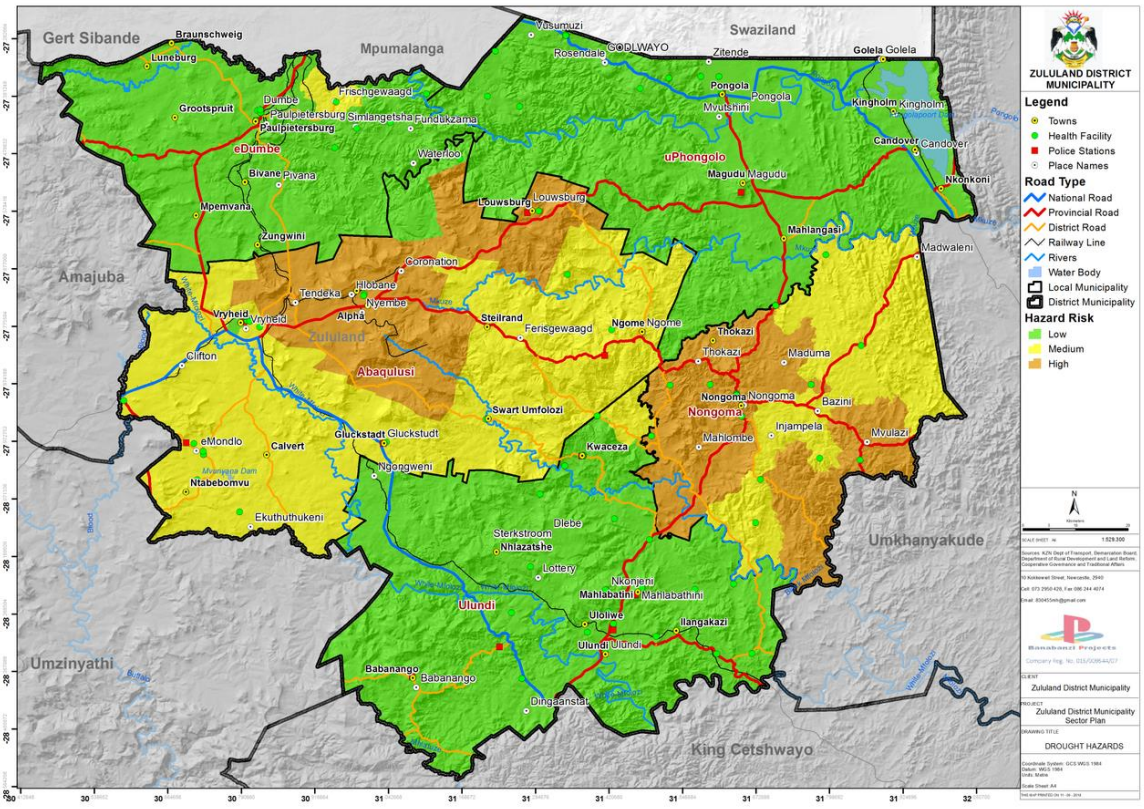
ISIFUNDAZWE SAKWAZULU-NATALI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Mpumalanga
Swaziland
Amajuba
Zululand
Umkhanyakude
Umzinyathi
King Cetshwayo
Braunschweig
Luneburg
Grootspruit
Frischgewaagd
Dumbe
Paulpietersburg
Sinqangetsha
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Gluckstadt
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Kwaceza
Ngongweni
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Dlebe
Sterkstroom
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Lottery
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Ulundi
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Ilangakazi
Babanango
Babanango
Dingaanstad
Legend
Towns
Health Facility
Police Stations
Place Names
Road Type
National Road
Provincial Road
District Road
Railway Line
Rivers
Water Body
Local Municipality
District Municipality
Hazard Risk
Low
Medium
High
ZULULAND DISTRICT MUNICIPALITY
Zululand District Municipality
Zululand District Municipality Sector Plan
DROUGHT HAZARDS

b) LIGHTING

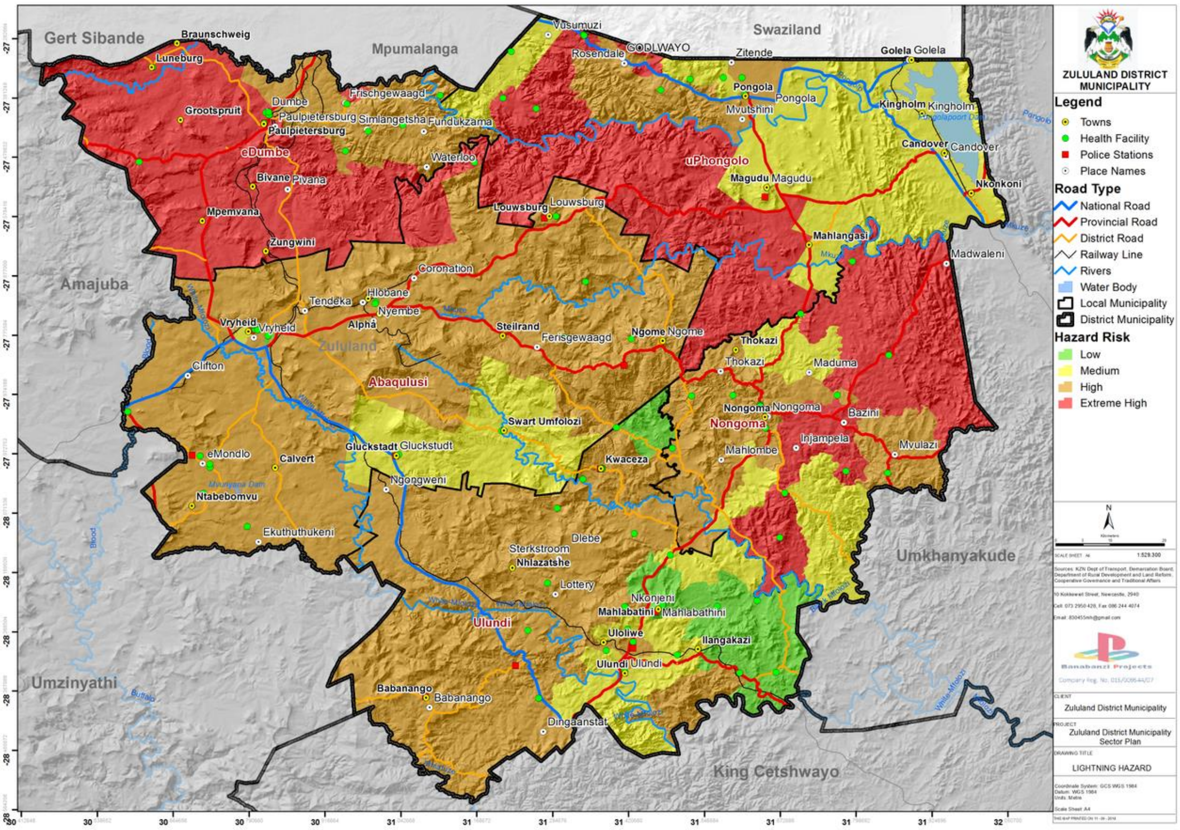
The Zululand District municipality is exposed to a wide range of natural and human-induced hazards that can cause widespread hardship and devastation to lives.

Natural disasters are often frightening and difficult for the communities to understand because they have no control over when they happen. The scale of natural disasters that are common phenomena in our district can be managed and controlled, hence the level of preparedness for communities and organs of state, as well as civil society organizations, to deal with the dangers that natural disasters is of critical importance.

The Zululand Disaster Management Centre (UDMC) has observed that since 2007 seasonal incidents occur in their extreme and this may be attributed to the effects of climate change. Over the past few seasons, the district has experienced:

- Heavy rainfall which caused flooding in a number of areas;
- Severe drought that causes serious shortage of water for both domestic and livestock use;
- Runaway veld fires that have ravaged the district and destroyed a lot of property, livestock, grazing lands and even claimed innocent people's lives:
- Fatal lightning strike incidents

Zululand District Municipality has particularly singled out fatal lightning strikes as a common trend in its area of jurisdiction during the summer season.


ZULULAND DISTRICT MUNICIPALITY
Legend
Towns
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Police Stations
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District Road
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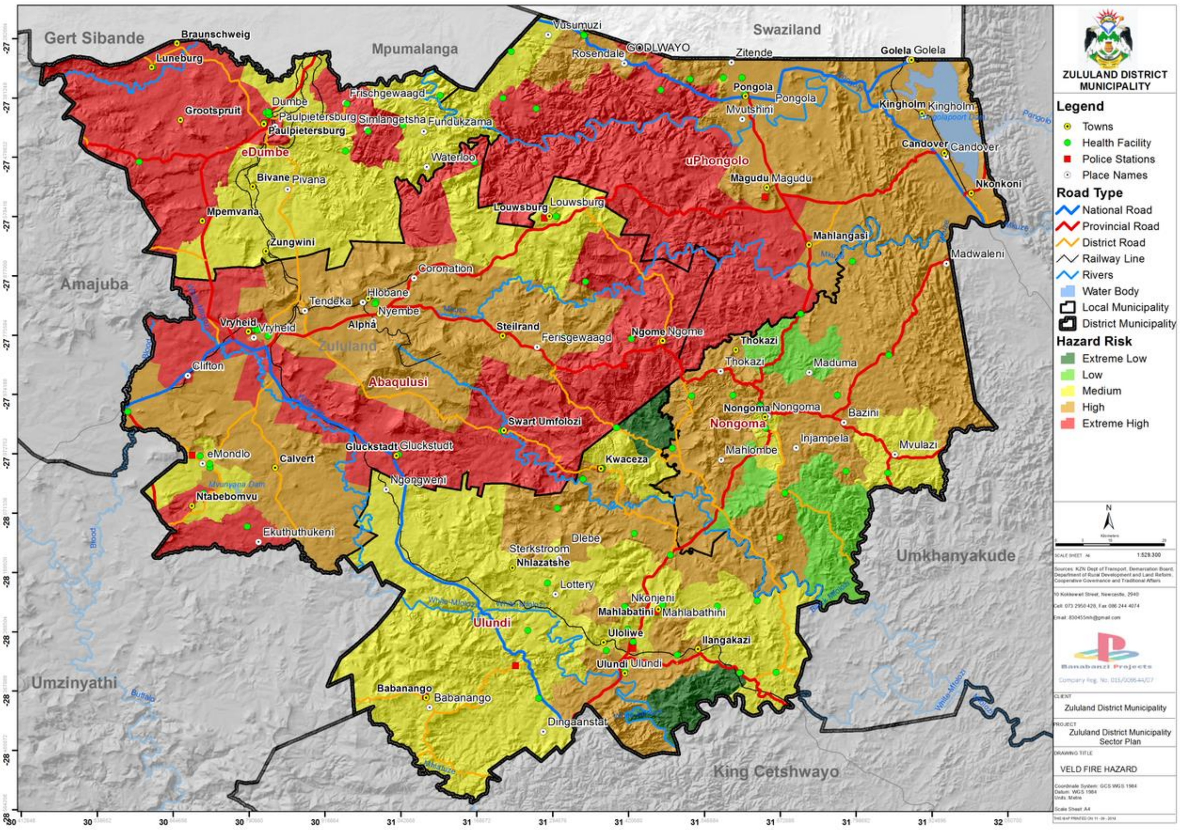
Mvutshini
Frischgewaagd
Simlangetsha
Fundukzama
Waterloo
Dumbe
Pivana
Client
Zululand District Municipality
Project
Zululand District Municipality Sector Plan
Drawing Title
LIGHTNING HAZARD
Scale Sheet A4
1:529 300
Sources: KZN Dept of Transport, Demarcation Board, Department of Rural Development and Land Reform, Cooperative Governance and Traditional Affairs
Banabanzi Projects
Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Metre

c) Veld FIRES

Fire has a fundamental role of sustaining biodiversity, but if it is not managed properly it may result in ecosystem degradation. Veld fires can have severe impacts on the environment like loss of biodiversity and ecologically sensitive areas, and air pollution from smoke and haze. There are also environmental factors or processes that increase the susceptibility of the environment to impacts of veld fires. These factors like environmental degradation, topography and weather play an important role in increasing vulnerability to veld fires.

Veld fires have been a persistent problem in Zululand District Municipality area and this situation has worsened over the past several years, the district experienced devastating veld and structural fires across

Those veld fires that resulted from strong winds and extremely dry winter conditions, damaged to land.Plant and animal communities in particular are at greater risk of extinction because their traditional habitats are irreversibly being modified by severe fires. Other notable adverse effects have been loss of livestock, agricultural crops and power outages.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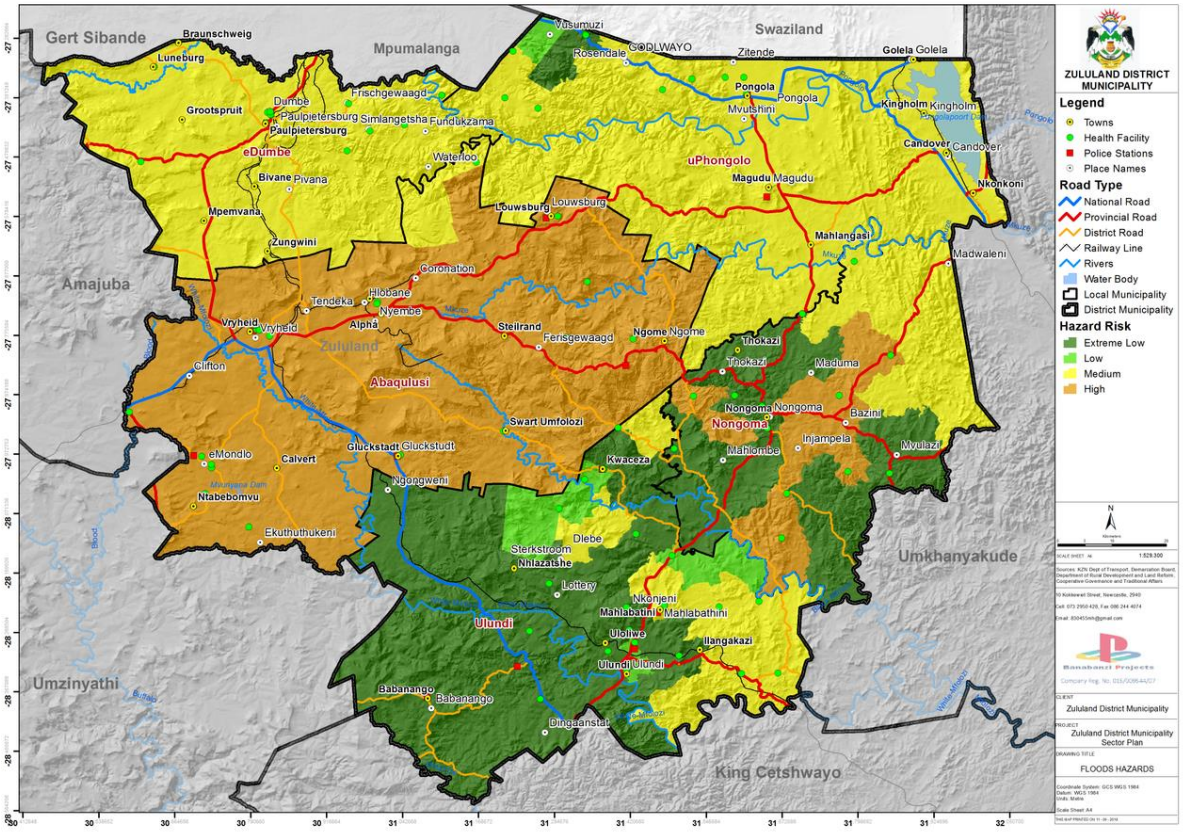
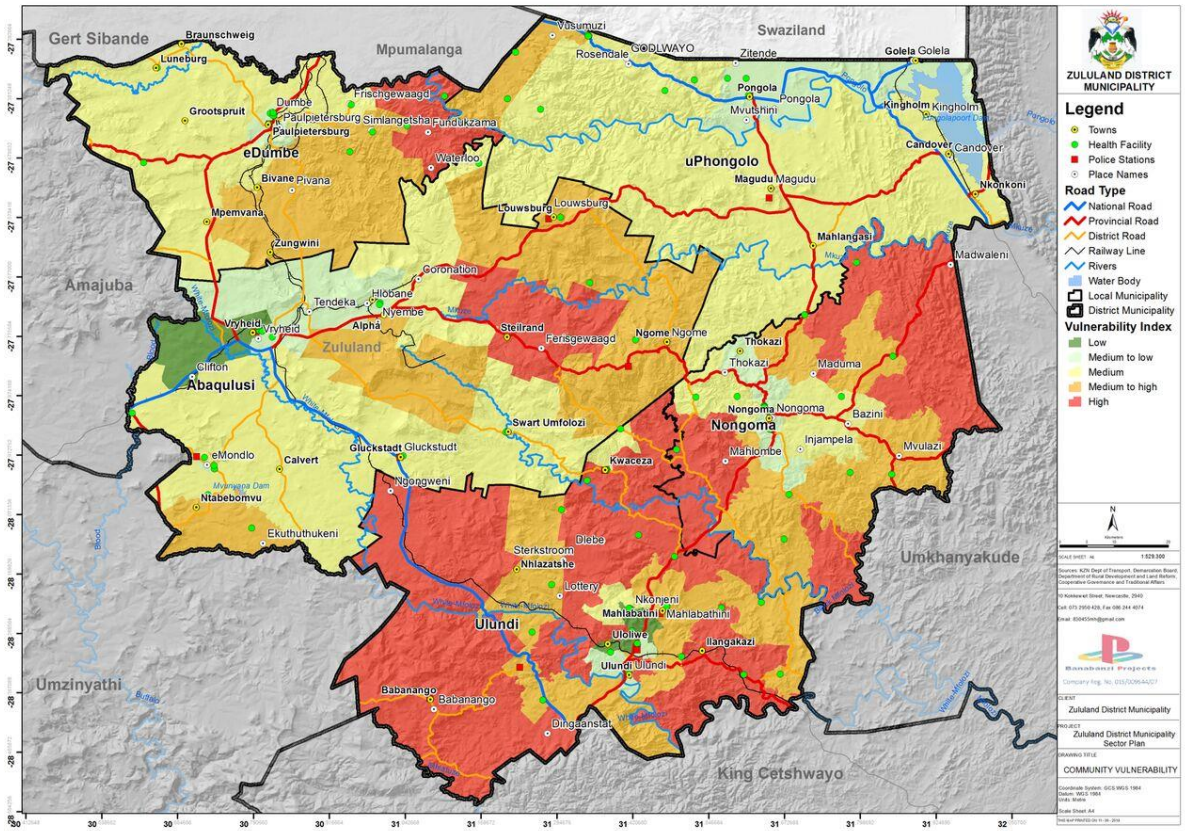
CLIENT
Zululand District Municipality
PROJECT
Zululand District Municipality Sector Plan
DRAWING TITLE
VELD FIRE HAZARD

d) FLOODS

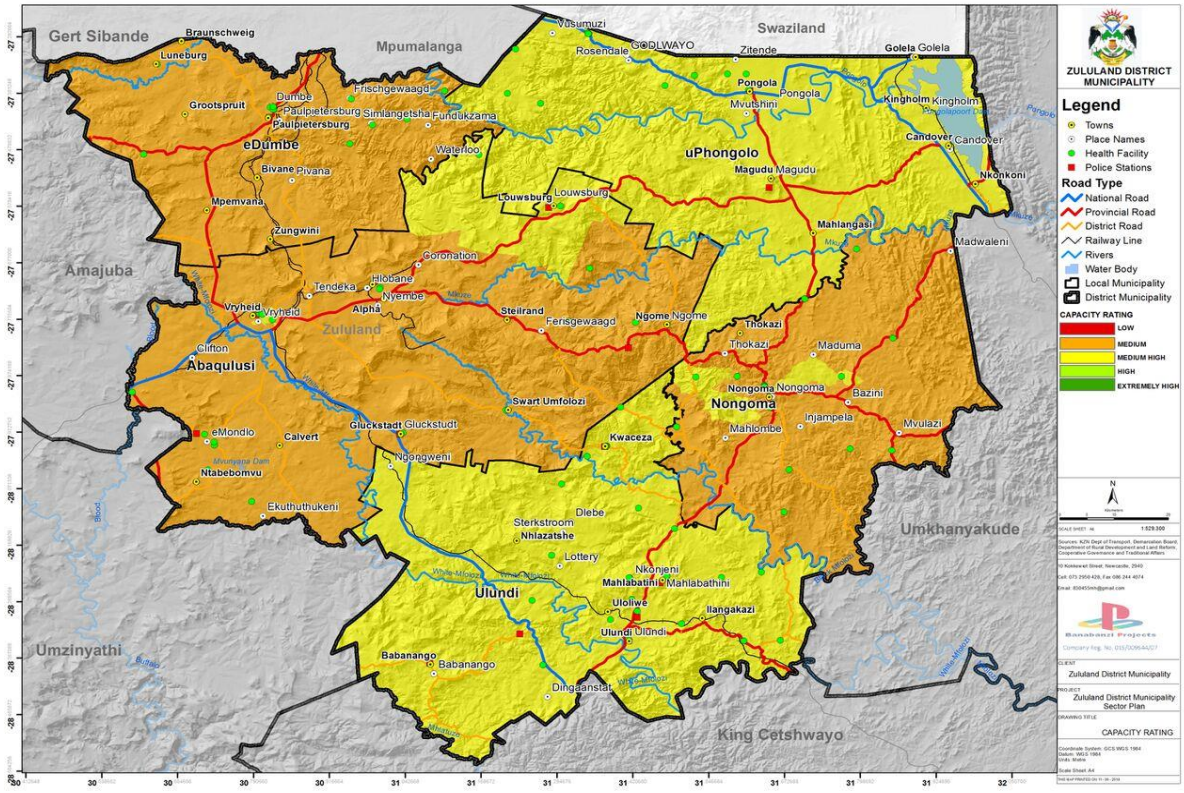
Higher rainfall occurring during November to January summer season period causes floods in low lying areas and erosion of land has become a regular feature in the district. The district has in the past witnessed worst form of disasters caused by floods and landslides rendering normal life paralyzed by way of disruption of means of communications caused due to damage of roads and bridges and also blockage of roads.



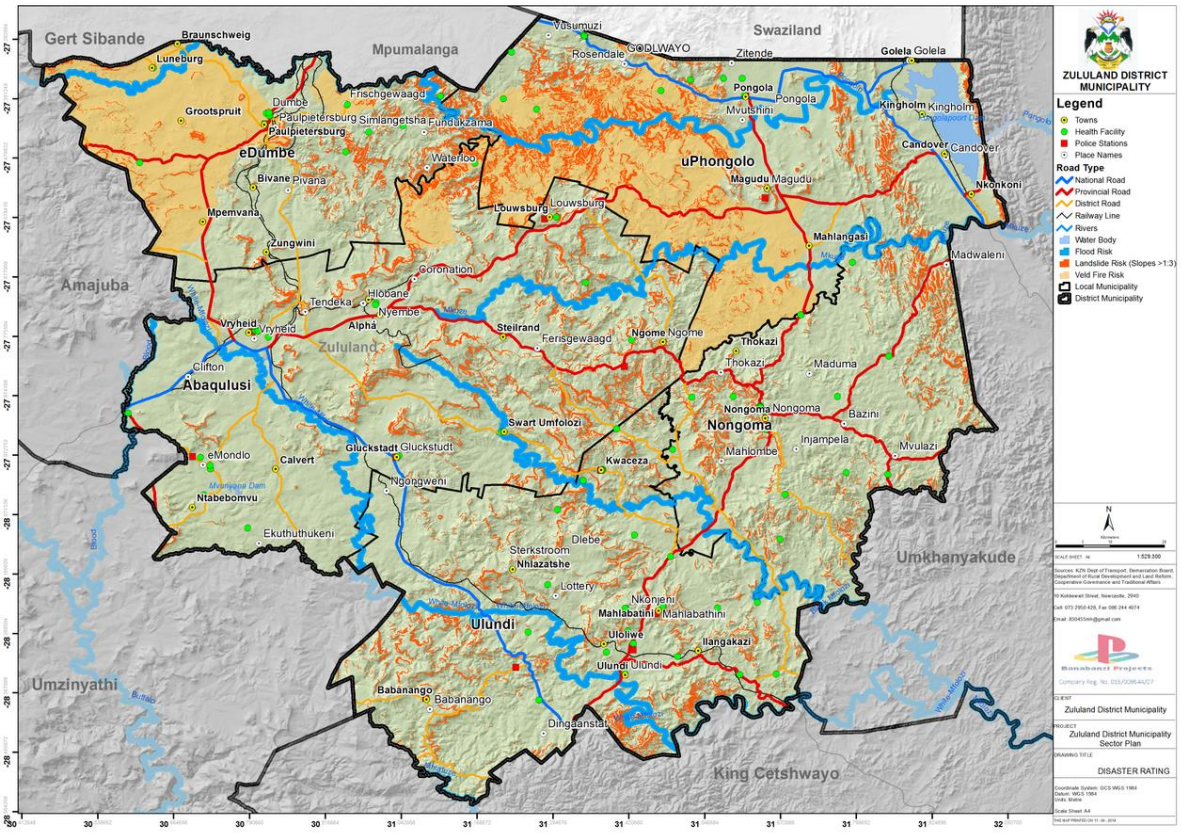
5.3 Vulnerability Map



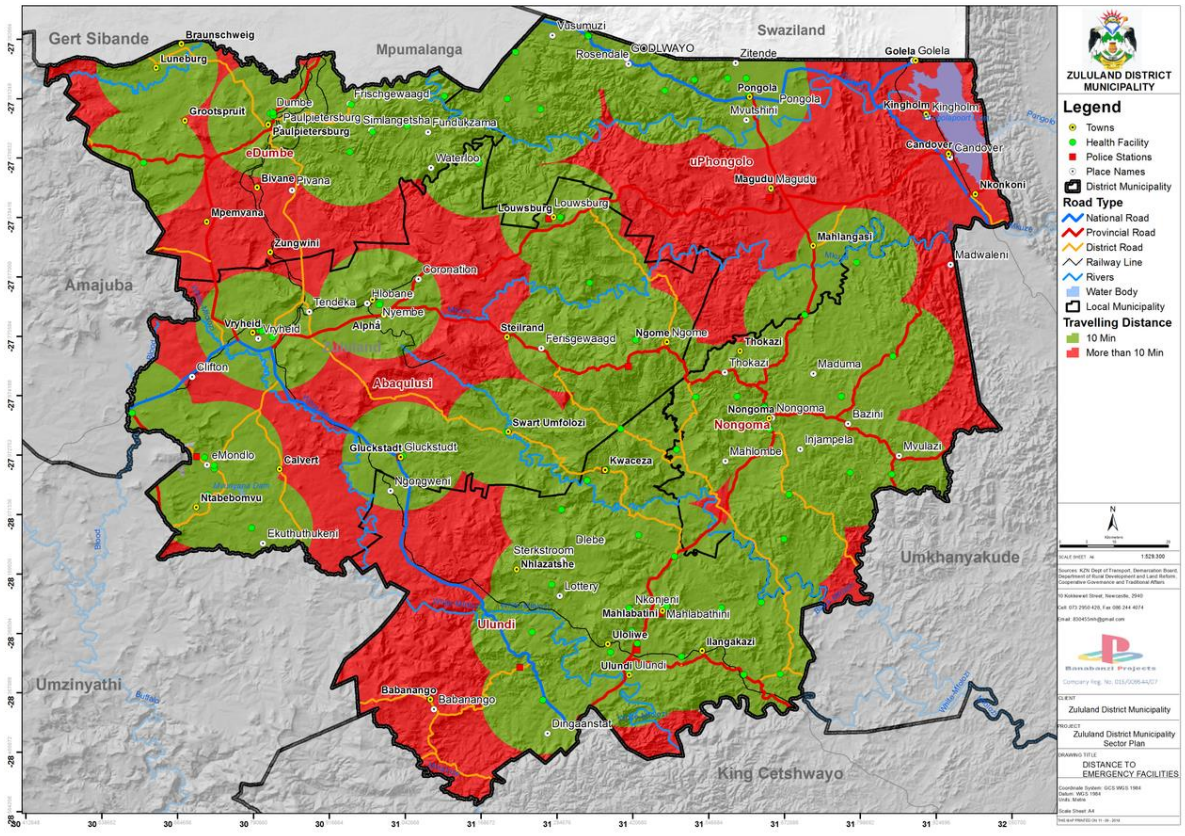
5.4 CapacityMap



5.5Disaster Risk Rating Map



5.6Travelling Distance to Emergency Centres Map



6. DISASTER RISK REDUCTION

6.1 Disaster Management Programmes/Projects by Municipality

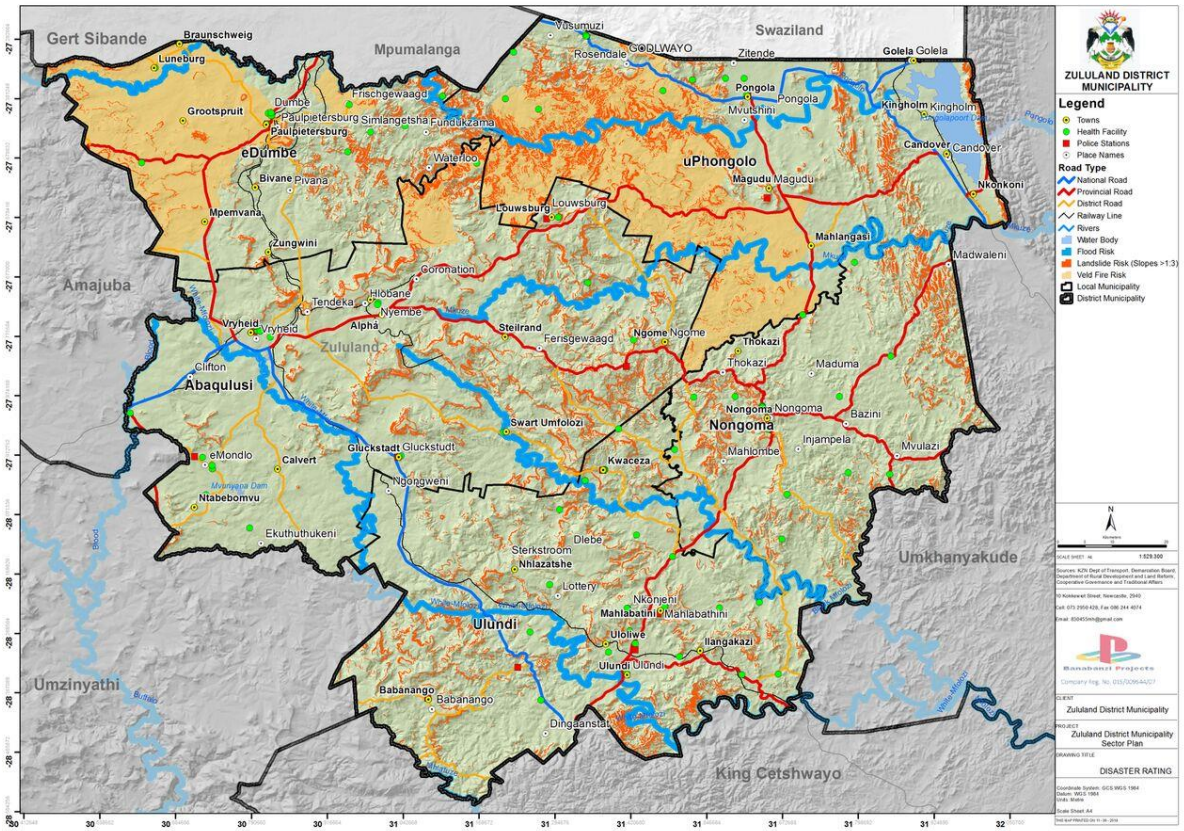
NAME OF THE PROJECT	BUDGET	TARGETED AREAS	DATE
Installation of lightning conductors (Climate Change)	R10000.00	Throughout the district where lightning strikes have proved to be a high risk.	1st October 2018
Development of Disaster Management Framework	R 200000.00	In compliance with the Disaster Management Act.	1st October 2018
Review of Disaster Plan	R200000.00	In compliance with the Disaster Management Act.	01 August 2018
Purchase the Disaster Management relief material.	R 400 000.00	Throughout the district to support the disaster management victims.	1st July 2018
Purchase of fire services equipment.	R 955 966.00	To support local municipalities and rural communities.	1st May 2019
Training of Disaster Management and Fire Sevices Staff	R 200 000.00	In order to capacitate them on Fire and Disaster hazard and prevention majors.	1thOctober 2018
Disaster Management Awareness Campaign	R 200 000 00	Throughout the district to the vulnerable communities as per risk assessment.	1st July 2018
Fire breaks	R200 000 00	Throughout the district to the vulnerable communities as per risk assessment.	1st May 2019
Implementation of Environmental issues Planting of trees (Climate Change)	R741 919 00	Throughout the district to the vulnerable communities as per risk assessment.	10th January 2019

Drought Mitigation	R36 Million	Throughout the district to the vulnerable communities as per risk assessment.	1st July 2018
Catering	R161 203 2	For Disaster, Fire, Climate change meetings and workshops	On going
Conduct Disaster Risk Assessment	R200 000 00	Throughout the district	1st July 2018
Review of the Disaster Management Plan	R200 000 00	For the disaster mitigation, preparedness and response	1st October 2018

6.2 Disaster Management Programmes/Projects by Stakeholders

NAME OF THE PROJECT	DEPARTMENT	BUDGET	TARGET AREAS	DATE
Disaster Management Awareness Campaign	Cooperate Services (Communication Unit)	R 1 591500	Throughout the district to the vulnerable communities as per risk assessment thought Mayoral slot.	On going
Drought Relief	Technical Department	R36 Million	Throughout the district to thevulnerable communities	1st July 2018
Training of Disaster Management and Fire Services staff	Cooperate Services (LGSETA)	R 1 423962	Municipal staff	1stJuly 2018
Implementation of Environmental issues Planting of trees (Climate Change)	Community Services Department	R 991 376 00	Throughout the district to the vulnerable communities as per risk assessment	1st July 2018

6.3 Map Showing Disaster Risk and Reduction Projects linked to budget



7. DISASTER RESPONSE AND RECOVERY

7.1 Municipal Capacity in terms of Response and Recovery

Section 53 of the Disaster Management Act (Act 57 of 2002) deals with disaster management plans for municipal areas. Section 53 (1) (k) of the Act prescribes that a disaster management plan must contain contingency plans and emergency procedures in the event of a disaster, providing for prompt disaster response and relief and the procurement of essential goods and services.

The Disaster management canter budgets annually for the purchase of relief materials in the form of tents, blankets and plastic sheeting. This material is provided to victims of disasters or serious incidents when necessary. All local municipalities are supported in this programme and relief materials are provided to them when it is necessary.

Relief efforts, in the event of disasters and/or incidents, are coordinated through the local municipality disaster management officials and the district disaster management centre.

7.2. LIST OF RELEVANT STAKEHOLDERS IN RESPONSE AND RECOVERY

NAME	ORGANISATION	CONTACT DETAILS	MOBILE NO
The Acting Municipal Manager: Mr P.M Manqele	Zululand District Municipality	Tel: 035-874 5503 Fax: 035-874 5589/91	+27 79 259 8891
The Honourable Mayor Cllr, TD Buthelezi	Zululand District Municipality	Tel: 035-874 5502 Fax: 035-874 5589/91	+27 78 500 7000
The HOD Corporate Services: Mr PM Manqele	Zululand District Municipality	Tel: 035-874 Fax: 035-874 5589/91	+27 79 259 8891
The Secretary HOD Corporate Services: Miss T Meyer	Zululand District Municipality	Tel: 035-874 5510 Fax: 035-874 5589/91	+27 79 692 2596
The Disaster Centre Manager: Mr Wonderboy Dhlamini	Zululand District Municipality	Tel: 035-870 1132 Fax: 035-874 5589/91	+27 82 813 2925
The Admin Officer Disaster Section: Mrs B.N Mshengu	Zululand District Municipality	Tel: 035-870 1132 Fax: 035-874 5589/91	+27 79 511 0555
The HOD Technical Services: Mr ES Ngcobo	Zululand District Municipality	Tel: 035-874 5509 Fax: 035-874 5589/91	+27 66 214 8394
The HOD Planning: Mr B.P Mnguni	Zululand District Municipality	Tel: 035-874 5618 Fax: 035-874 5589/91	+27 73 148 3715
The HOD Community Services: Mr S.P Mosia	Zululand District Municipality	Tel: 035-874 5626 Fax: 035-874 5589/91	+27 83 363 6916
The Deputy Director Airport Services: Miss T Hadebe	Zululand District Municipality	Tel: 035-870 1128 Fax: 035-874 5589/91	+27 82 902 6029
The Senior Admin Officer Airport Services: Ms B Khoza	Zululand District Municipality	Tel: 035-870 1128 Fax: 035-874 5589/91	+27 82 524 9113
The Fire Protection Officer: Mr Tony Robert	Fire Protection Association	Tel: 035-580 4713 Fax: 035 580 4713	+27 83 631 9076
The Operation Manager: Mr Simon Thomas	Zululand Fire Protection	Tel: 033-330 8421 Fax: 033- 330 8424	+27 82 654 4943
The FPA Manager: Mr Johan Le Rouxe	Vryheid Fire Protection	Tel: 034- 982 1882 Fax: 034- 982 1884	+27 83 570 0084
The Municipal Manager: Prince N.G Zulu	Ulundi Municipality	Tel: 035-874 5100 Fax: 035-870 1105	+27 82 656 3554
His Worship Honourable Mayor Cllr: W.M Ntshangase (Mr)	Ulundi Municipality	Tel: 035-874 5100 Fax: 035-870 1105	+27 73 470 7095
The Director Protection Services: Mr M.B Khali	Ulundi Municipality	Tel: 035-874 5191/97 Fax: 035-870 3941	+27 83 561 7829
The Fire Officer: Mr B Shandu	Ulundi Municipality	Tel: 035-874 5100 Fax: 035-874 5176	+27 82 407 6919

The Acting Municipal Manager: Mrs V.T Sokhela	Nongoma Municipality	Tel: 035-831 7500 Fax: 035 831 3152	+27 82 656 3554
The Honourable Mayor Cllr: M.A Mncwango	Nongoma Municipality	Tel: 035-831 3152 Fax: 035 831 3152 / 086 592 3920	+27 83 448 4896
The Acting Director Social Services: Mr ME Sithole	Nongoma Municipality	Tel: 035-831 3152 Fax: 035 831 3152	+27 72 593 7472
The Manager Protection Services: Prince P Zulu	Nongoma Municipality	Tel: 035-831 7500 Fax: 035 831 3152	+27 72 311 8561
The Disaster Officer: Mr S.E.L Ndwandwe	Nongoma Municipality	Tel: 035-831 3152 Fax: 035 831 3152	+27 72 649 5481
The Acting Municipal Manager: Mr W.M Nxumalo	uPhongolo Municipality	Tel: 034-413 1223/7 Fax: 034-413 1706	+27 72 647 3280
The Honourable Mayor Cllr: B.C Nhlabathi (Ms)	uPhongola Municipality	Tel: 034-413 1223/7 Fax: 034-413 1706	+27 76 154 5978
The Acting HOD Community Services: Mr T.V Mkhize	uPhongolo Municipality	Tel: 034-413 1223 Fax: 034-413 1706	+27 76 941 5198
The Disaster Manager: Mr A.F Lushaba	uPhongolo Municipality	Tel: 034-413 1223 Fax: 034-413 1706	+27 73 708 2891
The Director: Mr V.B Mbatha	Edumbe Municipality	Tel: 034-995 1650 Fax: 034-995 1192	+27 82 392 4832
The Honourable Mayor: Cllr S.J Kunene (Mr)	Edumbe Municipality	Tel: 034-995 1650 Fax: 034-995 1192	034-995 1650
The HOD Corporate Services: Vacant	Edumbe Municipality	Tel: 034-995 1650 Fax: 034-995 1192	
The Manager Public Safety: Mr T.R Nkosi	Edumbe Municipality	Tel: 034-995 1650 Fax: 034-995 1192	+27 82 772 0523
The Municipal Manager: Mr B.E Ntanzi	Abaqulusi Municipality	Tel: 034-982 2133 Fax: 034-995 1192	+27 83 320 2037
The Municipal Manager: Mr B.E Ntanzi	Abaqulusi Municipality	Tel: 034-982 2133 Fax: 034-995 1192	+27 76 214 1427
The Honourable Mayor: Cllr JM Sibiya	Abaqulusi Municipality	Tel: 034-982 2133 Fax: 034-980 9637	+27 82 954 2220
The Director Community Services: Vacant	Abaqulusi Municipality	Tel: 034-982 2948 Fax:034-980 9637	
The Assistant Superintendent Logistics: Mr T.S Mthembu	Abaqulusi Municipality	Tel: 034-982 2948 Fax: 034-982 2949	+27 73 373 7743
The Manager B.M Gumede	Dept of Social Development	Tel: 035-874 2511 Fax: 035-874 2512	+27 82 323 4372
The Executive Manager: Mr S Ghoorah	Ezemvelo KZN Wildlife	Tel: 033-845 1510/1511 Fax: 086 554 1312	
Mr S Ngiba	Ezemvelo KZN Wildlife	Tel: 033-845 1510/1511 Fax: 086 554 1312	+27 78 676 6984

Mr G Abrahams	Ezemvelo KZN Wildlife	Tel: 033-845 1510/1511 Fax: 086 554 1312	+27 72 242 2613
The Regional Director: Mr Z Mbonane	Human Settlement	Tel: 035: 874 8004/5 Fax: 086 640 3384	+27 82 567 7419
The Deputy Director: Mr M Shange	Human Settlement	Tel: 035: 874 8004/5 Fax: 086 640 3384	+27 72 638 6121
The Deputy Manager: Mr M Sokhele	Dept of Arts and Culture	Tel: 035-874 4531/5 Fax: 035-874 4544	+27 7
Ms JPR Nxumalo	Dept of Arts and Culture	Tel: 083 307 8947	+27 83 307 8947
The District Director: Mr P.D Ndlovu	Dept of Education	Tel: 034-989 9885 Fax: 034-982 1666	+27 79 835 4960
The Manager: Mr T.H Jiyane	Dept of Education	Tel: 034-989 9821 Fax: 034-982 1666	+27
The Controller: Ms N Majozi	ESKOM KZN Corporate Affairs	Tel: 034-413 2156 Fax: 034 982 1666	+27 83 465 8552
The Controller: Ms N Madlala	ESKOM KZN Corporate Affairs	Tel: 078 184 5579 Fax: 086 572 6604	+27 78 184 5579
The General Manager: Mr LXK Mtambo	Department of Transport	Tel: 035-787 2916 Fax: 035-787 2916	+27 83 628 1496
The Manager: Miss N Ngcobo	Department of Transport	Tel: 035-879 8100 Fax:035-879 1032	+27 83 628 1496
KwenzaMtshali	Dept of Comm. Safety &Liasing	Tel: 033-341 9300 Fax: 033-341 9349	+27 82 554 2465
S.C Dube	Dept of Comm. Safety &Liasing	Tel: 033-341 9300 Fax: 033-341 9349	+27 83 686 9184
Syabonga Mthethwa	SA Weather Services	Tel: 032-436 3816 Fax: 032-436 3815	+27 84 508 7266
Wisani Maluleka	SA Weather Services	Tel: 032-436 3816 Fax: 032-436 3815	+27 84 508 7266
The District Manager: Mr M.D Dlamini	Agriculture Nongoma District Office	Tel: 035-874 9000 Fax: 035-831 0844	+27 79 693 0654
The District Manager: Mr P Mans	DARD - KZN	Tel: Fax:033-355 9401	+27 82 302 7164
The Manager: Mr Mlindi Linda	DARD - KZN	Tel: Fax:033-355 9401	+27 82 925 8397
Mr M Mthethwa	EMRS	Tel: 035-874 6015 Fax:035-879 1899	+27 82 311 7827
Mr M.E Dlamini	Dept of Environmental Affairs	Tel: 035-874 2434 Fax: 035-874 2456	+27 83 488 1652
Mr K.D Mbatha	Dept of Environmental Affairs	Tel: 035-874 3168 Fax 035-874 3301	+27 82 777 2412
The Acting District Manager: Mr S.V Vilakazi	District Health	Tel: 035-874 0601 Fax: 086 485 6335	+27 82 970 9716
The Project Manager: Mr T Mbambo	SA Red Cross Zululand	Tel: 035-772 1320 Fax: 035-772 1320	+27 83 938 9966

Abed Karim	NGO	Tel: 036-352 1557 Fax: 036-352 4114	+27 82 587 8602
Hassan Shazi	NGO	Tel: 036-352 1557 Fax: 036-352 4114	+27 83 757 3308
The Fire Protection Officer: Mr Tony Robert	Fire Protection Association	Tel: 035-580 4713 Fax: 035 580 4713	+27 83 631 9076
The Operation Manager: Mr Simon Thomas	Zululand Fire Protection	Tel" 033-330 8421 Fax: 033- 330 8424	+27 82 654 4943
The FPA Manager: Mr Johan Le Rouxe	Vryheid Fire Protection	Tel: 034- 982 1882 Fax: 034- 982 1884	+27 83 570 0084
The Manager: Mr MuziNkala	Food Bank South Africa	Tel: 031-564 4148 Fax: 035-589 3322	+27 82 967 7560
The Manager: Inger Harber	Oxfam	Tel: 031-201 0865 Fax: 031-201 4026	
The District Manager: Mrs N.E Shandu	Dept of Home Affairs	Tel: 035-870 9804 Fax: 035-870 9816	+27 79 145 2274
The Deputy Director: Mrs M.N Buthelezi	Dept of Home Affairs	Tel: 035-870 9803 Fax: 035-870 9816	+27 82 809 9904
The Acting Workshop Manager: Ms Nonhle Sithole	Petro Net	Tel: 035-906 7004 Fax: 035-906 7003	+27 83 446 0170
The Station Commander: Colonel Zwane (Mr)	SAPS Vryheid	Tel: 034-989 6260 Fax: 034 989 5516	+27 76 954 4025
Brigadier: SSS Mhlungu	SAPS Vryheid: Cluster	Tel: 034-989 4219/0 Fax: 034-989 4216	+27 79 500 0225
The Station Commander: Colonel C.S Nkwanyana (Mr)	SAPS Ulundi	Tel: 035-874 0503 Fax: 035-874 0501	+27 82 828 4666
Major General	SAPS Ulundi: Cluster	Tel: 035-874 0202 Fax: 035-874 0521	
TheStation Commander: Colonel D.J Herbst (Mr)	SAPS Pongola	Tel: 034-413 1201 Fax: 034-413 9122	+27 82 419 8983
The Station Commander: Captain Ntshayintshayi (Mr)	SAPS Babanango	Tel: 035-835 0003 Fax: 035-835 0146	+27 82 372 4605
The Station Commander: Captain Ntshayintshayi (Mr)	SAPS Ceza	Tel: 035-832 0045 Fax: 035-832 0047	+27 82 419 2206
The Station Commander: Colonel Ngubane (Mrs)	SAPS Mahlabathini	Tel: 035-873 0304 Fax: 035-873 0273	+27 82 419 6311
The Station Commander: Captain Ntombela (Mr)	SAPS Mpungamhlophe	Tel: 035-450 0911 Fax: 035-450 0913	+27 82 419 9137
The Station Commander: Brig Gonya (Mr)	SAPS Nongoma	Tel: 035-836 1024 Fax: 035-836 1014	+27 82 417 8952
The Station Commander: Captain Majola	SAPS Magudu	Tel: 034-414 1014 Fax 034-414 1015	+27 82 419 6309
The Station Commander: LT	SAPS Paulpietersburg	Tel: 034-995 8304 Fax: 034-995 8306	+27 82 419 8053

Colonel BB Ndlovu (Mr)			
The Regional Manager: LNF Nkosi	Dept of Social Development	Tel: 035-874 8501 Fax: 035-874 3711	
Mr T Nkosi	Department of Labour - Ulundi	Tel: 035-879 8800 Fax: 035-879 1702	+27 82 907 7059
The Manager I Zwane	First National Bank - Ulundi	Tel: 035-870 1037 Fax: 035-870 3494	
The Forestry Manager: Mr PhineusMbokane	SAPPI Forest Melmoth	Tel: 035-450 2532 Fax: 035-450 3438	+27 83 607 044
The Manager	Standard Bank - Ulundi	Tel:035-870 9200 Fax: 035-870 0164	
The Manager: O.Z Ncanana	ABSA Bank - Ulundi	Tel: 035-870 9400 Fax: 035-870 0044	+27 72 124 8454
The Manager Ms K.S.N Buthelezi	ITHALA Bank - Ulundi	Tel: 035-870 0361 Fax: 035-870 1316	+27 78 216 8801
Nonhle Sithole	Transnet Pipelines	Tel: ---------- Fax: 034-982 3648	+27 83 446 0170
The Inspector Operating Safety: Mr Johan Botha	Transnet	Tel: 035-905 2233 Fax: 011-774 9609	+27 83 980 0107
S Nsele	Uphonoduba Farmers Association	Tel: ---------- Fax: ----------	+27 72 217 3674
The Mining Manager:	ZAC Mine/Okhukho	Tel: 035-870 0302 Fax: 035 870 0389	
Mr S Ngema	ZAC Mine/Okhukho	Tel: 035-870 0302 Fax: 035 870 0389	+27 82 444 1736
PLO Lindo Zikalala	IMS	Tel: ---------- Fax: 035-580 4276	+27 83 997 4839
The District Manager: Mr V Mvubu	SASSA	Tel: 035-874 6101 Fax: 035-874 6223	+27 83 577 0969
MaleselaKekane	Dept of Rural Development & Land Reform	Tel: 033-355 4347 Fax: 033-394 9727	+27 71 674 0811
ZolekaZikhali	Water Affairs	Tel: 031-336 2821 Fax: 031-307 7279	+27 82 326 0040
KZN PDMC (Senior Manager Operation) Mr Jonty Ndlanzi	COGTA	Tel: 033-897 5600 Fax: 033-897 5766	+27 82 897 6696
KZN: PDMC : Mr Bheki Phungula	COGTA	Tel: 033-897 5623 Fax: 033-897 5766	+27 72 512 8601
KZN: PDMC : Mr NkululekoGcwensa	COGTA	Tel: 033-897 5623 Fax: 033-897 5766	+27 71 438 7978
KZN: PDMC : Mr Thulani Wiso	COGTA	Tel: 033-897 5692 Fax: 033-897 5766	+27 73 761 2752

8. INFORMATION MANAGEMENT AND COMMUNICATION

8.1 Early Warning Strategy

The district Disaster Management Centre operates a bulk SMS system to disseminate early warnings of severe weather which are received from the South African Weather Services (SAWS).

Once a severe weather warning is received this is passed to relevant stakeholders using the bulk SMS system. Stakeholders include all the local municipalities and members of the advisory forum. The intention is for the local municipalities to ensure that these warnings are disseminated to the communities through ward councillors and ward committees.

9. EDUCATION, TRAINING, PUBLIC AWARENESS AND RESEARCH

9.1 Capacity Building Programmes

Sections 15 and 20(2) of the Disaster Risk Management Act (Act 57 of 2002) specifies the promotion of education and training, the encouragement of a broad-based culture of risk avoidance, and the promotion of research into all aspects of disaster risk management.

This key performance area addresses the development of education and training for disaster risk management and associated professions as well as the inclusion of disaster risk management and risk-avoidance programmes in school curricula. It also outlines that awareness needs to be created within the community.

The Zululand District Municipality is exposed to a wide range of natural and human induced hazards that can cause wide spread of hardship and devastation of lives. Natural disasters are often frightening and difficult for the community to understand, because they have no control over and where they happen. What we can manage to control, however, is the level of preparedness for the communities and organs of state and civil society organizations to deal with the dangers that natural disasters bring.

During this summer and winter season, several incidents have been reported with severe damage to both people's lives and property. Common major incidents in the district include:

- Runaway veldfires that affect the entire district, especially the rural black communities;
- The severe storms and strong winds claimed many lives and damages to property and agricultural commodities.
- Severe flash floods that usually affect communities that have informal houses next to the rivers or small river basins

9.2 PUBLIC AWARENESS

In line with the provisions of the Disaster Management Act 57 of 2002, this Community Awareness Campaign is a corner stone of ensuring that:

- Communities understand the hazards in their localities;
- Communities are acutely aware of the effects of those hazards;
- Communities are capacitated to deal with identified hazards;

In this regard, communities need to be made aware and educated on the risks in their areas, and what to do when the disaster strikes. The District Disaster Management Centre has therefore developed this Community Awareness, Educational Programme, Capacity Building and Workshops in order to create resilient communities on disaster management. One of the fundamental aims of this campaign is to ensure the visibility of District Disaster Management Centre (DDMC) at local level.

DDMC in consultation with other stakeholders in the rolling out of the campaign that will be in the form of Community Awareness, Educational Programme, Capacity Building and Workshops, where locals will play a huge role in identifying proper venues and mobilising local communities, amongst other things. During the programme itself, all messages will be based on the district risk profiles for those particular areas.

The target audience would be communities, community leaders, Operation Sukhumasakhe, school children and stakeholders. These programmes commenced last financial year, but other phase of the programme will be commencing in the 2018/19 financial year.

9.3 RESEARCH

Research Context

Climate change and water supply

Water resources are important to both society and ecosystems. We depend on a reliable, clean supply of drinking water to sustain our health. We also need water for agriculture, energy production, navigation, recreation, and manufacturing. Many of these uses put pressure on water resources, stresses that are likely to be exacerbated by climate change.

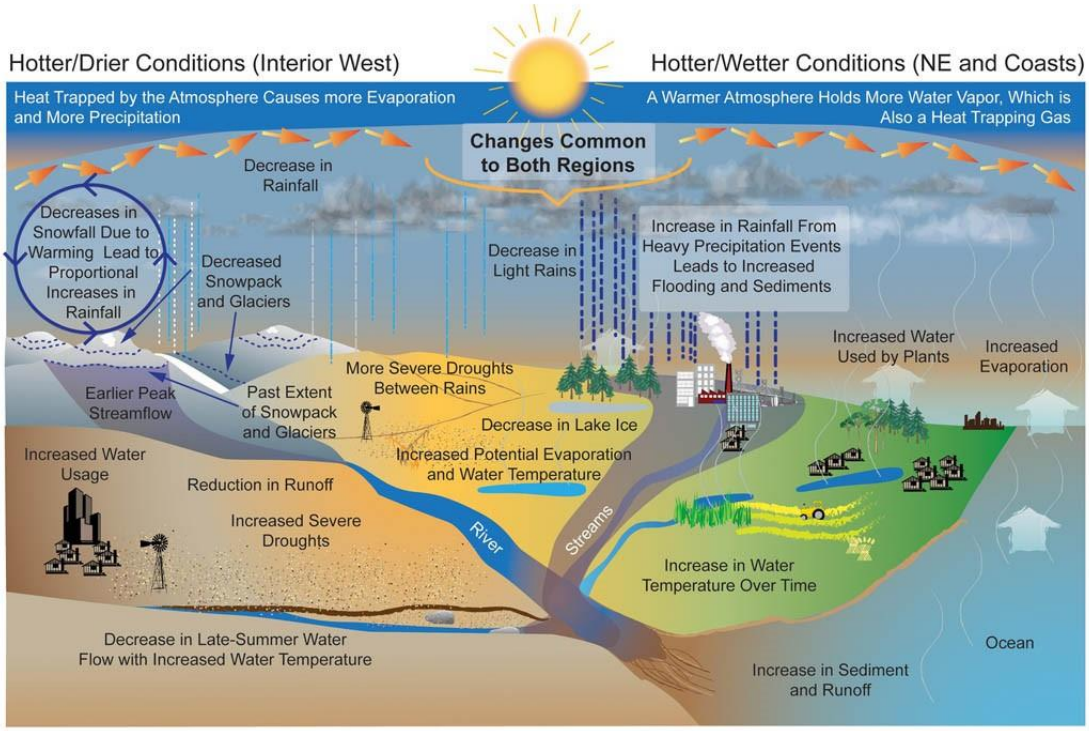
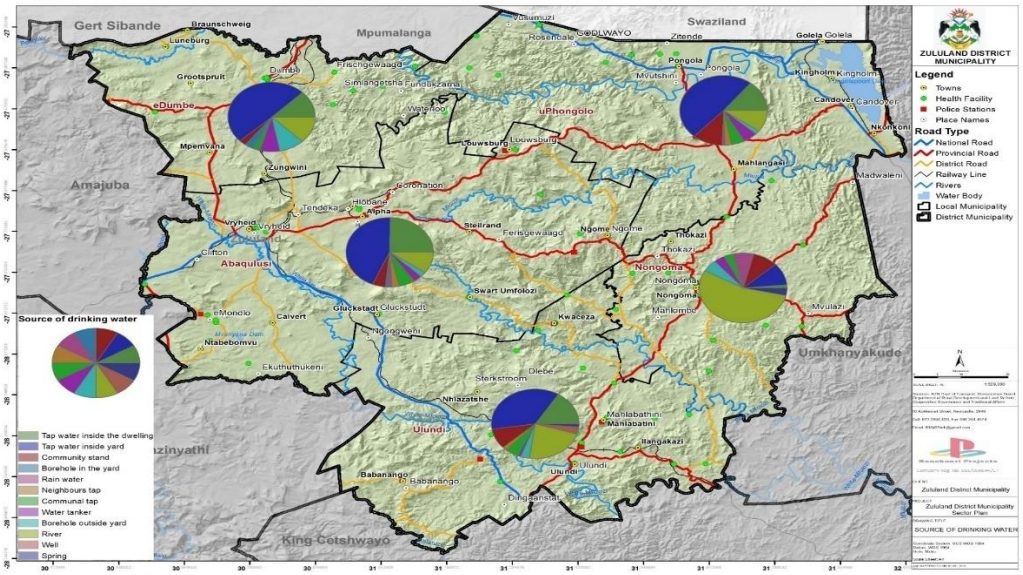


Figure 1: Water Cycle

Changes in the amount of rain falling during storms provide evidence that the water cycle is already changing. As temperatures rise, people and animals need more water to maintain their health and thrive. Many important economic activities, like producing energy at power plants, raising livestock, and growing food crops, also require water. The amount of water available for these activities may be reduced as earth warms and if competition for water resources increases.


ZULULAND DISTRICT MUNICIPALITY
Legend
Towns
Health Facility
Police Stations
Place Names
Road Type
National Road
Provincial Road
District Road
Railway Line
Rivers
Water Body
Local Municipality
District Municipality
Source of drinking water
Tap water inside the dwelling
Tap water inside yard
Community stand
Borehole in the yard
Rain water
Neighbours tap
Communal tap
Water tanker
Borehole outside yard
River
Well
Spring
Gert Sibande
Mpumalanga
Swaziland
Amajuba
uPhongolo
Abaqulusi
Nongoma
Umkhanyakude
King Cetshwayo
Zululand District Municipality
Zululand District Municipality Sector Plan
SOURCE OF DRINKING WATER

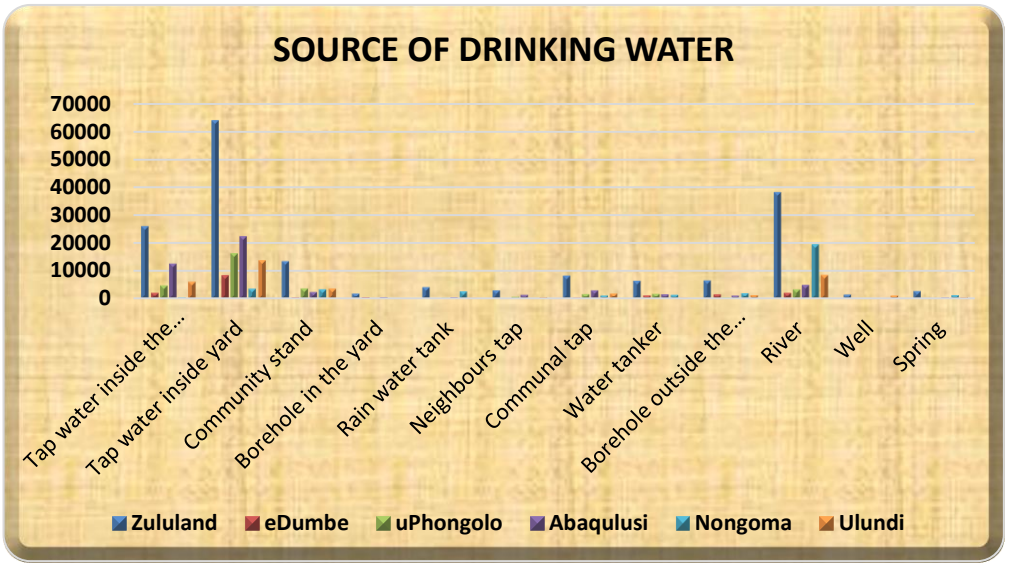
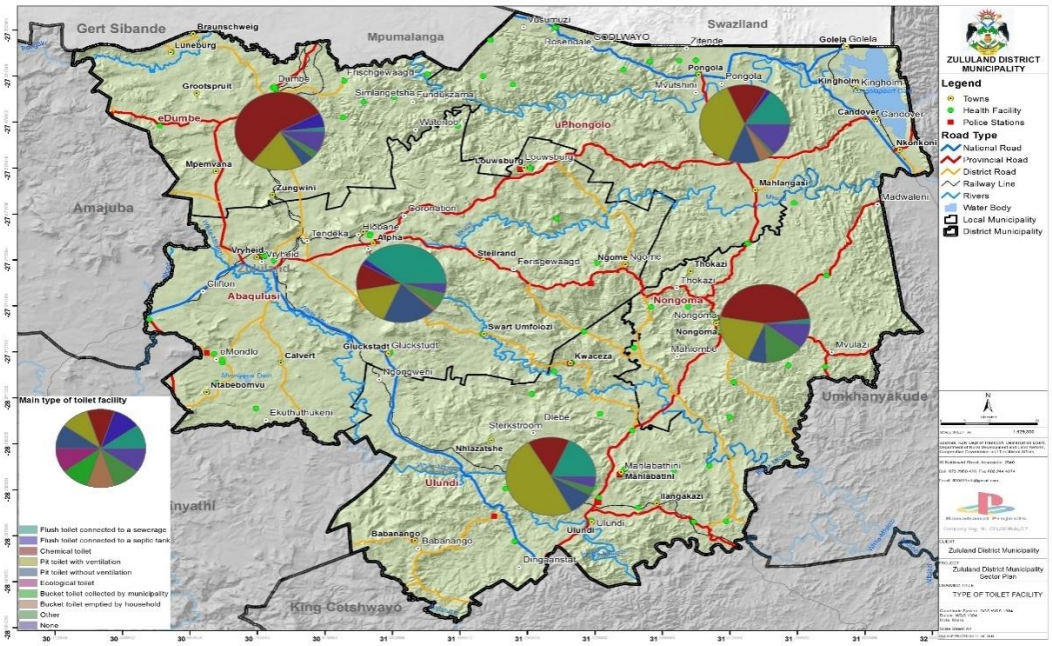

SOURCE OF DRINKING WATER
70000
60000
50000
40000
30000
20000
10000
0
Tap water inside the...
Tap water inside yard
Community stand
Borehole in the yard
Rain water tank
Neighbours tap
Communal tap
Water tanker
Borehole outside the...
River
Well
Spring
Zululand
eDumbe
uPhongolo
Abaqulusi
Nongoma
Ulundi

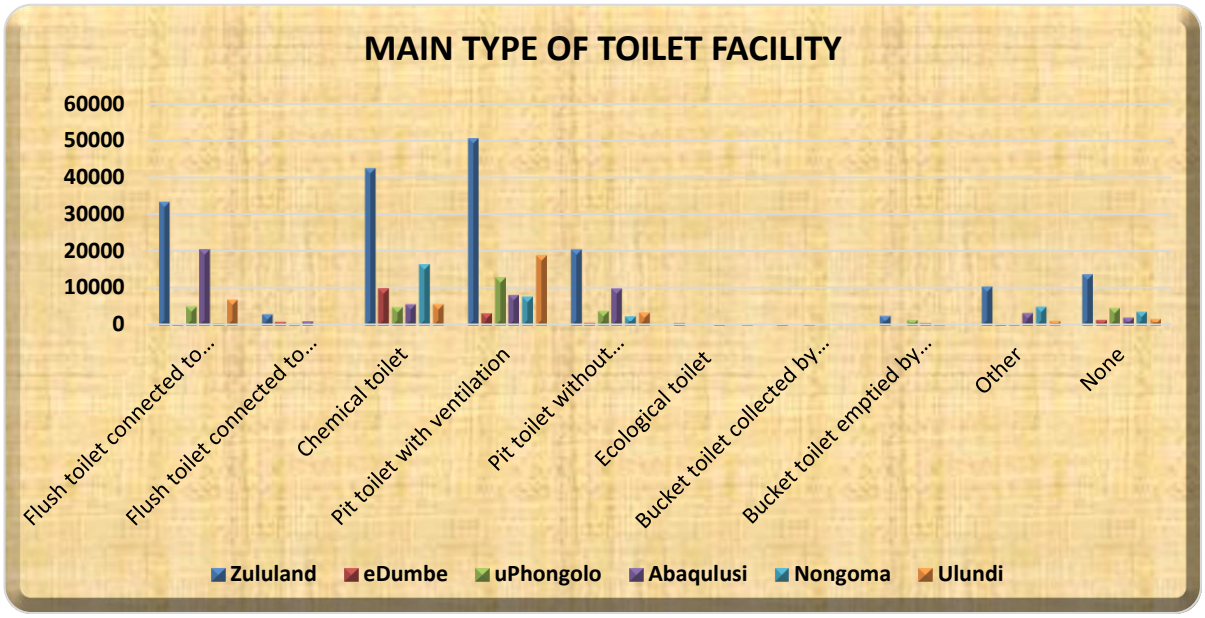
Table 1: Sources of drinking water by municipality (statssa, 2016)

Zululand District Municipality a high backlog of water service provision with an estimated half of its population not having access to reliable portable water, an average of 49.32%. Nongoma municipality is the lowest with 21.23% and Abaqulusi being the highest with 73.48%. As the district continue to address this backlog, more energy will be required to support the initiatives of water provision within the district. This will put more pressure on the Eskom grid supply, thus increasing the level on the district's emissions.

As the water demand increases, Zululand municipality will have to increase its water projects to increase the capacity of the municipality to deal with longer dry periods. This also applies to the increase of formal dwellings within the district, which requires connected water and sewer increasing pressure for the municipality for more water supply.

Municipality	Households	Tap water inside the dwelling	Tap water inside yard	Community stand	Borehole in the yard	Ra w ta
Zululand	178516	26067	64131	13549	1893	41
eDumbe	17415	2071	8223	445	554	12
uPhongolo	34228	4788	16227	3710	279	36
Abaqulusi	51910	12621	22362	2500	660	58
Nongoma	36409	521	3656	3341	212	27
Ulundi	38553	6066	13663	3554	189	37





Municipality	Households	Flush toilet connected to a sewerage	Flush toilet connected to a septic tank	Chemical toilet	Pit toilet with ventilation
Zululand	178516	33422	3122	42465	50593
eDumbe	17415	305	1026	9890	3284
uPhongolo	34228	5131	613	4908	12747
Abaqulusi	51910	20305	1214	5702	8131
Nongoma	36409	699	172	16235	7693
Ulundi	38553	6981	98	5730	18737

Table 2: Main type of toilet facility by municipality (statssa, 2016)

Zululand District Municipality a very low rate of modern day sanitation method. This might be exerbated by the fact that the municipality is dominated by rural communities. As formal structures increase within the district, more water for sanitation will be required as flush toilet becomes the dominant type of toilet facility adopted. Abaqulusi is high with 41.45% of its households having a flushed system with Nongoma being lowest with2.39%. As the district continue to address this backlog, more water will be required for these projects thus increasing the need for more water reserves.

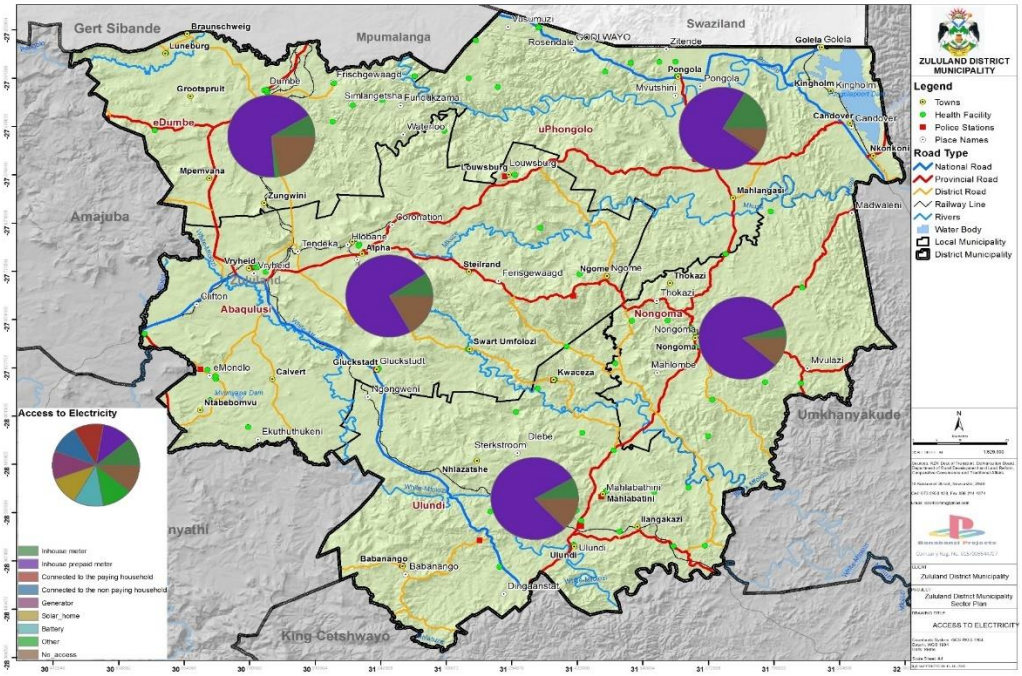
6.3.1 Climate change and energy

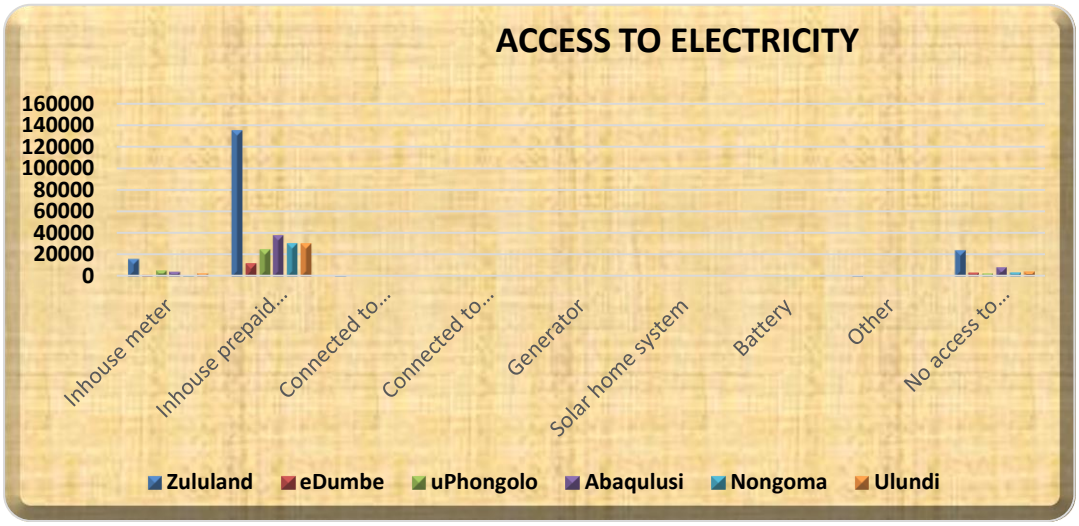
One of the major problems facing humanity in terms of achieving sustainable development is climate change. Many economic activities release greenhouse gasses – such as carbon dioxide, nitrous oxide and methane – that trap solar energy within the earth's atmosphere. The extra heat warms the climate, creating diverse economic, health, and ecological impacts. Evidence has revealed that fossil fuels (coal, oil and natural gas) constitute the single largest human influence on the climate change debate, accounting for over 80% of the anthropogenic greenhouse emissions. Two sectors of the economy, electricity and heat as well as the transport sector (especially road transport) emit greater amounts of GHGs. Given the fact that primary energy still dominates the world energy mix, the potential goal conflicts between economic growth and environmental protection are rather obvious. Reducing energy-related carbon emissions may require reducing the amount of fossil fuel consumption and hence economic growth. This dilemma has tended to contribute to the slow global, regional and national actions in addressing the danger of climate change. However, the problem of climate change associated with increased fossil fuel combustion is serious and requires concerted and comprehensive solutions. Improving energy efficiency, reforms of inefficient energy pricing, imposition of carbon emission taxes, promoting investment in renewable energy and creating public environmental awareness are some of the mitigation strategies that the municipality can use. Generating electricity is one of the biggest contributors to greenhouse gas emissions worldwide. Curbing emissions of CO2 and other greenhouse gases will require huge changes in how we produce and use

energy in the future. The following are some of mitigation measures that can assist to reduce our carbon emissions.

Ramping up renewable energy is key to creating a more resilient, reliable electricity system

- **Reduce the problem by reducing demand.** Energy-efficient homes and businesses require less electricity, eliminating the need to build new power plants and power lines. Less energy infrastructure means less equipment is vulnerable to damage from extreme weather events.
- **Conduct vulnerability assessments**. The municipality should conduct thorough assessments to evaluate the risks of climate change to their electricity infrastructure.
- **Incorporate climate adaptation and mitigation measures into utility resource planning.** The municipality should consider the costs of adapting to and mitigating climate change in their long-term planning.
- **Upgrade electricity infrastructure.** Power plant should install technologies that use less water. Utility and grid operators should pursue approaches that make the grid more flexible and better able to intergrate renewable energy sources. These include expanding transmission capacity and energy storage, adopting demand-response programs, and developing microgrids to better isolate outages.
- **Strengthen clean energy policies.** The municipality should also adopt and strengthen programs that support the timely expansion of renewable energy and energy efficiency, such as renewable electricity standards.



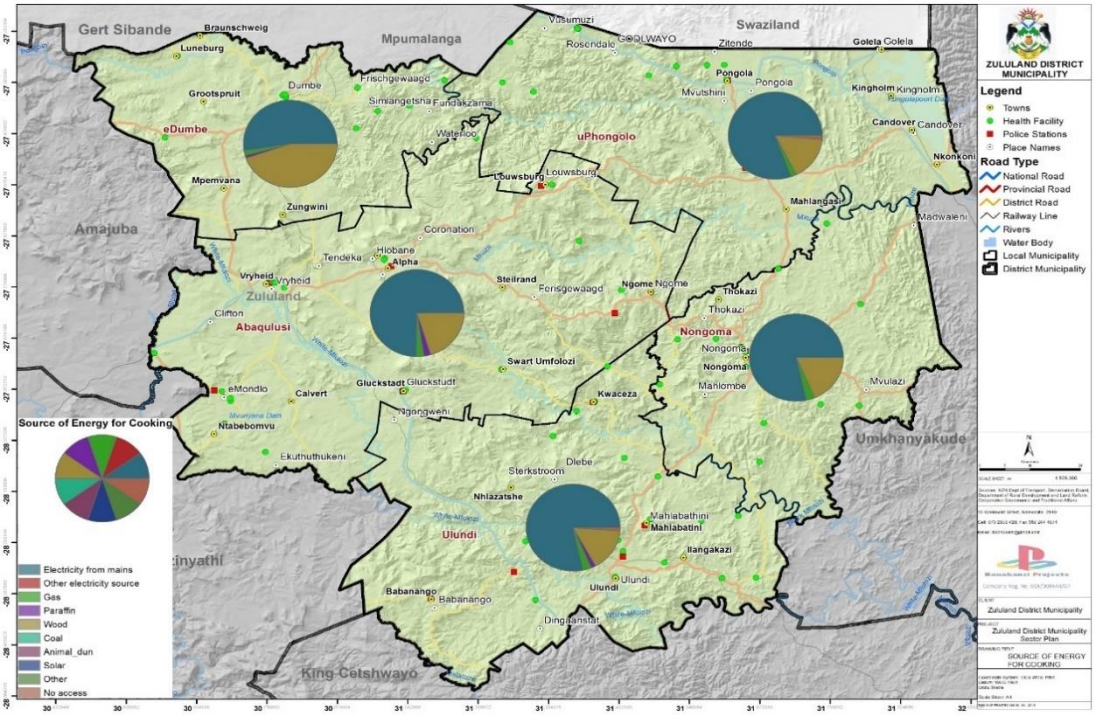


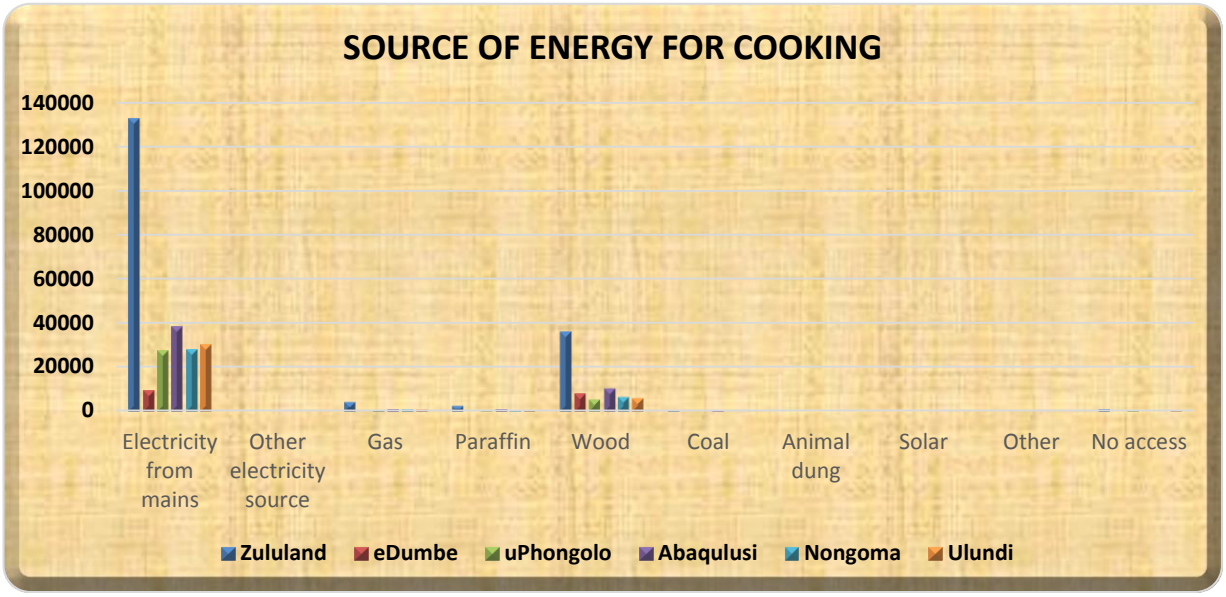
Municipality	Households	Inhouse meter	Inhouse prepaid meter	Connected to other source which household pays for	Connected to other source which household is not paying for
Zululand	178516	16623	135002	755	221
eDumbe	17415	1461	11640	133	27
uPhongolo	34228	5666	24960	347	42

Abaqulusi	51910	4652	37865	108	116
Nongoma	36409	1658	30298	47	35
Ulundi	38553	3185	30239	120	0

Table 3: Access to electricity by municipality (statssa, 2016)

Zululand District Municipality is reliant on electricity as a major source of energy. In order to contribute towards environmental sustainability, the District needs to identify the need to support alternative energy generation and reduce the reliance on fossil fuel generated energy. Electricity within the District is provided by Eskom. Electricity provision in the District has increased over the years. The number of households with access to electricity in the District is shown in the Table below, where only 85.48% of the District Municipality has access to electricity. uPhongolo is the highest municipality in providing electricity with eDumbe being the lowest

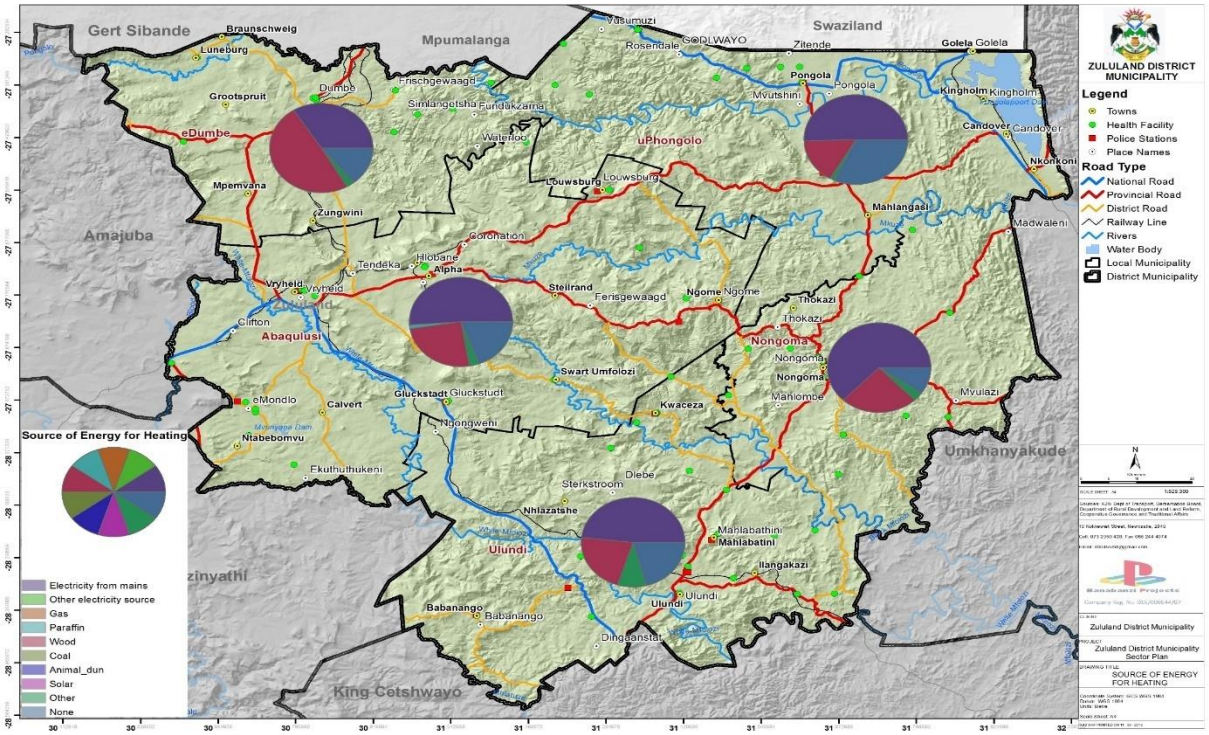


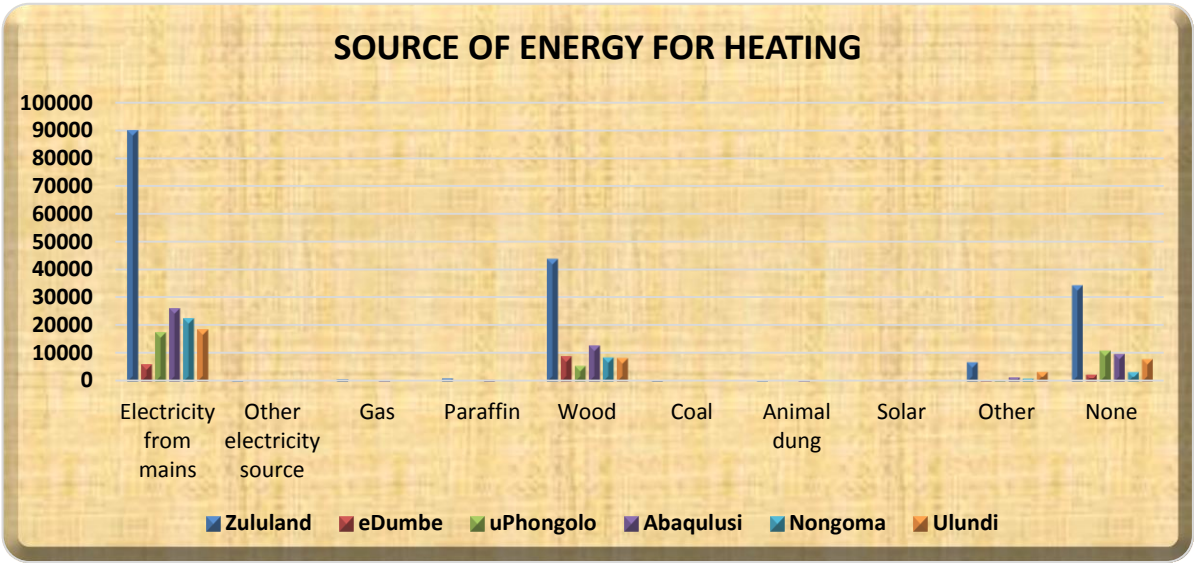


Municipality	Households	Electricity from mains	Other electricity source	Gas	
Zululand	178516	132838	262	4373	
eDumbe	17415	9132	0	287	
uPhongolo	34228	27246	58	652	
Abaqulusi	51910	38277	39	1301	
Nongoma	36409	28078	140	1017	
Ulundi	38553	30104	25	1116	

Table 4: Source of energy for cooking by municipality (statssa, 2016)

Zululand District Municipality is reliant on electricity as a major source of energy for cooking. Electricity provision in the District has increased over the years with a total number of households with access to electricity in the District is shown in the Table below, where an average of 72.71% of the District Municipality is using electricity as the source of energy for cooking. uPhongolo is the highest municipality in providing electricity for cooking at 79.77% with eDumbe being the lowest at 52.44%. Most of the people are still reliant on paraffin and wood for the source of energy for cooking which exerts pressure on the municipality to provide more energy for cooking, thus increasing the demand for electricy.

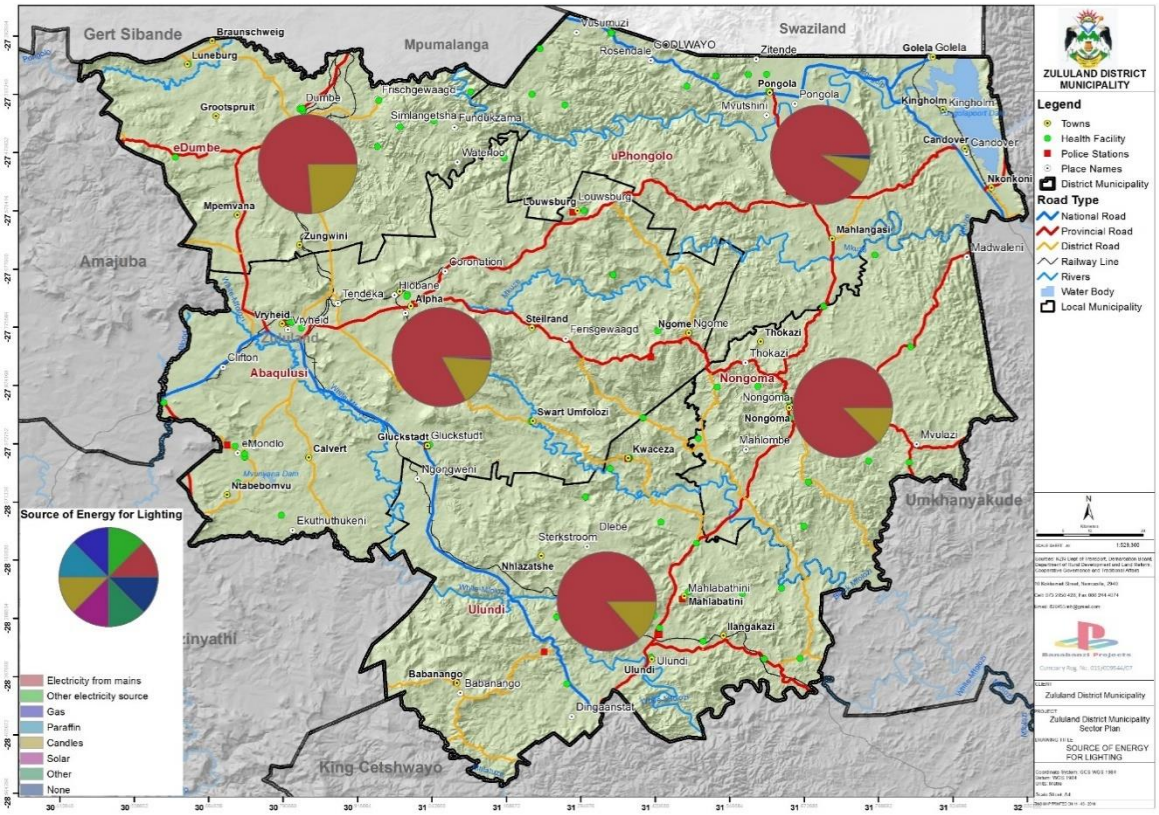


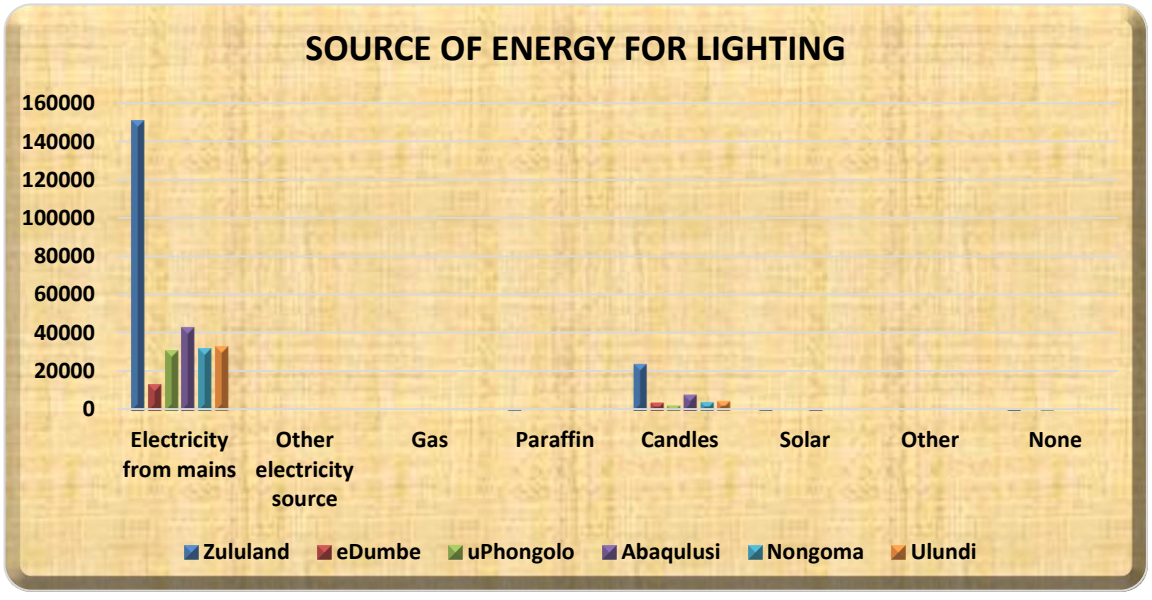


Municipality	Households	Electricity from mains	Other electricity source	Gas	Paraffin	Wood	Coal	Animal dung	Solar	Other	None
Zululand	178516	89822	262	867	1228	43866	505	352	55.0	7038	34484
eDumbe	17415	5861	0	78	44	8522	28	0	0.0	443	2439
uPhongolo	34228	17159	40	0	99	5553	27	0	32.0	491	10827
Abaqulusi	51910	26040	36	427	712	12843	156	303	13.0	1547	9833
Nongoma	36409	22443	123	222	124	8645	253	1	0.0	1166	3427
Ulundi	38553	18318	64	140	248	8303	41	47	10.0	3390	7958

Table 4: Source of energy for heating by municipality (statssa, 2016)

Zululand District Municipality is reliant mainly on wood as a major source of energy for heating. As the dwelling type change from traditional structures to formal structures, an increase in the demand and reliance for electricity as the source of energy for heating will be experienced by the district. The total population relying on electricity as the source of energy for heating is averaging at 49.04%, which indicates that more than half of the population is using other means. Ans this number increases, more renewable energy sources need to be explored. Nongoma is the highest municipality with 61.98% of its population relying on electricity for heating with eDumbe being the lowest on 33.65%.

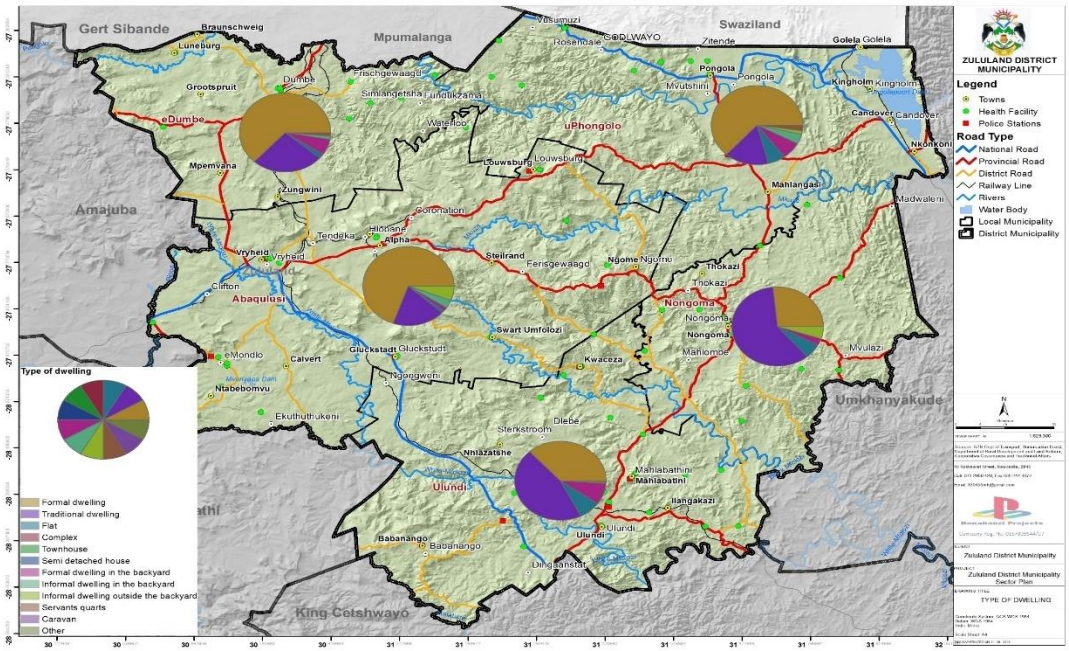


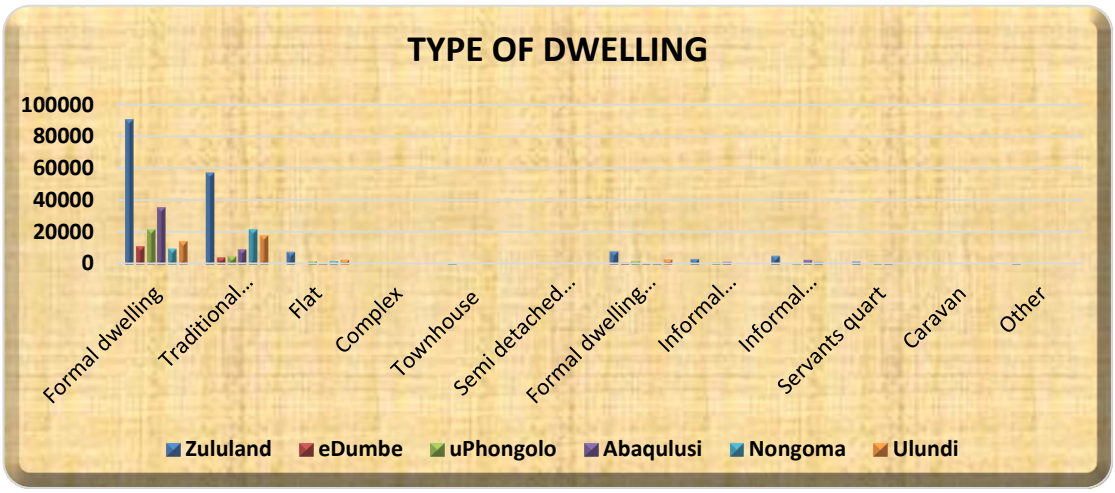


Municipality	Households	Electricity from mains	Other electricity source	Gas
Zululand	178516	151173	237	170
eDumbe	17415	13152	46	27
uPhongolo	34228	30825	10	40
Abaqulusi	51910	42708	34	50
Nongoma	36409	31464	146	8
Ulundi	38553	33024	1	45

Table 5: Source of energy for lighting by municipality (statssa, 2016)

Zululand District Municipality is reliant mainly on electricity as a major source of energy for lighting with an average of 84.25%. uPhongolo is the highest municipality with 90.09% of its population relying on electricity for lighting with eDumbe being the lowest on 75.79%. As this is the main source of energy for lighting being used by the municipality, the need for another source of energy is required. The municipality can also initiate some projects for reducing more energy consumption on this source, e.g. using more energy saving light bulbs for their communities.

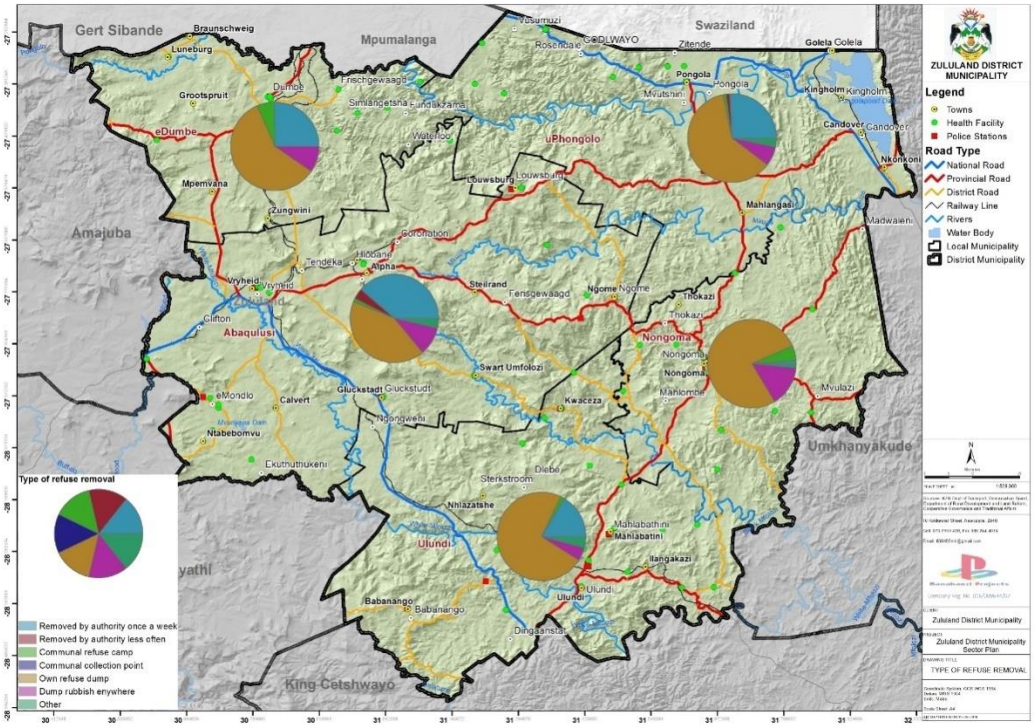


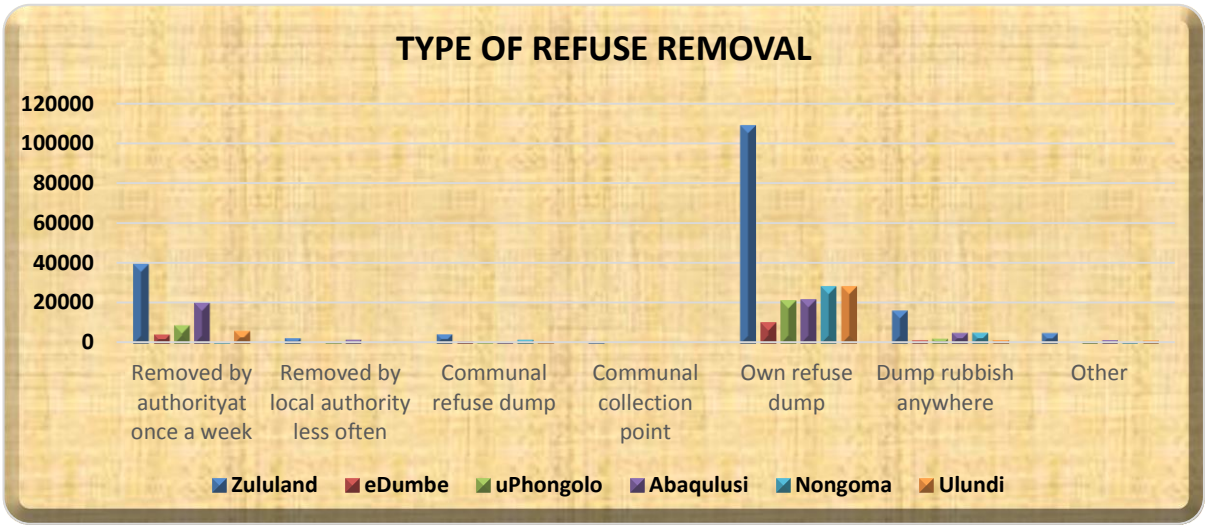


Municipality	Households	Formal dwelling	Traditional dwelling	Flat	Complex	Townhouse	Semi detached house	Formal dwelling in backyard	Informal dwelling in backyard	Informal dwelling outside the backyard	Servants quart	Caravan	Other
Zululand	178516	90978	57702	8082	389	627	423	8505	3646	5575	1901	61	620
eDumbe	17415	10893	4414	316	0	38	17	1134	219	81	255	0	47
uPhongolo	34228	21506	5302	2142	15	77	114	2379	1334	537	764	26	33
Abaqulusi	51910	35083	9407	526	305	360	248	740	1695	2980	483	0	83
Nongoma	36409	9558	21309	2161	28	4	44	977	264	1805	222	10	21
Ulundi	38553	13938	17271	2936	42	147	0	3276	134	172	177	25	436

Table 6: Type of dwelling by municipality (statssa, 2016)

Zululand District Municipality has more than 50% of its population that has formal type of dwelling. Abaqulusi is the highest municipality with 67.58% with Nongoma being the lowest on 26.25%. An increase in formal structures indicates an increase and reliance in municipality services from our communities. This will translate to an increase in electricity usage on most of household requirements. This increase in electricity reliance will increase the municipality supply from the service provider, thus making electricity production higher than before increasing the emissions to the atmosphere. It will also put pressure on the municipality to increase its projects that provide portable water to its population.





Municipality	Households	Removed by authorityat once a week	Removed by local authority less often	Communal refuse dump
Zululand	178516	39827	2741	4661
eDumbe	17415	4329	28	1087
uPhongolo	34228	8841	480	364
Abaqulusi	51910	20001	2021	671
Nongoma	36409	397	69	2008
Ulundi	38553	6259	144	531

Table 7: Type of refuse removal by municipality (statssa, 2016)

Modernization and progress has had its share of disadvantages and one of the main aspects of concerns, is the pollution it is causing to the earth – be it land, air, and water. With increase in the global population and the rising demand for food and other essentials, there has been a rise in the amount of waste being generated daily by each household. This waste is ultimately thrown into municipal waste collection where applicable, from where it is collected by the area municipalities to be further thrown into the landfills and dumps. However, either due to resource crunch or inefficient infrastructure, not all of this waste gets collected and transported to the final dumpsites. If at this stage the management and disposal is improperly done, it can cause serious impacts on health and problems to the surrounding environment.

Waste that is not properly managed, is a serious health hazard and lead to the spread of infectious diseases. Unattended waste lying around attracts flies, rats, and other creatures that in turn spread disease. Normally it is the wet waste that decomposes and releases a bad odour. This leads to unhygienic conditions and thereby to a rise in the health problems. Waste prevention and recycling-jointly referred to as waste reduction that helps us better manage the solid waste we generate. But preventing waste and recycling also are potent strategies for reducing greenhouse gases. Together they:

- **Reduce emissions from energy consumption.** Recycling saves energy. That's because making goods from recycled materials typically requires less energy than making goods from virgin materials. And waste prevention is even more effective. Less energy is needed to extract, transport, and process raw materials and to manufacture products when people reuse things or when products are made with less material. The payoff? When energy demand decreases, fewer fossil fuels are burned and less carbon dioxide is emitted to the atmosphere.
- **Reduce emissions from incinerators.** Diverting certain materials from incinerators through waste prevention and recycling reduces greenhouse gas emissions to the atmosphere.

- **Reduce methane emissions from landfills.** Waste prevention and recycling (including composting) divert organic wastes from landfills, reducing the methane released when these materials decompose.
- **Increase storage of carbon in trees.** Forests take large amounts of carbon dioxide out of the atmosphere and store it in wood, in a process called carbon sequestration. Waste prevention and recycling of paper products can leave more trees standing in the forest, continuing to absorb carbon dioxide from the atmosphere.

Zululand District Municipality has a very low number of waste that is collected and believed to be disposed appropriately at an average of 24.60%. Most of its waste is disposed from the community's own refuse dump. The manner at which that waste is disposed is questionable. The municipality need to increase its refuse collection method, and any other projects related to waste to reduce the emissions to the atmosphere.

10. FUNDING ARRANGEMENTS FOR DISASTER RISK MANAGEMENT

10.1 Funding Mobilization Strategy

The table below provides an overview of the recommended funding mechanisms for disaster risk management functions

Activity	Funding source	Funding mechanism
Start-Up activities (KPA1, Enabler 1)	Zululand District Municipality andProvincial Disaster Management Centre	Own budgets Conditional grant for local government; Conditional infrastructure grants (MIG).
Disaster Risk Management ongoing operations (KPAs 2 and 3)	Disaster Management and Fire &Rescue Services	Own unit's budgets Equitable share
Disaster risk reduction (KPAs 2 and 3)	Zululand District Municipality and Provincial Disaster Management Centre	Own budgets. Augmented as necessary. Own budgets but can be augmented by application to the ADM or directly the PDMC for special risk reduction projects.
Response, recovery and	Zululand District Municipality;	Own Budget; Also access to

Activity	Funding source	Funding mechanism
rehabilitation KPA 4)	and Provincial Disaster Management Centre	central contingency funds; Conditional infrastructure grants (i.e. Municipal Infrastructure Grant (MIG)
Education, training and capacity-building programmes (Enabler 2)	Zululand District Municipality; and Provincial Disaster Management Centre	Own Budget. Re-imbursement through SETAs. Also funding through private sector, research foundations, NGOs and donors

Table: 2 Funding arrangements for Disaster Risk Management in South Africa
Source: Framework for Disaster Risk Management in the Province of KwaZulu Natal