A. EXECUTIVE SUMMARY

A.1 Introduction

ZDM as the Water Service Authority has a duty to all customers or potential customers in its area of jurisdiction to progressively ensure efficient, affordable, economical and sustainable access to Water Services [Water Services Act of 1997 Section 11]. ZDM therefore has a legislative responsibility to Prepare a Water Services Development Plan (WSDP) for its area of jurisdiction [Water Service Act of 1997 Section 12]. Planning work related to various aspects of water services are being dealt with on a continuous basis through the year and the results of such work are then systematically fed into the WSDP.

Name of WSA

Name	Zululand District Municipality	
Address	Private Bag X76 ULUNDI 3838	Lot B400, Gagane Street ULUNDI 3838

Status of WSDP

The planned completion dates for the revision of the WSDP are as follows:

- WSDP Steering Committee approval (Draft version) – March 2019
- EXCO approval – May 2019
- Expected Council approval – June 2019
- Submission of final WSDP with amended comments & input - August 2019

WSDP drafting team

The contact persons within the municipality who are responsible for the functioning, planning and implementation of the WSDP are shown in Table A1.1 below:

Table A1.1: Drafting team

Name	Position	Tel Number	Email
Mr RN Hlongwa	Municipal Manager (Acting)	035 874 5500	mm@zululand.org.za
Mr X Buthelezi	Deputy Director: WSA	035 874 5542	xbuthelezi@zululand.org.za
Mr S Ngcobo	HOD: Technical Services	035 874 5500	esngcobo@zululand.org.za
Mr B Mnguni	HOD: Planning	035 874 5617	bmnguni@zululand.org.za

Process followed

ZDM annually prepares a revised WSDP in time for the approval of the annual municipal budget. Planning work related to various aspects of water services are being dealt with on a continuous basis through the year and the results of such work are then systematically fed into the WSDP.

The WSDP Steering Committee has been established and meets at least four times per year. The steering committee comprises of the ZDM management team, officials from the Local Municipalities, Councillors and consultants involved with the technical work. The aim is to have a first draft of each year's revision ready by end of February. The following approvals are done:

Table A1.2: WSDP Approval Process

Item	Date
WSDP Steering Committee Meetings	Quarterly
Submission of draft WSDP document to WSA for comments	End February
WSDP & IDP Steering Committee Approval	End March
Representative Forum approval – This forum comprises all Government Departments involved with the IDP process, all Councillors and role players from the private sector.	End April
EXCO approval	May
Advertise for public comment	End May
Council approval	June
Submit to DWA for final approval	August

Public comments

The WSDP will be advertised during May 2019 for public comment.

Adoption record

The 2018/2019 revision of the WSDP has been approved by the ZDM Council during June 2018.

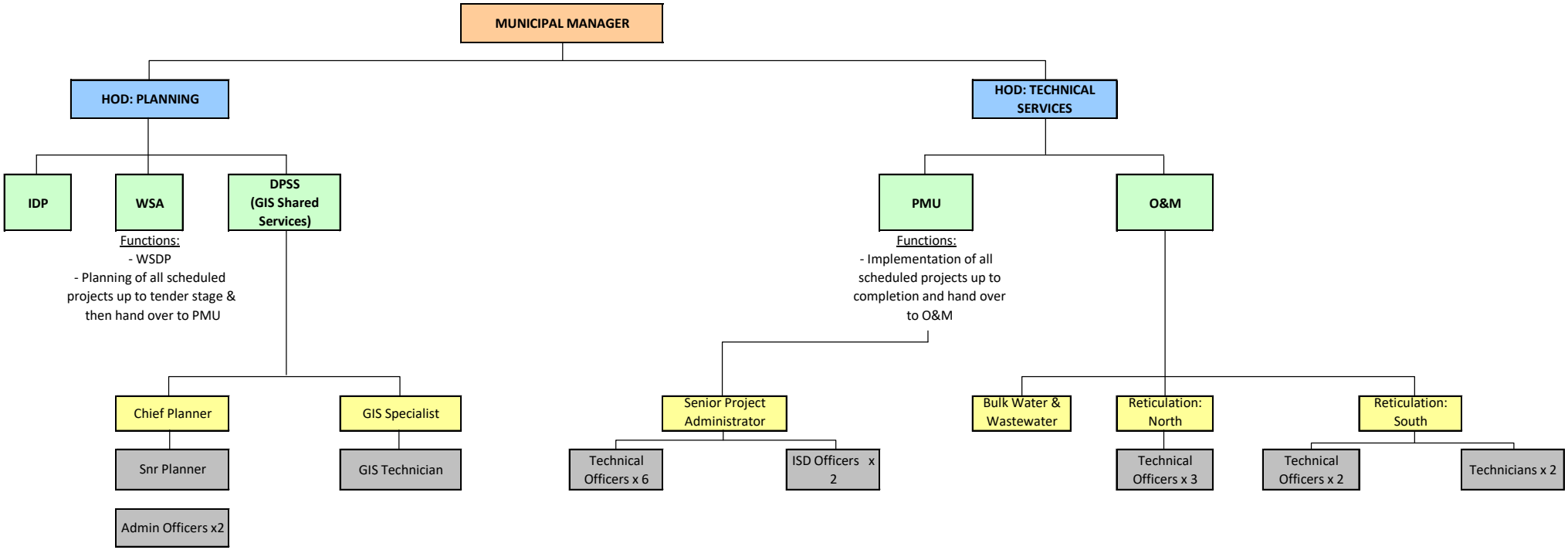
WSDP co-ordinators

The WSDP process is managed by the Deputy Director: Water Services Authority in association with the HOD: Planning & Community Development and the HOD: Technical Services and their staff.

PMU

The ZDM PMU has been established and is functioning well. The PMU unit comprises of a Deputy Director, two technical officers, project administrator and secretary. The PMU manager reports to the HOD: Technical Services and is responsible for the implementation of all projects scheduled by the WSA. The WSA unit is situated in the Planning Department and reports to the HOD: Planning. The organograms below indicates the split in functions related to water services:

Table A1.3: Organogram



Water services level policy

ZDM has compiled a Water Services Policy and this is available from the ZDM website at www.zululand.org.za. The following levels of service for water and sanitation are available from the municipality:

Table A1.4: Service Levels

Domestic Water Supply				
Service Level Number	**Level of Service**	**Definition**	**Applicable Tariff Structure**	**Norms and Standards**
DW1	Full pressure conventional house connection	Full pressure unrestricted individual erf/yard connection	Stepped block tariff	Design specifications
DW2	Yard tank (RDP standard)	Restricted (to 200l per day) individual erf connection with tank in yard	No charge	Design specifications
DW3	Communal street taps (RDP standards)	Unrestricted full pressure standpipe not further than 200m from dwellings (shared by a number of consumers)	No charge	Design specifications
DW4	Rudimentary	Formalised supply: • Borehole equipped with hand pump • Protected spring • Communal standpipe within 800m from dwellings	No charge	Design specifications

Domestic Sanitation				
Service Level Number	**Level of Service**	**Definition**	**Applicable Tariff Structure**	**Norms and Standards**
DS1	Water borne	Unrestricted connection to municipal sewerage system	Water consumption based tariff structure included in water tariff	Design specifications
DS2	Conservancy tank	Localised temporary sewage storage facility	Rate per load disposed by municipality	Design specifications
DS3	Septic tanks	On-site disposal (self treatment)	No charge	Design specifications
DS4	Ventilated improved pit (VIP)	Dry pit with sufficient capacity on-site disposal based on set standards	No charge	Design specifications

A.2 IDP and WSDP Goals

The Integrated Development Plan (IDP) for the ZDM has the following vision and mission statement for the region:

IDP vision and mission statement for the municipality
Vision "*We, the people of Zululand are proud communities that are committed to the development of Zululand through hard work, integrity and a common purpose."* **Mission** • **To develop an affluent district by:** o *Optimal delivery of essential services* o *Supporting sustainable local economic development* o *Community participation in service delivery*

Part of the development objectives for Zululand is facilitating the delivery of basic services that include water services (i.e. water and sanitation provision), strengthening the local economy with particular emphasis on tourism, agriculture and small business sectors, and the sustainable use of land and the natural environment.

The importance of the vision and objectives in terms of the WSDP is the development of Zululand through the provision of equitable and sustainable water services leading to an improvement in the quality of life. It therefore follows that planning in respect of water services must increase the current level of service throughout the region with an improvement experienced by all. Planning must therefore be sustainable in terms of water resources, material resources, contractor capacity, management capacity, as well as funding and maintenance cost.

The IDP has a number of key development strategies, namely:

- Delivery and coordination of basic services.
- Social issues of communities.
- Sustainability and environment.
- Economic development.
- Build capacity to lead and manage development in Zululand.

All these development strategies will ultimately link to the need and spatial requirement for water services provision. **Spatial development within the ZDM is directly related to the provision and availability of water services, therefore development tends to follow sustainable planning in the WSDP and not force water services provision into areas that are currently not economically viable or sustainable to supply.**

This support the water and sanitation infrastructure development focus of the KZN Provincial Growth and Development Strategy (PGDS) for 2035, which will be discussed in the next section.

A.3 Strategic Objectives & Development Goals

The ZDM WSDP supports the KZN PGDS Strategic Framework. WSDP goals, objectives, interventions and projects are aligned to place ZDM in a position to fulfil its role as WSA in achieving the provincial PGDS for 2035.

While the focus has been predominantly on providing each person with sustainable infrastructure and eradicating backlogs, the status of existing and aging infrastructure, as well as the availability and sustainability of water resources has been neglected. An extract of the KZN PGDS can be reviewed below.

> *"The 2015/2016 drought experienced in the country and more so in the Province has had a severe impact on the citizens of the Province and their livelihoods. The most severe impact has been felt by the rural communities of KZN whose livelihoods depend on agriculture, including livestock. The Province, through various initiatives and programs, has attempted to ensure a reliable supply of water to its citizens. The continued low rainfall has made this task increasingly challenging. National and Provincial government have spent millions of rand to ensure citizens have access to water.*
>
> ***The discourse on reliable and affordable water supply has forced the water sector to re-look at several aspects of the water source management and water supply**. In terms of water source it is being argued that the Province requires a better understanding of groundwater and its catchment areas. This strategy argues that water planning and resource management should be done at a quaternary catchment level - the focus should not only be at regional level. Alternative water sources, like grey water and desalination must become viable options as sources of supply.*
>
> ***There is also a school of thought that the severity of the drought is a direct correlation to the poor maintenance programs of water services authorities**. These related to poor borehole upgrades and spring protection, high water losses due to leakages not been attended to urgently, water theft and lack of bulk and reticulation planning.*
>
> *Skills development and capacity building, in the water sector continues to be an area of investigation in this review. There is a school of thought that argues that the skills required are more at an artisan level rather than at engineering level. This relates to the **maintenance issue around boreholes and spring protection and attendance of water leaks**. There is, however, another school of thought that water services authorities have focused more on **water demand** rather than water source management and that shift must be emphasised. Further, there is increasing pressure being put on the water sector institution to begin to develop a **sustainable water sector capacity building model**. The water services boards, the water services departments and the water services authorities all have various levels and type of expertise within their institutions. Therefore, these institutions along with engineering councils and the private sector must begin to provide a holistic sustainable **capacity building model** that contributes to a new water sector investment strategy. In addition, there is a growing demand for **localized water skills** at all levels as well as employment and*

business opportunities. The water sector through the vast capital spend have the potential to improve ***employment opportunities and create entrepreneurs in decentralized local spaces****.*

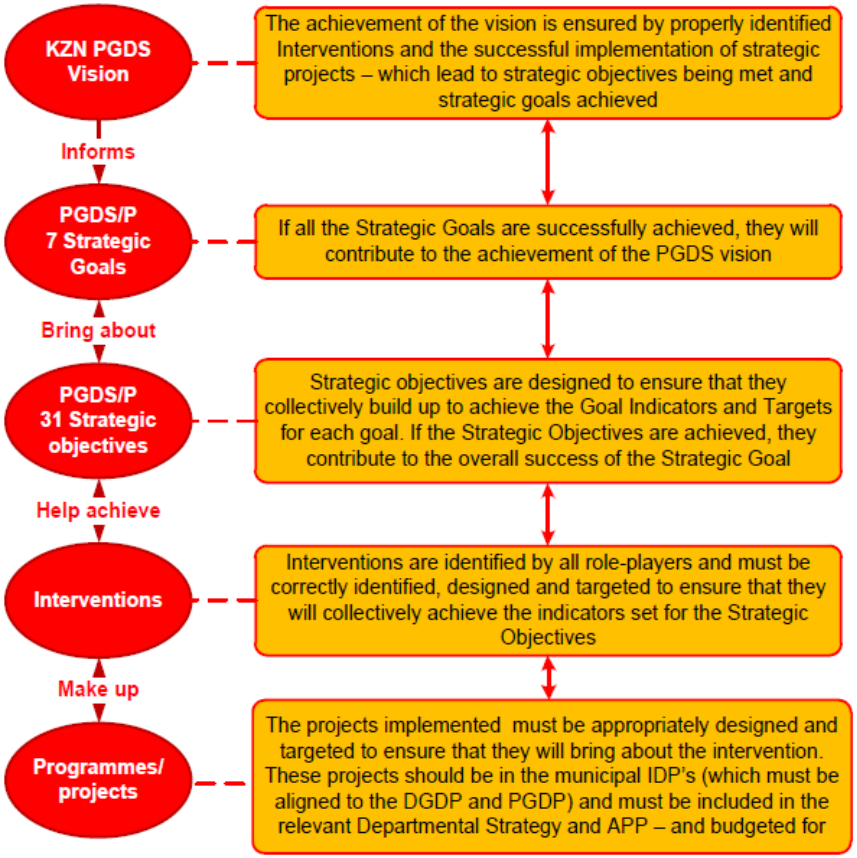
The financial cost of water supply cannot be underestimated and the Province needs to have a funding model to address this*. Like energy, water costs will increase and become increasingly expensive for consumers and business, thus the importance of having a* ***reliable and affordable water supply****. The Department of Water and Sanitation in the Province have several key capital water projects that will ensure a relative supply of water in the province. The growing concerns will be the pace at which our province is urbanizing and the greater demand this will have on water provision in these urbanized areas as well as to ensure reliable access to water, in rural areas.*

Given the above, the Province in the next five years must engage in the development of a new water sector investment strategy. This strategy must include ***elements of water loss and maintenance, water availability, cost of water supply****. In addition, the strategy should include water source plans that consider ground water, desalination, grey-water. Further a discussion on localized skills and local business development. Greater emphasis on improving rural access to water and increasing mitigating measures to this section of our population."*

As water provision will increase, so will water resources needs, operation and maintenance of existing infrastructure, efficient institutional and financial capacity to manage infrastructure and revenue etc. The KZN PGDS Framework aims to achieve at least 90% reliable services by 2035.

An overview of the KZN PGDS framework with associated goals and objectives for water and sanitation services can be reviewed in the next figure.

Figure A.3.1: KZN PGDS Framework



The 2016 Revised PGDS Strategic Framework

Figure 10: PGDS Strategic Framework

2016 PGDS STRATEGIC GOALS and OBJECTIVES

STRATEGIC GOAL	No	STRATEGIC OBJECTIVE 2016
1 INCLUSIVE ECONOMIC GROWTH	1.1	Develop and promote the agricultural potential of KZN
	1.2	Enhance sectoral development through trade investment and business retention
	1.3	Enhance spatial economic development
	1.4	Improve the efficiency, innovation and variety of government-led job creation programmes
	1.5	Promote SMME and entrepreneurial development
	1.6	Enhance the Knowledge Economy
2 HUMAN RESOURCE DEVELOPMENT	2.1	Improve early childhood development, primary and secondary education
	2.2	Support skills development to economic growth
	2.3	Enhance youth and adult skills development and life-long learning
3 HUMAN AND COMMUNITY DEVELOPMENT	3.1	Eradicate poverty and improve social welfare services
	3.2	Enhance health of communities and citizens
	3.3	Safeguard and enhance sustainable livelihoods and food security
	3.4	Promote sustainable human settlements
	3.5	Enhance safety and security
	3.6	Advance social cohesion and social capital
	3.7	Promote youth, gender and disability advocacy and the advancement of women
4 INFRASTRUCTURE DEVELOPMENT	4.1	Development of seaports and airports
	4.2	Develop road and rail networks
	4.3	Develop ICT infrastructure
	4.4	Ensure availability and sustainable management of water and sanitation for all
	4.5	Ensure access to affordable, reliable, sustainable and modern energy for all
	4.6	Enhance KZN waste management capacity
5 ENVIRONMENTAL SUSTAINABILITY	5.1	Enhance resilience of ecosystem services
	5.2	Expand the application of green technologies
	5.3	Adapt and respond climate change
6 GOVERNANCE AND POLICY	6.1	Strengthen policy, strategy coordination and IGR
	6.2	Build government capacity
	6.3	Eradicate fraud and corruption
	6.4	Promote participative, facilitative and accountable governance
7 SPATIAL EQUITY	7.1	Enhance the resilience of new and existing cities, towns and rural nodes, ensuring equitable access to resources, social and economic opportunities
	7.2	Ensure integrated land management use across the Province, ensuring equitable access to goods and services, attracting social and financial investment

Strategic Objectives and Interventions for the KZN PGDS can be reviewed below.

Figure A.3.2: KZN PGDS Strategic Objectives and Interventions

Strategic Objective 4.4 Indicators:

4.4.1 Percentage mean annual runoff water stored in each district.
4.4.2 Quantity of water abstracted per annum in each district.
4.4.3 Number of households receiving minimum standards of sanitation.
4.4.4 Percentage households with access to safe drinking water
4.4.5 Cubic meters of water available.
4.4.6 Surface Water storage as a percentage of surface mean annual runoff per district.
4.4.7 Non-Revenue Water loss – (physical and non-physical water loss).
4.4.8 Number of projects not approved due to bulk Water and Sanitation Infrastructure constraint.
4.4.9 Number of MIG and WSIG projects meeting 75 litres of water per person per day.

Strategic Objective 4.4 Interventions:

4.4(a) Review and implement the Provincial Water Sector Investment Strategy.
4.4(b) Policy and guidelines on the inclusion of quaternary catchment for groundwater, grey water and desalination.
4.4(c) Develop and implement water sector capacity building programme with all water institutions.
4.4(d) Develop new water and sanitation tariff policy.
4.4(e) Expedite the approval of Water Use Licences.
4.4(f) Programme for development of water sources (desalination, rainwater, recycling, groundwater).
4.4(g) Expedite the planning and implementation of sub-transmission networks in the Province.

The ZDM WSDP support the above framework, and will elaborate on each aspect in more details throughout the document under each relevant chapter. The following provides a framework for these topics under 11 categories as depicted in the KZN PGDS document.

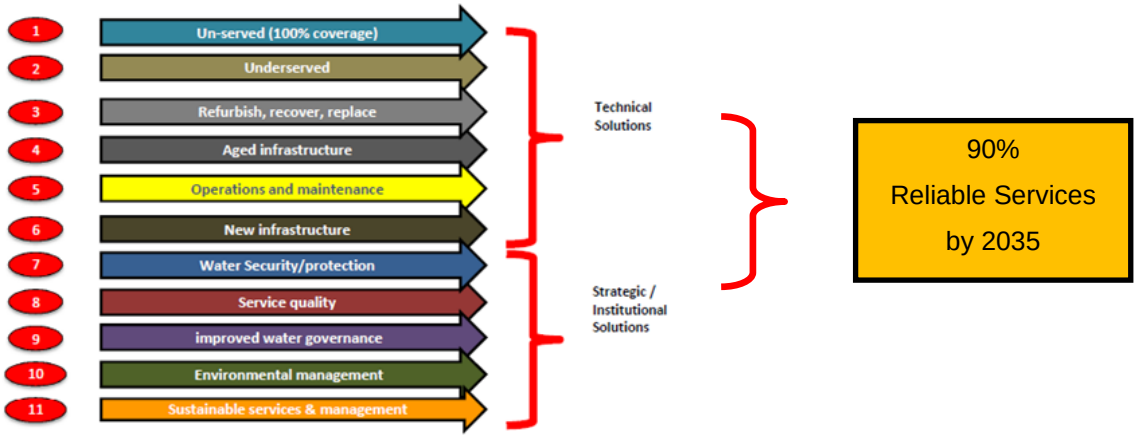


Figure A.3.3: KZN PGDS Strategic Framework

These 11 categories are consolidated in the WSDP under the following topics as required by the web-based WSDP template of DWS:

- TOPIC 1: Demographic Profile
- TOPIC 2: Service Level Profiles
- TOPIC 3: Socio-Economic Background
- TOPIC 4: Water & Sanitation Services Profile
- TOPIC 5: Operation & Maintenance
- TOPIC 6: Associated Services
- TOPIC 7: Conservation & Demand Management
- TOPIC 8: Water Resources
- TOPIC 9: Financial Profile
- TOPIC 10: Institutional Profile
- TOPIC 11: Customer Service

Items related to the Strategic Objectives and Development Framework will be discussed throughout this WSDP and reference will be made to the 2035 targets.

A.4 Background to the area

The ZDM is situated in northern KwaZulu-Natal (KZN). It covers an area of 14,808 km^2 and is divided into five local municipalities (LMs), namely eDumbe (KZ261), uPhongolo (KZ262), Abaqulusi (KZ263), Nongoma (KZ265), and Ulundi (KZ266) (Figure A4.1a). There is only one change in the local municipal boundaries from 2011 to 2016. This area is located west of Louwsburg, where a portion of uPhongolo LM has been incorporated into AbaQulusi LM. This change can be reviewed under Figure A 4.1a on the proceeding page.

The district is predominantly rural with commercial farmland interspersed by protected areas, towns, and dense to scattered rural settlements within traditional authority areas. The majority of these rural settlements are small, making service delivery to these remote areas extremely costly. Settlements are located as follows:

Table A 4.1: Settlement location

Settlement Location	Nr of Settlements
Urban Towns	27
Communal Property	27
Land Reform Areas	75
State-owned	26
Tribal Areas	857
Private Land	257
TOTAL	**1 269**

A revised update of settlements has been done to update settlement boundaries and include new land reform areas as settlements. Household clusters on private farms have also been identified, and will be addressed based on ZDM's policy regarding rural residents on privately owned farm lands. A map showing the existing settlements against the revised settlement database can be reviewed under Figure A4.1b. The major changes and updates can be seen in AbaQulusi and eDumbe LM's, with minor updates and additions in the uPhongolo LM. The new settlement areas are included as part of this 5-year review of the WSDP.

A comparison table showing the new revised settlement types can be reviewed in Table A4.1b below.

Table A 4.2: Settlement Types

Class	Settlement Type	Nr of Settlements	Total households
URBAN	Urban - Formal Town	4	6 425
	Urban - Former Township	5	14 675
	Urban - Ex Homeland Town	13	10 233
	Urban - Working Town	6	1 335
	Urban - Service Centre	8	1 549
	Urban - Squatter Camp	1	115
RURAL	Urban Fringe - Informal Settlement	19	8 906
	Peri-Urban - Squatter Camp	1	284
	Rural - Formal Dense >5000	2	3 046
	Rural - Formal Dense <5000	35	10 310
	Rural - Scattered Dense	5	2 612
	Rural - Scattered Medium Density	5	223
	Rural - Scattered Low Density	59	10 732
	Rural - Scattered Very Low Density	1 106	107 422
	Rural - Scattered households	N/A	5 775
	TOTAL	**1 269**	**183 642**

Land use in the ZDM is linked primarily to tenure and the land with the highest agricultural potential is in private ownership and is mostly used for commercial farming or conservation, with low settlement densities. Private farmlands constitute a large portion of the ZDM's land area. The land use potential varies throughout the district, but are predominantly varieties of grassveld and thornveld. Agricultural activities are mainly forestry (eDumbe, Abaqulusi and around Babanango), sugar cane (uPhongolo), livestock (throughout the district), maize, soya beans, wheat, groundnuts, sorghum, vegetables and sub-tropical fruit. These commercial farms mostly have well developed infrastructure and farming systems. The difficulties they experience relate more to broader economic factors than spatial factors and linkages in the ZDM. In recent years, a number of cattle farms throughout the ZDM have been converted into game farms. These may be linked to tourism and conservation in the district.

In contrast, the non-arable land and land with severe limitations to agriculture, fall into the traditional authority areas and are densely settled. These Ingonyama Trust areas support settlement and subsistence agriculture (there is moderate to restricted agricultural potential), with the Traditional Authorities (TAs) for each LM being divided as follows:

- eDumbe LM: Dlamini TA and Mtetwa TA.
- uPhongolo LM: Masidla TA, Msibi TA, Ntshangase TA and Simelane TA.
- Abaqulusi LM: Hlahlindhlela TA and Kambi TA.
- Nongoma LM: Mandhlakazi TA, Matheni TA and Usuthu TA.
- Ulundi LM: Empetempithini TA, Mbata TA, Mpungose TA, Ndebele TA, Nobamba TA, Ximba TA and Zungu TA.

A map showing land distribution can be reviewed under Figure A4.1c. Tribal Authority areas, Land Reform Areas, privately owned farms and urban areas can be seen.

Figure A 4.1: Locality map of Zululand District Municipality.

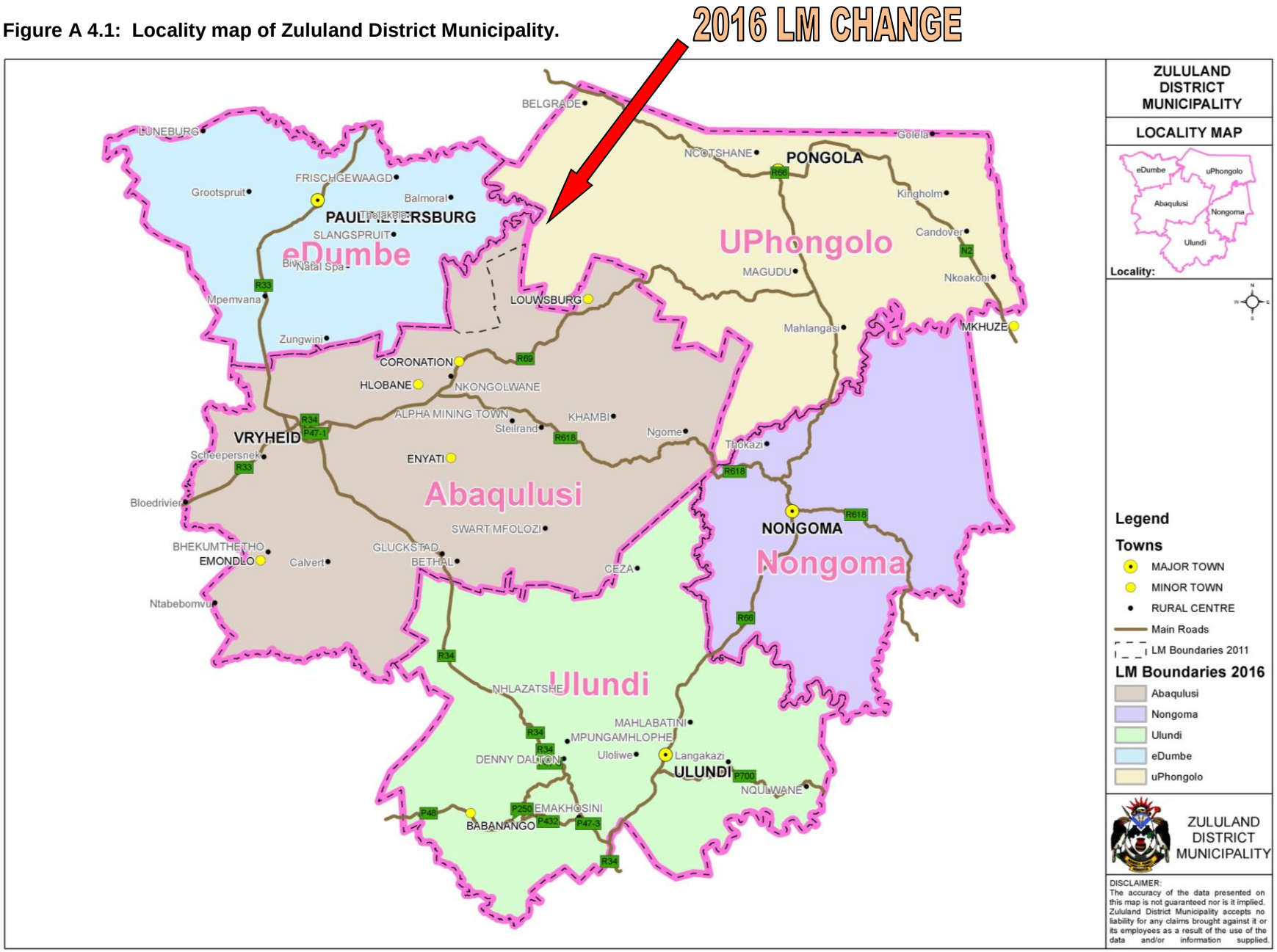


Figure A 4.2: Demographics of Zululand District Municipality.

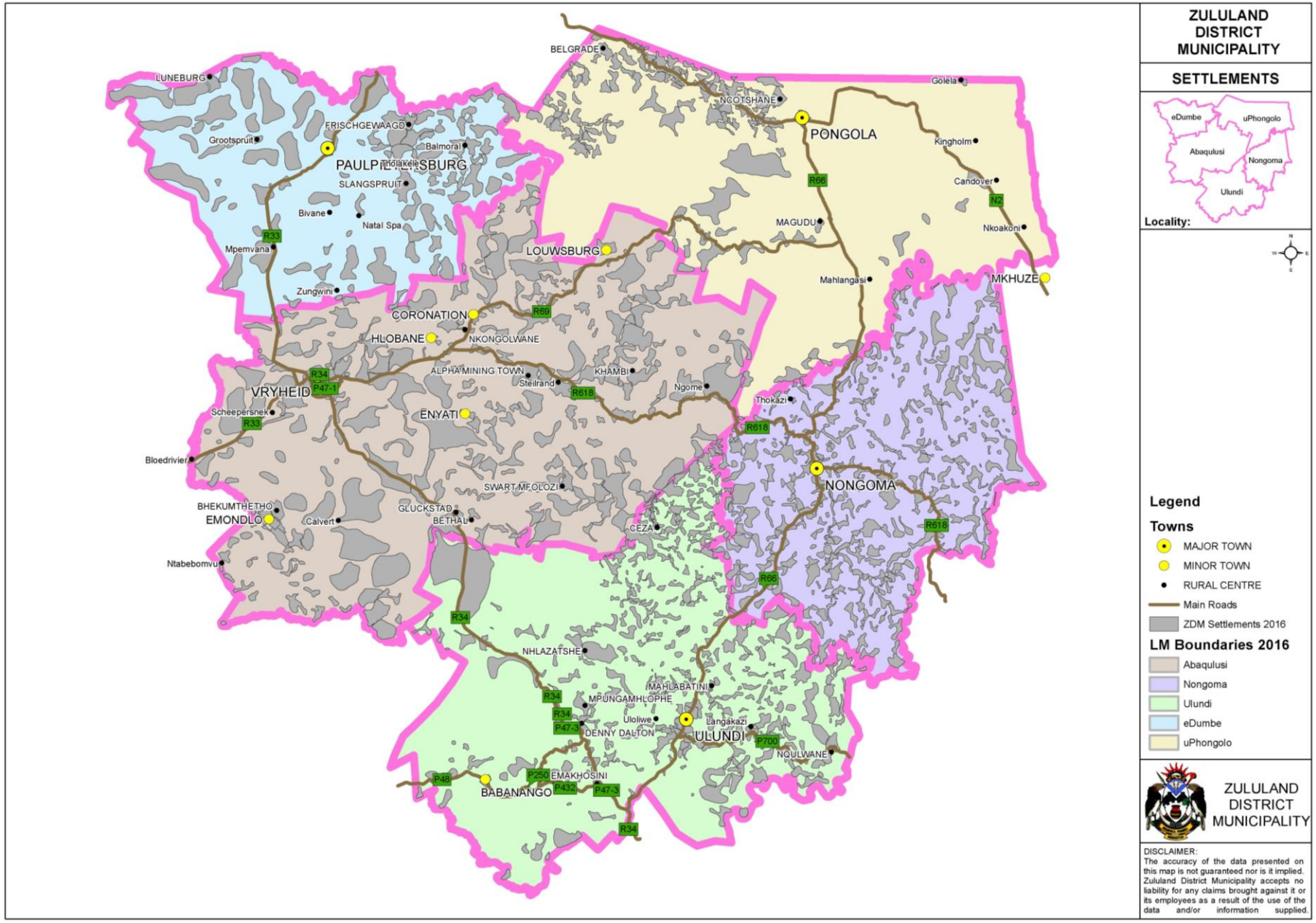
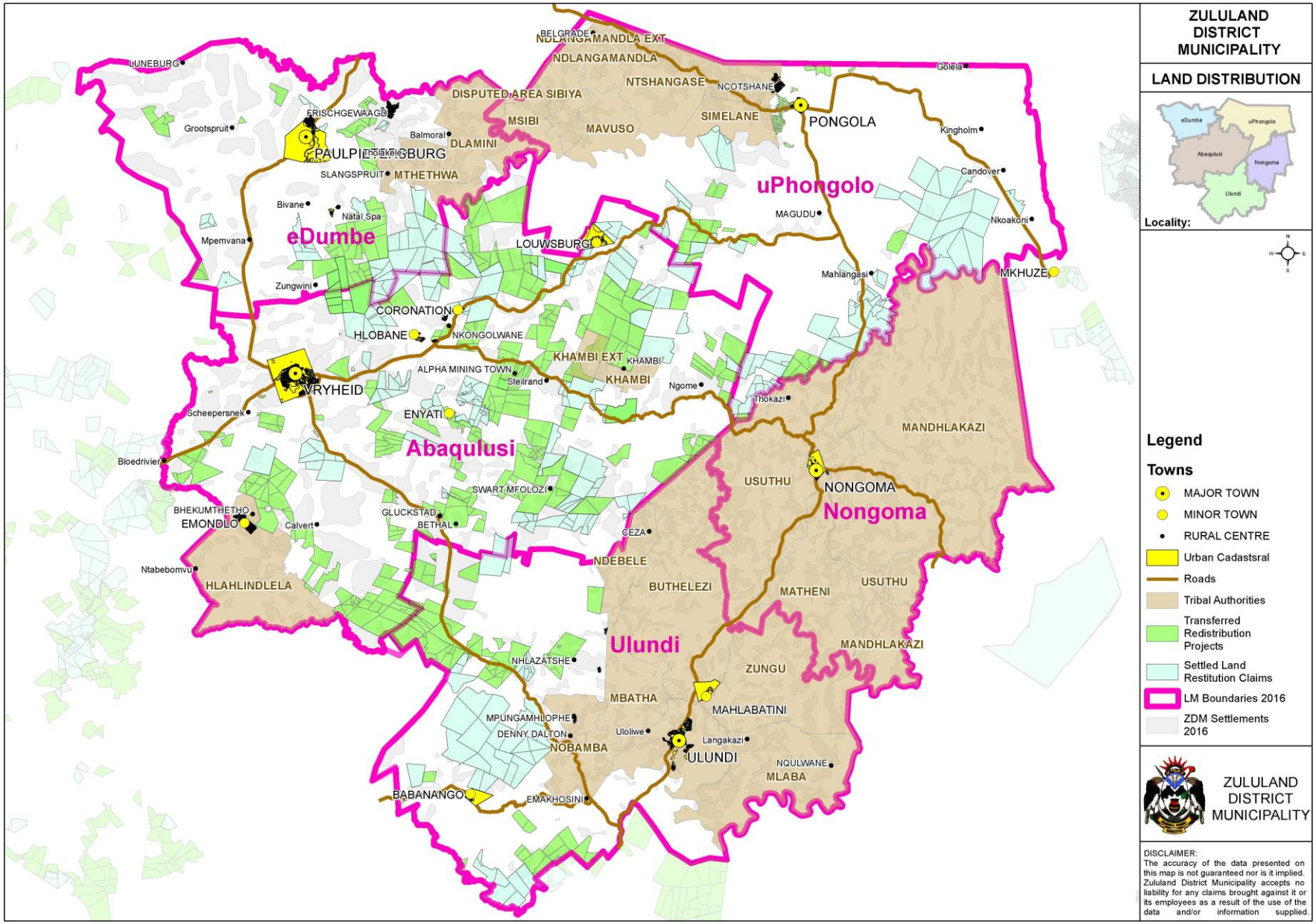


Figure A 4.3: Land distribution in Zululand District Municipality.



The area forms part of the Pongola, Mkuze and Mfolozi River Catchments of the Usuthu/Mhlathuze Water Management Area that extends from the high lying areas in the north and west to the Indian Ocean in the east. The northern and western edges of the ZDM are characterised by steep terrain. The Skurweberg and Elandsberg Mountains on the Western side of the ZDM are approximately 1,700 m above sea level. In the northeast there are the Lebombo Mountains. In general the topography slopes and gets less steep from west to east, as well as from north to south, consequently all the main rivers flow in this direction. There are some large relatively flat areas between 200 m and 300 m around the town of Pongola, as well as on the lower reaches of the Mfolozi River (Figure A4.2).

Climatic conditions vary significantly from the northern highlands to the eastern low-lying areas around the town of Pongola. Rainfall is strongly seasonal with more than 80% occurring as thunderstorms between October and March, with the peak months being December to February in the inland areas. Rainfall varies from over 1,000 mm in the north and west, dropping to below 600 mm in the central area around Pongola. The resultant Mean Annual Runoff (MAR) ranges from above 200 mm in the north and west, to below 100 mm in the central areas. Overall the Mean Annual Precipitation (MAP) is 840 mm, and the corresponding MAR 102 mm (12 % of MAP) (Figure A4.3). Annual variability of rainfall is indicated by the historic coefficient of variation of the rainfall record, which ranges from (20 % to 25 %) in the west to greater than 35 % in the Pongola area. In accordance with the rainfall pattern the relative humidity is higher in summer than in winter. Potential mean annual gross evaporation ranges from 1400mm in the west to 1600 mm in the lowveld. The highest mean monthly evaporation is in December and the lowest mean monthly evaporation in June. One strategic dam, namely Pongolapoort/Jozini, has been developed. There is a vast amount of water in the area with both surface resources, as well as good ground water potential.

Topography type	**Percentage of total municipal area**
Mountainous	30%
Rolling	70%
Flat	0%
Coastal	0%

Figure A 4.4: Terrain map of Zululand District Municipality.

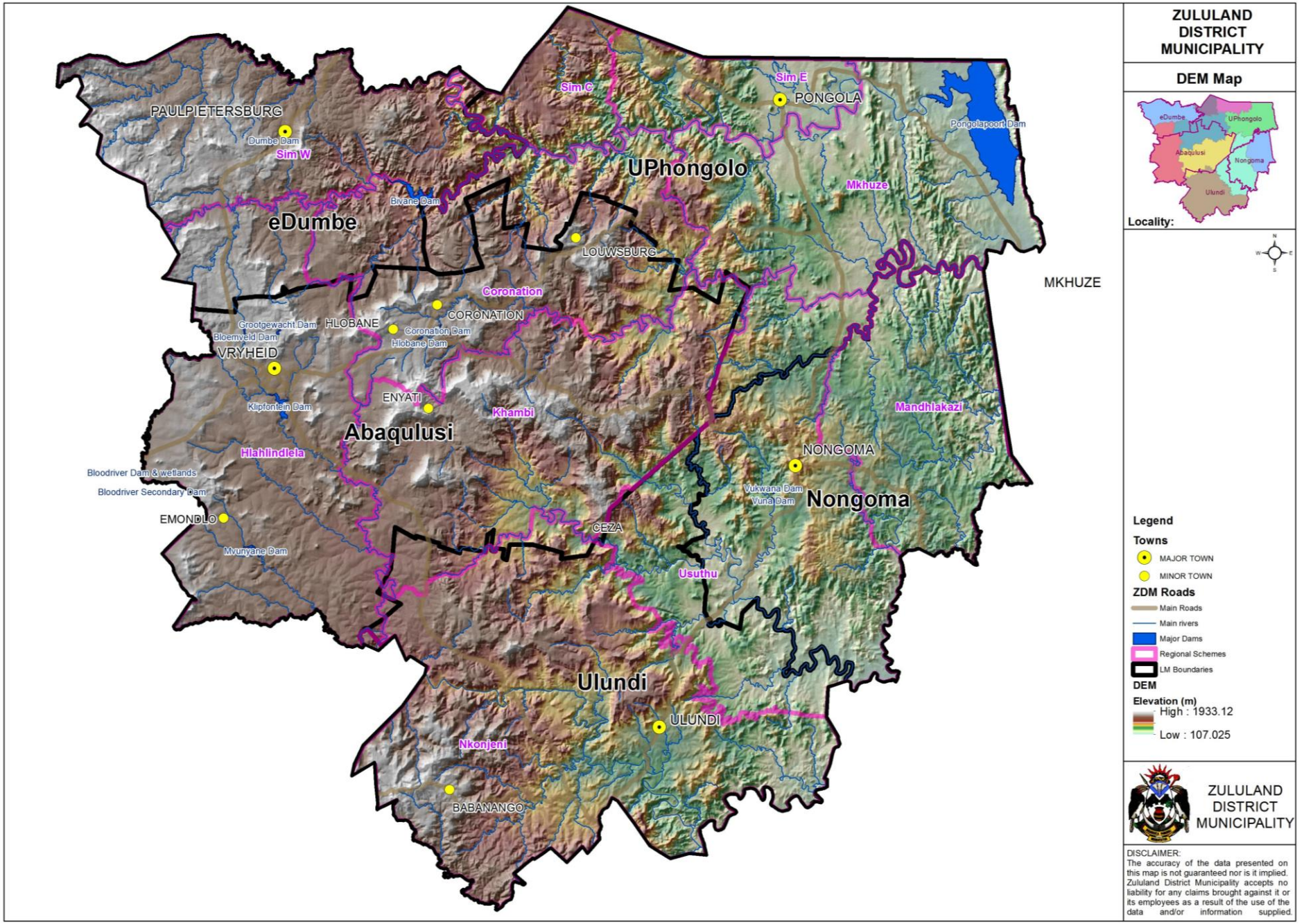
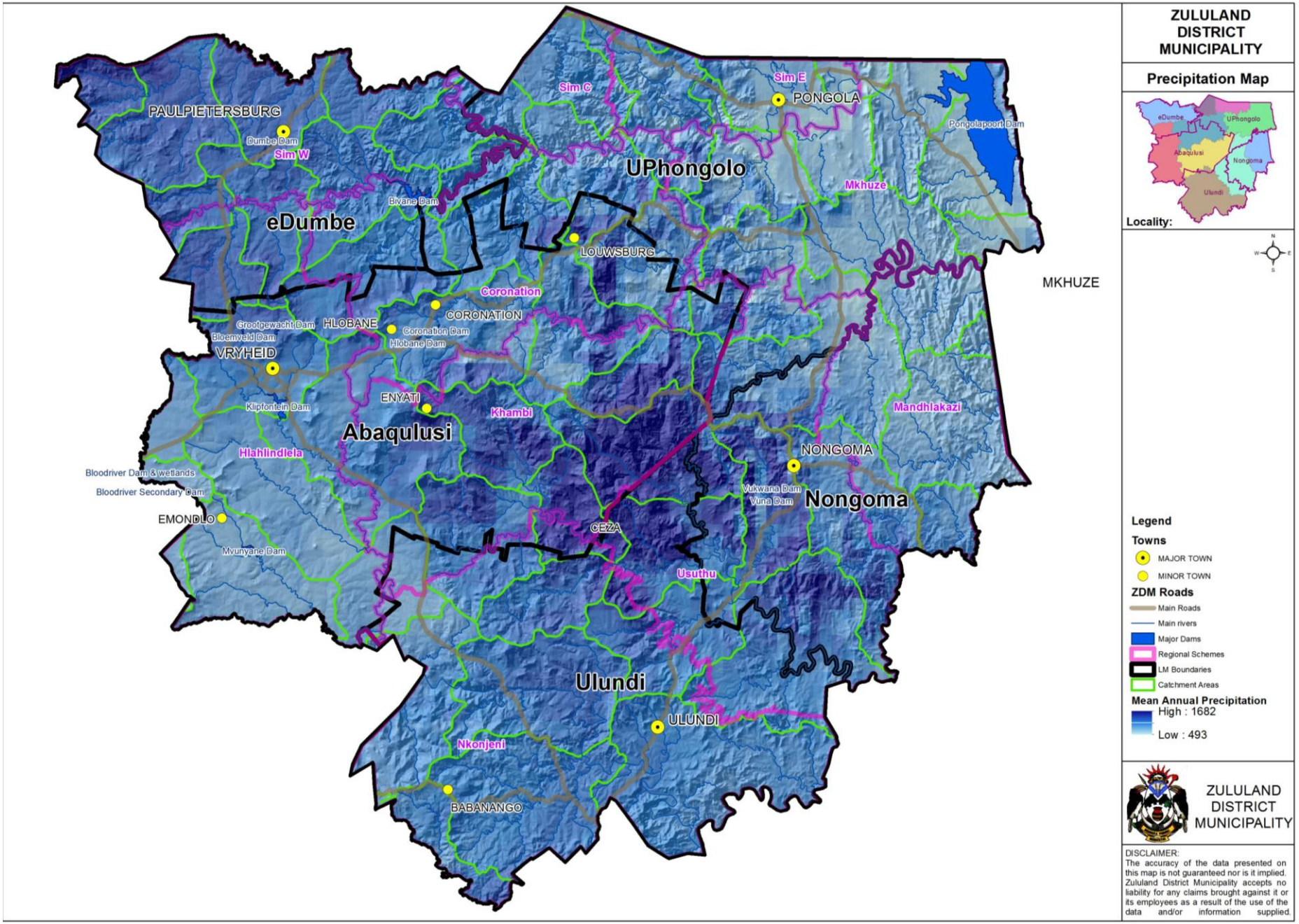


Figure A 4.5: Precipitation map of Zululand District Municipality.



A.5 Backlogs

Tables A.2 (a) & (b) below indicate the status in ZDM with regards to water services backlogs in the district. Baclogs, progress and funding allocations are to be finalised during the final review of the WSDP in May.

Table A.5.1: Access to water (households)

Water	None or Inadequate	Rudimentary <RDP	Communal standpipes RDP	Yard/House connections >RDP	TOTALS
AbaQulusi LM	0	0	0	16 000	16 000
eDumbe LM	0	0	0	5 458	5 458
Nongoma LM	0	0	0	632	632
Ulundi LM	0	0	0	5 912	5 912
uPhongolo LM	0	0	0	4 009	4 009
Total (urban)	**0**	**0**	**0**	**32 011**	**32 011**
AbaQulusi LM	7 088	3 908	10401	9 407	31 119
eDumbe LM	2 775	726	1628	6 940	12 183
Nongoma LM	7 227	12 768	11 086	12 662	43 744
Ulundi LM	3 143	2 658	14 333	18 806	39 075
uPhongolo LM	1 307	1111	2570	16 478	25 510
Total (rural)	**21 540**	**21 171**	**40 018**	**64 293**	**151 631**
Total (households)	**21 540**	**21 171**	**40 018**	**96 304**	**183 642**

The following figure depicts the estimated time it will take to eradicate all water backlogs below RDP standard if current MIG funding allocations remains constant. RBIG and WSIG funding allocations fluctuate based on approved funding applications, and future projections have not been included in this review. These funding allocations will however be added as funding is confirmed.

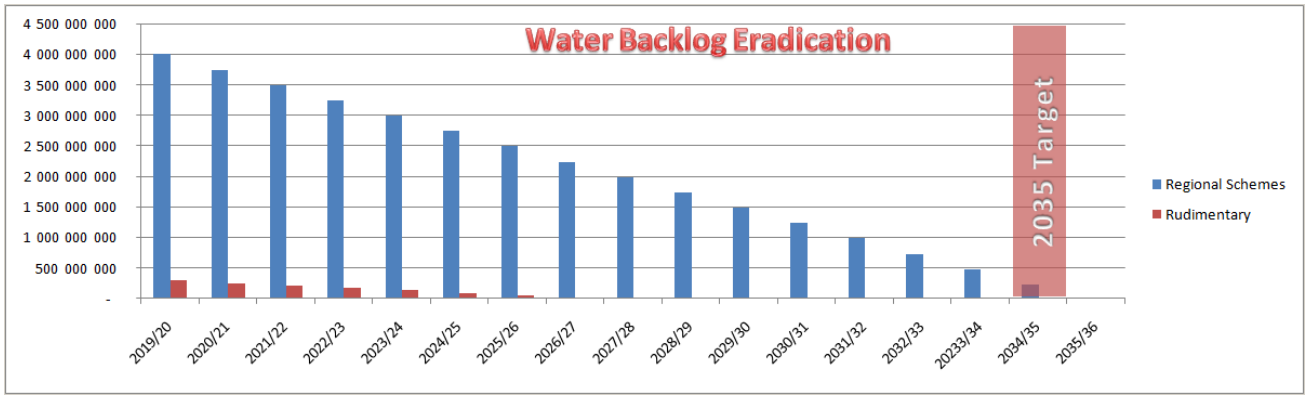


Figure A 5.1: Water Backlog eradication (2035 goals)

Table A.5.2: Access to sanitation

	None or Inadequate (Excl. Infills/Replaceme	VIP	Septic tank	Waterborne	
		RDP	RDP	>RDP	TOTALS
AbaQulusi LM	0	0	1035	14 965	16 000
eDumbe LM	0	2981	498	1 979	5 458
Nongoma LM	0	283	0	349	632
Ulundi LM	0	635	0	5 277	5 912
uPhongolo LM	0	698	0	3 311	4 009
Total (urban)	**-**	**4 597**	**1 533**	**25 881**	**32 011**
AbaQulusi LM	8 098	22 597	424	0	31 119
eDumbe LM	1 288	10 629	266	0	12 183
Nongoma LM	10 755	32 989	0	0	43 744
Ulundi LM	3 222	35 801	52	0	39 075
uPhongolo LM	7 223	17 951	336	0	25 510
Total (rural)	**30 586**	**119 967**	**1 078**	**0**	**151 631**
Total (households)	**30 586**	**124 564**	**2 611**	**25 881**	**183 642**

The following figure depicts the estimated time it will take to eradicate all sanitation backlogs below RDP standard if current MIG funding allocations remains constant.

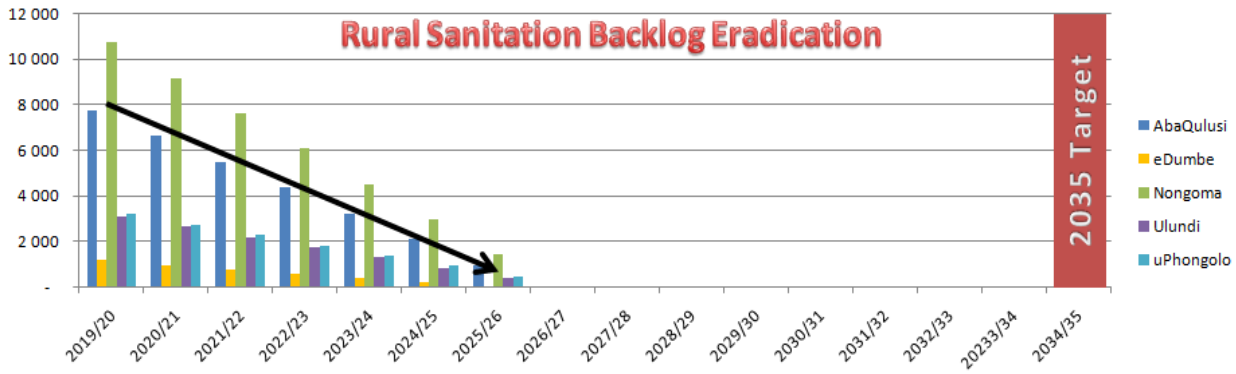


Figure A 5.2: Sanitation Backlog eradication (2035 goals)

With the 2035 goals in mind, the backlogs in rural sanitation should be eradicated by 2026. However, settlements are continuously expanding, and household growth will maintain an increase in the future.

Table A.5.3: Percentage backlogs (water & sanitation)

WATER	TOTAL HOUSEHOLDS	BACKLOGS	% BACKLOGS	% OF TOTAL BACKLOGS
AbaQulusi LM	47 119	10 996	23.34%	25.75%
eDumbe LM	17 641	3 501	19.85%	8.20%
Nongoma LM	44 376	19 995	45.06%	46.81%
Ulundi LM	44 987	5 801	12.89%	13.58%
uPhongolo LM	29 519	2 418	8.19%	5.66%
Total	**183 642**	**42 711**	**23.26%**	**100.00%**
SANITATION	**TOTAL HOUSEHOLDS**	**BACKLOGS**	**% BACKLOGS in LM**	**% OF TOTAL BACKLOGS**
AbaQulusi LM	47 119	8 098	17.19%	26.48%
eDumbe LM	17 641	1 288	7.30%	4.21%
Nongoma LM	44 376	10 755	24.24%	35.16%
Ulundi LM	44 987	3 222	7.16%	10.53%
uPhongolo LM	29 519	7 223	24.47%	23.62%
Total	**183 642**	**30 586**	**16.66%**	**100.00%**

Table A.5.4: Existing backlogs against funding allocations

YEAR	BACKLOGS (Households)		ALLOCATIONS		Household count
	Water	Sanitation	Water	Sanitation	
2013-2014	56 559	56 757	R 288 499 750	R 65 386 250	2010 household count
2014-2015	50 653	46 027	R 300 616 500	R 55 405 500	
2015-2016	47 934	37 650	R 440 019 250	R 55 339 750	
2016-2017	45 545	31 071	R 281 021 250	R 61 973 750	
2017-2018	**57 358**	**38 007**	**R 172 855 075**	**R 45 120 650**	**2013 Households**
2018-2019	**50 882**	**34 973**	**R 456 344 175**	**R 51 310 825**	
2019-2020	**42 711**	**25 977**	**TBA**	**TBA**	**2016 Households**

PLEASE NOTE THAT BACKLOGS ARE ESTIMATES BASED ON PROJECTED COMPLETION DATES OF PROJECTS AT THE END OF JUNE, AND MAY VARY ON FINAL FINANCIAL YEAR END.

ACTUAL FIGURES WILL BE UPDATED AFTER FINANCIAL YEAR END.

A.6 Summary of content

The key information contained in the WSDP is listed below for ease of reference. More detail can be obtained by referring to the respective chapters in the document:

Chapter 1: Socio Economic Profile

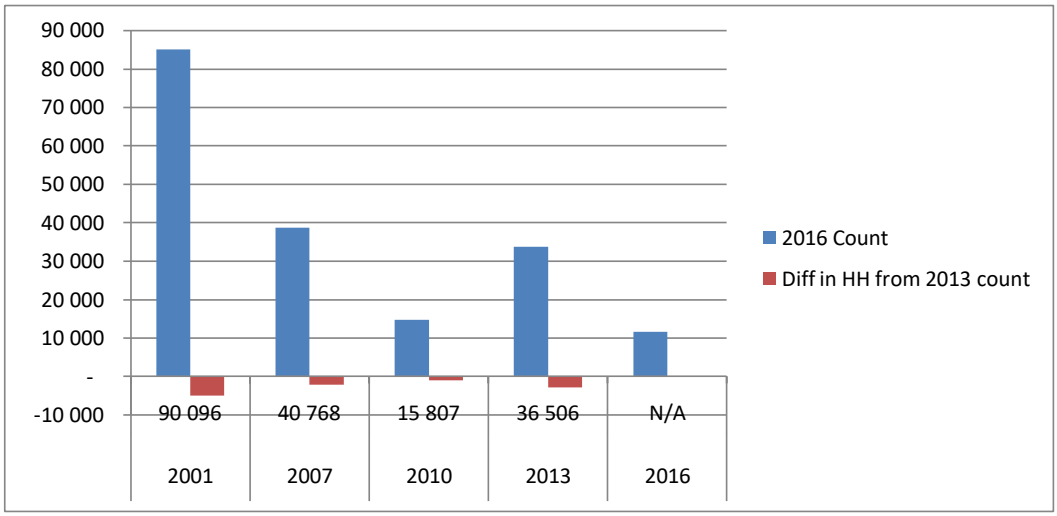
The current consumer profile of the district reflect an updated household count which was done by ZDM from aerial photography taken in 2016 by National Geo-spatial Information (NGI). A total of **182 585 households** and **1 057 farm houses** were captured, bringing the total dwellings in ZDM to **183 642.** Although this is only 465 households more than what the total household count was for 2013, there were many household ruins in the rural areas where dwellings were either abandoned or people have relocated. A comparison between the various households counts since 2001 is shown in the table below. This indicates the reduction in households over the past 17 years.

Table A 6.1: Household Count Analysis Table (2001-2016)

YEAR FLOWN	2013 Count	2016 Count	Diff in HH from 2013 count
2001	90 096	85 091	-5 005
2007	40 768	38 607	-2 161
2010	15 807	14 717	-1 090
2013	36 506	33 666	-2 840
2016	N/A	11 561	-
Overall increase in HH from 2013 count			**465**

The above table can be reviewed in graph format in the following chart.

Figure A.6.1: Household Count Analysis Graph (2001-2016)



From a spatial perspective, the following map indicates the number of households per square kilometer for 2016 compared with the number of households from 2013. The yellow and light green areas shows a strong decline in dwellings, whereas blue indicates a strong increase in households.

Figure A.6.2: Dwelling Growth Pattern per Square Kilometer (2013-2016)

Growth trends per local municipality can be summarised as follows:

- **AbaQulusi**

  High growth in the surrounding eMondlo town areas as well as in Nkongolwane. There is a substantial growth in the Kwa Shoba & Tinta's Drift areas, with a high decrease in rural households surrounding Vryheid town.
- **eDumbe**

  Strong positive growth in eDumbe, Frischgewaagd & Bilanyoni.
- **uPhongolo**

  High growth in Ncotshane as well as settlements all along the N2 going west towards Belgrade.
- **Nongoma**

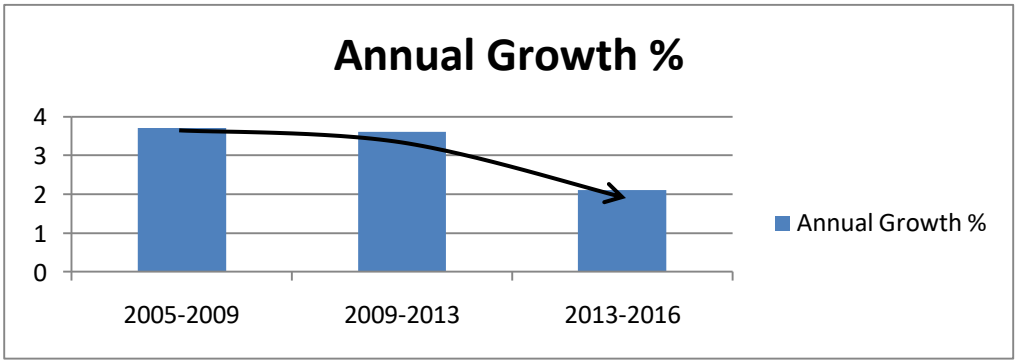
  Positive growth along the Nongoma/Hlabisa road, with an overall slight negative growth in most of the rural areas.

- **Ulundi**

  Positive growth surrounding Ulundi town areas, with an overall slight negative growth in most of the rural areas between Ulundi and Nongoma.

When the new household count of 11 561 from 2013 to 2016 is considered, it represents an increase in the number of households of 6.31% over 3 years. An **annual average household growth of 2.1%** is therefore evident over the period from 2013 to 2016, which is less than the 3.6% increase from the period 2009-2013. The period from 2005/2006 to 2009 shows an average annual household growth of 3.7%. There is therefore a slight decreasing trend in the household growth over the past 10 years in ZDM.

Figure A.6.3: Household Count Analysis Graph (2001-2016)



Due to the spatial analysis requirements for water and sanitation provision at household level, ZDM uses its own household data set which contains actual household positions as opposed to numerical values provided by STATSSA per enumeration area. Households and defined by and projects are implement per local settlement areas as defined by the ward councillors, and these settlements areas don't always coincide with the enumeration area boundaries of STATSSA. It is therefore impossible to correlate the enumeration areas with settlement areas and derive household statistics between the two data sets.

STATSSA has released the interim 2016 Community Survey statistics per local municipality, and the estimated number of households for the 2016 community survey is slightly higher than the spatial household count for ZDM. A comparison table between the 2011 census data and the 2016 community survey details can be seen in Table A.6.2 below.

Table A.6.2: STATSSA 2016 Community Survey

	HOUSEHOLDS		POPULATION		Ave Households Size	
Local Municipality	**2011**	**2016**	**2011**	**2016**	**2011**	**2016**
AbaQulusi	43 299	51 472	224 998	241 196	4.90	4.70
eDumbe	16 138	17 415	85 022	89 614	5.10	5.10
Nongoma	34 341	36 409	200 948	211 892	5.70	5.80
Ulundi	35 198	38 553	264 765	205 762	5.40	5.30
uPongolo	28 772	34 667	153 727	143 845	4.40	4.10
Total	**157 748**	**178 516**	**929 461**	**892 310**	**5.10**	**5.00**

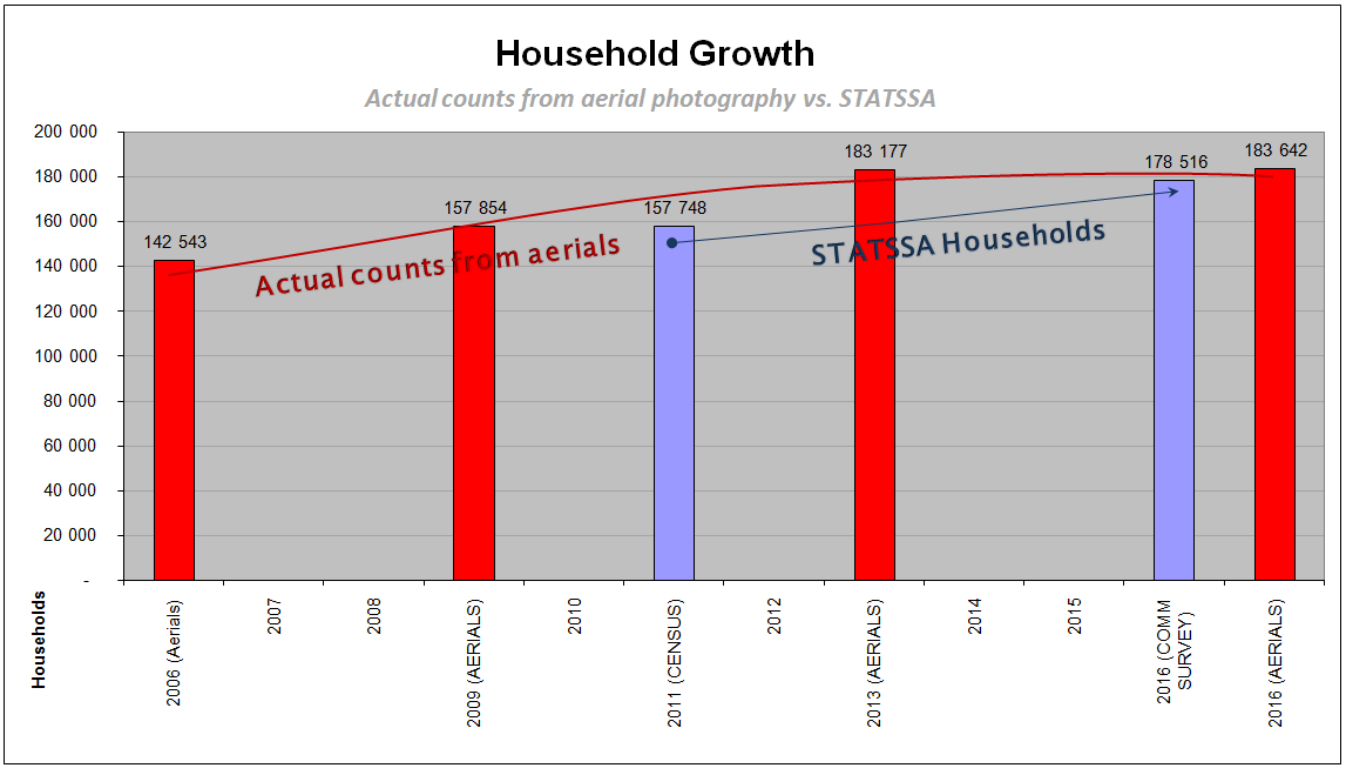
For population analysis, the 2011 Census figures will however be applied to the ZDM household count as per local municipality. A comparison table can be reviewed under Table A.6.3. below, showing household growth and population figures per local municipality.

Table A.6.3: ZDM and STATSSA Census 2011 household growth analysis (2005 - 2017)

	Actual Household Statistics (Captured from aerial photography over 4 consequtive periods) vs CENSUS Data												
Local Municipality	**2006**	**2009 (AERIALS)**	**2010**	**2011 (CENSUS)**	**2012**	**2013 (AERIALS)**	**2014**	**2015**	**2016 (COMM SURVEY)**	**2016 (AERIALS)**	**Annual household growth rate**	**Average Population per household**	**Total Population (ZDM)**
AbaQulusi	36 069	40 302				45 918				47 119	0.9%	4.90	230 883
eDumbe	15 011	16 880				16 671				17 641	1.9%	5.10	89 969
Nongoma	34 056	38 171				45 670				44 376	-0.9%	4.40	195 254
Ulundi	35 309	37 365				46 450				44 987	-1.1%	5.70	256 426
uPongolo	22 098	25 136				28 468				29 519	1.2%	5.40	159 403
Total	**142 543**	**157 854**		**157 748**		**183 177**			**178 516**	**183 642**	**0.41%**	**5.10**	**931 935**

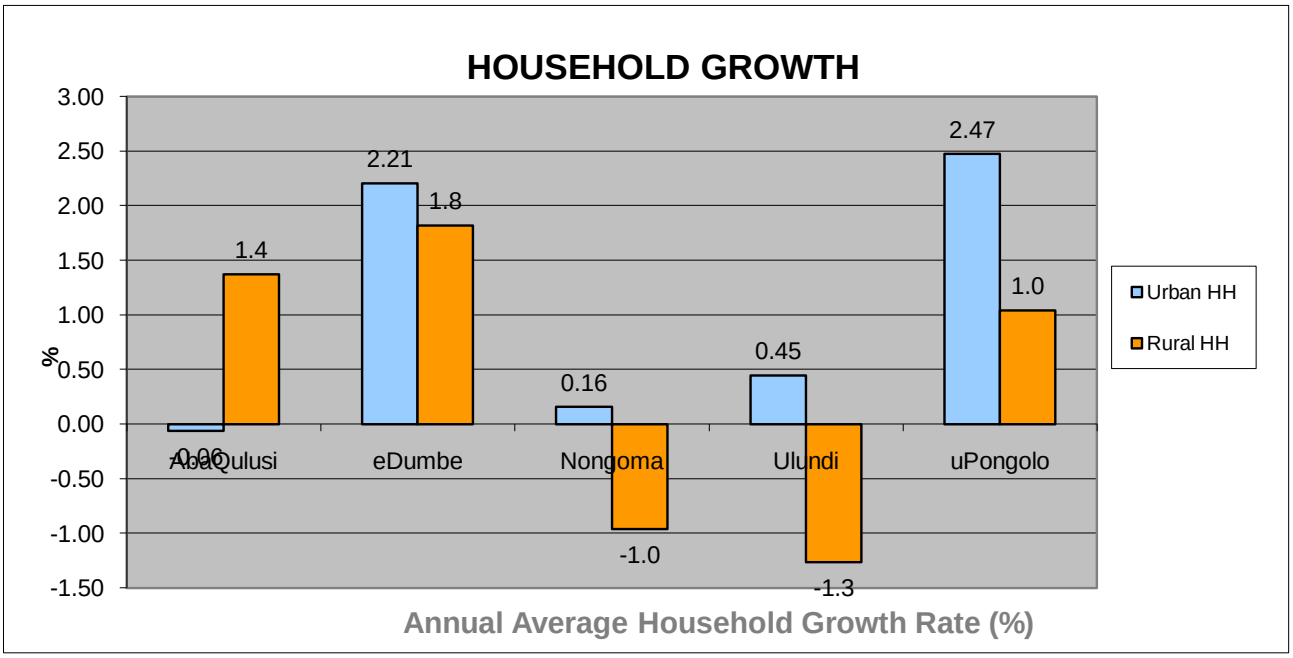
To summarise the above outcomes, the current household count for ZDM taken from the 2016 household count, is 183 642, with a total population count of 931 935 when STATSSA population per household is applied.

Figure A.6.4: ZDM household growth analysis (2005 - 2017)



In the following graph the household growth per local municipality can be compared between urban and rural growth over the past 3 years. eDumbe and uPhongolo shows the highest urban growth. Rural growth is negative in Ulundi and Nongoma, with a slight positive growth in AbaQulusi, eDumbe and uPhongolo.

Figure A.6.5: Annual Urban and Rural Household Growth per Local Municipality



Data derived from 2013 and 2016 Aerial Photography (NGI)

In Table A.3(d) the domestic dwellings and farm houses per local municipality can be reviewed. Industrial and business properties were only captured in urban areas since it is not always possible to distinguish businesses and commercial buildings in rural areas from aerial photography.

Table A.6.3: Current consumer profile (units)

LOCAL MUNICIPALITIES	DOMESTIC	INDUSTRIAL / BUSINESSES	FARM HOUSES	TOTAL
AbaQulusi	16 031	1 947	-	17 978
eDumbe	5 119	336	-	5 455
Nongoma	629	483	-	1 112
Ulundi	5 834	638	-	6 472
uPhongolo	3 732	576	-	4 308
Total (urban)	**31 345**	**3 980**	**-**	**35 325**
AbaQulusi	29 463	-	424	29 887
eDumbe	11 286	-	266	11 552
Nongoma	45 041	-	-	45 041
Ulundi	40 564	-	52	40 616
uPhongolo	24 400	-	336	24 736
Total (rural)	**150 754**	**-**	**1 078**	**151 832**
Total	**182 099**	**3 980**	**1 078**	**187 157**

Chapter 2: Service Level Profile

The current levels of access to water services in the district are indicated below:

Table A.6.4: Residential consumers: access to water

Water	None or Inadequate	Rudimentary <RDP	Communal standpipes RDP	Yard/House connections >RDP	TOTALS
AbaQulusi LM	0	0	0	16 000	16 000
eDumbe LM	0	0	0	5 458	5 458
Nongoma LM	0	0	0	632	632
Ulundi LM	0	0	0	5 912	5 912
uPhongolo LM	0	0	0	4 009	4 009
Total (urban)	**0**	**0**	**0**	**32 011**	**32 011**
AbaQulusi LM	7 088	3 908	10401	9 407	31 119
eDumbe LM	2 775	726	1628	6 940	12 183
Nongoma LM	7 227	12 768	11 086	12 662	43 744
Ulundi LM	3 143	2 658	14 333	18 806	39 075
uPhongolo LM	1 307	1111	2570	16 478	25 510
Total (rural)	**21 540**	**21 171**	**40 018**	**64 293**	**151 631**
Total (households)	**21 540**	**21 171**	**40 018**	**96 304**	**183 642**

Table A.6.5: Residential consumers: access to sanitation

	None or Inadequate (Excl. Infills/Replaceme	VIP RDP	Septic tank RDP	Waterborne >RDP	TOTALS
AbaQulusi LM	0	0	1035	14 965	16 000
eDumbe LM	0	2981	498	1 979	5 458
Nongoma LM	0	283	0	349	632
Ulundi LM	0	635	0	5 277	5 912
uPhongolo LM	0	698	0	3 311	4 009
Total (urban)	**-**	**4 597**	**1 533**	**25 881**	**32 011**
AbaQulusi LM	8 098	22 597	424	0	31 119
eDumbe LM	1 288	10 629	266	0	12 183
Nongoma LM	10 755	32 989	0	0	43 744
Ulundi LM	3 222	35 801	52	0	39 075
uPhongolo LM	7 223	17 951	336	0	25 510
Total (rural)	**30 586**	**119 967**	**1 078**	**0**	**151 631**
Total (households)	**30 586**	**124 564**	**2 611**	**25 881**	**183 642**

Chapter 3: Water Resource Profile

The ZDM falls within the Mfolozi (W2), Mkuze (W3) and Pongola (W4) secondary catchments of the Usuthu/Mhlathuze Water Management Area (WMA)[1]. The aerial extent of the ZDM occupies approximately 22% of this WMA. . The total available water and requirements as at year 2000, based on a 98% assurance of supply within these sub-areas, is summarised in Table A.3 (d). It is evident that apart from the Pongola catchments, water from these sub-areas is currently over-utilised and a deficit is created. However, according

[1] *The Usuthu/Mhlathuze WMA is one of 19 areas defined across South Africa in terms of the National Water Act, 1998 (Act 36 of 1998). These WMAs have been defined to improve water resource management within South Africa. With time, each of the WMAs will establish a catchment management agency (CMA) for the regulation and control of water use in the WMA.*

to Basson and Rossouw[2], this deficit is a result of the provision made for future implementation of the Reserve. The Reserve is a legislated requirement of the amount of water required to satisfy the ecological needs of a river system (provisionally estimated at 20%) as well as the basic human needs (that have been established as 25 litres per person per day).

Table A.6.6: Water balance - summary of the water available and required within Zululand District Municipality for the year 2000 (Million m^3 (kℓ) per annum).

			Mfolozi	Mkuze	Pongola	Total
Available water	Natural resource	surface water	36	15	616	667
		groundwater	5	12	8	25
	Usable return flow	Irrigation	5	6	21	32
		Urban	4	0	0	4
		Mining & bulk	1	0	0	1
	Total local yield*		**51**	**33**	**645**	**729**
	Transfers in		0	30	0	30
	Total available		**51**	**63**	**645**	**759**
Water requirements	Consumer groups	Irrigation	51	61	213	325
		Urban**	12	1	1	14
		Rural**	11	10	6	27
		Mining & bulk industrial***	4	0	1	5
		Afforestation****	2	6	34	42
	Total local requirements		**80**	**78**	**255**	**413**
	Transfers out		18	0	30	**48**
	Total used		**98**	**78**	**285**	**461**
Balance			**-47**	**-15**	**360**	**298**

Source: Basson and Rossouw (2003).
**Includes allowance for impacts of the ecological component of the Reserve, river losses, alien vegetation, rain-fed agriculture and urban run-off on yield.*
***Includes allowance for basic human needs component of the Reserve (25 ℓ/c/d).*
****Mining and bulk industrial water uses that are not part of the urban system.*

*****Afforestation quantities refer to the impact on yield only.*

[2] *Op cit 2 at 23.*

Chapter 4: Water Conservation/ Demand Management

ZDM has embarked on an extensive Unaccounted for Water programme (UAW), aimed at understanding the usage of water in the district and to provide guidance to future demand management and waterloss interventions. Specific interventions will be launched at individual schemes to address water losses through:

- Pressure management
- Leak repair programmes
- Meter repair & replacement programmes
- Internal plumbing leaks
- Consumer end-use demand management initiatives

The water demand strategy will focus on a number of ways to ensure the reduction of water demand by consumers, for example:

- Influencing the behaviour of consumers
    - School and public educational and awareness programmes aimed at promoting effective usage of water (brochures, advertising, newsletters, demonstrations, exhibits, informative billing, etc)
    - Water services tariff that promotes efficient water usage
    - Any other “win-win” initiatives that could influence consumers positively
- Specific targeted projects like;
    - Repair plumbing leaks inside properties
    - Installation of water flow control devices, etc.

Chapter 5: Water Services Infrastructure Profile

ZDM has done extensive work on the development of a database that will serve as an asset register, but also to be used as the basis for the development of an asset management system and to capture asset related information electronically for ongoing use. The system has been named ‘MANZI’ and access can be gained on the ZDM website at www.zululand.org.za once the user has been issued with a username and password.
Table A.3 (h) below provides a brief overview of the schemes in the district that have been captured on the MANZI system and a summary of the infrastructure under consideration, as well as a rough estimate of the value of assets. These figures will be refined over time once the asset management system has been rolled out.

Table A.6.7: Summary of schemes in the district

Summary Data	LOS	Total
Number of Schemes	Above RDP - Urban	13
	Above RDP - Rural	25
	RDP	105
	Rudimentary	173
	TOTAL SCHEMES	**316**

Table A.3 (i) below shows examples of infrastructure data that is currently available on the GIS system and MANZI. Some gaps still exist in the infrastructure information, ZDM has been systematically updating its infrastructure details and eliminating data gaps where possible within its capability and resources. This process involves both feature as well as attribute data, and will support the asset management system initiative of ZDM which is currently in development

Table A.6.8: Summary of infrastructure components available the ZDM GIS

Summary Data	Description	Total
Pipelines	Bulk	1264 km
	Reticulation	5745 km
Installations	Yard Connection	27 831
	StandPipe - Barrel	[illegible]
	StandPipe - Communal	[illegible]681
	Electrical Point	72
	Valve	14 820
	Meter	1 274
	Bulk Metering Points	253
	Handpump	486
	Pump	25
	Pump Station	119
	Source / Abstraction	520
	Break-pressure Tank	499
	Storage - Jojo	228
	Storage - Reservoir	744
	Treatment (Sand filters etc)	12
	Water Treatment Works	39
Replacement Value	Civil	R 2 187 465 532.77
	Mechanical	R 638 857 590.23
	Electrical	R 252 906 251.28
	Telemetry	R 13 480 747.91

Chapter 6: Water Balance

A first order water balance is presented in Chapter 6 from available data at the time.

Chapter 7: Water Services Institutional Arrangements

The ZDM Section 78 investigation process was completed in 2007 and the conclusion was that a single Water Services Provider for the entire district (internal department within ZDM) is the preferred water services provision arrangement for the future and that this be implemented progressively. Certain specialised functions were also listed that should rather be contracted out to private business, although still being part of the overall WSP structure. These are services that require skilled personnel that are expensive and difficult to source and

that are more cost effective to contract in rather than source in-house, for example electrical/mechanical artisans, certain maintenance functions, etc. The detailed outcome of the Section 78 investigation process is captured in Chapter 7 herewith.

Chapter 8: Customer Services Profile

The provision of high quality water services to consumers involves good water quality and the reliability of water services. This chapter covers interventions implemented or planned by ZDM to address the above mentioned issues. A customer care charter is being drafted that will be the "contract" with the consumer and will also list the consumer's responsibilities in this regard. Work has been done on the drafting of a customer care strategy and the following key focus areas have been identified:

- To know your customers (complete customer database)
- To develop proper mechanisms for effective two way communication with customers
- To provide affordable, high quality services that are accessible to all
- To empower your consumers through education
- To develop a customer focused organisation
- To develop a customer charter and honour the agreement with the customer
- To accelerate the implementation of appropriate service provision structures

Chapter 9: Financial Profile

This chapter deals with two financial issues related to water services infrastructure, namely:

- New capital projects
- Operations and maintenance (O&M) of existing infrastructure

The details are contained in Chapter 9 but can be summarised in the tables below:

Table A.6.9: Capital requirements: water

WATER	Capital requirements	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	>2022
Regional bulk	R 1 608 189 416			R 294 473 452	R 294 572 595	R 313 011 521	R 706 131 848
Secondary bulk	R 946 404 450			R 76 915 407	R 33 478 526	R 35 896 523	R 800 113 994
Reticulation	R 146 907 688			R 11 939 361	R 11 452 635	R 14 758 965	R 108 756 726
Total capital (new)	**R 2 701 501 553**	**R -**	**R -**	**R 383 328 220**	**R 339 503 756**	**R 363 667 009**	**R 1 615 002 568**
Regional bulk (WTW)	R 599 570 000						
Secondary bulk	TBA						
Reticulation	TBA						
Total capital (refurbishment)	**R 599 570 000**			**R -**			
Total capital	**R 3 301 071 553**	**R -**	**R -**	**R 383 328 220**	**R 339 503 756**	**R 363 667 009**	**R 1 615 002 568**

Table A.6.10: Capital requirements: sanitation

SANITATION	Capital requirements	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	>2022
Bulk infrastructure	R -						
Reticulation	R -						
VIP toilets	R 350 689 500			51 310 825	51 310 825	51 310 825	196 757 025
Total capital (new)	**R 350 689 500**	**R -**	**R -**	**R 51 310 825**	**R 51 310 825**	**R 51 310 825**	**R 196 757 025**
Bulk infrastructure (WWTW)	322 510 000				TBA	TBA	TBA
Reticulation	TBA				TBA	TBA	TBA
VIP toilets (Replacement Prgrm)	551 988 000				TBA	TBA	TBA
Total capital (refurbishment)	**R 874 498 000**	**R -**		**R -**	**R -**	**R -**	**R -**
Total capital	**R 1 225 187 500**	**R -**	**R -**	**R 51 310 825**	**R 51 310 825**	**R 51 310 825**	**R 196 757 025**

Table A.6.11: Sources of Capital Income: Water

WATER	Expected Funding	2017/2018	2018/2019	2019/2020	2020/2021 (Est.)	2021/2022 (Est.)	>2022
MIG	R 631 607 200.00			R 180 459 200.00	R 225 574 000.00	R 225 574 000.00	TBA
DWA (RBIG)	R 163 774 000.00			R 163 774 000.00	TBA	TBA	TBA
Housing							
WSIG	R 100 000.00			R 100 000.00	TBA	TBA	TBA
Loans							
TOTAL	**R 795 481 200**	**R -**	**R -**	**R 344 333 200**	**R 225 574 000**	**R 225 574 000**	**R -**
Capital requirements	R 3 301 071 553						
Shortfall up to 2022	**R -2 505 590 353**						

Table A.6.12: Sources of Capital Income: Sanitation

SANITATION	Expected Funding	2017/2018	2018/2019	2019/2020	2020/2021 (Est.)	2021/2022 (Est.)	>2022
MIG	R 135 344 400.00			R 45 114 800.00	R 45 114 800.00	R 45 114 800.00	TBA
DWA							
Housing	R -			R -	R -	R -	R -
Other grant funding							
Loans							
TOTAL	**R 135 344 400**	**R -**	**R -**	**R 45 114 800**	**R 45 114 800**	**R 45 114 800**	**R -**
Capital requirements	R 1 225 187 500						
Shortfall up to 2022	**R -1 089 843 100**						

Table A.6.13: Operational costs and income

Operating costs and income	Total 5yr projected	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Operational costs	R 2 584 611 744	R 431 009 527	R 470 231 394	R 513 022 451	R 559 707 494	R 610 640 876
Personnel costs	R 915 267 755	R 152 629 935	R 166 519 259	R 181 672 512	R 198 204 710	R 216 241 339
Total O&M costs	**R 3 499 879 499**	**R 583 639 462**	**R 636 750 654**	**R 694 694 963**	**R 757 912 205**	**R 826 882 215**
Equitable share: FBS	R 2 328 387 910	R 388 281 673	R 423 615 306	R 462 164 298	R 504 221 250	R 550 105 383
Income: sales (actual payment)	R 133 386 724	R 22 243 553	R 24 267 717	R 26 476 079	R 28 885 402	R 31 513 974
Total income	**R 2 461 774 634**	**R 410 525 227**	**R 447 883 022**	**R 488 640 377**	**R 533 106 652**	**R 581 619 357**
Deficit/surplus	**R -1 038 104 865**	**R -173 114 236**	**R -188 867 631**	**R -206 054 586**	**R -224 805 553**	**R -245 262 859**

Chapter 10: List of Projects

The ZDM Water Master Plan comprises of ten back-to-back regional water schemes. The detailed project list included under Chapter 10 herewith lists sub-projects or phases associated with each regional scheme according to the approved progressive roll-out of the scheme.

The WSDP further allows for intermediate stand-alone schemes for areas falling within the regional scheme context which will take a long time to be implemented due to costly bulks. These intermediate stand-alone schemes are designed with a sustainable intermediate source which will all be integrated into the regional scheme once the regional scheme bulks reaches the area.

For remote communities where no bulk services are feasible or possible, a rudimentary water level of service is implemented in the form of boreholes with handpumps, or spring protections. In some areas a small reticulation scheme with RDP level of services will be constructed where possible.

Sanitation is being rolled out progressively based on prioritised zones or clusters to make implementation more cost-effective and practical. There is also a future sanitation rollout planned to replace the old Archloo, Zinc and block-type VIP's.

The water and sanitation projects to be implemented over the next 5 years and beyond are listed in detail in Chapter 10 of the document. Rollout maps can be reviewed under Figure A 5.1 - 5.5, and include the following rollouts:

- Regional Water Supply Schemes
- Intermediate Stand-alone Water Supply Schemes
- Rudimentary Water Supply
- Rural Sanitation
    - New infrastructure
    - Future Rural Sanitation Replacement Programme

Figure A.6.6: Regional Water Supply Schemes

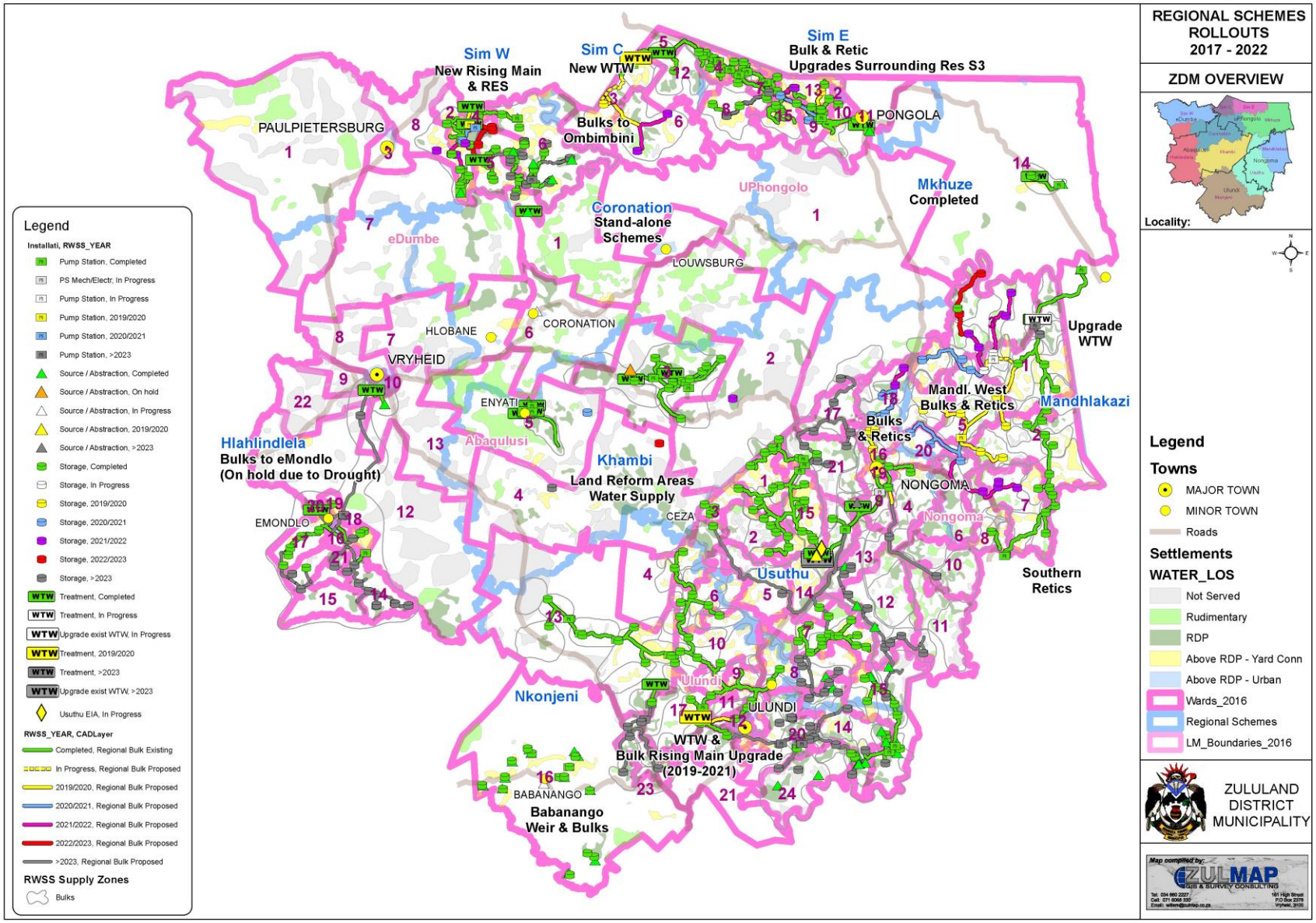


Figure A.6.7: Intermediate Stand-alone Water Supply Schemes

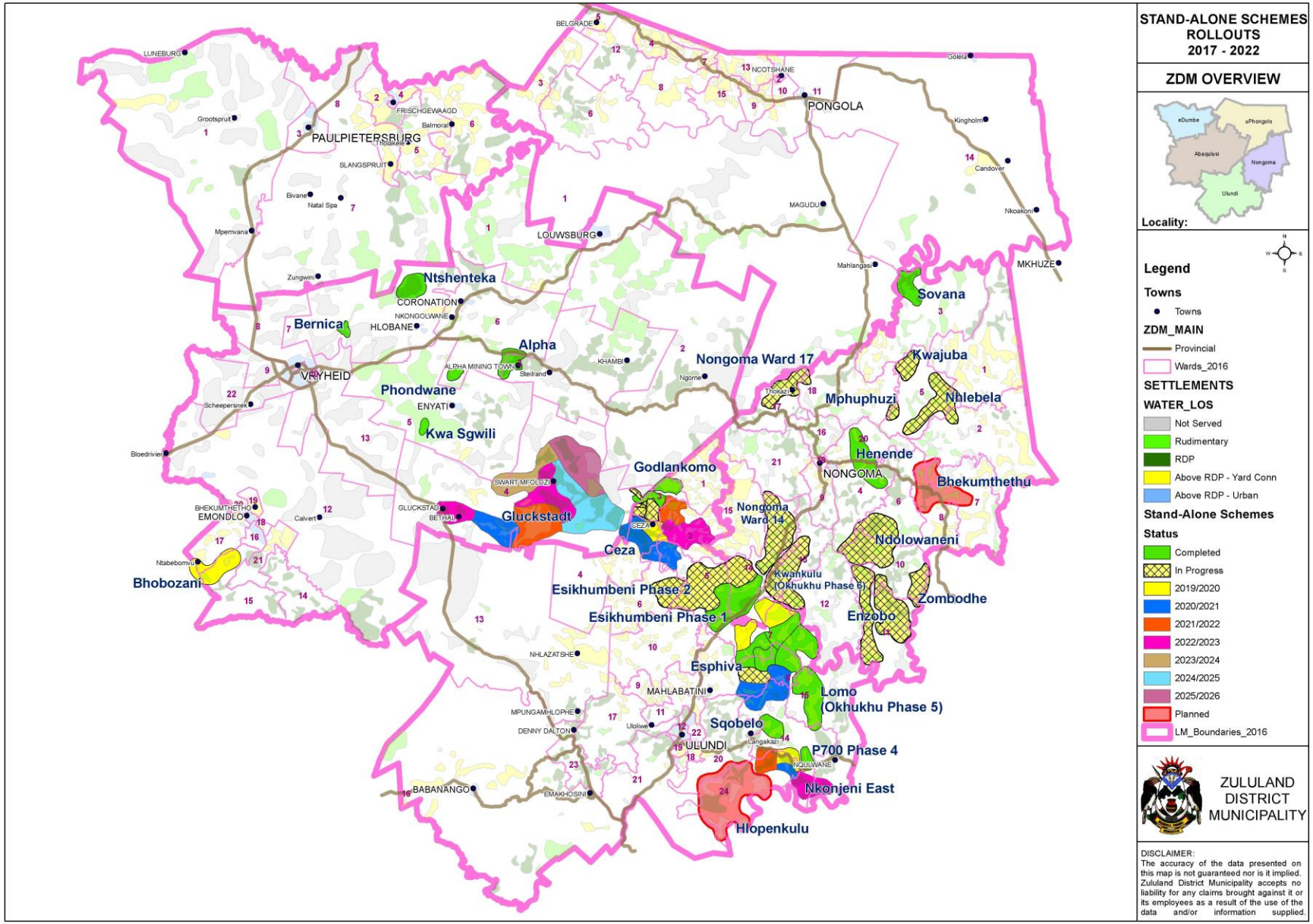


Figure A.6.8: Rudimentary Water Supply

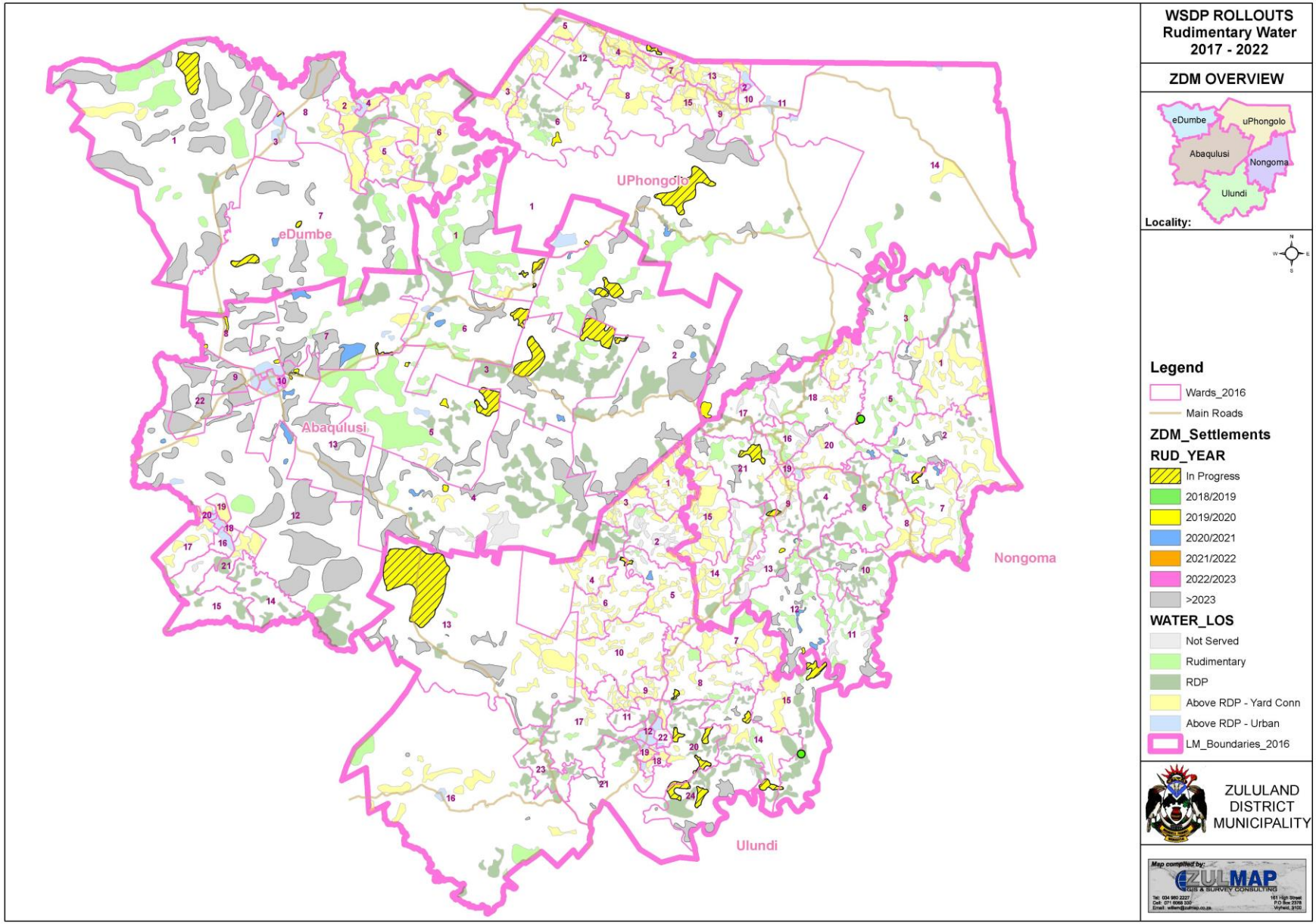


Figure A.6.9: Rural Sanitation (New infrastructure)

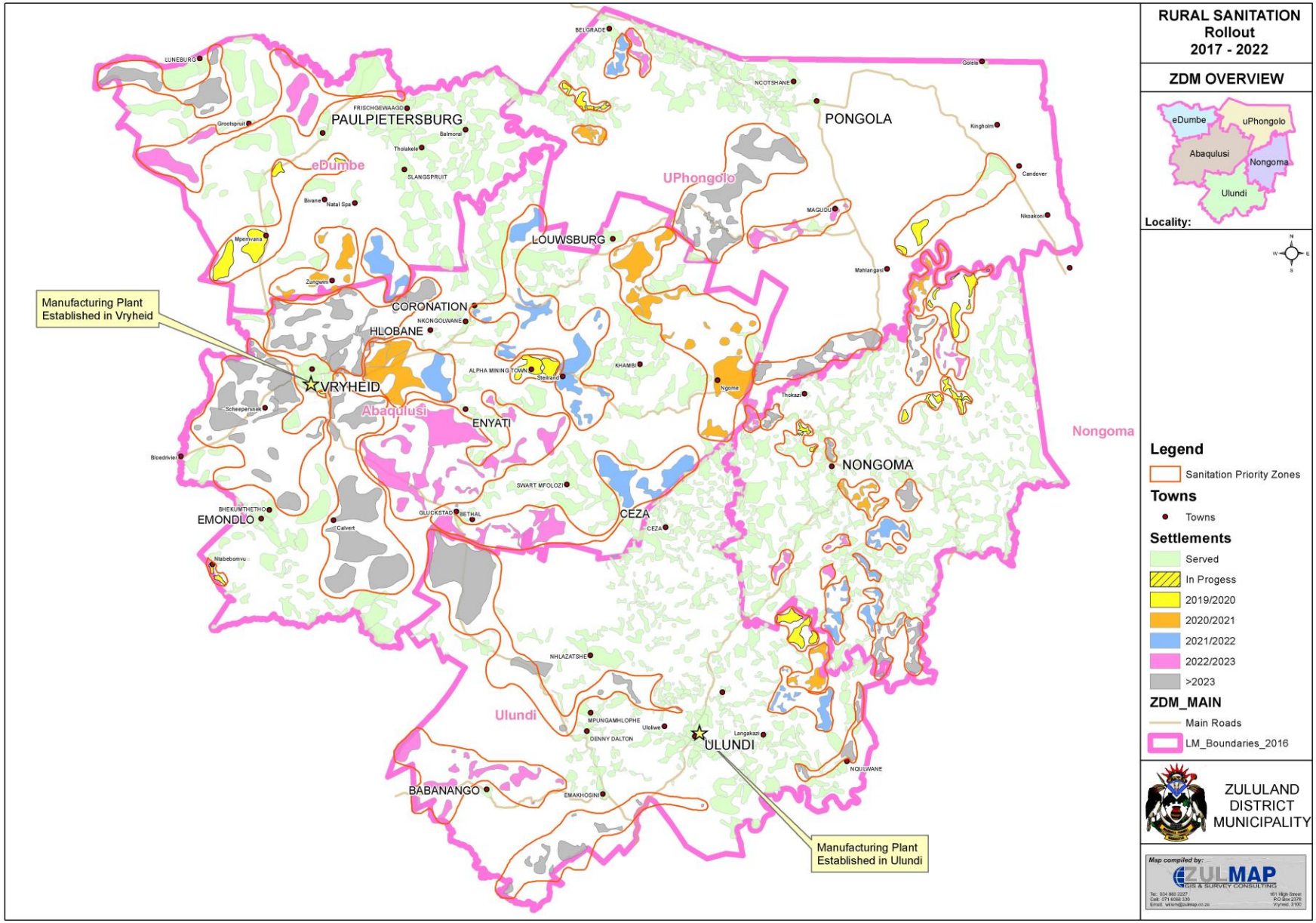
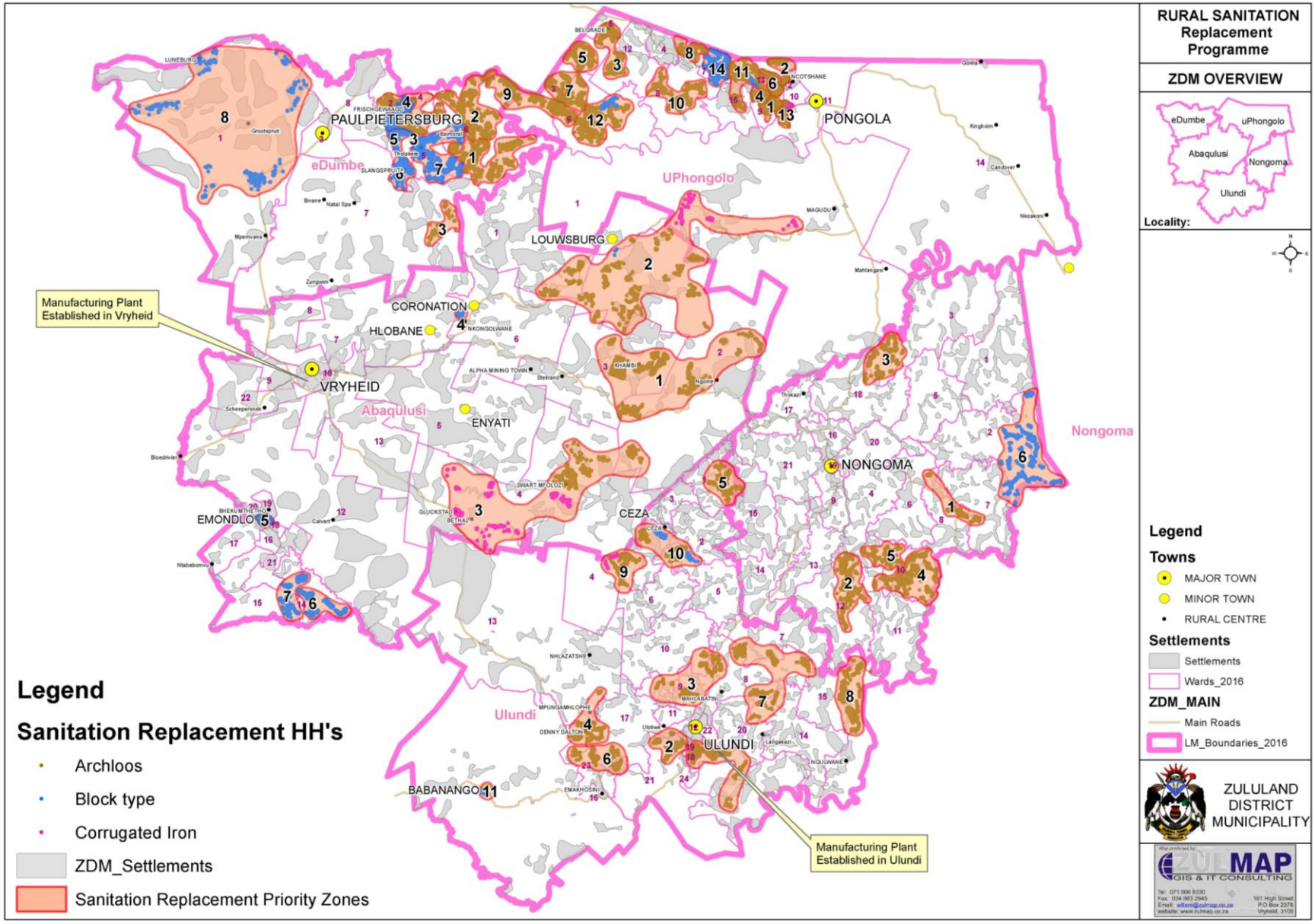


Figure A.6.10: Rural Sanitation (Replacement Programme)



Chapter 11: Strategic Objectives & Development Strategies

The ZDM WSDP supports the KZN PGDS Strategic Framework. WSDP goals, objectives, interventions and projects are aligned to place ZDM in a position to fulfil its role as WSA in achieving the provincial PGDS for 2035.

While the focus has been predominantly on providing each person with sustainable infrastructure and eradicating backlogs, the status of existing and aging infrastructure, as well as the availability and sustainability of water resources has been neglected.

As water provision will increase, so will water resources needs, operation and maintenance of existing infrastructure, efficient institutional and financial capacity to manage infrastructure and revenue etc. The KZN PGDS Framework aims to achieve at least 90% reliable services by 2035.

An overview of the KZN PGDS framework with associated goals and objectives for water and sanitation services can be reviewed in the next figure.

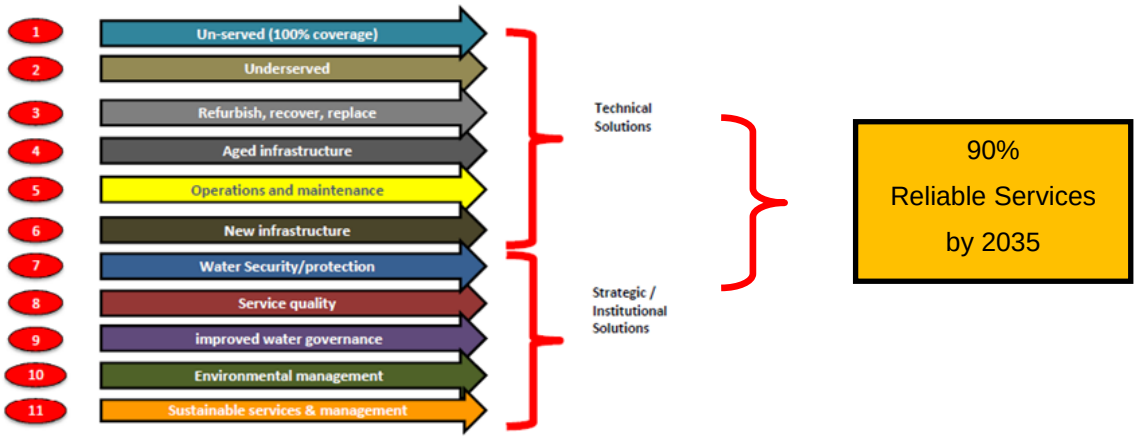


Figure A.3.3: KZN PGDS Strategic Framework

These 11 categories are consolidated in the WSDP under the following topics as required by the web-based WSDP template of DWS:

- TOPIC 1: Demographic Profile
- TOPIC 2: Service Level Profiles
- TOPIC 3: Socio-Economic Background
- TOPIC 4: Water & Sanitation Services Profile
- TOPIC 5: Operation & Maintenance
- TOPIC 6: Associated Services
- TOPIC 7: Conservation & Demand Management
- TOPIC 8: Water Resources

- TOPIC 9: Financial Profile
- TOPIC 10: Institutional Profile
- TOPIC 11: Customer Services

The Strategic Objectives and Development Framework with associated targets and KPI's will be provided in this chapter.