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Department:  
Co-operative Governance and Traditional Affairs  
PROVINCE OF KWAZULU-NATAL



**water affairs**

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Water Affairs  
REPUBLIC OF SOUTH AFRICA

**LITHUNGULU**



# uThungulu District Municipality

## Development of Universal Access Plan for Water & Sanitation in KwaZulu-Natal

# Final

## September 2014



**cogta**

Department:  
Co-operative Governance and Traditional Affairs  
PROVINCE OF KWAZULU-NATAL

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# LDM REPORT

## Final Universal Access Plan

<b>Report Title:</b>	uThungulu District Municipality - Final Universal Access Plan
<b>Client:</b>	Co-operative Governance and Traditional Affairs
<b>Implementing Agent</b>	Umgeni Water
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Date

## LIST OF ABBREVIATIONS

CoGTA	Department of Cooperative Governance and Traditional Affairs
KZN	Kwa-Zulu Natal
UAP	Universal Access Plan
DWA	Department of Water Affairs
UW	Umgeni
DM	District Municipality
LM	Local Municipality
WSDP	Water Services Development Plan
WSA	Water Service Authorities
IA	Implementing Agent
IIWSP	Interim/Intermediate Water Supply Programme
IDP	Integrated Development Plan
MIG	Municipal Infrastructure Grant
SDF	Spatial Development Framework
RDP	Reconstruction and Development Programme
WTW	Water Treatment Works
WWTW	Waste Water Treatment Works
GIS	Geographic Information System
LOS	Level of Service
VIP	Ventilated Improved Pit

## TABLE OF CONTENTS

	Page No
<b>1 EXECUTIVE SUMMARY.....</b>	<b>6</b>
<b>2 INTRODUCTION.....</b>	<b>14</b>
<b>3 MAIN DELIVERABLES.....</b>	<b>15</b>
<b>4 UTHUNGULU DISTRICT MUNICIPALITY .....</b>	<b>15</b>
4.1 Demographic Trends and Settlement Growth.....	16
<b>5 WATER AND SANITATION STATUS QUO.....</b>	<b>17</b>
5.1 Bulk Water Infrastructure.....	17
5.2 Access to Water .....	18
5.3 Current Water Supply Status.....	19
<b>6 CONTINUOUS WATER SUPPLY FOOTPRINTS.....</b>	<b>21</b>
6.1 Capturing of Draft Water Supply Footprints .....	21
6.2 Water & Sanitation Attribute Data.....	22
6.3 Engagement Meeting to Verify GIS Information.....	22
<b>7 EXISTING WATER SCHEMES.....</b>	<b>25</b>
<b>8 RECONCILIATION OF EXISTING &amp; PROPOSED WATER SUPPLY.....</b>	<b>27</b>
8.1 uThungulu Proposed/Planned Water Schemes .....	27
8.2 Water Backlogs .....	33
8.3 Sanitation Backlogs.....	34
8.4 Level of Service.....	36
<b>9 PLANNED AND PROPOSED WATER &amp; SANITATION SCHEMES.....</b>	<b>37</b>
9.1 Conceptual Design Approach.....	37
9.2 Assumptions.....	39
<b>9.2.1 Water.....</b>	<b>39</b>
<b>9.2.2 Sanitation .....</b>	<b>40</b>
9.3 Infrastructure Water & Sanitation Costs.....	40
<b>9.3.1 Water Costs.....</b>	<b>41</b>
<b>9.3.2 Sanitation Costs .....</b>	<b>42</b>
9.4 Five Year Budget Plan for Water and Sanitation.....	43
<b>10 RECOMMENDATIONS.....</b>	<b>58</b>
<b>11 CONCLUSIONS.....</b>	<b>60</b>

## LIST OF TABLES, FIGURES AND MAPS

Table 1: Local Municipality with Population Distribution and Household Figures .....	17
Table 2: Access to Water .....	19
Table 3: Number of Existing Water Schemes .....	26
Table 4 : Existing Water Sources of Existing Schemes .....	26
Table 5: Census 2011 Water Services Backlogs.....	34
Table 6: Water Services Backlogs Captured at Engagement with District Municipality .....	34
Table 7: Census 2011 Sanitation Backlogs .....	35
Table 8: Sanitation Backlogs Captured at Engagement with District Municipality .....	35
Table 9: uThungulu District Level of Service .....	36
Table 10: Demand based on Household Income.....	40
Table 11: Water Infrastructural Costs .....	42
Table 12: Sanitation Infrastructural Costs.....	42
Table 13: Five Year Budget Plan for Water & Sanitation .....	44
Table 14: Proposed Alternate Schemes .....	46
Figure 1: uThungulu District Municipality Locality Map .....	16
Figure 2 : Current Water Supply Status.....	20
Figure 3 : Current Water Supply Status Percentage Breakdown .....	20
Figure 4: Water & Sanitation Attributes Data.....	24
Figure 5 : Water Scheme Options .....	25
Figure 6: Sanitation Scheme Options.....	25
Figure 7: WTW to Reservoir Scheme.....	38
Figure 8: Borehole to Reservoir Scheme.....	38
Figure 9: Borehole with Hand Pumps Scheme.....	39
Figure 10: Water and Sanitation 5 Year Budget Plan .....	45
Map 1: uThungulu District Municipality Water Supply	
Map 2: uThungulu District Municipality Dwelling Distribution	
Map 3: uThungulu District Municipality Water Connection Types	
Map 4: uThungulu District Municipality Water Backlogs	
Map 5: uThungulu District Municipality Sub Supply Areas	
Map 6: uThungulu District Water Resources	
Map 7: uThungulu District Municipality Sanitation Supply	
Map 8: uThungulu District Municipality Sanitation Types	
Map 9: uThungulu District Municipality Sanitation Backlogs	
Map 10: uThungulu District Municipality Household Income Categories	

- Map 11: Mfolozi / Mbonambi Water Supply
- Map 12: Mfolozi / Mbonambi Proposed Alternate Schemes
- Map 13: Mfolozi / Mbonambi Sanitation Supply
- Map 14: Mthonjaneni Water Supply
- Map 15: Mthonjaneni Proposed Alternate Schemes
- Map 16: Mthonjaneni Sanitation Supply
- Map 17: Nkandla Water Supply
- Map 18: Nkandla Proposed Alternate Schemes
- Map 19: Nkandla Sanitation Supply
- Map 20: Ntambanana Water Supply
- Map 21: Ntambanana Proposed Alternate Schemes
- Map 22: Ntambanana Sanitation Supply
- Map 23: uMlalazi Water Supply
- Map 24: uMlalazi Proposed Alternate Schemes
- Map 25: uMlalazi Sanitation Supply
- Map 26: uMhlathuze Water Supply
- Map 27: uMhlathuze Sanitation Supply

#### **LIST OF ANNEXURES**

- Annexure A: uThungulu District Municipality DWA Priority Actions Plans
- Annexure B: Water Supply & Sanitation Footprints
- Annexure C: Attributes Data/Tables
- Annexure D: uThungulu District Municipality Water & Sanitation Project List

## 1 EXECUTIVE SUMMARY

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KwaZulu-Natal (KZN) Department of Cooperative Governance and Traditional Affairs (CoGTA) strategic priorities 2013/14 Programme 3 (Development Planning), the Department is mandated to prepare a Universal Access Plan (UAP) with a specific focus on citizen's access to water, sanitation as contained in the MEC's 2013/14 Vote 11 Budget Speech of the 30th May 2013.

In order to prepare a UAP, an all-inclusive conceptual water service plan was required for the ten (10) District Municipalities (DM's) of KZN (excluding the eThekweni Metropolitan Municipality) and also for the three Water Utilities in KZN, namely; Umgeni Water, Umhlatuze Water and Uthukela Water. The UAP for electricity has been undertaken by Eskom and does not form part of this report and findings.

All District Municipalities have set clear objectives to ensure that all citizens have access to basic levels of service which include:

- Upgrading or refurbishment of existing water services treatment works;
- Upgrading or refurbishment of existing water services schemes;
- Operate and maintain existing schemes and treatment works in a sustainable manner;
- Complete existing water services projects;
- Remove water services backlogs by implementing new projects.

The scope of this assignment was to determine the backlogs to access to basic water and sanitation needs within each District municipalities and thus provide an overall cost within each District municipality.

As part of this Universal Access Plan (UAP) assignment to determine the backlogs in water and sanitation; all documentation such as Water Services Development Plan (WSDP), Integrated Development Plan (IDP) and Water Service Master Plan (WSMP) had to be reviewed as these are strategic planning instruments which guides and informs all planning, budgeting, management and decisions making in the District Municipality. The Water Services Development Plan is also intended to address the sector planning needs of each of the Local Municipalities.

In order to identify the backlogs, draft water supply footprints were digitised forming water supply polygons by using existing water infrastructure available from Umgeni Water and the District Municipality. These water supply polygons were then used at the engagement meeting at uThungulu. The water and sanitation attributes were confirmed and updated by the

operational and maintenance staff of uThungulu, and water and sanitation backlogs identified. Also, captured at the engagement meeting were the existing water schemes and associated water and sanitation infrastructure. Due to time constraints and lack of engagement meetings with the District Municipality, not all water and sanitation infrastructure has been captured. Approximately 60% of infrastructure has been captured for Mfolozi, Mthonjaneni, and Nkanda, and 20% has been captured for Ntambanana, uMhlatuze and uMlalazi. It is very important that the outstanding water and sanitation infrastructure be captured as this information can assist in making important decisions with regards to upgrades and additions to existing and aging infrastructure and inform municipalities where budgets should be spent depending on the shortfall in infrastructure.

Geographic Information System (GIS) analysis was used to capture all infrastructural attributes and the 2011 Eskom household points used to determine the backlogs numbers per water supply polygon. Statistics SA census data was used to calculate the average growth rate per annum between 2001/ 2011. The percentage growth was then applied to the 2011 to 2014 household's counts to determine the current estimated household counts. The Department of Human Settlement income was also used to determine the required consumptions and capacity requirements. Majority of the backlogs identified fall in the category of informal with no formal connection which equates to maximum per capita consumption of 70 l/c/d. This was the applied to the water supply polygons and the required consumptions identified in order to determine the conceptual bulk schemes.

To address these short term water and sanitation backlogs, conceptual water supply schemes were developed and costed according to the infrastructure rates given by Umgeni Water and SMEC South Africa's current water and sanitation projects undertaken. A total of 29 conceptual bulk schemes have been identified to address the water and sanitation backlogs ranging from schemes with small water treatment plants to bulk lines, reservoirs to reticulation and stand pipes connections to boreholes with tanks and hand-pumps. The selections of these conceptual schemes incorporated different factors such as income levels with consumption requirements, local topography, and number of households affected, spacing of the polygons without access to water, and the adjacent polygons with access to water.

The Goedertrouw dam was used as a major source which could eradicate majority of the backlogs thru the use of a single water treatment works. There are three proposed treatment



facilities from this dam which has a total capacity of 39 ML/day. The total required capacity to eradicate backlogs was approximately 70 ML/day.

This UAP encompassed the identification of gaps/backlogs in water and sanitation service delivery, and the provision of conceptual plans focusing on regional and bulk schemes with the associated cost estimates for the supply of these services. In areas where regional and bulk schemes aren't viable or where an interim water supply is needed, an alternative local scheme has been identified for prioritisation.

uThungulu District Municipality, in terms of the Water Services Act, is the Water Services Authority in respects of its area of jurisdiction, apart from City of uMhlathuze. According to the 2011 census, there has been an increase in the number of households with water inside their yards as well as access to communal stands. It must be noted that no backlogs were identified in uMhlathuze and hence reporting is done on the 5 Local Municipalities serviced by the uThungulu WSA. Although uMhlathuze falls within the uThungulu District Municipality, they function as their own WSA and no engagement meetings were held or confirmed with them. It is for this reason that the GIS data received from Umgeni Water was used in order to determine access to water and sanitation. From the GIS data it was concluded that no backlogs were present in uMhlathuze. An additional phase to this UAP project should be conducted in order to verify the access to water and sanitation and to capture water and sanitation infrastructure.

**Table 1: Local Municipality with Population Distribution and Household Figures**

Municipality	KZN Code	Population Size	Households
Mfolozi / Mbonambi	KZ 281	122 889	25 582
Mthonjaneni	KZ 285	47 818	10 432
Nkandla	KZ 286	114 416	22 462
Ntambanana	KZ 283	74 336	12 825
uMlalazi	KZ 284	213 601	45 065
uMhlathuze	KZ 282	334 459	116 399
<b>uThungulu District Municipality</b>		<b>907 519</b>	<b>202 974</b>

The Statics SA Census 2011 indicates that the current population for the uThungulu District Municipality is currently at 907 519 with the total number of households at 202 974 as listed in table 1 above. The current average growth rate is estimated at 0.24% from the 2011 Census. Table 5 below indicates the water backlogs identified from the 2011 Census data for the 5 Local Municipalities excluding the uMhlathuze Local Municipality.

**Table 5: Census 2011 Water Services Backlogs**

Municipality	Number of Households	Water Served Households	Water Backlogs Households	Percentage of Water Backlogs
Mfolozi / Mbonambi	25584	19147	6437	25%
Mthonjaneni	10433	6491	3942	38%
Nkandla	22463	13616	8847	39%
Ntambanana	12826	6122	6704	52%
uMlalazi	45062	27679	17383	39%
<b>uThungulu District Municipality</b>	<b>116368</b>	<b>73055</b>	<b>43313</b>	<b>37%</b>

The total water backlogs identified from the Census data for the uThungulu District Municipality is 43313 households which equates to 37% of the District Municipality and the total backlogs identified from the engagements with the uThungulu District Municipality using the Eskom household points are 15281 households, which is 17% of the District Municipality total backlogs. Table 6 below indicates the water backlogs identified at the engagement meetings.

**Table 6: Water Service Backlogs Captured at Engagement with District Municipality**

Municipality	2011 Eskom Household Dwellings	Growth Rate %	Factor	2014 Escalated ESKOM Household Dwellings	Water Backlogs Households	Percentage of Water Backlog
Mfolozi / Mbonambi	20472	1.39	1.0139	20757	2749	13%
Mthonjaneni	6898	-0.52	1	6898	701	10%
Nkandla	18197	-1.55	1	18197	2515	14%
Ntambanana	10331	-1.31	1	10331	2933	28%
uMlalazi	33952	-0.34	1	33952	6383	19%
<b>uThungulu District Municipality</b>	<b>89850</b>	<b>-</b>	<b>-</b>	<b>90135</b>	<b>15281</b>	<b>17%</b>

The backlogs for sanitation in the uThungulu District Municipality from Census data reflects a total of 48991 households which equates to approximately 41% of the District Municipality and a

total number of 21462 households were indicated as having backlogs from the engagement meetings which equates to approximately 24% of the District Municipality. Table 7 indicates the sanitation backlogs identified from the 2011 Census data and Table 8 indicates the sanitation backlogs captured at the engagement meetings.

**Table 7: Census 2011 Sanitation Backlogs**

Municipality	Households	Sanitation Served	Backlogs	Percentage Backlogs
Mfolozi / Mbonambi	25584	14421	11163	44%
Mthonjaneni	10433	5112	5321	51%
Nkandla	22463	12719	9743	43%
Ntambanana	12826	6974	5852	46%
uMlalazi	45062	28151	16911	38%
<b>uThungulu District Municipality</b>	<b>116368</b>	<b>67377</b>	<b>48991</b>	<b>41%</b>

**Table 8: Sanitation Backlogs Captured at Engagement with District Municipality**

Municipality	Water borne	VIP	VIP and Septic Tanks	Pits	None	Private	Septic Tanks	Total Households	Percentage Backlogs
Mfolozi / Mbonambi	0	10565	63	0	3241	855	6033	20757	48.80%
Mthonjaneni	1697	4290	0	412	54	445	0	6898	13.21%
Nkandla	784	17390	0	0	23	0	0	18197	0.13%
Ntambanana	0	9498	0	0	363	470	0	10331	8.06%
uMlalazi	3102	20274	1010	8034	233	1299	0	33952	28.18%
<b>uThungulu District Municipality</b>	<b>5583</b>	<b>62017</b>	<b>1073</b>	<b>8446</b>	<b>3914</b>	<b>3069</b>	<b>6033</b>	<b>90135</b>	<b>23.81%</b>
	<b>68673</b>			<b>21462</b>					
	<b>76%</b>			<b>24%</b>					
	<b>Access</b>			<b>Backlog</b>					

Conceptual schemes to eradicate the water backlogs have been proposed and costed accordingly in order to determine the total amount of funding needed for the District Municipality. The total cost for the proposed schemes is approximately R813 million. The cost to eradicate the sanitation backlogs was based on data obtained from service providers who are currently eradicating backlogs in the Harry Gwala District municipality. The rates used ranged

between R6000 to R7000 to supply and lay a VIP per household, and hence we used a fixed rate of R7000. The total cost to eradicate sanitation backlogs is approximately R129 million. Table 11 and 12 below indicates the estimated water backlogs infrastructure costs and the estimated sanitation backlogs infrastructure costs based on the conceptual schemes respectively.

**Table 11: Water Infrastructural Costs**

Local Municipality	Total
Mfolozi / Mbonambi	R 37 498 487
Mthonjaneni	R 11 349 661
Nkandla	R 122 101 280
Ntambanana	R 4 323 677
uMlalazi	R 637 823 702
<b>Total</b>	<b>R 813 096 807</b>

**Table 12: Sanitation Infrastructural Costs**

Local Municipality	Rate/VIP	Remaining Expenditure
Mfolozi / Mbonambi	R 7 000	R 64 919 003
Mthonjaneni	R 7 000	R 3 262 000
Nkandla	R 7 000	R 161 000
Ntambanana	R 7 000	R 2 541 000
uMlalazi	R 7 000	R 57 869 000
<b>Totals</b>		<b>R 128 752 003</b>

The total cost with the study fees for the proposed water schemes is approximately R854 Million. The total cumulative cost to eradicate the water backlogs with 29 proposed schemes and the sanitation backlogs over the 5 years is approximately R1.07 Billion which includes escalation. A cumulative summary of these costs is indicated in the Figure 10 below.

The projects listed in the Integrated Development Plan and those set out by the Department of Water Affairs which are shown in Annexure A and D are regional bulk schemes which are long

term solutions to address backlogs and improve current water and sanitation infrastructure. These projects have are funded through the Municipal Infrastructure Grant and Municipal Water Infrastructure Grant which we have not considered when proposing conceptual alternate schemes to eradicate current backlogs. There could be overlapping of the proposed conceptual schemes to the regional bulk schemes and thus overlapping of infrastructure costs. The main reason that infrastructure cost could be overlapped is due to our mandate to develop conceptual schemes to eradicate the backlogs identified at the engagement meeting with the district municipalities. The staff could not identify the boundaries of the regional bulk schemes nor provide information on start and completion dates.

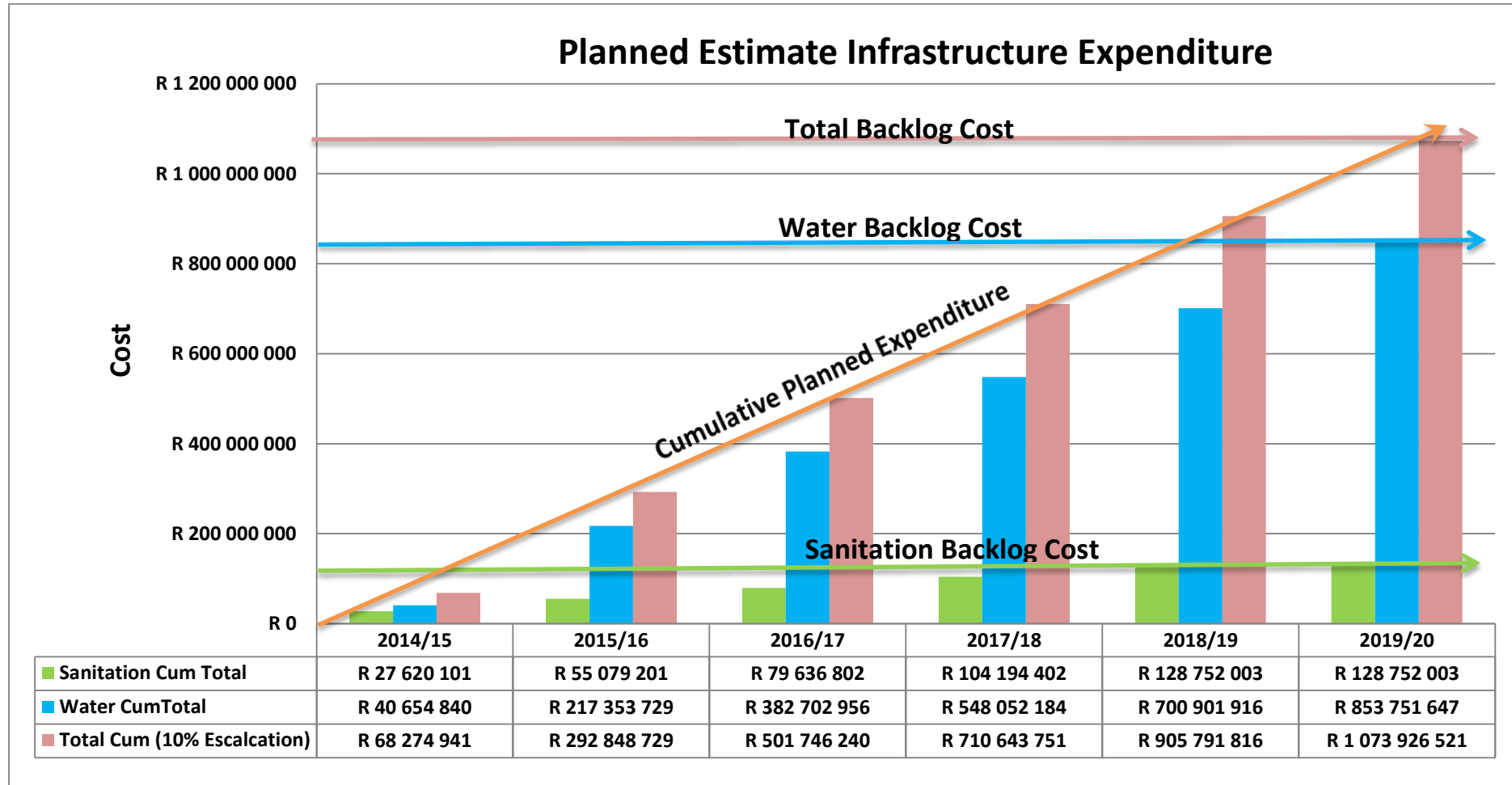


Figure 10: Water and Sanitation 5 Year Budget Plan

## 2 INTRODUCTION

In terms of the 'Department of Cooperative Governance and Traditional Affairs' (CoGTA's) strategic priorities 2013/14 Programme 3 (Development Planning), the Department has been mandated to prepare a Universal Access Plan (UAP) with a specific focus on access to water and sanitation.

Whilst a significant number of municipalities in KwaZulu-Natal are close to achieving universal access regarding key municipal infrastructure services such as water, sanitation and electricity; a need was identified, to formulate a plan to allow for the remaining backlogs to be quantified and the approximate costs of remedying these situations, established.

As a result, CoGTA's 'Municipal Infrastructure Development Business Unit' was directed to undertake the collection of all basic infrastructure backlog data; the verification of this data and the compilation of a Universal Access Plan document with a geo-database and an implementation programme, indicating the relevant milestones and associated infrastructure costs.

CoGTA thus enlisted Umgeni Water (UW), with the assistance of the 'Department of Water Affairs' (DWA), to act as the Implementing Agent (IA) for this project. This was aligned with the DWA's mandate to provide potable water to the people of South Africa; as well as the development of bulk Infrastructure Master Plans (IMP's) by water utilities such as Umgeni Water, uThukela Water, Umhlathuze Water.

In terms of Section 1 of the Water Services Act, 1997, the District Municipalities are the mandated Water Service Authorities (WSA's) that are required to develop 'Integrated Development Plans' (IDP's) and 'Water Services Development Plans' (WSDP's). In addition to these water supply plans, there are currently several other supporting programmes which include the DWA's 'Total Water Services Business Master Planning Process'; the 'All Town Study/Reconciliation Studies', the 'Prioritisation of Water Services to 24 District Municipalities', the 'Interim/Intermediate Water Supply Programme' (IIWSP) and the 'Municipal Infrastructure Grant' (MIG). Despite these many plans, it was still recognised by CoGTA that the water planning process to date, has not entirely fulfilled the water planning requirements of the province, as well as originally envisaged. Hence, on the 6<sup>th</sup> September 2013, Umgeni Water was requested by CoGTA to manage the water supply planning programme in KwaZulu-Natal and from this was born the design of the Universal Access Plan (UAP).

LDM was appointed by The Municipal Infrastructure Development Business Unit of CoGTA, to develop these Universal Access Plans, for Water & Sanitation, within five of the ten Districts, namely, iLembe, Harry Gwala, Umzinyathi, Uthungulu and Umgungundlovu. The process of developing these plans included the collection of infrastructure backlog data; the capture of water supply footprints and their verification; and confirmations of the existing bulk, reticulation networks and proposed new schemes; for each of the five awarded Districts. Also crucial, was the identification and mapping of 'gaps" of settled or residential areas that are without access to an acceptable level of water and sanitation services; and also the provision of conceptual plans focusing on regional and bulk schemes for the provision of these services. In areas where regional and bulk schemes are currently not feasible or where an interim water supply is needed, a local scheme was opted be used.

### 3 MAIN DELIVERABLES

In order to develop these Universal Access Plans, specific to each District Municipality, the following guidelines have been set by Umgeni Water:

- Assessment of water planning status quo;
- Identification of existing water supply schemes;
- Identification of already proposed future water supply options;
- Development of continuous water supply footprint areas covering the entire province, showing demographics, as well as current and required levels of service;
- Planned supply schemes (at a conceptual level) that can be constructed to supply all areas;
- Reconciliation of existing and proposed water supply and demand options;
- Provision of an updated geo-database including meta data of all relevant information; and finally the,
- Compilation of a UAP report for each District Municipality.

### 4 UTHUNGULU DISTRICT MUNICIPALITY

The uThungulu District Municipality is located in the North-Eastern region of the KwaZulu-Natal Province on the Eastern seaboard of South Africa. It covers an area of approximately 8213 square kilometres, from the agricultural town of Gingidinglovu in the South, to the Umfolozi River in the North and inland to the mountainous beauty of rural Nkandla. uThungulu consists of six Local Municipalities, namely, Mfolozi, Mthonjaneni, Nkandla, Ntambanana, uMlalazi and uMhlatuze.



Figure 1 below shows the orientation of these local municipalities within the District.

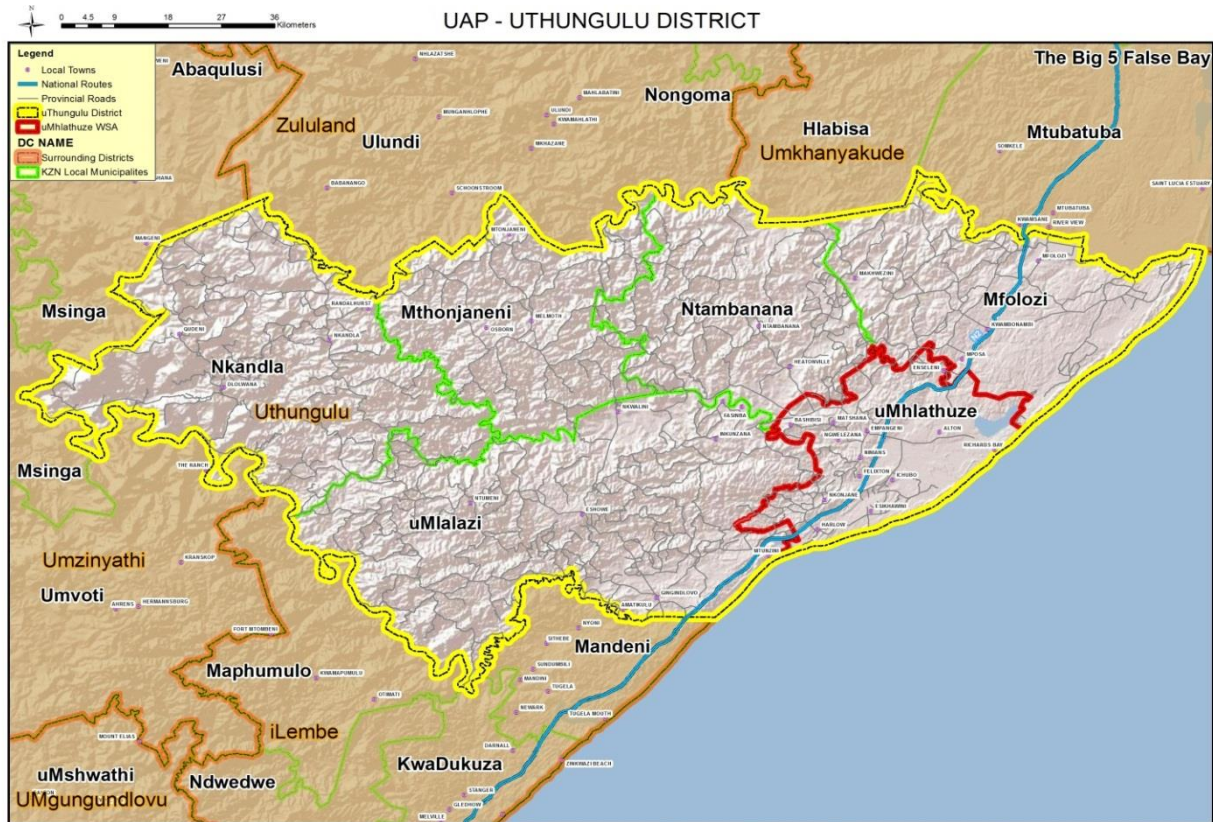


Figure 1: uThungulu District Municipality Locality Map

#### 4.1 Demographic Trends and Settlement Growth

The total population of the uThungulu District Municipality was 907 519 in 2011. Since 1996, the population of the uThungulu District grew at an average annual growth rate of 1.5% per annum compared to the 1.1% population growth at the provincial and national level, thereby increasing uThungulu population share in KwaZulu-Natal from 9% in 1996 to 9.5% in 2011. For an illustration of the dwellings within the uThungulu District Municipality refer to Map 2 in Annexure B.

Table 1: Local Municipality with Population Distribution and Household Figures

Municipality	KZN Code	Population Size	Households
Mfolozi / Mbonambi	KZ 281	122889	25582
Mthonjaneni	KZ 285	47818	10432
Nkandla	KZ 286	114416	22462
Ntambanana	KZ 283	74336	12825
uMlalazi	KZ 284	213601	45065
uMhlathuze	KZ 282	334459	116399
<b>uThungulu District Municipality</b>		<b>907 519</b>	<b>202974</b>

Stats SA 2011

## 5 WATER AND SANITATION STATUS QUO

The uThungulu District Municipality is the Water Service Authority for five of the six local municipalities within its jurisdiction, apart from the City of uMhlathuze which serves as their own Water Service Authority. This core authoritative function of the municipality is carried and shared among three departments that form the back-bone of water service delivery, namely, Water Services, Project Management Unit (PMU) and Finance; with the delivery itself cutting across all the departments of the municipality.

The Water Services Department is responsible for the planning and design of new projects, and is also responsible for the operations and maintenance of all water and sanitation projects and water schemes. The PMU is responsible for overseeing the implementation and construction of approved projects, as well as signing off on their completion as per the project milestones and deliverables. The Finance Department monitors the expenses of the project by tracking all expenditure items against project specific votes.

### 5.1 Bulk Water Infrastructure

In order to efficiently plan the delivery of water, via bulk water infrastructure; a Water Services Development Plan has been developed to assist the individual Local Municipalities to align their projects, as set out by the Water Services Authority, i.e. uThungulu District Municipality, and uMhlathuze; to that of the Integrated Development Plan (IDP) and its strategy to providing water

and sanitation services to the entire District. Refer to Annexure A and D for a list of projects and their descriptions as per DWA's Priority Action Plans (2013) and the IDP respectively.

Umgeni Water has provided the LDM consortium, also comprising of SMEC South Africa (LDM/SMEC) with the GIS data of some of their already captured water supply footprints and current water infrastructure; as well as DWA data such as the All Town Study. LDM/SMEC also obtained all IDP's and SDF's per District Municipality, in order to determine what infrastructural plans are in place within the uThungulu District. All of this existing information was used as the basis in which to verify and enhance the data captured during the engagement meetings. These sessions played a pivotal role in acquiring the knowledge of local technical specialists within the District and Local Municipalities, in a collective bid to determining reasonably accurate backlogs.

Due to time constraints and lack of engagement meetings with the District Municipality, not all water and sanitation infrastructure has been captured. Approximately 60% of infrastructure has been captured for Mfolozi, Mthonjaneni, and Nkanda, and 20% has been captured for Ntambanana, uMhlatuze and uMlalazi. An additional phase to this UAP project should be conducted in order to capture outstanding information.

## 5.2 Access to Water

Table 2 below gives an indication of the various types of 'water connections' within the uThungulu District Municipality. The following information was captured at the engagement meetings held in August 2014 with representatives from the different Local Municipality's. Approximately 28% of the households in the uThungulu District Municipality are supplied by standpipes less than 200m walking distance from the respective homes. 32% have household connections, and mainly constitute those houses located near the major towns within the District. There is a total of 15% of households that have no access to water.

Refer to Map 3: uThungulu District Municipality Water Connection Types in Annexure B for an illustration of the water accessibility across the uThungulu District Municipality.

**Table 2: Access to Water**

Access to Water	Above RDP Standards					Below RDP Standards			Private	Grand Total
	Household	House and Standpipes	Yard Taps	Standpipe	Yard connections and standpipes	Jojo tanks	None	Hand Pumps		
Mfolozi	7575	450	0	6918	2210	0	2220	528	855	20757
Mthonjaneni	3978	0	0	1774	0	0	701	0	445	6898
Nkandla	11799	453	0	3653	0	2	2221	69	0	18197
Ntambanana	0	0	0	6928	0	0	2933	0	470	10331
uMlalazi	5196	13619	254	5629	1464	0	5381	1110	1299	33952
<b>Total</b>	<b>28548</b>	<b>14522</b>	<b>254</b>	<b>24902</b>	<b>3674</b>	<b>2</b>	<b>13456</b>	<b>1707</b>	<b>3069</b>	<b>90135</b>
	<b>31.67%</b>	<b>16.11%</b>	<b>0.28%</b>	<b>27.63%</b>	<b>4.08%</b>	<b>0.00%</b>	<b>14.93%</b>	<b>1.89%</b>	<b>3.40%</b>	<b>100%</b>
	<b>80%</b>					<b>17%</b>			<b>3%</b>	<b>97%</b>

### 5.3 Current Water Supply Status

The current water supply status offers an indication of water provision/delivery to households; as well as if they fall within municipal jurisdiction or within privately owned sectors, primarily farm lands. This is depicted in Figures 2 and 3.

This information is as a result of the engagement meetings that were held at the uThungulu District Municipality, and indicates that approximately 80% of all households in the District have access to water at a minimum RDP standard, while 17% of households do not have access to drinking water or have water supplied at standards that are below that of the RDP minimum, and finally just 3% fall within privately-owned properties.

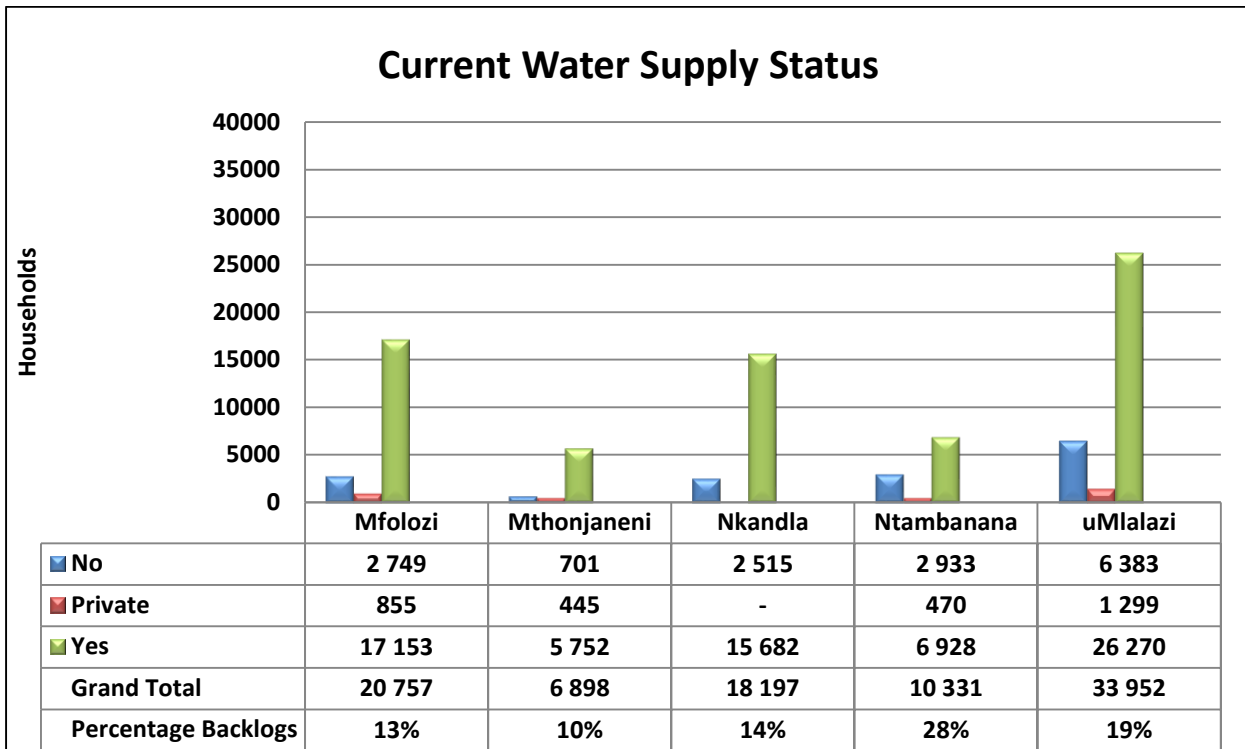


Figure 2 : Current Water Supply Status

In Figure 2 above, No refers to households below RDP standards which constitute a backlog, while Yes refers to households that have access to water above that of RDP Standards.

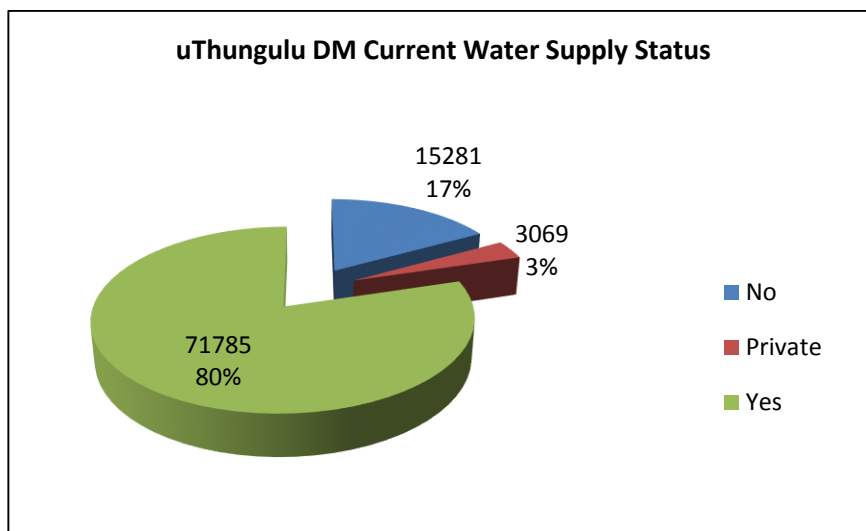


Figure 3 : Current Water Supply Status Percentage Breakdown

Refer to Map 1: uThungulu District Municipality Water Supply in Annexure B for a depiction of the water supply in the District.

## 6 CONTINUOUS WATER SUPPLY FOOTPRINTS

One of the main deliverables of this project was to develop a continuous water supply footprint that describes the current and future supply capacity for the District Municipality. These footprints comprise of polygons that define autonomous supply zones that are either currently supplied or have the potential to be supplied with water from a particular water source.

### 6.1 Capturing of Draft Water Supply Footprints

Infrastructure data such as bulk infrastructure and reticulation networks obtained from Umgeni Water was initially used to capture and digitise these water supply footprints as polygons on GIS. Where no reticulation was present, then the assumption was made that households located within these polygons do not have basic services. Having drawn up the footprint polygons, the water supply or lack thereof was then confirmed with the District Municipality at the Delphi engagement meetings and all polygons and associated attribute data was updated accordingly.

The water supply polygons that were confirmed as having sustainable drinking water have been updated, with their attributes in Annexure C.

The polygons representing footprint areas that do not have sustainable drinking water have been grouped, and conceptual schemes have been proposed. These conceptual schemes may consist of borehole schemes, small bulk schemes with package plants, pump stations, bulk lines and reservoirs with reticulation; and in more remote and sparsely populated areas spring protection and water harvesting schemes have been proposed.

Households identified with no current water supply, but were situated close to towns that have bulk infrastructure, have been incorporated into these existing bulk scheme. If these current bulk schemes have inadequate capacity to supply the no-supply households, then an upgrade or expansion to the existing water treatment works, as well as new reservoirs, was proposed. Refer to Maps 11, 14, 17, 20, 23 and 26, in Annexure B for the illustration of water supply footprints in each of the Local Municipalities.

The establishment of footprints for sanitation provision was undertaken in a similar way to that of water supply; and areas where mapped accordingly. Sanitation infrastructure included both ventilated improved pit latrines (VIP's) and waterborne sewerage systems. Refer to Maps 13,

16, 19, 22, 25 and 27 in Annexure B for the illustration of sanitation supply in each of the Local Municipalities.

## 6.2 Water & Sanitation Attribute Data

Figure 4 below illustrates the Delphi/Engagement data capture processes that have been applied in order to obtain the necessary data required for the Water Footprint Areas. These attributes or required information, have been extracted from the Umgeni Water terms of reference and is a means of providing value to the GIS data that is being captured. This data will also be handed back to the District Municipality for their own use. Attribute data for the infrastructure was captured as it was provided to us by the staff during the engagement meetings. In the event that municipal operational staff could not provide us with the necessary information; assumptions had to be made on their part, so as to allow for reasonably complete data collection. All collected data was supported by a 'confidence level indicator', which in such cases, was selected as 'low'. The reverse of 'high', being allocated to those attributes of which the staff could confirm. The collected/confirmed attribute data for the infrastructure was then collectively applied to the captured water supply footprint with additional information regarding the current supply. The data obtained within the Delphi sessions was then used to compile the UAP for the uThungulu District Municipality. It was therefore essential that all data captured was accurate and reliable. Due to time constraints and lack of engagement meetings with the District Municipality, assumptions were made, for all of the areas not captured in the first round of meetings with the District Municipality, using GIS provided to us by Umgeni Water. This data included that of reservoir points, bulk lines, boreholes, and water and sanitation treatment facilities. The entire water and sanitation infrastructure were not captured or verified during the engagements and was a means of determining whether the areas surrounding it had access to water and sanitation. This should be addressed in an additional phase of this UAP project.

A detailed description of the attribute fields listed in Figure 4 below is indicated in Annexure C. This represents the level of attribute data which we aimed to collect at the engagement meetings with the Districts Municipalities, wherein which these attributes were partially confirmed.

## 6.3 Engagement Meeting to Verify GIS Information

The process followed in capturing water schemes was such that the supply source was firstly identified. This source then led either directly to reservoirs; or to a water treatment facility, prior

to a reservoir; and in some cases, directly to pump stations, used to get the water to the reservoirs itself. Bulk water pipelines were identified for the movement of water from the supply source through to the reservoirs. From the reservoirs water would reticulate to households or to communal standpipes. All of this information was captured in the GIS.

This process of verifying all GIS data with the uThungulu District Municipality was completed at the end of August 2014. The data collected at the Delphi/Engagement meeting was processed and the attributes updated on the Geo-Database for the uThungulu District Municipality. The data has confirmed backlogs and areas that require interventions with regards to water and sanitation upgrades, existing schemes, proposed new schemes and the cost thereof.

It must be noted that due to time constraints and problems with arranging engagement meetings with the District Municipality, a high level study was conducted where only important data was collected that would be used to compile the UAP. This information consisted of water and sanitation access; scheme names, source type, and type of water connection where available; and type of sanitation. Water Infrastructure such as the reservoirs, bulk lines, and supply sources were not identified in these engagement meetings. Only essential data was captured at the engagement meeting to determine water and sanitation backlogs and this data was used to design conceptual schemes and thus cost these schemes to determine estimated overall cost to eradicate these backlogs.



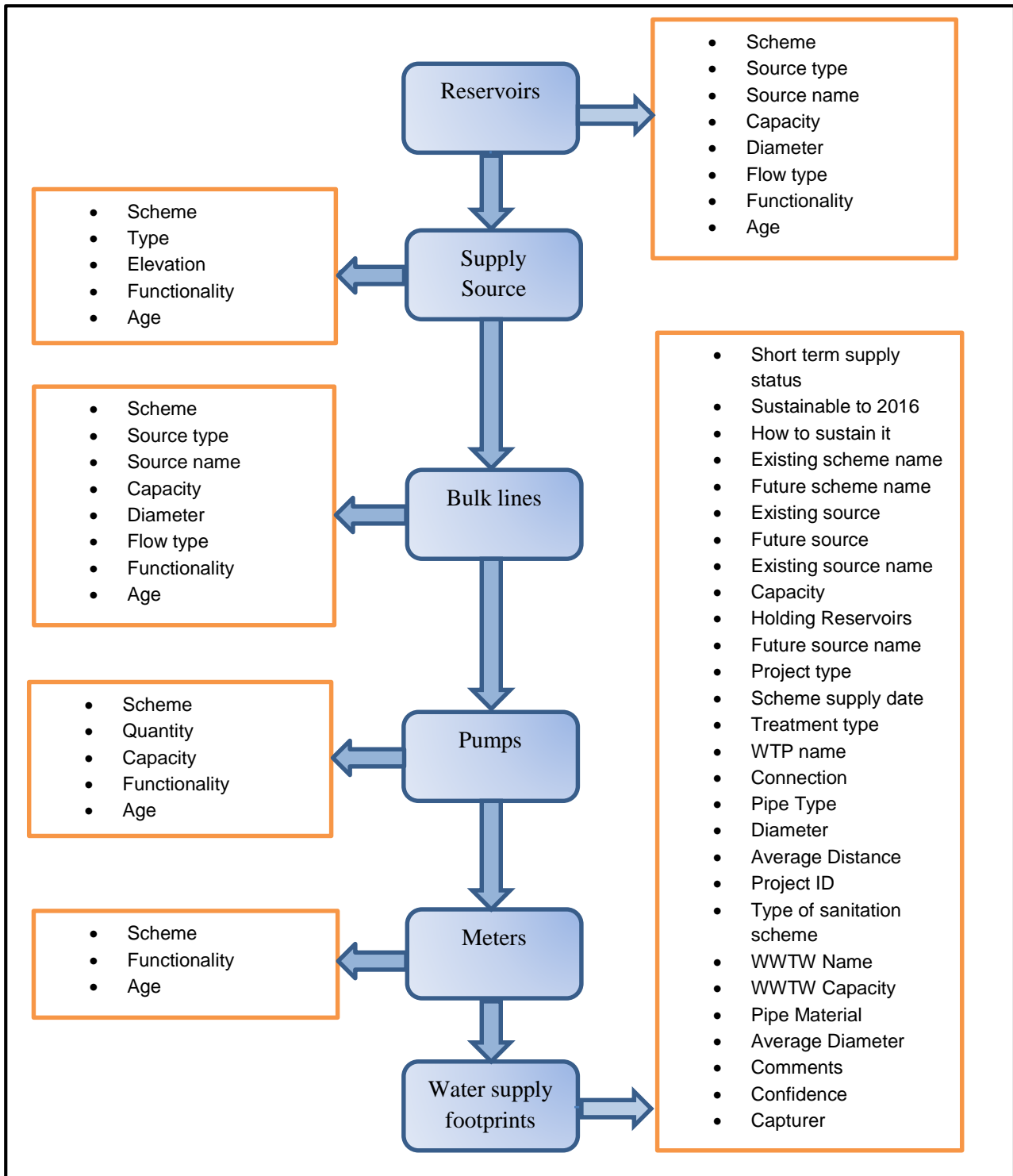


Figure 4: Water & Sanitation Attributes Data

## 7 EXISTING WATER SCHEMES

The identification of the existing water and sanitation schemes, have been determined via confirmations with the uThungulu District Municipality during the engagement meetings. The process involved identifying areas which have access to piped water either from known sources such as water treatment works, reservoirs, boreholes or springs; to household connections or standpipes.

LDM /SMEC South Africa have engaged with the various Local Municipality’s and departments to determine the accuracy of the GIS water supply footprints and confirmed all attribute data as per Figure 5, 6 and Annexure C. The data has been updated in the Geo-Database and will form part of the deliverable to CoGTA.

### Water Scheme Options

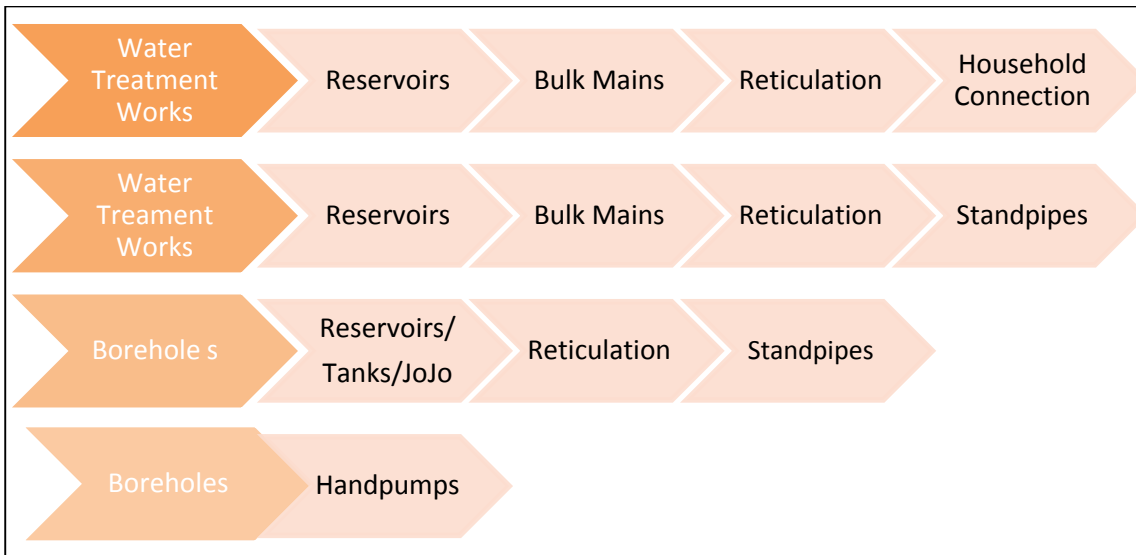


Figure 5 : Water Scheme Options

### Sanitation Scheme Options

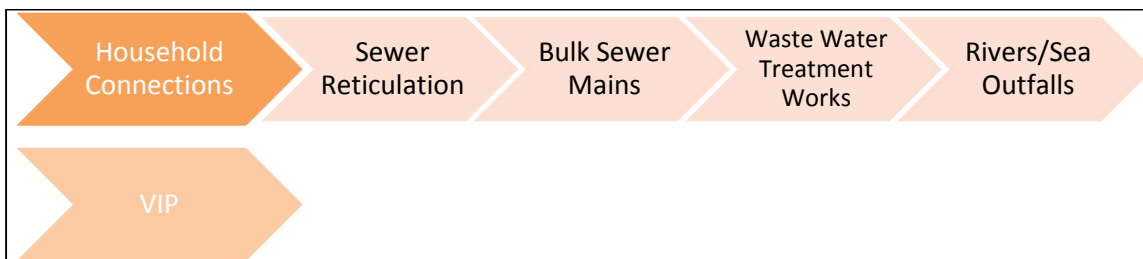


Figure 6: Sanitation Scheme Options

In total 166 schemes have been captured in the uThungulu District Municipality. These schemes range from bulk schemes with water treatment facilities to rudimentary schemes with boreholes and springs feeding reservoirs. Table 3 below indicates the number of existing schemes in each Local Municipality for the uThungulu District Municipality.

**Table 3: Number of Existing Water Schemes**

	Mfolozi	Mthonjaneni	Nkandla	Ntambanana	uMlalazi	Total
Existing Schemes	37	10	58	22	39	166

Each of the water schemes captured has either one or multiple sources feeding that particular scheme. The attributes captured during the engagement meetings for the water supply footprints in terms of the existing sources have been listed in Table 4 below. The majority of the footprints get water from either water tankers, or reservoirs. The number listed below is an indication of the number of captured water footprints. We have proposed alternate schemes for the footprints with no water and those that get water from sources below that of RDP standards such as river, hand pumps, and water tankers.

**Table 4 : Existing Water Sources of Existing Schemes**

Existing Sources	Number
Reservoir	585
Borehole	148
Spring	127
Water Tanker	154
River	30
None	265
Private	246
Hand pumps	2
Borehole and Reservoir	2
Regional water scheme	3
Jojo tanks	2
<b>Total</b>	<b>1564</b>

## 8 RECONCILIATION OF EXISTING & PROPOSED WATER SUPPLY

On completion of the engagement meetings with the uThungulu District Municipality, the data has been processed and existing water and sanitation schemes identified. This has assisted in indicating those areas where there is a backlog on services or where local/bulk schemes are required. In order to meet full Universal Access, we have proposed schemes to eradicate the backlogs. This is in the form of conceptual design schemes. These proposed schemes are provided in the Geo-Database.

### 8.1 uThungulu Proposed/Planned Water Schemes

The uThungulu District Municipality has accounted for future water needs on the basis of master planning studies that investigated various options on the basis of their economic, technical, environmental, social suitability and cost effectiveness. This master planning produced revised design criteria and updated areas of coverage for bulk and reticulation infrastructure. The supply zones were simplified into 5 supply areas as listed in the table below for the District, in order to distinguish reasonable water supply catchments. Refer to Map 5 for an illustration of these supply areas.

Supply Area	Local Municipality	Surface Water Source
<b>1. Goedertrouw</b> (Greater Mthonjaneni, Eshowe & Kwahlokhloko)	uMlalazi/ Ntambanana / Mthonjaneni	Goedertrouw Dam
<b>2. Mfolozi / Mbonambi</b>	Mfolozi / Mbonambi	uMhlathuze City (lake Mzingazi)
<b>3. Upper Nseleni Mhlana</b>	Ntambanana / Mbonambi	uMhlathuze City (lake Mzingazi, Nsezi)
<b>4. Vutshini-Nkandla</b>	Nkandla	Nsuze River
<b>5. Middledrift</b>	uMlalazi / Nkandla	Tugela River

(UDM – WSDP 2009 FINAL)

A survey has been conducted by The uThungulu District Municipality on the rivers that fall within their jurisdictions mentioned in the IDP, and this information can be used as the basis for determining the proposed water sources for backlogged areas.

The rivers in each of the Local Municipalities can be found in the table below. The major rivers listed below should be further investigated to determine if possible dam sites can be identified along them. Refer to Map 6 for an illustration of the water resources in the uThungulu District Municipality.

Local Municipality	RIVER NAME	COMMENTS
<b>uMfolozi</b>	1. Msunduzi	Never Dry
	2. Mfolozi River	Dry in winter for at least 2 months
	3. Small localized dams throughout the Municipality	Never Dry
<b>UMhlathuze</b>	1. Nsezi	Never Dry
	2. Umhlathuze	Never Dry
	3. Lake Chubu	Never Dry
	4. Lake Mzingazi	Never Dry
<b>Ntambanana</b>	1. Mfule River	Never Dry
	2. Hlambanyathi	Never Dry
<b>UMlalazi</b>	1. Mhlathuzana	Never Dry
	2. Mozane "Dam"	Localized "Dam"
	3. Dengwini	Levels get low in winter
	4. Ntenjane	Levels get low in winter
	5. Thukela	Never Dry
	6. Phobane Lake	Never Dry has back up supply from Thukela River
	7. Ndlovini	Levels get low in winter
<b>Mthonjaneni</b>	No Rivers	Can benefit from KZ 283 rivers as they are very close
<b>Nkandla</b>	1. Mhlathuze River	Never Dry
	2. Nsuze River	Never Dry
	3. Thukela River	Never Dry

(uThungulu IDP – June 2013 Part 2)

Below is a summary of the projects for each of the supply areas as obtained from the uThungulu District Municipality Water Service Delivery Plan dated 2009 Review, Final.

## Goedertrouw Supply Area

The Goedertrouw Water Supply Scheme serves three local municipalities, being:

- Umlalazi Local Municipality
- Ntambanana Local Municipality
- Mthonjaneni Local Municipality

As per statistics from the 2009 census data, the population served by the Goedertrouw supply scheme is as follows:

Supply Area	Dwelling Type	Population	Households
Greater Mthonjaneni	Rural	131 996	21 986
	Town (Melmoth)	14 112	2 352
Kwahloko	Rural	98 196	16 366
Eshowe	Rural	53 298	8 883
	Town (Eshowe & Gingindlovu)	23 760	3 960
Totals		321 282	53 547

To the North, the Greater Mthonjaneni project has been indicated as being underway. This project consists of 3 phases, with the scope for phases 1 and 2 including bulk pipelines, reservoirs, pump stations, treatment works, and installation of electrical and mechanical components, being complete. Finalisation of the scope for phase 3 has not been confirmed.

To the South, the Eshowe water project (Nyanini) had been completed in 2007 and the Kwahloko project had been planned with no date specified for implementation.

## Mbonambi / Mfolozi Supply Area

The Mbonambi/Mfolozi Water Supply Scheme only serves the Mbonambi Local Municipality. Tribal Authorities served within this local municipality are:

- Mbonambi Tribal Authorities
- Sokhulu Tribal Authorities

Mbonambi has a phase 1 and 2 planned for the supply area, with the abstraction works from uMhlathuze water, bulk pipelines, pump stations and reservoirs. As per statistics from the 2009 census data, the population served by the Mbonambi/Mfolozi supply scheme is as follows

Supply Area	Dwelling Type	Population	Households
Mfolozi/Mbonambi	Rural	29 676	4 946
<b>Totals</b>		<b>29 676</b>	<b>4 946</b>

The Mbonambi/Mfolozi Water Supply Scheme feeds from the Mfolozi River, Lake Nhlabane and Lake Mzingazi as its water sources. However, water purchased from Umhlathuze City (Lake Mzingazi and Lake Nsese) was identified in year 2008 as the most feasible water source for the scheme. Below are existing schemes in the Mbonambi Supply Area:

Scheme Name	Population Served	Level of Service	Source	Treatment Works	Total Reservoir Capacity (KI)
Hlanzeni / Thuweni	2 360	Standpipes	Borehole	Pressure Filter	160
Holinyoka	234	Standpipes	Borehole	None	30
Malaleni / Sokhulu	250	Standpipes	Borehole	None	10
Ndlabeyilandula	1 700	Standpipes	Borehole	None	30
Mbonambi Bulk Supply	26 146 Reticulated & 50 589 Bulk Supply	Metered House	uMhlathuze Water		4300

### Upper Nseleni-Mhlana Supply Area

The Upper Nseleni-Mhlana Water Supply Scheme serves the Ntambanana Local Municipality and the Mbonambi Local Municipality. The status of water supply at these local municipalities is as follows:

Local Municipality	2009 Population	2009 Households	Households with Water Coverage	Household Backlog	2009 Backlog (%)
Mbonambi	122 241	19 144	12 266	6 877	40%
Ntambanana	124 714	20 058	8 389	11 669	48%
<b>Totals</b>	<b>246 955</b>	<b>39 202</b>	<b>20 655</b>	<b>18 546</b>	<b>44%</b>

The current projects in this supply area include the construction of a new 350 mm diameter rising main from Nseleni town into Upper Nseleni and the upgrade of the Nseleni pump station to serve a portion of the Upper Nseleni scheme. This bulk infrastructure will have to be upgraded to meet the ultimate demand for the Upper Nseleni-Mhlana scheme.

The Upper Nseleni phase 1 and part of the Mhlana bulk water phase 3 is completed in the supply area with the Upper Nseleni phase 2 and 3, Mhlana extension, and Mhlana Somopho phase 3 still underway or yet to be started. These schemes source abstraction works is from the uMhlathuze City and includes bulk pipelines, reservoirs and pump stations.

### **Vutshini-Nkandla Supply Area**

The Vutshini-Nkandla Water Supply Scheme only serves the Nkandla Local Municipality. The status of water supply at the Nkandla Local Municipality is as follows:

Local Municipality	2009 Population	2009 Households	Households with Water Coverage	Household Backlog	2009 Backlog (%)
Nkandla	105 037	17 506	4 600	12 906	65%

A feasibility study was conducted by the uThungulu District Municipality to determine the most cost effective means to supply water to the Vutshini area. Various options were considered, including small tributaries within the area, the Thukela, Mhlatuze and Msuzu rivers. The result was the construction of a dam in the upper reaches of the Msuzu River to supply the northern parts of Vutshini and a cross border supply from Umzinyathi DM to supply the southern portion of Vutshini (SSA 5) by means of the Thukela River.

The projects currently underway or yet to be started are the Vutshini Phase 1 & 2 and the Vutshini SSA 5. These schemes include an abstraction works, water treatment works, bulk pipelines, reservoirs and pump stations.

### **Middledrift Supply Area**

The Middledrift Water Supply Scheme serves the uMlalazi Local Municipality and the Nkandla Local Municipality. The status of water supply at these local municipalities is as follows:



Local Municipality	2009 Population	2009 Households	Households with Water Coverage	Household Backlog	2009 Backlog (%)
uMlalazi	249 122	41 520	30 066	11 455	25%
Nkandla	105 037	17 506	4 600	12 906	65%

Based on the 2001 statistics, the Middledrift Water Supply Scheme serves a population which was estimated to increase from 106 894 in 2008 to 174 992 by the year 2030 considering a high growth scenario. The population and demographics for the Middledrift Water Supply Scheme are as follows:

Growth Scenarios	2008	2010	2015	2020	2025	2030
High Growth Scenarios	106 894	112 306	126 878	142 503	158 495	174 992
	0%	2%	2%	2%	2%	2%
Median Growth Scenario	106 894	110 668	120 608	130 249	139 453	148 390
	0%	2%	2%	2%	1%	1%
Low Growth Scenario	106 894	109 043	114 605	118 968	122 579	125 675
	1%	1%	1%	1%	1%	0%

Historical water consumption for the Middledrift Water Supply Scheme is as follows:

Consumption Type	Consumption Unit (Year 2008)
Raw Water Abstraction (Million m <sup>3</sup> /a)	2.99
Raw Water Abstraction (Ml/d)	8.20
Treated Water Production (Million m <sup>3</sup> /a)	2.63
Treated Water Production (Ml/d)	7.12

A phase 2 is planned for the Middledrift Water Supply Scheme inclusive of the abstraction works from the existing Thukela River abstraction, the water treatment works, the bulk pipelines, the pump stations and the reservoirs.

## 8.2 Water Backlogs

Water and sanitation backlogs may be defined as households (excluding farms) without access to safe water & sanitation services. In the case of water, safe access is deemed to include communal standpipes, yard standpipes and household connections. Households without access to these minimum services therefore constitute a backlog. Refer to Map 4 in Annexure B for the illustration of the water backlogs.

Table 5 indicates the backlogs in terms of households for each Local Municipality and for the District Municipality that have been identified from the 2011 census data. From here we can see that the Local Municipality with the greatest amount of backlogs is Mthonjaneni with a backlog of 55%. Mfolozi has the lowest amount of backlogs of approximately 25%. In terms of households, Nkandla has the greatest backlogs, which is 17 383 households. The total backlogs identified from the Census data for the uThungulu District Municipality is 43 313 households which equates to 37% of the District Municipality.

Table 6 indicates the backlogs that have been captured from the engagement meetings with the uThungulu District Municipality. There is a significant difference in the percentage of backlogs in each local municipality from the Census 2011 information. This could be that water backlogs in these local municipalities have been eradicated. Also, there is a difference of approximately 26000 in the total number of households in the uThungulu District Municipality from Census 2011 data. We have used the ESKOM household data as the correct number of households in the uThungulu District Municipality. The total backlogs identified from the engagements with the uThungulu District Municipality using the Eskom household points are 15 281 households, which is 17% of the District Municipality.

The discrepancy in the household points of approximately 26000 between the Census and Eskom data is due to the reason that the Eskom household points are based on 2006 to 2010 data and is not current. We have also only used points that fall within and around the polygons that was captured. Some Eskom household points fall spatially onto rocks and boulders and have thus not been considered. These polygons were also captured using imagery dated 2010 and there is a possibility that these images may be dated prior to 2010.

Table 5: Census 2011 Water Services Backlogs

Municipality	Number of Households	Water Served Households	Water Backlogs Households	Percentage of Water Backlogs
Mfolozi / Mbonambi	25584	19147	6437	25%
Mthonjaneni	10433	6491	3942	38%
Nkandla	22463	13616	8847	39%
Ntambanana	12826	6122	6704	52%
uMlalazi	45062	27679	17383	39%
<b>uThungulu District Municipality</b>	<b>116368</b>	<b>73055</b>	<b>43313</b>	<b>37%</b>

The Eskom household data that was received was based on 2011 data and has been factored to reflect as 2014 household counts. Where Local Municipality's had a negative growth rate, the value of households in 2011 was used as the 2014 value. The growth rate has been obtained from Stats SA and can be seen in Table 6 below.

Table 6: Water Services Backlogs Captured at Engagement with District Municipality

Municipality	2011 Eskom Household Dwellings	Growth Rate %	Factor	2014 Escalated ESKOM Household Dwellings	Water Backlogs Households	Percentage of Water Backlog
Mfolozi / Mbonambi	20472	1.39	1.0139	20757	2749	13%
Mthonjaneni	6898	-0.52	1	6898	701	10%
Nkandla	18197	-1.55	1	18197	2515	14%
Ntambanana	10331	-1.31	1	10331	2933	28%
uMlalazi	33952	-0.34	1	33952	6383	19%
<b>uThungulu District Municipality</b>	<b>89850</b>	<b>-</b>	<b>-</b>	<b>90135</b>	<b>15281</b>	<b>17%</b>

### 8.3 Sanitation Backlogs

Water and sanitation backlogs may be defined as households (excluding farms) without access to safe water & sanitation services. With regards to sanitation, safe access is deemed to include VIP's and chemical toilets. Households with levels of service below the minimum level i.e. unimproved pit latrines / rudimentary pit toilets and no sanitation at all, therefore constitute sanitation backlogs. Refer to Map 9 in Annexure B for the illustration of the sanitation backlogs.

Table 7 below indicates the backlogs in sanitation captured in the 2011 Census with a total of 116 368 households recorded. There is a high percentage of backlogs for sanitation in the uThungulu District Municipality with a total of 48 991 households which equates to approximately 41%.

Table 8 below indicates the backlogs in sanitation captured at the engagement meetings. A total number of 21462 households were indicated as having sanitation below that of RDP standards, and thus being a backlog. This equates to approximately 24% of the uThungulu District Municipality. Refer to Maps 7 and 8 in Annexure B for the illustration of the sanitation supply and the sanitation types for the uThungulu District Municipality respectively.

**Table 7: Census 2011 Sanitation Backlogs**

Municipality	Households	Sanitation Served	Backlogs	Percentage Backlogs
Mfolozi / Mbonambi	25584	14421	11163	44%
Mthonjaneni	10433	5112	5321	51%
Nkandla	22463	12719	9743	43%
Ntambanana	12826	6974	5852	46%
uMlalazi	45062	28151	16911	38%
<b>uThungulu District Municipality</b>	<b>116368</b>	<b>67377</b>	<b>48991</b>	<b>41%</b>

**Table 8: Sanitation Backlogs Captured at Engagement with District Municipality**

Municipality	Water borne	VIP	VIP and Septic Tanks	Pits	None	Private	Septic Tanks	Total Households	Percentage Backlogs
Mfolozi / Mbonambi	0	10565	63	0	3241	855	6033	20757	48.80%
Mthonjaneni	1697	4290	0	412	54	445	0	6898	13.21%
Nkandla	784	17390	0	0	23	0	0	18197	0.13%
Ntambanana	0	9498	0	0	363	470	0	10331	8.06%
uMlalazi	3102	20274	1010	8034	233	1299	0	33952	28.18%
uThungulu District Municipality	<b>5583</b>	<b>62017</b>	<b>1073</b>	<b>8446</b>	<b>3914</b>	<b>3069</b>	<b>6033</b>	<b>90135</b>	<b>23.81%</b>
	<b>68673</b>			<b>21462</b>					
	<b>76.19%</b>			<b>23.81%</b>					
	<b>Access</b>			<b>Backlog</b>					

## 8.4 Level of Service

The municipality provides various levels of service (LOS) to cater for the varying and unique needs to the different communities, within the confines of sustainability. Each level of service is unique to the various conditions relating to the use and upgrade and has different implications for the municipality in terms of capital and operational costs. The LOS addresses the basic standards and supports the concept of progressive improvement of LOS. In addition to these levels of service, the municipality also provides a rudimentary service, referred to as safe access, as an interim measure in areas that cannot be guaranteed with sustainable water resources.

**Table 9: uThungulu District Level of Service**

<b>Water Level of Service</b>	<b>Comments</b>
<b>LOS 1 - Communal Water Point</b>	Basic LOS, consists of communal water points <ul style="list-style-type: none"> <li>• Reticulated standpipes</li> <li>• Stationary water tank</li> <li>• &lt; than 200m from households</li> </ul>
<b>LOS 2 - Yard Standpipe on each property</b>	Metered or unmetered
<b>LOS 3 - Metered Pressurised water connection on each property</b>	Metered and connected to private plumbing
<b>Sanitation Level of Service</b>	<b>Comments</b>
<b>LOS 1 - VIP on every informal property</b>	<ul style="list-style-type: none"> <li>• Preferred option Rural and informal settlements</li> <li>• Ventilated Improved Pit (VIP) latrine located on each site.</li> </ul>
<b>LOS 2 - Septic &amp; Conservancy Tanks</b>	<ul style="list-style-type: none"> <li>• Not serviced by sewer reticulation and treatment system</li> <li>• Typically be provided too many formal housing developments.</li> </ul>
<b>LOS 3 - Water Borne Sewage on each serviced site</b>	<ul style="list-style-type: none"> <li>• Conventional waterborne municipal sewage network with individual sewer connections to each erf.</li> </ul>

## 9 PLANNED AND PROPOSED WATER & SANITATION SCHEMES

### 9.1 Conceptual Design Approach

Various engagements meetings were held with the uThungulu District Municipality to identify existing schemes and backlogs with regards to water and sanitation needs. At these meetings operational staff determined the accuracy of GIS data and assisted with updating the water and sanitation attribute data. This information was then processed and backlogs identified.

Using the Eskom household data, we were able to identify the total number of households in a specific area that had backlogs. We then used the Census income categories as listed in Table 10 to determine the demand for the area. Based on the number of households, and the density of these areas, a conceptual proposed scheme was put into place. Where areas were highly dense and there was a river nearby, water was to be extracted from the river and a small package plant was proposed for the treatment of water. Where no rivers are present, boreholes have been proposed. The surrounding areas with water supply were analysed to identify how water was obtained, and a similar approach was proposed. Using the topography of the area, high points were identified for placement of reservoirs and for the routing of the bulk lines. Areas that had a minimal number of households, and that was sparsely located, had boreholes with hand pumps proposed for them. It should also be noted that a feasibility study for the positioning of boreholes would need to be undertaken as their positions are subject to change. Also, the Goedertrouw Dam which is located within the District Municipality which is a major source of water, and has been identified and utilized to cover a majority of the areas with backlogs.

An illustrative example of the proposed schemes that can be found in the geo-data base can be seen in figures 7, 8, and 9 below. Figure 7 represents a scheme where water is obtained from a dam and is pumped up to a WTW, and then it is pumped to reservoirs which will reticulate to standpipes. A typical rudimentary scheme where water is pumped from a borehole to reservoirs and then gravitates to standpipes can be seen in figure 8. Figure 9 illustrates an area where households are isolated in an area away from densely populated areas. This area has been provided with an alternate supply scheme of boreholes with hand pumps as it is not feasible to construct a reservoir and supply them with standpipes.

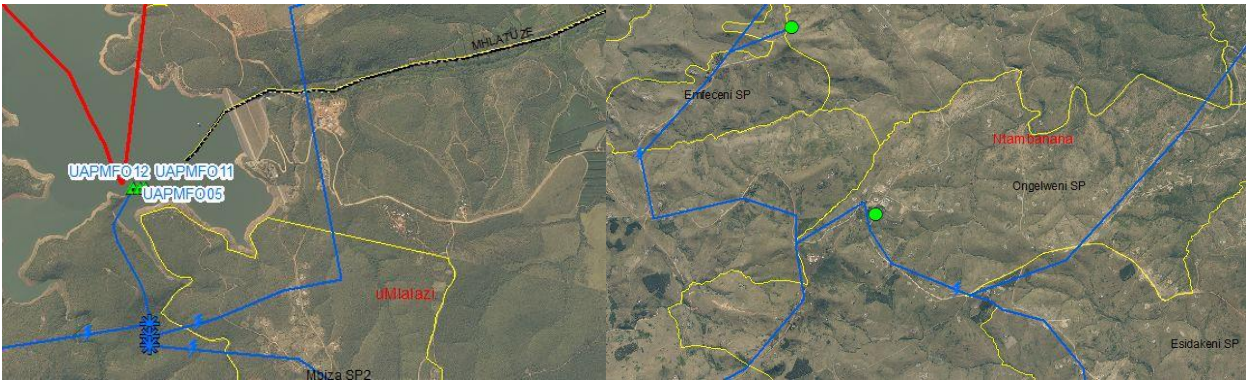


Figure 7: WTW to Reservoir Scheme

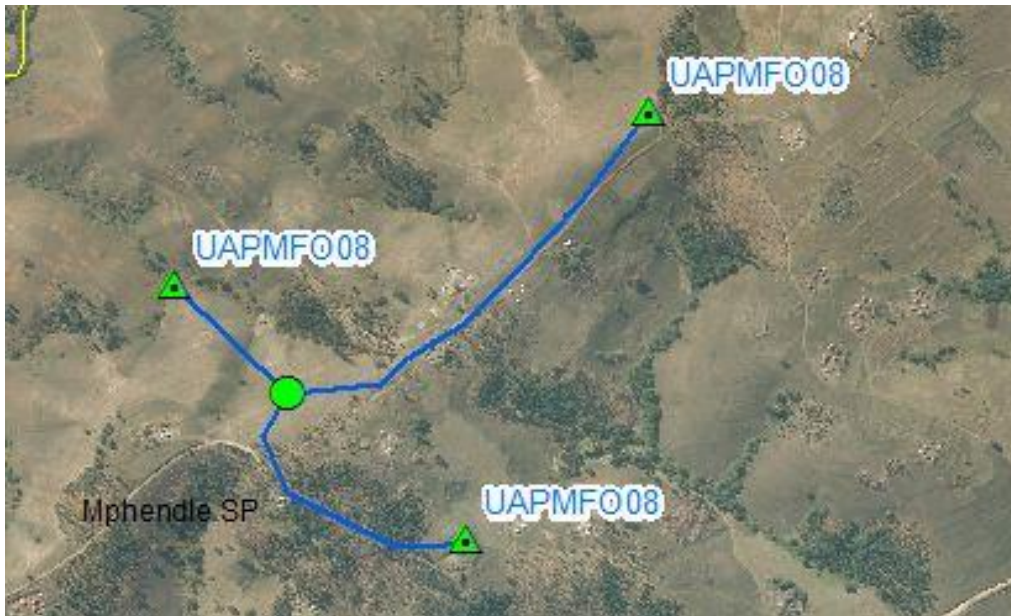


Figure 8: Borehole to Reservoir Scheme



Figure 9: Borehole with Hand Pumps Scheme

## 9.2 Assumptions

In order to cost the water and sanitation backlogs, certain assumptions had to be made and are as follows:

### 9.2.1 Water

- 6 people per household;
- Reservoirs have a minimum storage capacity of 48 hrs;
- All reservoir pipework included in the cost of reservoir;
- All SCADA and electrical included in cost of reservoir;
- Reservoirs are concrete;
- All existing boreholes are functional;
- New borehole depths range from 100m to 200m;
- Water quality is good;
- Assume that yield and water quality testing are included in the cost of the borehole;
- Diameter of boreholes 150mm – 200mm with steel casting;
- All electrical pumps associated with the boreholes are included in the cost;
- All schemes have some form of power supply;
- Existing schemes have the potential to be upgraded;
- Reticulation costs are estimated at 40% of the overall bulk infrastructure costs;



- Reticulation pipes range from 25mm to 75mm dia. HDPE;
- No house connections are costed in proposed schemes;
- All end connections are standpipe connections not exceeding 200m;
- Where areas are extremely rural and scattered, then boreholes with hand pumps are proposed;
- All bulk pipelines range from 75mm to 250mm uPVC;
- Positions/location of reservoirs, boreholes, pump stations/booster pump stations, water treatment works/package plants and bulk lines are subject to change after a full pre-feasibility study has been undertaken.

### 9.2.2 Sanitation

- All sanitation backlogs are based on Ventilated Improved Pit (VIP).

### 9.3 Infrastructure Water & Sanitation Costs

The water demand was determined based on the household annual income. Table 10 below indicates the daily demand per capita required for the different categories of household income. The income values used was obtained from Stats SA Census 2011 data. The data reflects income at a Sub Place level and due to this, additional verification was done on the households without water as some of them fall in high income areas such as category 1 and 2. These categories were manually updated by looking at the surrounding Sub Place income categories and by spatial imagery depicting the type of dwelling. Refer to Maps 12, 15, 18, 21, and 24 in Annexure B for the illustration of the proposed alternate schemes in each of the Local Municipalities and to Map 10 for an illustration of the Household Income Categories.

**Table 10: Demand based on Household Income**

Category	Description of consumer category	Household Annual Income range	Per capita cons (l/c/d)		
			Min	Ave.	Max.
1	Very High Income; villas, large detached house, large luxury flats	>R1 228 000	320	410	500
2	Upper middle income: detached houses, large flats	153 601 – 1 228 000	240	295	350
3	Average Middle Income: 2 - 3 bedroom houses or flats with 1 or 2 WC, kitchen, and one bathroom, shower	38 401 – 153 600	180	228	275
4	Low middle Income: Small houses or flats with WC, one kitchen, one bathroom	9 601– 38 400	120	170	220
5	Low income: flatlets, bedsits with	1- 9600	60	100	140

Category	Description of consumer category	Household Annual Income range	Per capita cons (l/c/d)		
			Min	Ave.	Max.
	kitchen & bathroom, informal household				
6	No income & informal supplies with yard connections		60	80	100
7	Informal with no formal connection		30	50	70
8	Informal below 25 l/c/d		0	12	25

### 9.3.1 Water Costs

Table 11 indicates the estimated water infrastructural costs for the short term interventions in each Local Municipality for the uThungulu District Municipality. The rates used to compile these costs were obtained from the Umgeni Water terms of reference, as well as from rates used internally on other projects. A Detailed list for the costing of infrastructure is provided in the geo-database that is provided in conjunction with this report. The total cost to eradicate backlogs in the uThungulu District Municipality is approximately R813 Million. A summarised list of the infrastructure in each proposed scheme and the cost associated to it is listed in Table 14.

The projects listed in the Integrated Development Plan and those set out by DWA which are shown in Annexure A and D are regional bulk schemes which are long term solutions to address backlogs and improve current water and sanitation infrastructure. These projects have are funded through the Municipal Infrastructure Grant and Municipal Water Infrastructure Grant which we have not considered when proposing conceptual alternate schemes to eradicate current backlogs. There could be overlapping of the proposed conceptual schemes to the regional bulk schemes and thus overlapping of infrastructure costs. The main reason that infrastructure cost could be overlapped is due to our mandate to develop conceptual schemes to eradicate the backlogs identified at the engagement meeting with the district municipalities. The staff could not identify the boundaries of the regional bulk schemes nor provide information on start and completion dates.

Table 11: Water Infrastructural Costs

Local Municipality	Total
Mfolozi / Mbonambi	R 37 498 487
Mthonjaneni	R 11 349 661
Nkandla	R 122 101 280
Ntambanana	R 4 323 677
uMlalazi	R 637 823 702
<b>Total</b>	<b>R 813 096 807</b>

### 9.3.2 Sanitation Costs

Table 12 indicates the estimated sanitation infrastructural costs for Ventilated Improved Pits. The cost to eradicate the sanitation backlogs was based on data obtained from service providers who are currently eradicating backlogs in the Harry Gwala District municipality. The rates used ranged between R6000 to R7000 to supply and lay a VIP per household, and hence we used a fixed rate of R7000 per VIP per household. The total number of households that have backlogs were identified from the engagement meetings and used to calculate the cost to eradicate sanitation backlogs. The total cost to eradicate backlogs in the uThungulu District Municipality is approximately R129 Million.

Table 12: Sanitation Infrastructural Costs

Local Municipality Name	Rate/VIP	Remaining Expenditure
Mfolozi / Mbonambi	R 7 000	R 64 919 003
Mthonjaneni	R 7 000	R 3 262 000
Nkandla	R 7 000	R 161 000
Ntambanana	R 7 000	R 2 541 000
uMlalazi	R 7 000	R 57 869 000
<b>Totals</b>		<b>R 128 752 003</b>

## 9.4 Five Year Budget Plan for Water and Sanitation

Table 13 indicates the estimated short term budget expenditure. The sanitation estimate is based on an average expenditure over the next 5 years. Water cost estimates are based on a straight line over the next five years without any infrastructural expenditure in this current financial year besides planning and or feasibility study fees. The estimated feasibility study fees are based on 5% of the estimated construction cost. Escalation is estimated at 10% per year.

It must be noted that the identified short term schemes could be completed within 5 years if feasibility studies are undertaken in this financial year subject to the uThungulu District Municipality having the funds to undertake these studies. The total cumulative cost to eradicate the water backlogs with 29 proposed schemes and the sanitation backlogs over the 5 years is approximately R1.07 Billion which includes escalation. This projection over 5 years is subject to change if necessary. An illustration of the cumulative costing for the five years can be seen on figure 10 below.

**Table 13: Five Year Budget Plan for Water & Sanitation**

Local Municipality	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
<b>Mfolozi (Water)</b>	R 1 874 924	R 12 499 496	R 12 499 496	R 12 499 496	R -	R -
<b>Mfolozi (Sanitation)</b>	R 12 983 800.60	R 12 983 800.60	R 12 983 800.60	R 12 983 800.60	R 12 983 800.60	R -
<b>Mthonjaneni (Water)</b>	R 567 483	R 11 349 661	R -	R -	R -	R -
<b>Mthonjaneni (Sanitation)</b>	R 1 631 000	R 1 631 000	R -	R -	R -	R -
<b>Nkandla (Water)</b>	R 6 105 064	R 24 420 256	R 24 420 256	R 24 420 256	R 24 420 256	R 24 420 256
<b>Nkandla (Sanitation)</b>	R 161 000	R -	R -	R -	R -	R -
<b>Ntambanana (Water)</b>	R 216 184	R 864 735	R 864 735	R 864 735	R 864 735	R 864 735
<b>Ntambanana (Sanitation)</b>	R 1 270 500	R 1 270 500	R -	R -	R -	R -
<b>uMlalazi (Water)</b>	R 31 891 185	R 127 564 740	R 127 564 740	R 127 564 740	R 127 564 740	R 127 564 740
<b>uMlalazi (Sanitation)</b>	R 11 573 800	R 11 573 800	R 11 573 800	R 11 573 800	R 11 573 800	R -
<b>Totals</b>	<b>R 68 274 941</b>	<b>R 204 157 989</b>	<b>R 189 906 828</b>	<b>R 189 906 828</b>	<b>R 177 407 332</b>	<b>R 152 849 732</b>
<b>Escalation (10%)</b>	<b>R -</b>	<b>R 224 573 788</b>	<b>R 208 897 511</b>	<b>R 208 897 511</b>	<b>R 195 148 066</b>	<b>R 168 134 705</b>
<b>Cumulative Total</b>	<b>R 68 274 941</b>	<b>R 292 848 729</b>	<b>R 501 746 240</b>	<b>R 710 643 751</b>	<b>R 905 791 816</b>	<b>R 1 073 926 521</b>

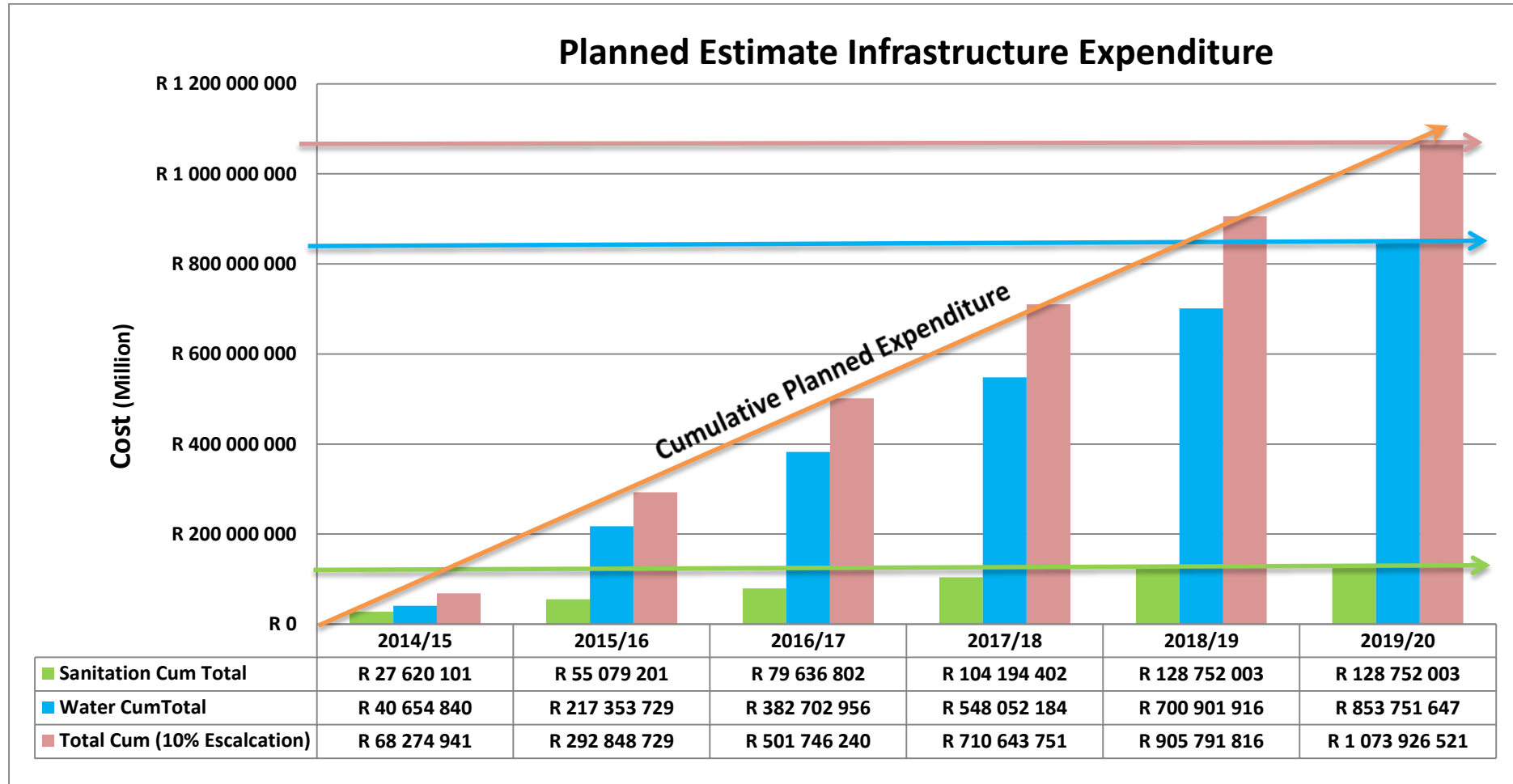


Figure 10: Water and Sanitation 5 Year Budget Plan

Table 14: Proposed Alternate Schemes

Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Hlanzeni-Ward 1	Borehole	Borehole 01 UAPMFO01	Mfolozi	R 300 000	
Hlanzeni-Ward 1	Borehole	Borehole 02 UAPMFO01	Mfolozi	R 300 000	
Hlanzeni-Ward 1	Borehole	Borehole 03 UAPMFO01	Mfolozi	R 300 000	
Hlanzeni-Ward 1	Reservoir	Res UAPMFO01	Mfolozi	R 3 089 419	
Hlanzeni-Ward 1	Bulk Line	Borehole 01 UAPMFO01	Mfolozi	R 133 804	
Hlanzeni-Ward 1	Bulk Line	Borehole 02 UAPMFO01	Mfolozi	R 106 210	
Hlanzeni-Ward 1	Bulk Line	Borehole 03 UAPMFO01	Mfolozi	R 67 029	
Hlanzeni-Ward 1	Reticulation	RET_UAPMFO01	Mfolozi	R 1 718 585	
<b>Hlanzeni-Ward 1</b>	<b>Total</b>				<b>R 6 015 046</b>
Amalala-Ward 4	Borehole	Borehole 01 UAPMFO02	Mfolozi	R 300 000	
Amalala-Ward 4	Borehole	Borehole 02 UAPMFO02	Mfolozi	R 300 000	
Amalala-Ward 4	Borehole	Borehole 03 UAPMFO02	Mfolozi	R 300 000	
Amalala-Ward 4	Borehole	Borehole 04 UAPMFO02	Mfolozi	R 300 000	
Amalala-Ward 4	Borehole	Borehole 05 UAPMFO02	Mfolozi	R 300 000	
Amalala-Ward 4	Borehole	Borehole 06 UAPMFO02	Mfolozi	R 300 000	
Amalala-Ward 4	Reservoir	Res 01 UAPMFO02	Mfolozi	R 2 677 374	
Amalala-Ward 4	Reservoir	Res 02 UAPMFO02	Mfolozi	R 2 677 374	
Amalala-Ward 4	Bulk Line	Borehole 02 UAPMFO02	Mfolozi	R 270 395	
Amalala-Ward 4	Bulk Line	Borehole 01 UAPMFO02	Mfolozi	R 148 148	
Amalala-Ward 4	Bulk Line	Borehole 03 UAPMFO02	Mfolozi	R 278 784	
Amalala-Ward 4	Bulk Line	Borehole 04 UAPMFO02	Mfolozi	R 171 833	
Amalala-Ward 4	Bulk Line	Borehole 05 UAPMFO02	Mfolozi	R 171 639	

Development of UAP for Water & Sanitation in Kwazulu-Natal



Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Amalala-Ward 4	Bulk Line	Borehole 06 UAPMFO02	Mfolozi	R 113 206	
Amalala-Ward 4	Reticulation	RET_UAPMFO02	Mfolozi	R 3 323 501	
<b>Amalala-Ward 4</b>	<b>Total</b>				<b>R 11 632 253</b>
Mbonambi-Ward 4	Borehole	Borehole 01 UAPMFO03	Mfolozi	R 300 000	
Mbonambi-Ward 4	Borehole	Borehole 02 UAPMFO03	Mfolozi	R 300 000	
Mbonambi-Ward 4	Reservoir	Res 01 UAPMFO03	Mfolozi	R 740 757	
Mbonambi-Ward 4	Bulk Line	Borehole 01 UAPMFO03	Mfolozi	R 92 918	
Mbonambi-Ward 4	Bulk Line	Borehole 02 UAPMFO03	Mfolozi	R 88 777	
Mbonambi-Ward 4	Reticulation	RET_UAPMFO03	Mfolozi	R 608 981	
<b>Mbonambi-Ward 4</b>	<b>Total</b>				<b>R 2 131 433</b>
Mankwathini-Ward 3	Borehole	Borehole 05 UAPMFO04	Mfolozi	R 300 000	
Mankwathini-Ward 3	Borehole	Borehole 06 UAPMFO04	Mfolozi	R 300 000	
Mankwathini-Ward 3	Borehole	Borehole 01 UAPMFO04	Mfolozi	R 300 000	
Mankwathini-Ward 3	Borehole	Borehole 02 UAPMFO04	Mfolozi	R 300 000	
Mankwathini-Ward 3	Borehole	Borehole 03 UAPMFO04	Mfolozi	R 300 000	
Mankwathini-Ward 3	Borehole	Borehole 04 UAPMFO04	Mfolozi	R 300 000	
Mankwathini-Ward 3	Reservoir	Res 01 UAPMFO04	Mfolozi	R 3 501 465	
Mankwathini-Ward 3	Reservoir	Res 04 UAPMFO04	Mfolozi	R 3 501 465	
Mankwathini-Ward 3	Bulk Line	Borehole 01 UAPMFO04	Mfolozi	R 76 391	
Mankwathini-Ward 3	Bulk Line	Borehole 02 UAPMFO04	Mfolozi	R 111 373	
Mankwathini-Ward 3	Bulk Line	Borehole 03 UAPMFO04	Mfolozi	R 104 228	
Mankwathini-Ward 3	Bulk Line	Borehole 04 UAPMFO04	Mfolozi	R 72 200	
Mankwathini-Ward 3	Bulk Line	Borehole 05 UAPMFO04	Mfolozi	R 71 225	
Mankwathini-Ward 3	Bulk Line	Borehole 06 UAPMFO04	Mfolozi	R 113 433	



Development of UAP for Water & Sanitation in Kwazulu-Natal



Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Mankwathini-Ward 3	Reticulation	RET_UAPMFO04	Mfolozi	R 3 740 712	
<b>Mankwathini-Ward 3</b>	<b>Total</b>				<b>R 13 092 492</b>
uMlalazi NU-Ward 26/1	Bulk Line	WTW UAPMFO05	uMlalazi	R 406 065	
uMlalazi NU-Ward 26/1	Dam	Dam 01 UAPMFO05	uMlalazi	R 300 000	
uMlalazi NU-Ward 26/1	Reservoir	Res 01	uMlalazi	R 432 519	
uMlalazi NU-Ward 26/1	Reservoir	Res 02	uMlalazi	R 740 757	
uMlalazi NU-Ward 26/1	Reservoir	Res 05	uMlalazi	R 1 419 164	
uMlalazi NU-Ward 26/1	Reservoir	Res 03	uMlalazi	R 1 808 400	
uMlalazi NU-Ward 26/1	Reservoir	Res 04	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/1	Reservoir	Res 06	uMlalazi	R 3 089 419	
uMlalazi NU-Ward 26/1	Reservoir	Res 07	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/1	Reservoir	Res 08	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/1	Bulk Line	WTW UAPMFO05	uMlalazi	R 2 318 143	
uMlalazi NU-Ward 26/1	Bulk Line	WTW UAPMFO05	uMlalazi	R 9 993 681	
uMlalazi NU-Ward 26/1	Bulk Line	WTW UAPMFO05	uMlalazi	R 2 762 726	
uMlalazi NU-Ward 26/1	Bulk Line	WTW UAPMFO05	uMlalazi	R 260 990	
uMlalazi NU-Ward 26/1	Bulk Line	WTW UAPMFO05	uMlalazi	R 37 801	
uMlalazi NU-Ward 26/1	Bulk Line	WTW UAPMFO05	uMlalazi	R 31 374	
uMlalazi NU-Ward 26/1	Bulk Line	WTW UAPMFO05	uMlalazi	R 51 545	
uMlalazi NU-Ward 26/1	Pumpstation	Pump01	uMlalazi	R 2 862 453	
uMlalazi NU-Ward 26/1	Pumpstation	Pump02	uMlalazi	R 2 862 453	
uMlalazi NU-Ward 26/1	Pumpstation	Pump03	uMlalazi	R 2 862 453	
uMlalazi NU-Ward 26/1	Pumpstation	Pump04	uMlalazi	R 2 862 453	
uMlalazi NU-Ward 26/1	Pumpstation	Pump05	uMlalazi	R 2 862 453	

Development of UAP for Water & Sanitation in Kwazulu-Natal



Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
uMlalazi NU-Ward 26/1	WTW	WTW UAPMFO05	uMlalazi	R 77 000 000	
uMlalazi NU-Ward 26/1	Reticulation	RET_UAPMFO05	uMlalazi	R 49 198 789	
<b>uMlalazi NU-Ward 26/1</b>	<b>Total</b>				<b>R 172 195 762</b>
Mthonjaneni NU-Ward 4	Borehole	Borehole 01 UAPMFO06	Mthonjaneni	R 300 000	
Mthonjaneni NU-Ward 4	Borehole	Borehole 02 UAPMFO06	Mthonjaneni	R 300 000	
Mthonjaneni NU-Ward 4	Borehole	Borehole 03 UAPMFO06	Mthonjaneni	R 300 000	
Mthonjaneni NU-Ward 4	Reservoir	Res 01 UAPMFO06	Mthonjaneni	R 3 089 419	
Mthonjaneni NU-Ward 4	Bulk Line	Borehole 03 UAPMFO06	Mthonjaneni	R 344 033	
Mthonjaneni NU-Ward 4	Bulk Line	Borehole 02 UAPMFO06	Mthonjaneni	R 362 293	
Mthonjaneni NU-Ward 4	Bulk Line	Borehole 01 UAPMFO06	Mthonjaneni	R 694 664	
Mthonjaneni NU-Ward 4	Reticulation	RET_UAPMFO06	Mthonjaneni	R 2 156 164	
<b>Mthonjaneni NU-Ward 4</b>	<b>Total</b>				<b>R 7 546 574</b>
Makhoni-Ward 5	Borehole	Borehole 01 UAPMFO07	uMlalazi	R 300 000	
Makhoni-Ward 5	Borehole	Borehole 02 UAPMFO07	uMlalazi	R 300 000	
Makhoni-Ward 5	Borehole	Borehole 03 UAPMFO07	uMlalazi	R 300 000	
Makhoni-Ward 5	Borehole	Borehole 04 UAPMFO07	uMlalazi	R 300 000	
Makhoni-Ward 5	Reservoir	Res 01 UAPMFO07	uMlalazi	R 3 771 980	
Makhoni-Ward 5	Bulk Line	Borehole 01 UAPMFO07	uMlalazi	R 233 097	
Makhoni-Ward 5	Bulk Line	Borehole 02 UAPMFO07	uMlalazi	R 187 766	
Makhoni-Ward 5	Bulk Line	Borehole 03 UAPMFO07	uMlalazi	R 176 404	
Makhoni-Ward 5	Bulk Line	Borehole 04 UAPMFO07	uMlalazi	R 175 827	
Makhoni-Ward 5	Reticulation	RET_UAPMFO07	uMlalazi	R 2 298 030	
<b>Makhoni-Ward 5</b>	<b>Total</b>				<b>R 8 043 104</b>
Mphendle-Ward 5	Borehole	Borehole 01 UAPMFO08	uMlalazi	R 300 000	

Development of UAP for Water & Sanitation in Kwazulu-Natal

Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Mphendle-Ward 5	Borehole	Borehole 02 UAPMFO08	uMlalazi	R 300 000	
Mphendle-Ward 5	Borehole	Borehole 03 UAPMFO08	uMlalazi	R 300 000	
Mphendle-Ward 5	Reservoir	Res 01 UAPMFO08	uMlalazi	R 2 197 636	
Mphendle-Ward 5	Bulk Line	Borehole 01 UAPMFO08	uMlalazi	R 65 487	
Mphendle-Ward 5	Bulk Line	Borehole 02 UAPMFO08	uMlalazi	R 196 245	
Mphendle-Ward 5	Bulk Line	Borehole 03 UAPMFO08	uMlalazi	R 122 513	
Mphendle-Ward 5	Reticulation	RET_UAPMFO08	uMlalazi	R 1 392 752	
<b>Mphendle-Ward 5</b>	<b>Total</b>				<b>R 4 874 632</b>
Samungu-Ward 3	Borehole	Borehole 01 UAPMFO09	uMlalazi	R 300 000	
Samungu-Ward 3	Borehole	Borehole 02 UAPMFO09	uMlalazi	R 300 000	
Samungu-Ward 3	Borehole	Borehole 03 UAPMFO09	uMlalazi	R 300 000	
Samungu-Ward 3	Reservoir	Res 01 UAPMFO09	uMlalazi	R 1 717 897	
Samungu-Ward 3	Bulk Line	Borehole 01 UAPMFO09	uMlalazi	R 166 900	
Samungu-Ward 3	Bulk Line	Borehole 02 UAPMFO09	uMlalazi	R 30 931	
Samungu-Ward 3	Bulk Line	Borehole 03 UAPMFO09	uMlalazi	R 134 461	
Samungu-Ward 3	Reticulation	RET_UAPMFO09	uMlalazi	R 1 180 075	
<b>Samungu-Ward 3</b>	<b>Total</b>				<b>R 4 130 264</b>
Nkunzempunga-Ward 4	Borehole	Borehole 01 UAPMFO10	uMlalazi	R 300 000	
Nkunzempunga-Ward 4	Borehole	Borehole 02 UAPMFO10	uMlalazi	R 300 000	
Nkunzempunga-Ward 4	Borehole	Borehole 03 UAPMFO09	uMlalazi	R 300 000	
Nkunzempunga-Ward 4	Borehole	Borehole 04 UAPMFO07	uMlalazi	R 300 000	
Nkunzempunga-Ward 4	Reservoir	Res 01 UAPMFO10	uMlalazi	R 2 197 636	
Nkunzempunga-Ward 4	Bulk Line	Borehole 01 UAPMFO10	uMlalazi	R 200 370	
Nkunzempunga-Ward 4	Bulk Line	Borehole 02 UAPMFO10	uMlalazi	R 134 849	

Development of UAP for Water & Sanitation in Kwazulu-Natal



Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Nkunzempunga-Ward 4	Bulk Line	Borehole 03 UAPMFO10	uMlalazi	R 239 732	
Nkunzempunga-Ward 4	Bulk Line	Borehole 04 UAPMFO10	uMlalazi	R 195 816	
Nkunzempunga-Ward 4	Reticulation	RET_UAPMFO10	uMlalazi	R 1 667 361	
<b>Nkunzempunga-Ward 4</b>	<b>Total</b>				<b>R 5 835 764</b>
uMlalazi NU-Ward 26/3	Dam	Dam 01 UAPMFO11	uMlalazi	R 300 000	
uMlalazi NU-Ward 26/3	Reservoir	UAPMFO11 res 2	uMlalazi	R 3 089 419	
uMlalazi NU-Ward 26/3	Reservoir	UAPMFO11 res 1	uMlalazi	R 3 089 419	
uMlalazi NU-Ward 26/3	Reservoir	UAPMFO11 res 3	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/3	Reservoir	UAPMFO11 res 5	uMlalazi	R 2 197 636	
uMlalazi NU-Ward 26/3	Reservoir	UAPMFO11 res 6	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/3	Reservoir	UAPMFO11 res 7	uMlalazi	R 1 808 400	
uMlalazi NU-Ward 26/3	Reservoir	UAPMFO11 res 4	uMlalazi	R 1 808 400	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 9 935 328	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 6 789 889	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 650 211	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 3 340 697	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 1 638 021	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 26 413	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 181 410	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 630 889	
uMlalazi NU-Ward 26/3	Bulk Line	WTW UAPMFO11	uMlalazi	R 1 910 786	
uMlalazi NU-Ward 26/3	Pumpstation	Pump01	uMlalazi	R 4 422 620	
uMlalazi NU-Ward 26/3	Pumpstation	Pump02	uMlalazi	R 4 422 620	
uMlalazi NU-Ward 26/3	Pumpstation	Pump03	uMlalazi	R 4 422 620	

Development of UAP for Water & Sanitation in Kwazulu-Natal



Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
uMlalazi NU-Ward 26/3	WTW	WTW UAPMFO11	uMlalazi	R 91 000 000	
uMlalazi NU-Ward 26/3	Reticulation	RET_UAPMFO11	uMlalazi	R 58 807 810	
<b>uMlalazi NU-Ward 26/3</b>	<b>Total</b>				<b>R 205 827 335</b>
uMlalazi NU-Ward 26/2	Dam	Dam 01 UAPMFO12	uMlalazi	R 300 000	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 2	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 1	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 3	uMlalazi	R 1 808 400	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 4	uMlalazi	R 3 089 419	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 5	uMlalazi	R 1 120 431	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 6	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 7	uMlalazi	R 1 808 400	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 9	uMlalazi	R 2 197 636	
uMlalazi NU-Ward 26/2	Reservoir	UAPMFO12 res 8	uMlalazi	R 2 677 374	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 3 330 612	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 1 036 679	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 7 125 308	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 7 987	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 15 643	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 3 559 610	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 4 626 256	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 91 712	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 3 876 407	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 5 330 852	
uMlalazi NU-Ward 26/2	Bulk Line	WTW UAPMFO12	uMlalazi	R 73 850	

Development of UAP for Water & Sanitation in Kwazulu-Natal



Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
uMlalazi NU-Ward 26/2	Pumpstation	Pump01	uMlalazi	R 4 422 620	
uMlalazi NU-Ward 26/2	Pumpstation	Pump02	uMlalazi	R 4 422 620	
uMlalazi NU-Ward 26/2	Pumpstation	Pump03	uMlalazi	R 4 422 620	
uMlalazi NU-Ward 26/2	WTW	WTW UAPMFO12	uMlalazi	R 105 000 000	
uMlalazi NU-Ward 26/2	Reticulation	RET_UAPMFO12	uMlalazi	R 67 350 622	
<b>uMlalazi NU-Ward 26/2</b>	<b>Total</b>				<b>R 235 727 178</b>
Mthonjaneni NU-Ward 2	Borehole	Borehole 01 UAPMFO13	Mthonjaneni	R 300 000	
Mthonjaneni NU-Ward 2	Borehole	Borehole 02 UAPMFO13	Mthonjaneni	R 300 000	
Mthonjaneni NU-Ward 2	Reservoir	Res 01 UAPMFO13	Mthonjaneni	R 1 419 164	
Mthonjaneni NU-Ward 2	Bulk Line	Borehole 01 UAPMFO13	Mthonjaneni	R 220 222	
Mthonjaneni NU-Ward 2	Bulk Line	Borehole 02 UAPMFO13	Mthonjaneni	R 284 248	
Mthonjaneni NU-Ward 2	Reticulation	RET_UAPMFO13	Mthonjaneni	R 1 009 454	
<b>Mthonjaneni NU-Ward 2</b>	<b>Total</b>				<b>R 3 533 088</b>
Mwane-Ward 13	River	River 01 UAPMFO14	Nkandla	R 300 000	
Mwane-Ward 13	Reservoir	Res 02 UAPMFO14	Nkandla	R 1 717 897	
Mwane-Ward 13	Reservoir	Res 03 UAPMFO14	Nkandla	R 1 419 164	
Mwane-Ward 13	Reservoir	Res 04 UAPMFO14	Nkandla	R 1 808 400	
Mwane-Ward 13	Reservoir	Res 01 UAPMFO14	Nkandla	R 1 808 400	
Mwane-Ward 13	Reservoir	Res 05 UAPMFO14	Nkandla	R 1 717 897	
Mwane-Ward 13	Bulk Line	Package Plant UAPMFO14	Nkandla	R 181 692	
Mwane-Ward 13	Bulk Line	Package Plant UAPMFO14	Nkandla	R 356 717	
Mwane-Ward 13	Bulk Line	Package Plant UAPMFO14	Nkandla	R 9 750 947	
Mwane-Ward 13	Bulk Line	Package Plant UAPMFO14	Nkandla	R 184 653	
Mwane-Ward 13	Bulk Line	Package Plant UAPMFO14	Nkandla	R 1 164 519	

Development of UAP for Water & Sanitation in Kwazulu-Natal

Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Mwane-Ward 13	Pumpstation	Pump01	Nkandla	R 2 862 453	
Mwane-Ward 13	Pumpstation	Pump02	Nkandla	R 2 862 453	
Mwane-Ward 13	Pumpstation	Pump03	Nkandla	R 2 862 453	
Mwane-Ward 13	Pumpstation	Pump04	Nkandla	R 2 862 453	
Mwane-Ward 13	Pumpstation	Pump05	Nkandla	R 2 862 453	
Mwane-Ward 13	WTW	Package Plant UAPMFO14	Nkandla	R 36 750 000	
Mwane-Ward 13	Reticulation	RET_UAPMFO14	Nkandla	R 28 589 022	
<b>Mwane-Ward 13</b>	<b>Total</b>				<b>R 100 061 576</b>
Devondale-Ward 8	Borehole	Borehole 01 UAPMFO15	Nkandla	R 300 000	
Devondale-Ward 8	Borehole	Borehole 02 UAPMFO15	Nkandla	R 300 000	
Devondale-Ward 8	Borehole	Borehole 03 UAPMFO15	Nkandla	R 300 000	
Devondale-Ward 8	Borehole	Borehole 04 UAPMFO15	Nkandla	R 300 000	
Devondale-Ward 8	Reservoir	Res 01 UAPMFO15	Nkandla	R 3 089 419	
Devondale-Ward 8	Bulk Line	Borehole 01 UAPMFO15	Nkandla	R 532 311	
Devondale-Ward 8	Bulk Line	Borehole 02 UAPMFO15	Nkandla	R 489 177	
Devondale-Ward 8	Bulk Line	Borehole 03 UAPMFO15	Nkandla	R 600 382	
Devondale-Ward 8	Bulk Line	Borehole 04 UAPMFO15	Nkandla	R 607 241	
Devondale-Ward 8	Reticulation	RET_UAPMFO15	Nkandla	R 2 607 412	
<b>Devondale-Ward 8</b>	<b>Total</b>				<b>R 9 125 942</b>
Spinnes-Ward 8	Borehole	Hand Pump 01 UAPMFO16	Nkandla	R 270 000	
Spinnes-Ward 8	Borehole	Hand Pump 02 UAPMFO16	Nkandla	R 270 000	
<b>Spinnes-Ward 8</b>	<b>Total</b>				<b>R 540 000</b>
Vutshini-Ward 10	Borehole	Hand Pump 01 UAPMFO17	Nkandla	R 270 000	
<b>Vutshini-Ward 10</b>	<b>Total</b>				<b>R 270 000</b>

Development of UAP for Water & Sanitation in Kwazulu-Natal

Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Dinuntuli-Ward 9	Borehole	Hand Pump 01 UAPMFO18	Nkandla	R 270 000	
Dinuntuli-Ward 9	Borehole	Hand Pump 02 UAPMFO18	Nkandla	R 270 000	
<b>Dinuntuli-Ward 9</b>	<b>Total</b>				<b>R 540 000</b>
Ohlahla-Ward 3	Borehole	Hand Pump 01 UAPMFO19	Nkandla	R 300 000	
Ohlahla-Ward 3	Reservoir	Res 01 UAPMFO19	Nkandla	R 740 757	
Ohlahla-Ward 3	Bulk Line	Borehole 01 UAPMFO19	Nkandla	R 817 985	
Ohlahla-Ward 3	Reticulation	RET_UAPMFO19	Nkandla	R 743 497	
<b>Ohlahla-Ward 3</b>	<b>Total</b>				<b>R 2 602 238</b>
Njomelwano-Ward 3	Borehole	Hand Pump 01 UAPMFO20	Ntambanana	R 270 000	
Njomelwano-Ward 3	Borehole	Hand Pump 02 UAPMFO20	Ntambanana	R 270 000	
Njomelwano-Ward 3	Borehole	Hand Pump 03 UAPMFO20	Ntambanana	R 270 000	
<b>Njomelwano-Ward 3</b>	<b>Total</b>				<b>R 810 000</b>
Ntambanana NU-Ward 6	Borehole	Borehole 01 UAPMFO21	Ntambanana	R 300 000	
Ntambanana NU-Ward 6	Borehole	Borehole 02 UAPMFO21	Ntambanana	R 300 000	
Ntambanana NU-Ward 6	Reservoir	Res 01 UAPMFO21	Ntambanana	R 1 120 431	
Ntambanana NU-Ward 6	Bulk Line	Borehole 01 UAPMFO21	Ntambanana	R 211 675	
Ntambanana NU-Ward 6	Bulk Line	Borehole 02 UAPMFO21	Ntambanana	R 191 948	
Ntambanana NU-Ward 6	Reticulation	RET_UAPMFO21	Ntambanana	R 849 622	
<b>Ntambanana NU-Ward 6</b>	<b>Total</b>				<b>R 2 973 677</b>
Mbojane-Ward 4	Borehole	Hand Pump 01 UAPMFO22	Mthonjaneni	R 270 000	
<b>Mbojane-Ward 4</b>	<b>Total</b>				<b>R 270 000</b>
Ntambanana NU-Ward 5	Borehole	Hand Pump 01 UAPMFO23	Ntambanana	R 270 000	
Ntambanana NU-Ward 5	Borehole	Hand Pump 02 UAPMFO23	Ntambanana	R 270 000	
<b>Ntambanana NU-Ward 5</b>	<b>Total</b>				<b>R 540 000</b>



Development of UAP for Water & Sanitation in Kwazulu-Natal



Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Ematholeni-Ward 15	Borehole	Borehole 03 UAPMFO24	Mfolozi	R 300 000	
Ematholeni-Ward 15	Borehole	Borehole 02 UAPMFO24	Mfolozi	R 300 000	
Ematholeni-Ward 15	Borehole	Borehole 01 UAPMFO24	Mfolozi	R 300 000	
Ematholeni-Ward 15	Reservoir	Res 01 UAPMFO24	Mfolozi	R 1 717 897	
Ematholeni-Ward 15	Bulk Line	Borehole 01 UAPMFO24	Mfolozi	R 262 487	
Ematholeni-Ward 15	Bulk Line	Borehole 02 UAPMFO24	Mfolozi	R 267 403	
Ematholeni-Ward 15	Bulk Line	Borehole 03 UAPMFO24	Mfolozi	R 157 400	
Ematholeni-Ward 15	Reticulation	RET_UAPMFO24	Mfolozi	R 1 322 075	
<b>Ematholeni-Ward 15</b>	<b>Total</b>				<b>R 4 627 263</b>
Ntabandlovu-Ward 7	Borehole	Borehole 01 UAPMFO25	Nkandla	R 300 000	
Ntabandlovu-Ward 7	Reservoir	Res 01 UAPMFO25	Nkandla	R 740 757	
Ntabandlovu-Ward 7	Bulk Line	Borehole 01 UAPMFO25	Nkandla	R 136 156	
Ntabandlovu-Ward 7	Reticulation	RET_UAPMFO25	Nkandla	R 470 765	
<b>Ntabandlovu-Ward 7</b>	<b>Total</b>				<b>R 1 647 678</b>
Nkandla-Ward 5	Borehole	Borehole 01 UAPMFO27	Nkandla	R 300 000	
Nkandla-Ward 5	Borehole	Borehole 02 UAPMFO27	Nkandla	R 300 000	
Nkandla-Ward 5	Reservoir	Res 01 UAPMFO27	Nkandla	R 1 419 164	
Nkandla-Ward 5	Bulk Line	Borehole 01 UAPMFO27	Nkandla	R 218 882	
Nkandla-Ward 5	Bulk Line	Borehole 02 UAPMFO27	Nkandla	R 112 327	
Nkandla-Ward 5	Reticulation	RET_UAPMFO27	Nkandla	R 940 149	
<b>Nkandla-Ward 5</b>	<b>Total</b>				<b>R 3 290 522</b>
Ngomankulu-Ward 11	Borehole	Borehole 01 UAPMFO28	Nkandla	R 300 000	
Ngomankulu-Ward 11	Reservoir	Res 01 UAPMFO28	Nkandla	R 432 519	
Ngomankulu-Ward 11	Bulk Line	Borehole 01 UAPMFO28	Nkandla	R 67 758	

Development of UAP for Water & Sanitation in Kwazulu-Natal



Scheme Name	Type	Name	Local Municipality	Infrastructure Cost	Total Cost
Ngomankulu-Ward 11	Reticulation	RET_UAPMFO28	Nkandla	R 320 111	
<b>Ngomankulu-Ward 11</b>	<b>Total</b>				<b>R 1 120 387</b>
Dlabe-Ward 11	Borehole	Borehole 01 UAPMFO29	Nkandla	R 300 000	
Dlabe-Ward 11	Borehole	Borehole 02 UAPMFO29	Nkandla	R 300 000	
Dlabe-Ward 11	Reservoir	Res 01 UAPMFO29	Nkandla	R 1 120 431	
Dlabe-Ward 11	Bulk Line	Borehole 01 UAPMFO29	Nkandla	R 112 562	
Dlabe-Ward 11	Bulk Line	Borehole 02 UAPMFO29	Nkandla	R 240 533	
Dlabe-Ward 11	Reticulation	RET_UAPMFO29	Nkandla	R 829 411	
<b>Dlabe-Ward 11</b>	<b>Total</b>				<b>R 2 902 937</b>
Hayinyama-Ward 6	Borehole	Borehole 01 UAPMFO30	uMlalazi	R 300 000	
Hayinyama-Ward 6	Reservoir	Res 01 UAPMFO30	uMlalazi	R 432 519	
Hayinyama-Ward 6	Bulk Line	Borehole 01 UAPMFO30	uMlalazi	R 117 241	
Hayinyama-Ward 6	Reticulation	RET_UAPMFO30	uMlalazi	R 339 904	
<b>Hayinyama-Ward 6</b>	<b>Total</b>				<b>R 1 189 664</b>
<b>UTHUNGULU UNIVERSAL ACCESS PLAN</b>					<b>R 813 096 807</b>

## 10 RECOMMENDATIONS

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The following recommendation needs to be considered as these are likely to impact the water and sanitation services provisions in uThungulu:

- The conceptual bulk schemes identified in this report should be used to form a basis for further investigations to address the current backlogs, pre-feasibilities and feasibility studies must be undertaken.
- The Goedertrouw Dam is a potential major water source in the District Municipality and should be considered when planning water provision to backlogged areas.
- Other major rivers such as the Mfolozi, Thukela, Mhlathuze and Nsuze rivers could also be potential water supply or even could be used to impound water by construction of weirs and dams. These potential supply sources should be investigated further to determine its viability.
- Plans should be put in place to prevent illegal connections to water supply. Vandalism of water connections causes strain on the infrastructure whereby preventing the proposed extent of water supply to be met.
- No Regional schemes have been confirmed by the District municipality. It is thus important to understand the long term plan to address backlogs and improve the water and sanitation infrastructure. District Municipality must be able to determine this long term plan.
- A fully comprehensive GIS exercise should be carried out to identify all ground structures including bulk lines. GIS data collected during the Delphi Sessions would be a good starting point as data available within this newly created GIS could be used as a base from which to compile an updated Geodatabase.
- Water and sanitation attributes captured in this project must be confirmed on site and updated on the Geographic Information System (GIS). This will ensure that better planning could be completed and more accurate and realistic costing could be achieved.
- Water and sanitation services backlogs needs to be reviewed on an annual basis to ensure that:-
  - The water services programme aligns with the available funding;
  - Equitable allocation of funding is applied;
  - Monitor progress of the planning;

➤ Enable future planning.

- Although the focus may be on addressing the backlogs to those in need, uThungulu should also prioritise the maintenance of the existing infrastructure by introducing an asset management programme with appropriate budget.
- Water Service Authority must ensure that water and sanitation infrastructure must be aligned to the requirements of the Water Service Master Planning and Water Services Development Plan (WSDP) document. The latest WSDP found was dated 2010 and should be updated soon.
- Alternate sources of funding are needed to be secured in order to expedite service delivery and address the current backlogs. The current budget will not be able to address all the backlogs hence it is important for alternative funding models to be investigated.
- The District does not have sufficient funding to implement all the water and sanitation projects that are required to service the backlogs and cater for new developments.
- The funding streams from Provincial Government only cover the certain basic level of service and not the high order of service. The impact is that the District is unable to adequately service this urbanizing area which poses a huge challenge and delays improving quality of life.
- The projects listed in the Integrated Development Plan should be updated in terms of current progress and funding required for the completion of them.

## 11 CONCLUSIONS

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Funding models must be investigated in order to address these backlogs. Planning of regional and bulk schemes is the first steps but without funding these can be implemented. uThungulu together with other stakeholders must conduct feasibility studies in order to accurately determine and quantify the cost and suitability of bulk and regional schemes.

The current backlogs for both water and sanitation identified at the engagement meeting with the District municipality are vastly different to the 2011 Census data. Hence it is important that these figures are confirmed through physical verification on site and could be incorporated in an asset management programme. This will identify current infrastructure for both water and sanitation hence from this assessment the backlogs could be more accurately quantified.

uThungulu has a potential dam, the Goudertrouw dam, that can be a major source of raw water for treatment and provision to backlogged areas. A feasibility study should be done to determine the capacity that the dam can provide and other major rivers.

The short term schemes identified in the report are conceptual designs and are based on inputs from the operational staff at the engagement meeting. It is important that all water and sanitation infrastructure are confirmed through asset management programmes which will determine and confirm this infrastructure. This confirmation of infrastructure can be used for better water and sanitation planning and will update the current GIS database.

uThungulu should also prioritise the maintenance of the existing infrastructure by introducing an asset management programme with appropriate budget. Without maintenance and lack of maintenance could lead to an increase in backlogs numbers hence it is crucial that a maintenance budget set aside every year to maintain its current infrastructure.

The findings of this report and the GIS information collected should be used for future planning and decision making and must be further investigated through feasibility studies and must not be read in isolation from other studies undertaken in the uThungulu District Municipality or other Water Authorities such as Umgeni Water and Department of Water Affairs.

The projects listed in the Integrated Development Plan and those set out by DWA which are shown in Annexure A and D are regional bulk schemes which are long term solutions to

address backlogs and improve current water and sanitation infrastructure. These projects have are funded through the Municipal Infrastructure Grant and Municipal Water Infrastructure Grant which we have not considered when proposing conceptual alternate schemes to eradicate current backlogs. There could be overlapping of the proposed conceptual schemes to the regional bulk schemes and thus overlapping of infrastructure costs. The main reason that infrastructure cost could be overlapped is due to our mandate to develop conceptual schemes to eradicate the backlogs identified at the engagement meeting with the district municipalities.

## Annexure A

### uThungulu District Municipality

### DWA Priority Actions Plans

PRJNR (MWIG Project Number)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
2005MIGFD C280010	MIG	uMhlathuze	Upper Nseleni Bulk Water and Reticulation Ph 1,2 &3 (AFA) MIS 149395, 189754	Bulk water supply to Upper Nseleni Phases 1, 2 and 3, being an extension to an existing regional water supply system, and comprising 25km of bulk pipeline, 90km of reticulation pipeline, 2 pump stations with appurtenant electrical connections, 5 new reservoirs, 90 metered standpipes, and 2 reservoir upgrades to serve approximately 19 383 poor people made up of 3 342 households.	Completed	91 746 101	-	-	-	-	-	-
2005MIGFD C280021	MIG	Mthonjaneni	Greater Mthonjaneni Bulk Water Supply Phase 1 VO:1 (AFA) MIS 174718	Water supply to Greater Mthonjaneni Phases 1 and 2 comprises 63km of bulk pipeline, 75km of reticulation pipeline, 5 pump stations with appurtenant electrical connections, 14 new reservoirs to serve a population of 81 990 people made up of 12 715 poor households with bulk and reticulation networks and a further capacity to extend the bulk infrastructure to serve another 8 237 households.	Completed	249 367 632	-	-	-	-	-	-
2005MIGFD C280027	MIG	Mbonambi	Kwambonambi low cost housing water	INSTALLATION OF 3440 METERS OF WATER PIPE.	Construction	2 291 000	-	-	-	-	-	-
2005MIGFD C280030	MIG	Nkandla	Middledrift: Bulk Water Supply Phase 2 (AFA) MIS 179100, 206844	MIDDLEDRIFT BULK WATER SUPPLY PHASE 2. The Middledrift water supply scheme will eventually provide water to settlements in both Umlalazi and Nkandla Municipalities and will eventually serve 126 783 people.	Construction	132 409 907	-	-	-	-	-	-
2007MIGFD C28123467	MIG	Mbonambi	Mbonambi CWSS Phase 2 (AFA) MIS 207229	The aim of the project is provision of potable water to RDP standards to the Mbonambi and Sokhulu Communities, living immediately North of Richards Bay in KwaZulu-Natal.	Construction	156 725 350	-	-	-	-	-	-
2007MIGFD C28153233	MIG	Nkandla	Vutshini Phase 2 Bulk Water Supply	The Vutshini Supply Area Masterplan provides an integrated development plan for the supply of water services for the Uthungulu District Municipality and indicates the proposed positions for required bulk infrastructure. This infrastructure is required for the supply of water to households served by the Nkandla Local Municipality, to the norms and standards adopted by the uThungulu District Municipality. The area under consideration is located north of the Tugela River and west of the Nsuze River and falls within the catchment areas of both of these rivers. The upper limit of the area is the Emachidini settlement and the lower limit is the Kwampanza settlement. The area includes the Cunu, Kambela, Ntuli, Ngono, Xulu, Isiggosa and part of the Ekukhanyeni,	Construction	19 873 400	-	-	-	-	-	-



PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
				Zondi and Magwaza tribal authorities in Nkandla and is comprised of rural villages, scattered rural settlements and farmland. There are 5 186 households in the area, with a population of 46 674 people. There are seventy schools, one hospital and seven clinics distributed throughout the area.								
2010MIGFD C28195865	MIG	Ntambanana	Mhlana Somopho 3C (Upper Nseleni Bulk and Reticulation)	The Mhlana / Somopho Phase 3C project is a component of a regional water supply scheme known as the Upper Nseleni / Mhlana regional water supply scheme, of which this project forms a distinct and unique component. The most recent Master Plan indicates that this project will provide water to upper Nseleni - Mhlana sub-supply area 17 (SSA17) and sub-supply area 16 (SSA16), the last two areas being the supply area to be addressed through this application. The existing water source is Lake Mzingazi with water treated at the Mzingazi Water Treatment Plant and which is in turn provided to the Mandlazini bulk reservoirs in Richards's bay and there from transferred to the Nseleni town reservoir. This source is under jurisdiction of the City of uMhlathuze, and a supply agreement is in existence between the uThungulu District Municipality and the City of uMhlathuze to provide 2.7Ml/day. The project comprises of 43km (160-350mm) bulk water pipelines, total of 4Ml storage bulk reservoirs, 2 pump stations, total of 1.4Ml storage localized reservoirs, 341km of reticulation distribution network (32-160mm) and 18,278 metered yard connections to each household. The implementation of the project is divided into 3 phases, each awarded to a separate consultant.	Construction	116 618 866	-	525 000	-	13 406 944	-	21 068 056

PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
2010MIGFD C28196105	MIG	Umlalazi	Mpungose 1D Reticulation - Kwahlukhloko SSA2 and SSA3 Water Supply	<p>This funding will be used for the supply of water through the basic level of service, namely community standpipes. This project covers sub-supply area (SSA) 2 and 3 of the Kwahlukhloko supply area, as detailed in the Master Plan for the Goedertrouw Regional Scheme (2007 revision). The water will be sourced from the Goedertrouw dam. This is said to be a sustainable source of water and provision is being made for the increased abstraction of water from the dam. The Kwahlukhloko supply area is located approximately 15km North East of Eshowe. The sub-supply areas that are being proposed for infrastructure installation with this funding, namely SSA2 and SSA3, are made up of portions of wards 10, 22,23,24,25 and 26 KZ284 - Umlalazi Local Municipality.</p> <p>The funding will be utilized to construct approximately 20km of connector water pipelines, 2 no. concrete/steel bulk water reservoirs, 96 km of reticulation pipelines including 225 metered standpipes and 27 break pressure tanks. The funding also includes for the refurbishment of 1 no. steel water reservoir. This serves to supply water to 5,063 no. of households, 9,620 no. of population.</p>	Construction	35 219 891	-	-	-	-	-	-
2010MIGFD C28196689	MIG	Nkandla	Middledrift SSA5 Bulk Water and Reticulation	<p>The Bulk Water Supply and Reticulation to the Middledrift SSA5 is situated approximately 25km west of Eshowe. Access to the project area can be achieved either from the south through Mandeni heading north northwest through Sundumbili towards Mbongolwane or alternatively from the north heading west from Eshowe towards Entumeni and thereafter south west towards Mbongolwane. Mbongolwane is situated approximated in the middle of our project area, as shown on the attached locality plan, with approximate co-ordinates 28°50'25.4"S / 31°11'40.8"E. The estimated population including 1% anticipated growth over 20 year design period for the Middledrift Supply Area is 167,709 people residing in approximately 70702 homesteads. The estimated population of Middledrift Sub-Supply Area 5 that will benefit directly from Bulk water supply and Reticulation will be 19,871 people. The estimated water demand for the provision of water by means of house</p>	Tender	208 304 337	-	-	-	-	-	-

PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
				connections is 60l/p/d for rural areas. The total estimated Average Annual Daily Demand (AADD) water required for the upgrade of Bulk water supply for Middledrift Supply area is 11,063 kl/d and the total estimated Average Annual Daily Demand (AADD) water required for the upgrade of Reticulation for Middledrift SSA 5 is 2,229.4 kld. Although this project encompasses Sub Supply Area 5 (SSA5), the bulk pipelines and infrastructure will also contribute towards the supply of water resources to SSA6, SSA7 and SSA8. The scope of work will consist of the following: Two new multi-staged pumpstations will be constructed, one at the Middledrift purification works and the other at D1547 Road crossing, to supply water to Middledrift SSA5. The existing pumpstations at the purification works and road crossing will in future be dedicated to satisfy the demands of Middledrift SSA2. The flow and head are reflected on Appendix 1D. Both rising mains will be 500mm in diameter pumping from the new pumpstation PS01 at Middledrift purification works to the new pumpstation PS02 at D1547 road crossing and thereafter to the existing 5ML reservoir at Yelland. The total length of proposed bulk pipelines at Middledrift SSA5 would be 40,719m ranging from 50mm to 500mm. The total length of proposed reticulation pipelines at Middledrift SSA5 would be 180,000m ranging from 32mm to 250mm. The number of proposed reservoirs and tanks at Middledrift SSA5 would total to 9 with a total storage capacity of 2,762 kl. The proposed bulk infrastructure will also contribute to the supply of portable water in SSA 6, SSA7 and SSA8.								
2010MIGFD C28197351	MIG	Umlalazi	Goedetrouw Regional Water Scheme - Kwahlokhloko SSA5	The KwaHlokhloko Regional Water Supply Project will serve the Mzimela Tribal Authority community, also known as 'Sub Supply Area 5, of the Umlalazi Local Municipality within the Uthungulu District Municipality. The area is located approximately 20km south-west of Empangeni.	Construction	157 844 574	-	-	-	-	-	-

PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
2011MIGFD C28199310	MIG	Umlalazi	Kwahlokhloko SSA1 Water	The water source for this supply scheme is the Phobane Dam (formerly Goedetrouw Dam), which is augmented from time to time by water from the Tugela Water Transfer Scheme. The works will consist of the following: Bulks: 8ML concrete reservoir; 1ML concrete reservoir; 120kl concrete reservoir; 28km of new bulk pipelines (75mm, 250mm, 400mm & 800mm) diameter; and New pump station and booster pump station to Kwahlokhloko SA and Eshowe SA. Reticulation: 105km new reticulation network (50mm -250mm) diameter; 3,659 No. metered connections 200m from household service level @ 60l/c/d and Verification of the existing reticulation pipeline network.	Construction	263 150 511	-	-	-	-	-	-
2011MIGFD C28201239	MIG	Nkandla	Middledrift SSA3 Water	The Upgrading of the bulk water supply and reticulation to Middledrift SSA 3 is located in the Nkandla and uMlalazi Municipal areas. The area boundary is defined by the UMhlathuze River to the east, the Thukela River in the west and the Nkandla forest to the north. The supply area is situated at approximate site co-ordinates of 28°49'25.11S / 31°01'54.33E, and falls within Ward 13 of the Magwaza Tribal Authority.  The bulk works will consist of the following: • 720KL Concrete Reservoir • 80KL Concrete Reservoir • 50 Concrete Reservoirs • 14km New Bulk pipelines uPVC (75mm, 110mm, 160mm & 200mm) diameter • 2 No pumpstations. The Reticulation works will consist of the following: • 30km New Reticulation network (50mm -75mm) diameter • 1458 metered connections 200m from household service level @ 60l/c/d. • Verification of the existing reticulation pipeline network.	Design	40 805 280	-	-	-	-	-	-

PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
2011MIGFD C28202386	MIG	Umlalazi	Eshowe SSA1 Bulk Water	<p>The UThungulu District Municipality appointed Aurecon South Africa (Pty) Ltd and Makhetha Development Consultants (Pty) Ltd to undertake the feasibility, preliminary and detail design, and subsequent tender and construction supervision for the Eshowe Sub-Supply Area 1 bulk and rural water scheme respectively.</p> <p>This feasibility report looks more closely at implementing a module of the "Master Plan for the Goedertrouw Regional Scheme" as originally identified by VGC and later reviewed by BKS and then Aurecon for UThungulu. The master plan identified the Goedertrouw Dam (Lake Phobane) as the source for a regional water treatment works to supply the Greater Mthonjaneni, KwaHloko and Eshowe areas. This report further describes a strategy in respect of the funding, implementation, management, operation and maintenance of the scheme. It also provides a community profile of the area, existing institutions as well as the necessary institutional arrangements that will be managing the project.</p> <p>The following infrastructure is proposed for the Eshowe SSA1 scheme:</p> <ul style="list-style-type: none"> <li>• Approximately 17km of steel bulk supply pipelines ranging in diameter from 200mm to 700mm;</li> <li>• A 30MI clear water reservoir at the existing Eshowe Waterworks site to augment the storage for Eshowe town, providing 48 hours of storage based on the GAADD for the town;</li> <li>• 1.5 MI and 1.0 MI reservoirs named R1-1 and R1-2 respectively to provide for a minimum storage of 48 hours of GAADD for the supply to the rural areas outside of Eshowe town;</li> <li>• Approximately 64km of u-PVC reticulation pipelines ranging in diameter from 50mm to 160mm to supply households within the rural areas outside of the Eshowe town with potable water supply to RDP standards.</li> </ul>	Design	152 282 499	-	-	-	-	-	-

PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
2011MIGFD C28202932	MIG	Ntambanana	Greater Mthonjaneni SSA4	<p>The objective of this project will be to provide a potable water supply through reticulation to a position within 200m of each homestead located within the project area.</p> <p>The source of water will be from the newly constructed Bulk water pipeline (400 - 350mm ductile iron), which is under construction. It is however assumed that this will be commissioned and fully functional at the commencement date of this project. The project will in principle entail the following elements:</p> <p>A 2.7Ml bulk reservoir will be constructed at Nomponjwana area to store and supply water SSA 4 and all sub-supply areas to the northern with enough water storage.</p> <p>A newly bulk pipeline, being a 350 and 300mm Ductile iron pipe, will commence at the Nomponjwana reservoir and traverses the project area alongside the main road, splitting into two directions supply reservoirs R 5-1 and R 8-1 from where it terminates.</p> <p>Four new local reservoirs arranging ranging in capacity from 400kl to 650kl.</p> <p>Reticulation pipelines in extent approximate 105km for community reticulation piping with sizes varying between 25mm and 200mm.</p>	Construction	47 687 840	-	-	-	-	-	-
2011MIGFD C28202935	MIG	Ntambanana	Greater Mthonjaneni SSA5	<p>This project (SSA 5) of the Greater Mthonjaneni water supply scheme will be an extension from SSA 4 obtaining potable water from this supply area. The objective of this project will be to provide a potable water supply through reticulation to a position within 200m of each homestead located within the project area.</p> <p>The source of water will be from the bulk water pipeline which will be undertaken on the sub-supply area 4. The project will in principle entail the following elements:</p> <p>Reservoir in a specific designated reservoir zones obtaining water from the source being the bulk pipeline undertaken in SSA 4.</p> <p>Bulk supply pipeline supplying bulk water from each reservoir to each reservoir.</p> <p>Reticulation networks commencing at the reservoirs and distributing water to the homesteads.</p>	Construction	90 738 717	-	-	-	-	-	-

PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
2012MIG	MIG	Ntambanana	Greater Mthonjeni SSA 2	The Goedetrouw Regional scheme located in uThungulu District Municipality area is the main source for this area. The water supply area (SSA2) encompasses portions of ward 2 and 3 of Greater Mthonjaneni Local Municipality within the province of KwaZulu Natal, and it is in the south west of MeLocal Municipality. To date the project has received funding to the value of R249m through MIG and R44,7m through Regional Bulk Infrastructure Grant (RBIG) excluding the SSA4 of a value of R47.5M and SSA5 to a value of R 90,7m which are still pending. The project will provide a basic level of service to some 13 950 people (459 810 Households) of Mthonjaneni Local Municipality area.	Planning	196 898 425	-	-	-	-	-	-
2012MIGFD C28205283	MIG	Nkandla	Nkandla Vutshini Regional Water Supply (SSA5)	<p>Proposed infrastructure :</p> <ul style="list-style-type: none"> <li>Infrastructure will be designed to the parameters as set out in the 'Red Book', Human Settlement Planning and Design and in line with the DWA Technical Guidelines for the Development of Water and Sanitation Infrastructure.</li> <li>Existing water sources – Nkandla Vutshini SSA5 and SSA4                             <ul style="list-style-type: none"> <li>- Currently the Water sources utilized by the communities in SSA4 are : 2 weirs, springs &amp; boreholes with hand pumps</li> <li>- Water sources in SSA5 are springs, boreholes with hand pumps and the raw water from the Tugela River.</li> </ul> </li> <li>These sources are not sustainable and water is also often carted at high expense to these areas</li> <li>Bulk Supply and Reservoirs</li> <li>Based on pressure zones and locality, communities has been divided into 20 reservoir zones                             <ul style="list-style-type: none"> <li>• 6 x New Pump stations / PS5.1 &amp; PS5.2(brick and concrete)</li> <li>- Inclusive of 4 x new pump sets, Security &amp; ablution facility</li> <li>• 20x New Reservoirs (various sizes from 50kl – 2Ml) (4 Bulk + 16)</li> <li>- Inclusive of new access roads</li> <li>• 49.16 km Bulk pipelines</li> <li>- Terrain is mountainous and high pressure steel pipe and ductile iron pipes will be also be used</li> </ul> </li> <li>Reticulation Networks:                             <ul style="list-style-type: none"> <li>• The following is a summary of the proposed infrastructure for this scheme:</li> <li>• Water Reticulation :</li> </ul> </li> </ul>	Design	189 341 223	-	-	-	-	-	

PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
				<ul style="list-style-type: none"> <li>- 200m walking distance = 2137</li> <li>- 11,700m galvanized mild steel 'Lulu' pipe (75mm – 200mm dia)</li> <li>- 27,400m of uPVC pipe (110 – 200mm)</li> <li>- 2321400m of HDPE pipe (25mm – 75mm)</li> <li>- 20 – 250mm dia, (capacity 0.1 – 10 l/s) Galvanized, uPVC &amp; HDPE type pipe = 271,4 km</li> <li>• Proprietary Galvanized mild steel break pressure tanks = 130</li> <li>• Inclusive of :-Isolating valves at branches and regular intervals</li> <li>-Air valves ant high points</li> <li>-Scour valves at low points</li> <li>• Security Fencing</li> <li>- All Reservoirs sites will be razor fenced and,</li> <li>- Pump Station will be concrete fencing</li> </ul>								
KNR016	RBIG	Nkandla	Middledrift (Nkandla) RBS	Regional Bulk Water Supply including Link and Reticulation for Enyawshana.	Construction	140 998 000	-	-	-	-	-	-
ZKZNUTHU N01	23District Municipality	Umlalazi	Gingindlovu Water Supply Intake Relocation	Relocate the existng intake at the water sourse to omprove water supply in Gingindlovu	Conceptual	5 000 000	Det Design	275 000	Procurement and Construction	4 725 000	-	-
ZKZNUTHU N02	23District Municipality	Nkandla	Hhwehlwe, Sogedle and Mpundumani Water Treatment works in Nkandla	Refurbish existing water treatment works to improve water supply in various settlements in Nkandla	Conceptual	3 600 000	Procurement and Construction	198 000	Construction	3 402 000	-	-
ZKZNUTHU N03	23District Municipality	All	Water Demand and Conservation management strategy	None	Conceptual	2 525 000	Planning	138 875	Planning	2 386 125	-	-
ZKZNUTHU N04	23District Municipality	Umlalazi	KDS & Eshowe Interim Water Supply	The project objective is to supply reliable, potable water to Eshowe	Conceptual	31 000 000	BP and Planning	155 000	Det Design & Procurement	2 015 000	Construction	28 830 000
ZKZNUTHU N05	23District Municipality	All	Tanker Reduction Strategy	The project objective is to supply reliable, potable water to various settlements	Conceptual	3 500 000	BP and Planning	17 500	Det Design & Procurement	3 482 500	-	-
ZKZNUTHU N06	23District Municipality	Umlalazi	Eshowe SSA 2 - SSA 7	None	Conceptual	170 000 000	BP and Planning	850 000	Det Design & Procurement	8 500 000	Construction	50 000 000
ZKZNUTHU N07	23District Municipality	Ntambanana	Upper Nseleni SSA 4 - SSA 5	None	Conceptual	71 100 000	BP and Planning	355 500	Det Design & Procurement	3 555 000	Construction	50 000 000



PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
	ality											
ZKZNUTHU N08	Other	Ntambanana	Upper Nseleni SSA 10 - SSA 15	None	Conceptual	72 700 000	BP and Planning	363 500	Det Design & Procurement	3 635 000	Construction	50 000 000
ZKZNUTHU N09	Other	Mthonjaneni	Greater Mthonjaneni SSA 3	None	Conceptual	525 200 000	BP and Planning	2 626 000	Det Design & Procurement	26 260 000	Construction	50 000 000
ZKZNUTHU N10	Other	Ntambanana	Greater Mthonjaneni SSA 6 - SSA 9 Bulk	None	Conceptual	85 000 000	BP and Planning	425 000	Det Design & Procurement	4 250 000	Construction	50 000 000
ZKZNUTHU N11	Other	Ntambanana	Greater Mthonjaneni SSA 6 - SSA 9 Reticulation	None	Conceptual	85 000 000	BP and Planning	425 000	Det Design & Procurement	4 250 000	Construction	50 000 000
ZKZNUTHU N12	Other	Umlalazi	KwaHlokoHloko SSA 4	None	Conceptual	33 800 000	BP and Planning	169 000	Det Design & Procurement	1 690 000	Construction	31 941 000
ZKZNUTHU N13	Other	Umlalazi	KwaHlokoHloko SSA 6	None	Conceptual	26 400 000	BP and Planning	132 000	Det Design & Procurement	1 320 000	Construction	24 948 000
ZKZNUTHU N14	Other	Umlalazi	KwaHlokoHloko SSA 7	None	Conceptual	39 150 000	BP and Planning	195 750	Det Design & Procurement	1 957 500	Construction	36 996 750
ZKZNUTHU N15	Other	Umlalazi	Middle-drift SSA 1	None	Conceptual	77 800 000	BP and Planning	389 000	Det Design & Procurement	3 890 000	Construction	50 000 000
ZKZNUTHU N16	Other	Nkandla	Middle-drift SSA 2	None	Conceptual	96 800 000	BP and Planning	484 000	Det Design & Procurement	4 840 000	Construction	50 000 000
ZKZNUTHU N17	Other	Umlalazi	Middle-drift SSA 4	None	Conceptual	38 800 000	BP and Planning	194 000	Det Design & Procurement	1 940 000	Construction	36 666 000
ZKZNUTHU N18	Other	Umlalazi	Middle-drift SSA 6	None	Conceptual	192 100 000	BP and Planning	960 500	Det Design & Procurement	9 605 000	Construction	50 000 000
ZKZNUTHU N19	Other	Umlalazi	Middle-drift SSA 7	None	Conceptual	60 900 000	BP and Planning	304 500	Det Design & Procurement	3 045 000	Construction	50 000 000
ZKZNUTHU N20	Other	Nkandla	Nkandla Vutshini SSA 1	None	Conceptual	417 000 000	BP and Planning	2 085 000	Det Design & Procurement	20 850 000	Construction	50 000 000
ZKZNUTHU N21	Other	Nkandla	Nkandla Vutshini SSA 3 & 4	None	Conceptual	201 000 000	BP and Planning	1 005 000	Det Design & Procurement	10 050 000	Construction	50 000 000
ZKZNUTHU N22	Other	Mbonambi	Mbonambi SSA3	None	Conceptual	28 600 000	BP and Planning	143 000	Det Design & Procurement	1 430 000	Construction	27 027 000
ZKZNUTHU N23	Other	Umlalazi	Middle-drift SSA 8	None	Conceptual	71 300 000	BP and Planning	356 500	Det Design & Procurement	3 565 000	Construction	50 000 000
ZKZNUTHU N24	Other	Nkandla	Nkandla Vutshini Regional Water Supply (SSA5)	Proposed infrastructure : • Infrastructure will be designed to the parameters as set out in the 'Red Book', Human Settlement Planning and Design and in line with the DWA Technical Guidelines for the Development of Water and Sanitation Infrastructure. • Existing water sources – Nkandla Vutshini SSA5 and SSA4 - Currently the Water sources utilized by the communities in SSA4 are : 2 weirs, springs & boreholes with	Design	28 600 000	Tender	429 000	Construction	10 955 389	Construction	17 215 611

PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
				<p>hand pumps</p> <ul style="list-style-type: none"> <li>- Water sources in SSA5 are springs, boreholes with hand pumps and the raw water from the Tugela River.</li> <li>• These sources are not sustainable and water is also often carted at high expense to these areas</li> <li>• Bulk Supply and Reservoirs</li> <li>• Based on pressure zones and locality, communities has been divided into 20 reservoir zones</li> <li>• 6 x New Pump stations / PS5.1 &amp; PS5.2(brick and concrete)</li> <li>- Inclusive of 4 x new pump sets, Security &amp; ablution facility</li> <li>• 20x New Reservoirs (various sizes from 50kl – 2Ml) (4 Bulk + 16)</li> <li>- Inclusive of new access roads</li> <li>• 49.16 km Bulk pipelines</li> <li>- Terrain is mountainous and high pressure steel pipe and ductile iron pipes will be also be used</li> <li>i) Reticulation Networks: <ul style="list-style-type: none"> <li>• The following is a summary of the proposed infrastructure for this scheme: <ul style="list-style-type: none"> <li>• Water Reticulation : <ul style="list-style-type: none"> <li>- 200m walking distance = 2137</li> <li>- 11,700m galvanized mild steel 'Lulu' pipe (75mm – 200mm dia)</li> <li>- 27,400m of uPVC pipe (110 – 200mm)</li> <li>- 2321400m of HDPE pipe (25mm – 75mm)</li> <li>- 20 – 250mm dia, (capacity 0.1 – 10 l/s) Galvanized, uPVC &amp; HDPE type pipe = 271,4 km</li> <li>• Proprietary Galvanized mild steel break pressure tanks = 130</li> <li>• Inclusive of :-Isolating valves at branches and regular intervals</li> <li>-Air valves ant high points</li> <li>-Scour valves at low points</li> <li>• Security Fencing</li> <li>- All Reservoirs sites will be razor fenced and,</li> <li>- Pump Station will be concrete fencing</li> </ul> </li> </ul> </li> </ul> </li> </ul>								
		Mbonambi				187 616 350	-	143 000	-	1 430 000	-	27 027 000
		Mthonjaneni				774 567 632	-	2 626 000	-	26 260 000	-	50 000 000
		Nkandla				1 478 732 147	-	4 201 000	-	50 097 389	-	167 215 611
		Ntambanana				765 743 848	-	2 094 000	-	29 096 944	-	221 068 056
		Umlalazi				1 354 747 475	-	3 981 250	-	42 252 500	-	409 381 750

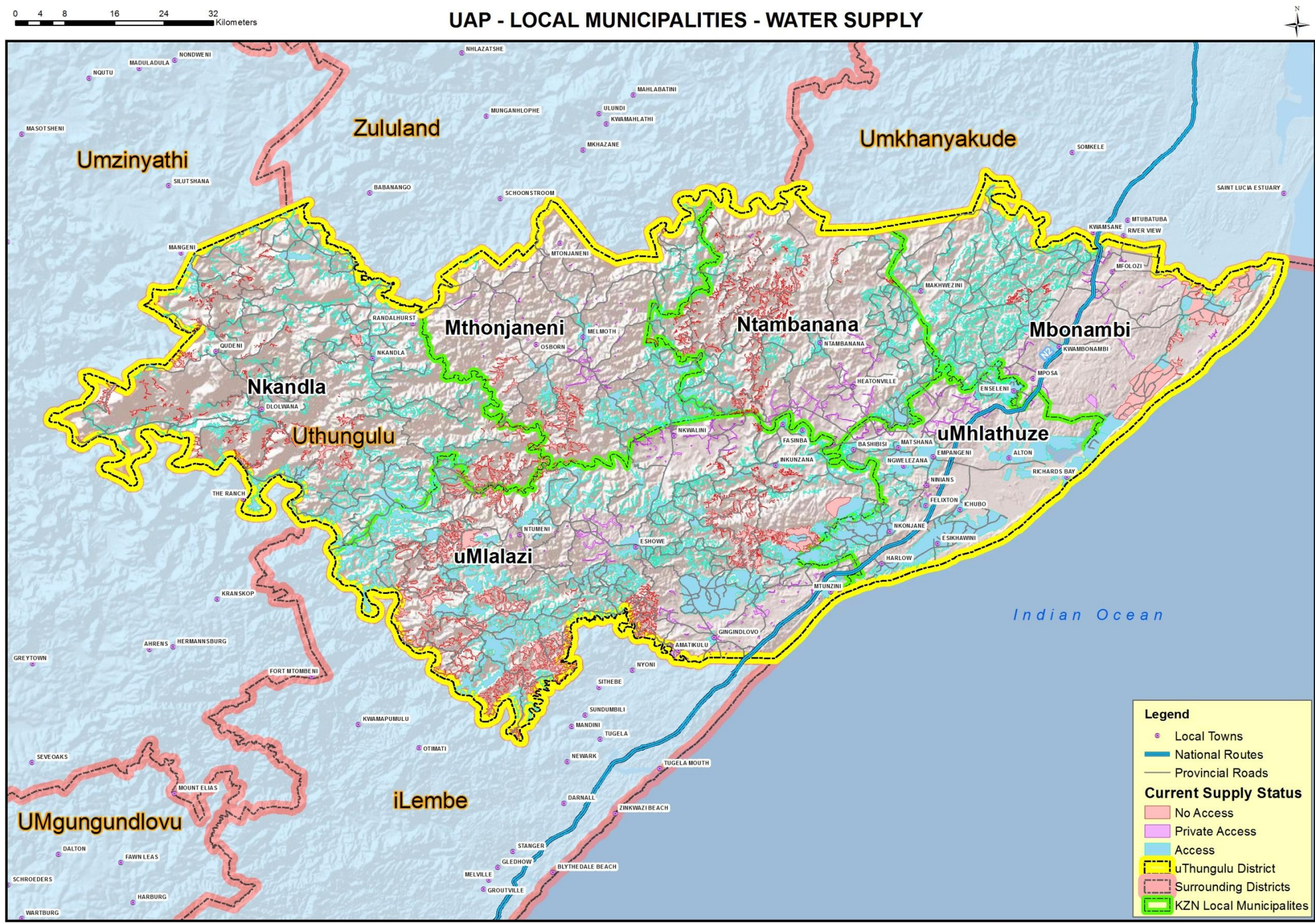
Development of UAP for Water & Sanitation in Kwazulu-Natal



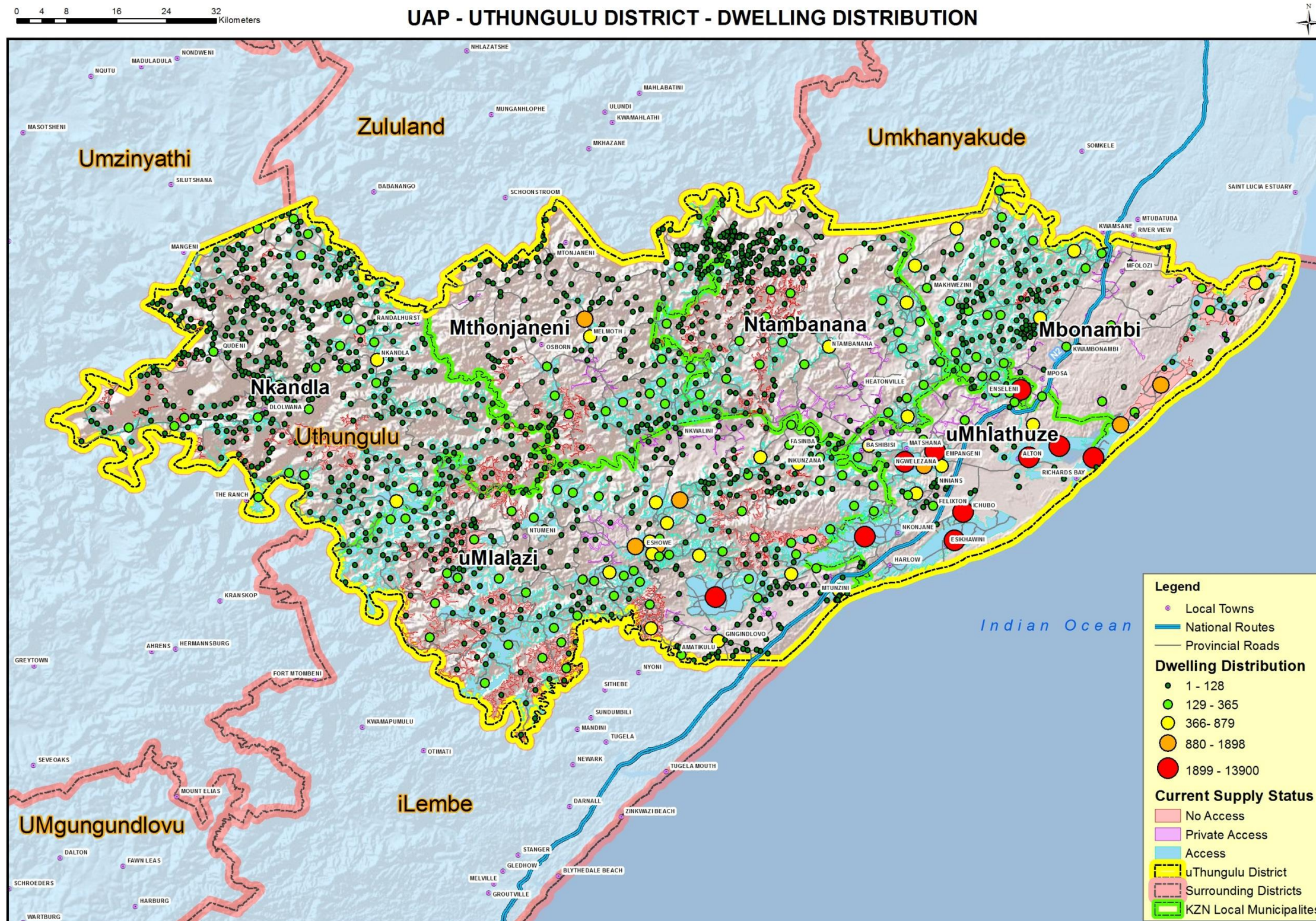
PRJNR (MWIG)	Project Origin	Local Municipality	Project Name	Project Description	Project Status	Total Project Cost	Short Term Actions	Short Term Fund Requirement	Medium Term Actions	Medium Term Funding Requirement	Long Term Actions	Long Term Funding Requirement
							-		-		-	
		All				6 025 000	-	156 375	-	5 868 625	-	-
						4 567 432 452	-	13 201 625	-	155 005 458	-	874 692 417

## Annexure B

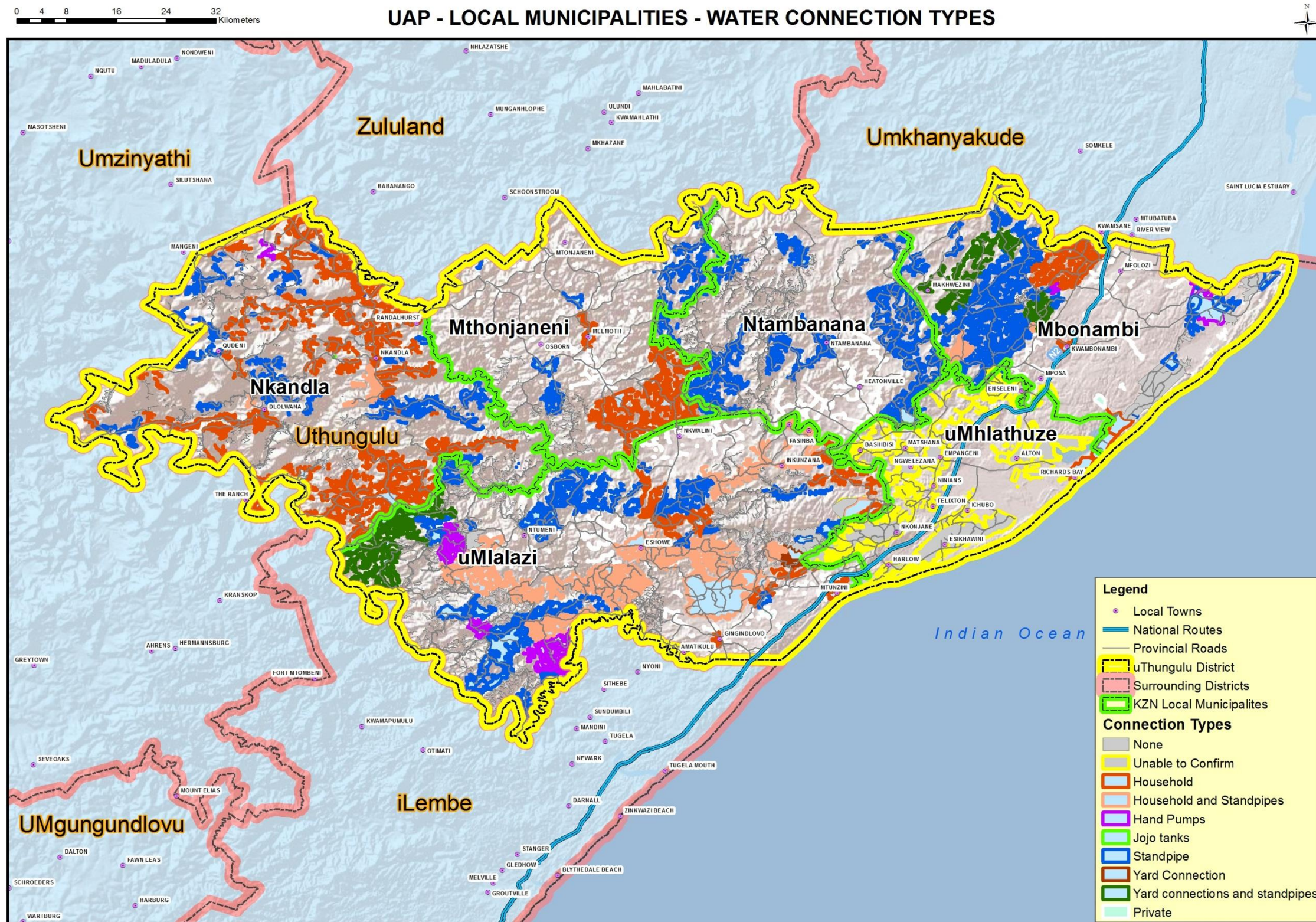
# Water Supply & Sanitation Footprints



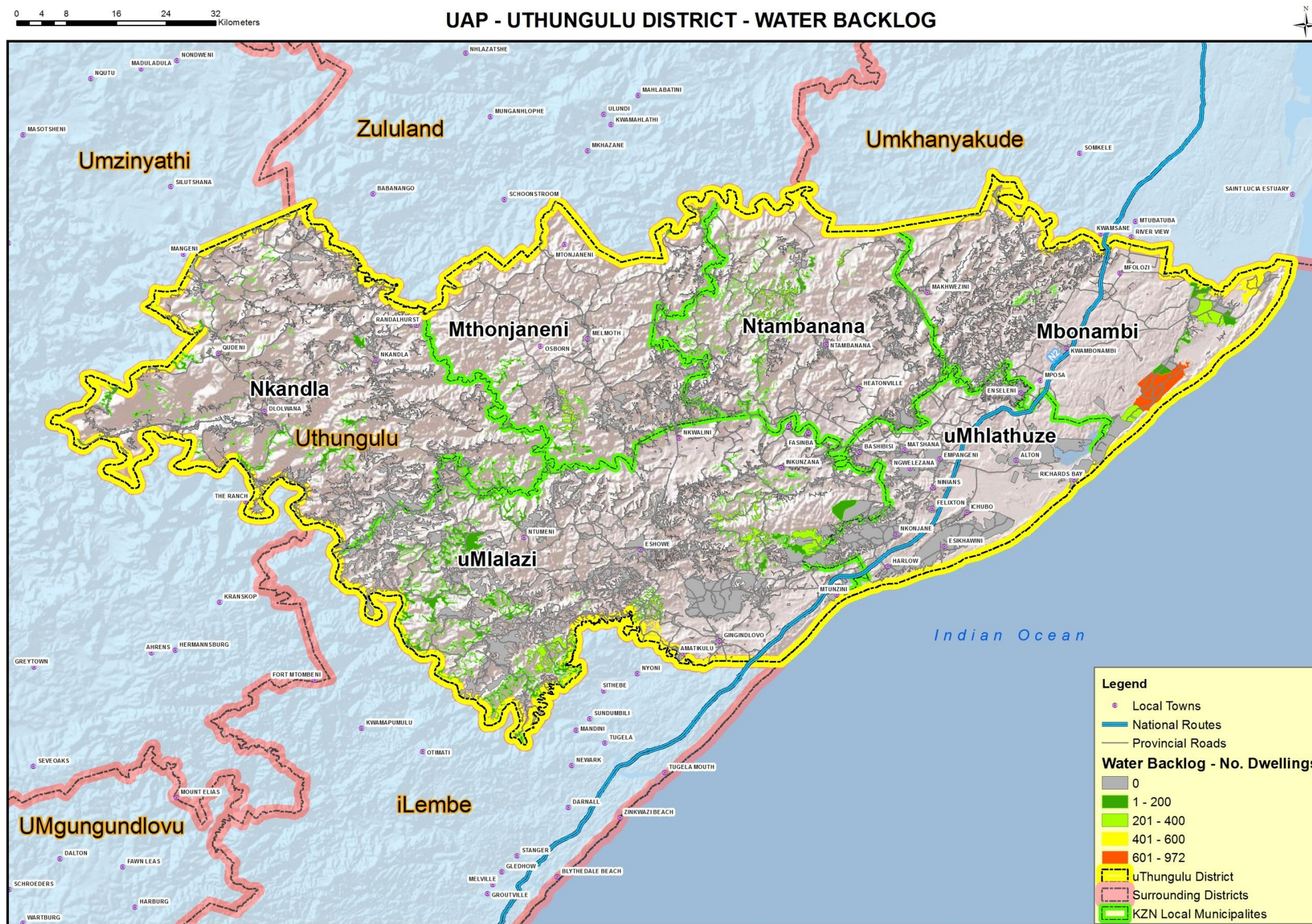
**Map 1: uThungulu District Municipality Water Supply**



**Map 2: uThungulu District Municipality Dwelling Distribution**

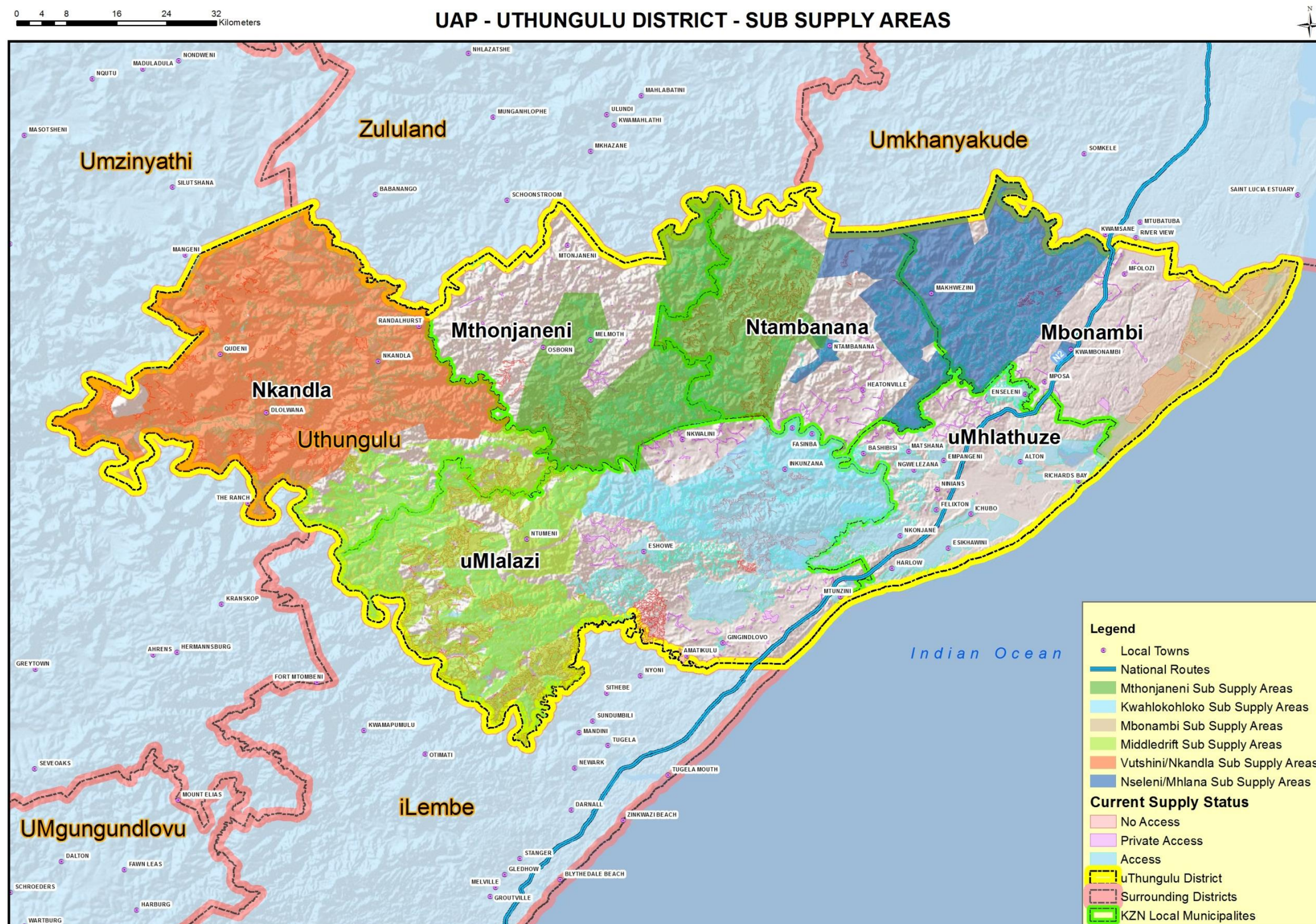


**Map 3: uThungulu District Municipality Water Connection Types**

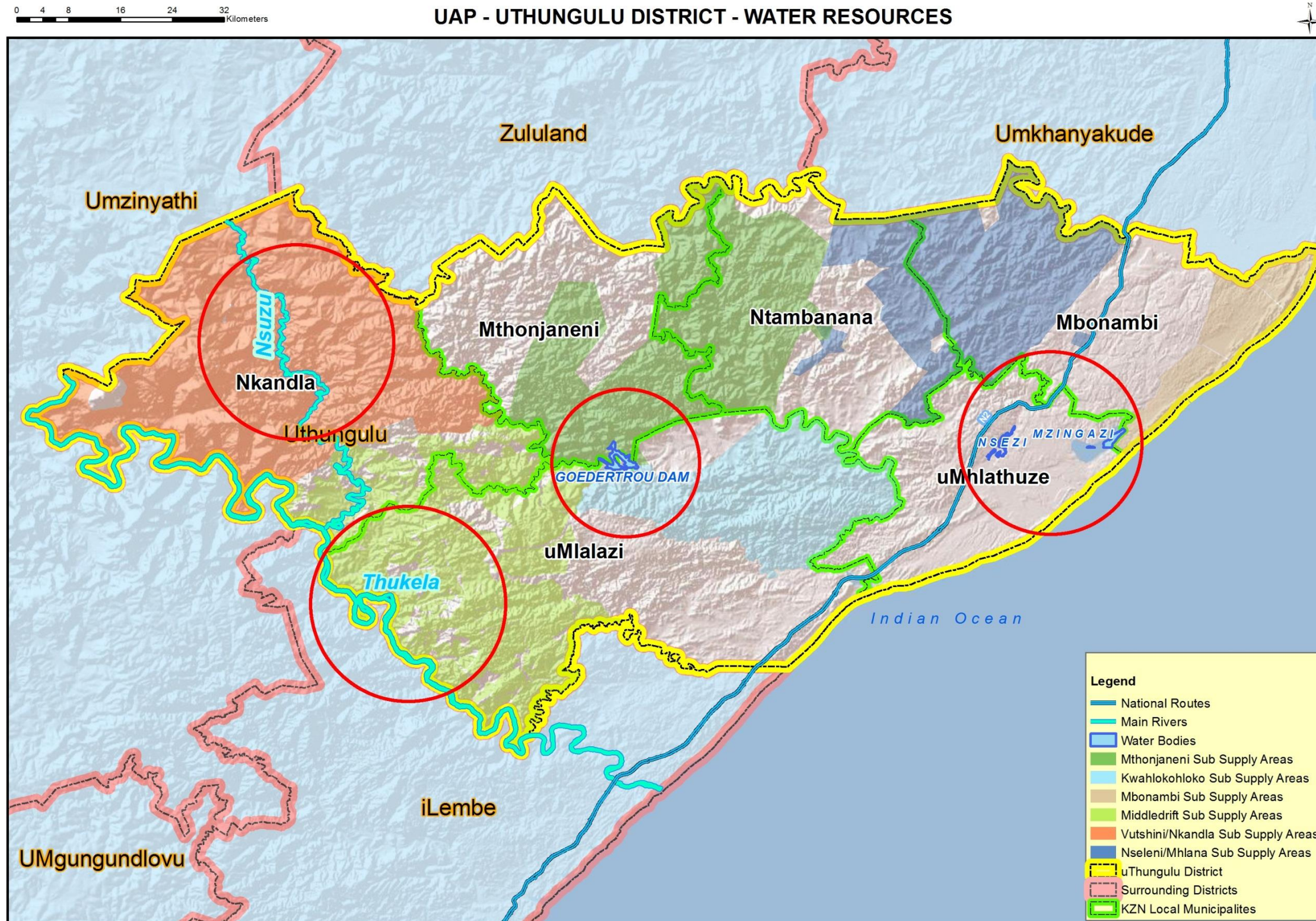


**Map 4: uThungulu District Municipality Water Backlogs**

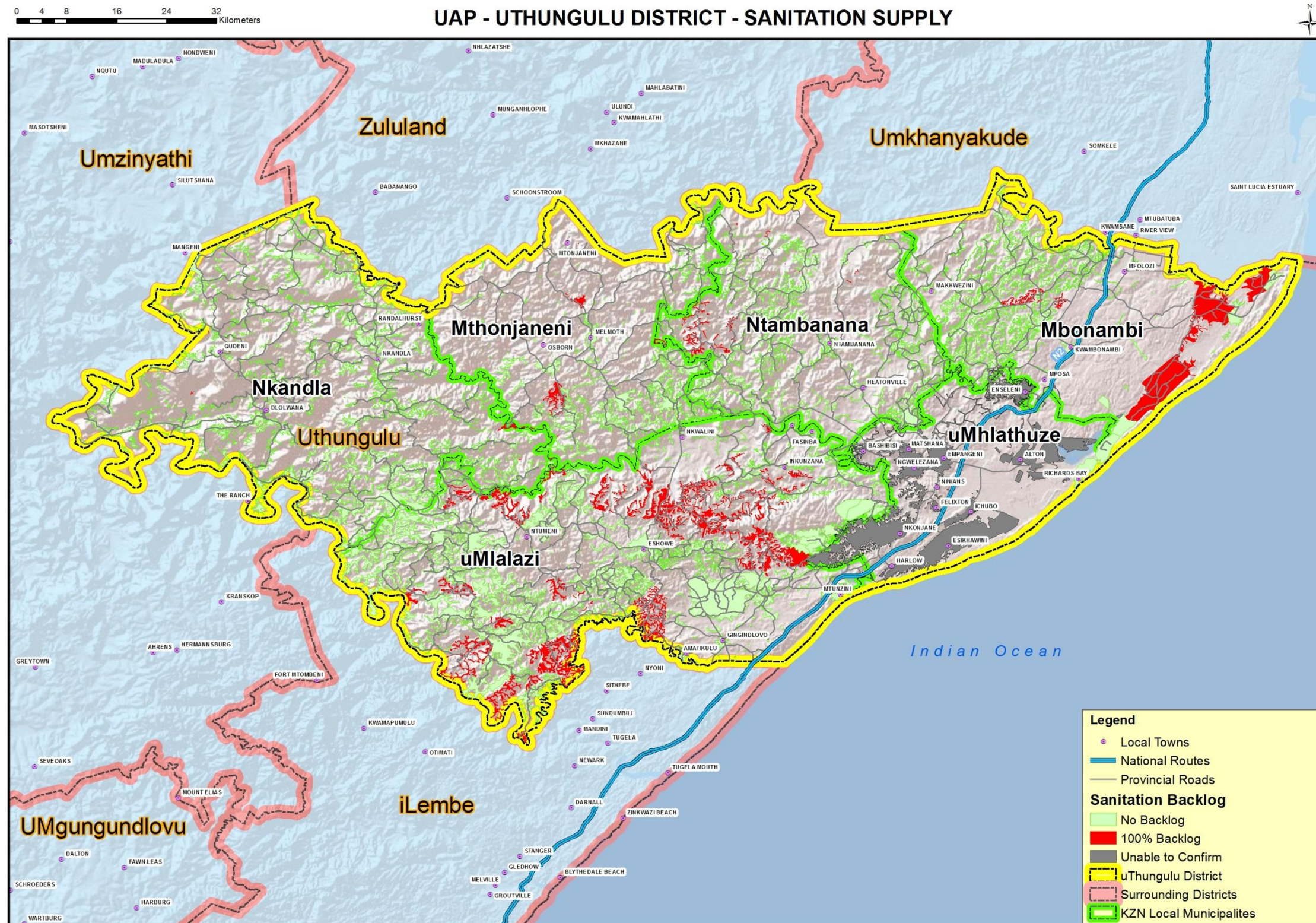




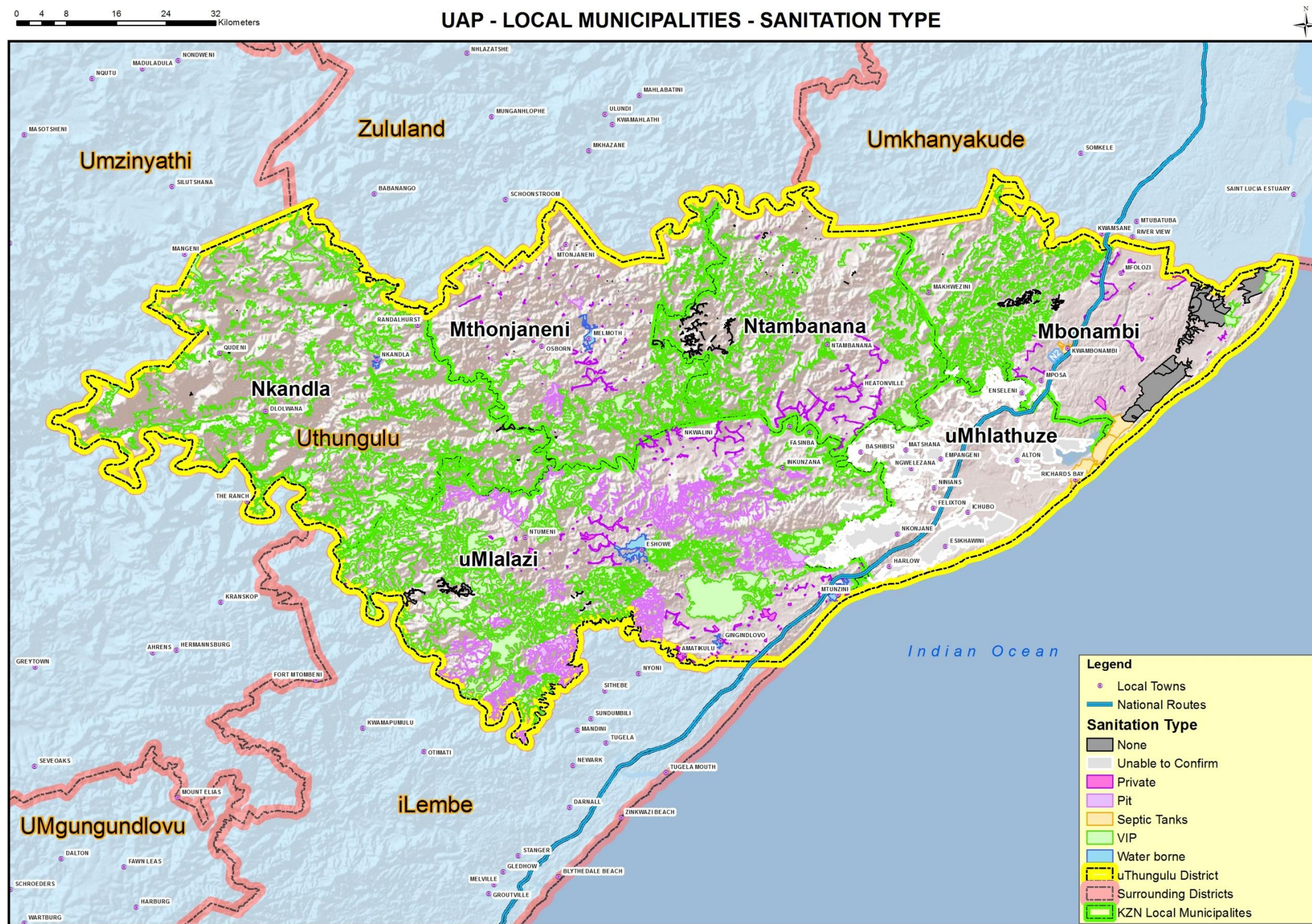
**Map 5: uThungulu District Municipality Sub Supply Areas**



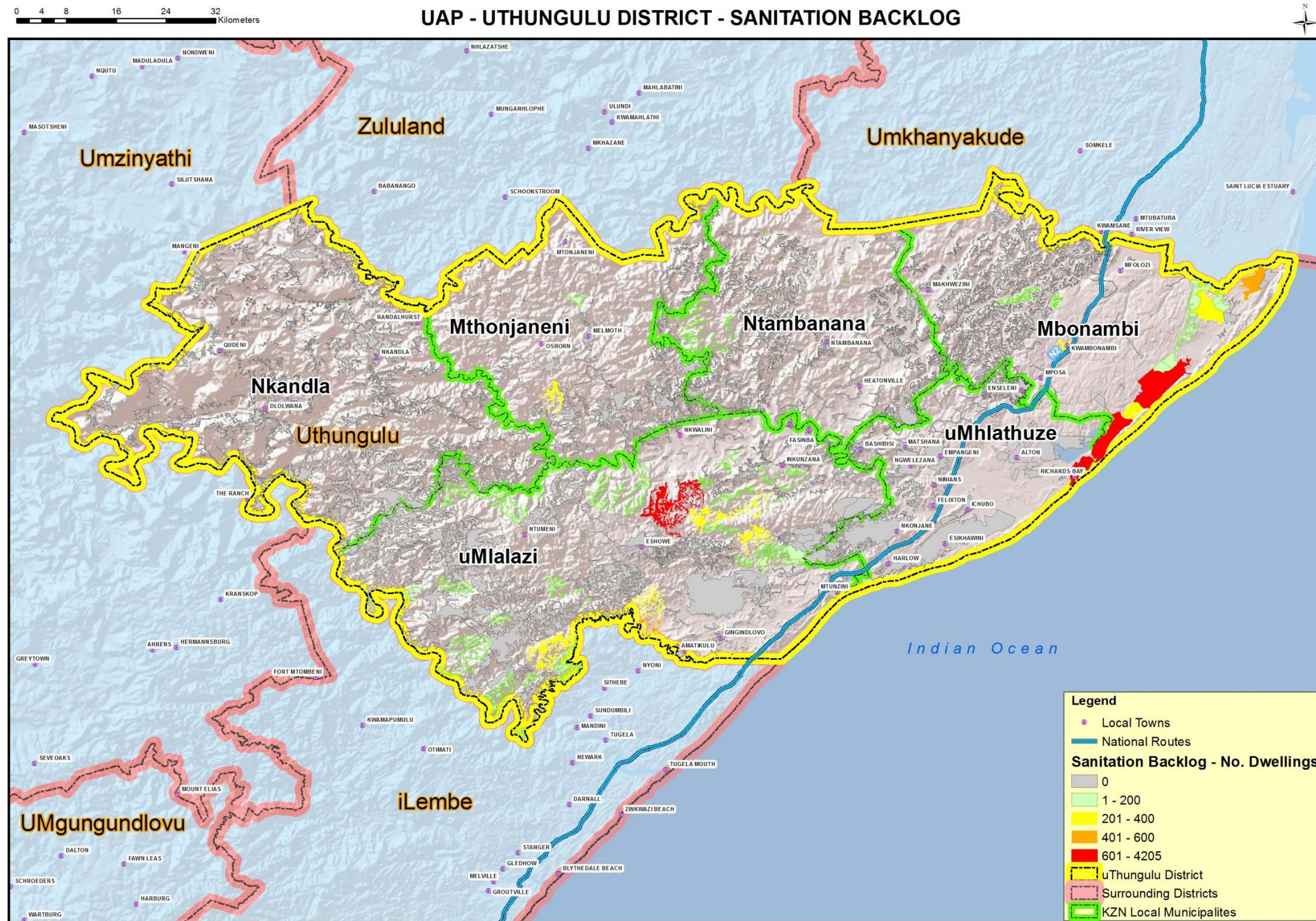
**Map 6: uThungulu District Water Resources**



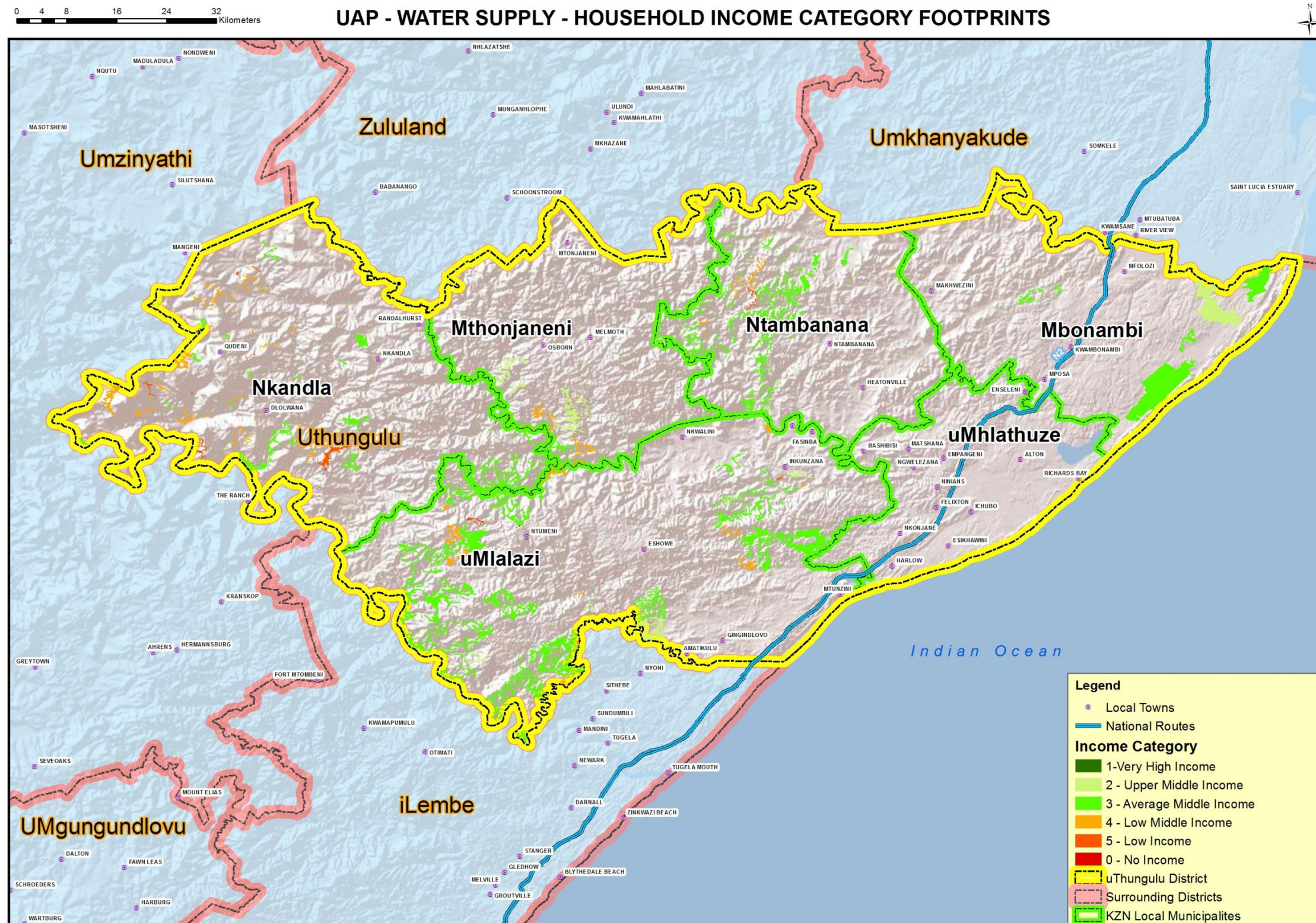
**Map 7: uThungulu District Municipality Sanitation Supply**



**Map 8: uThungulu District Municipality Sanitation Types**



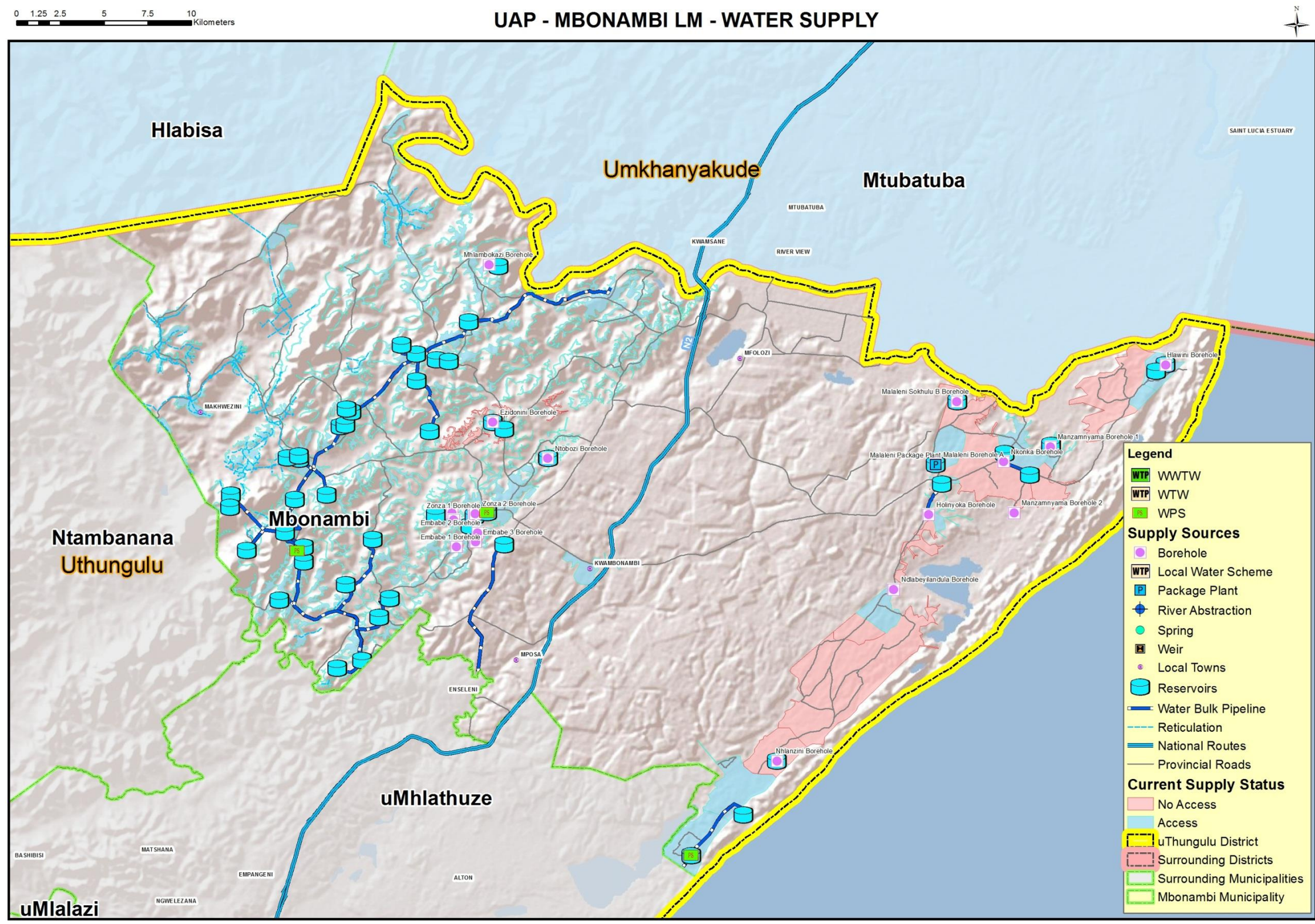
**Map 9: uThungulu District Municipality Sanitation Backlogs**



**Map 10: uThungulu District Municipality Household Income Categories**

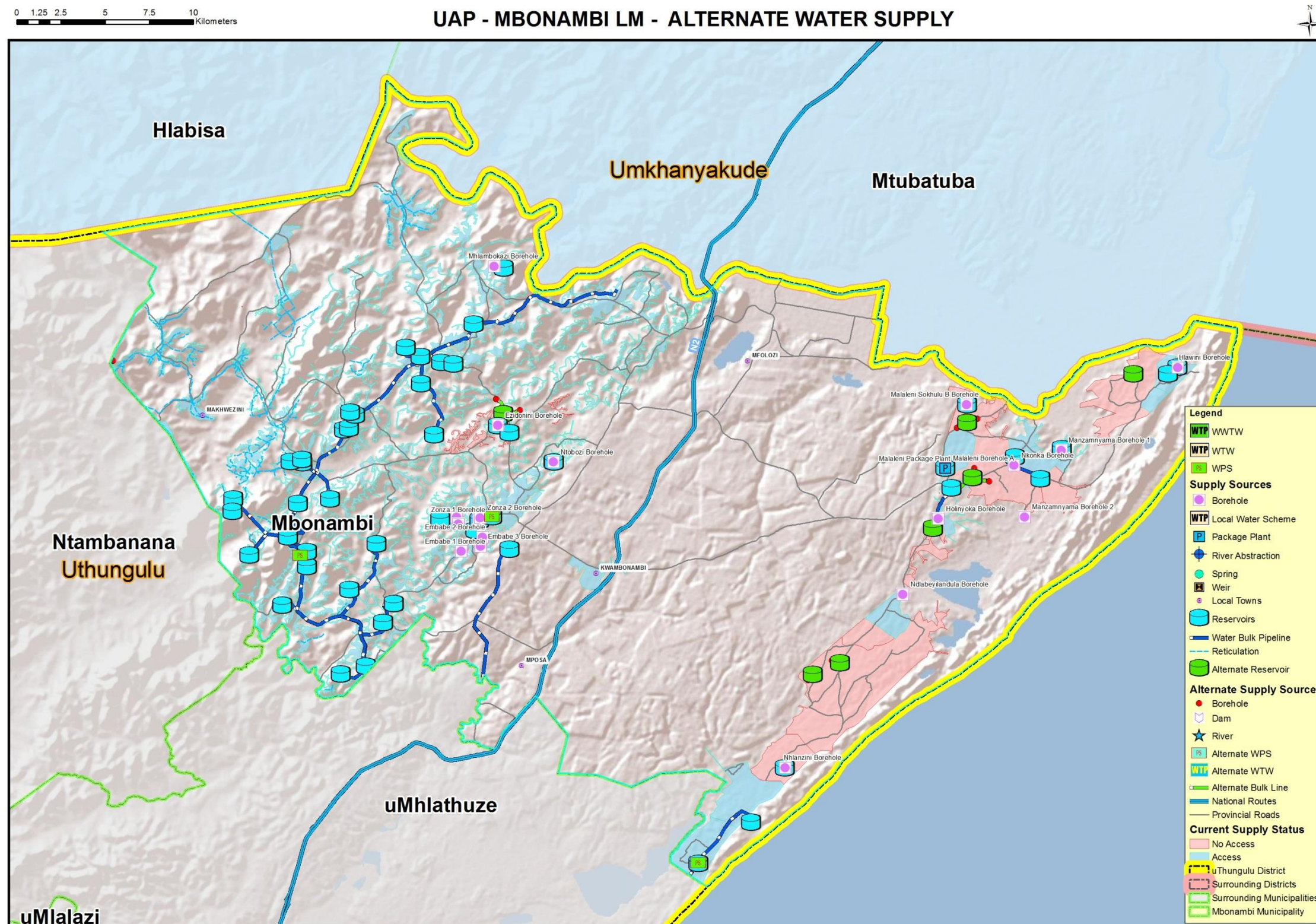
## Mfolozi / Mbonambi

## Water & Sanitation Maps

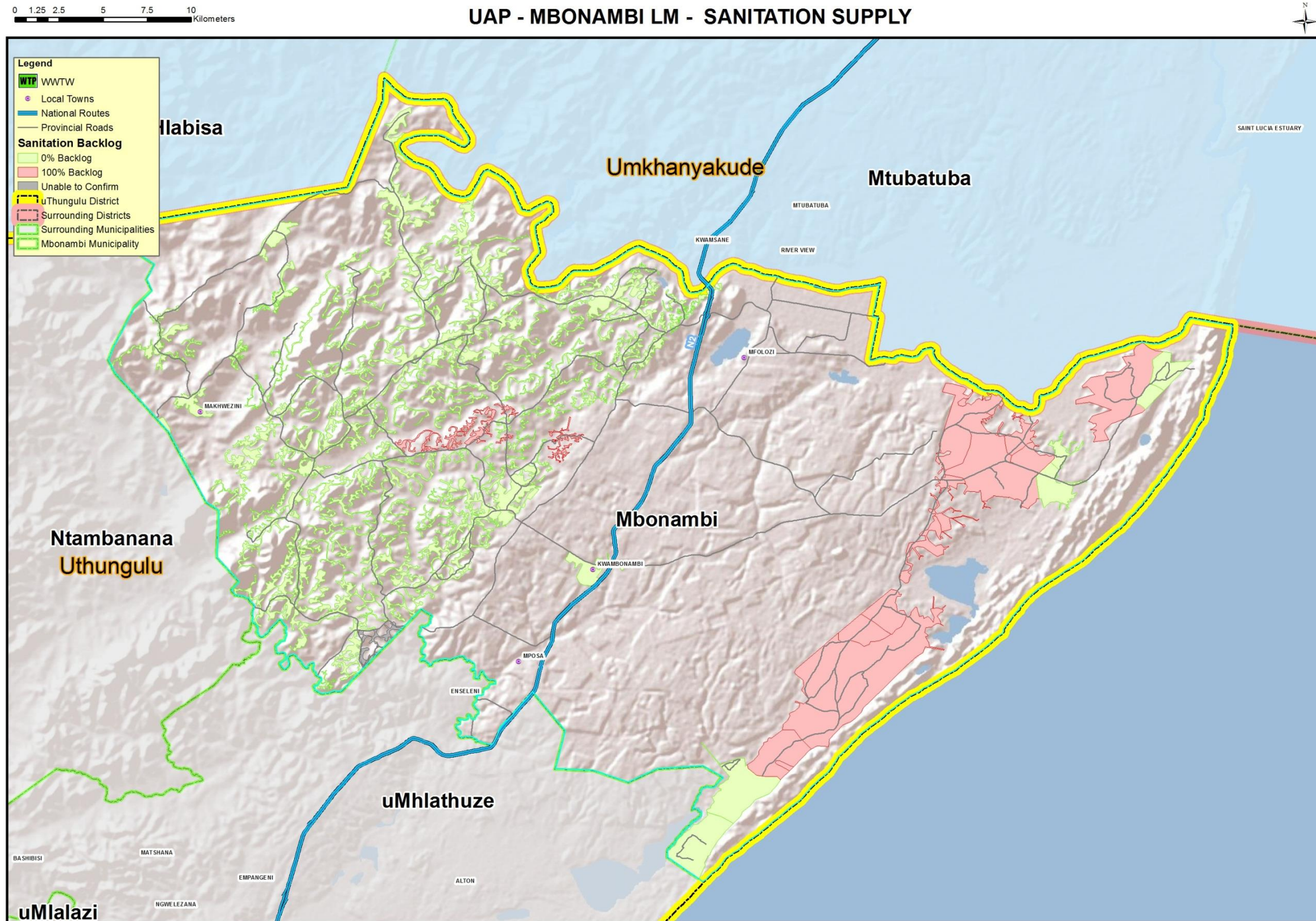


Map 11: Mfolozi / Mbonambi Water Supply





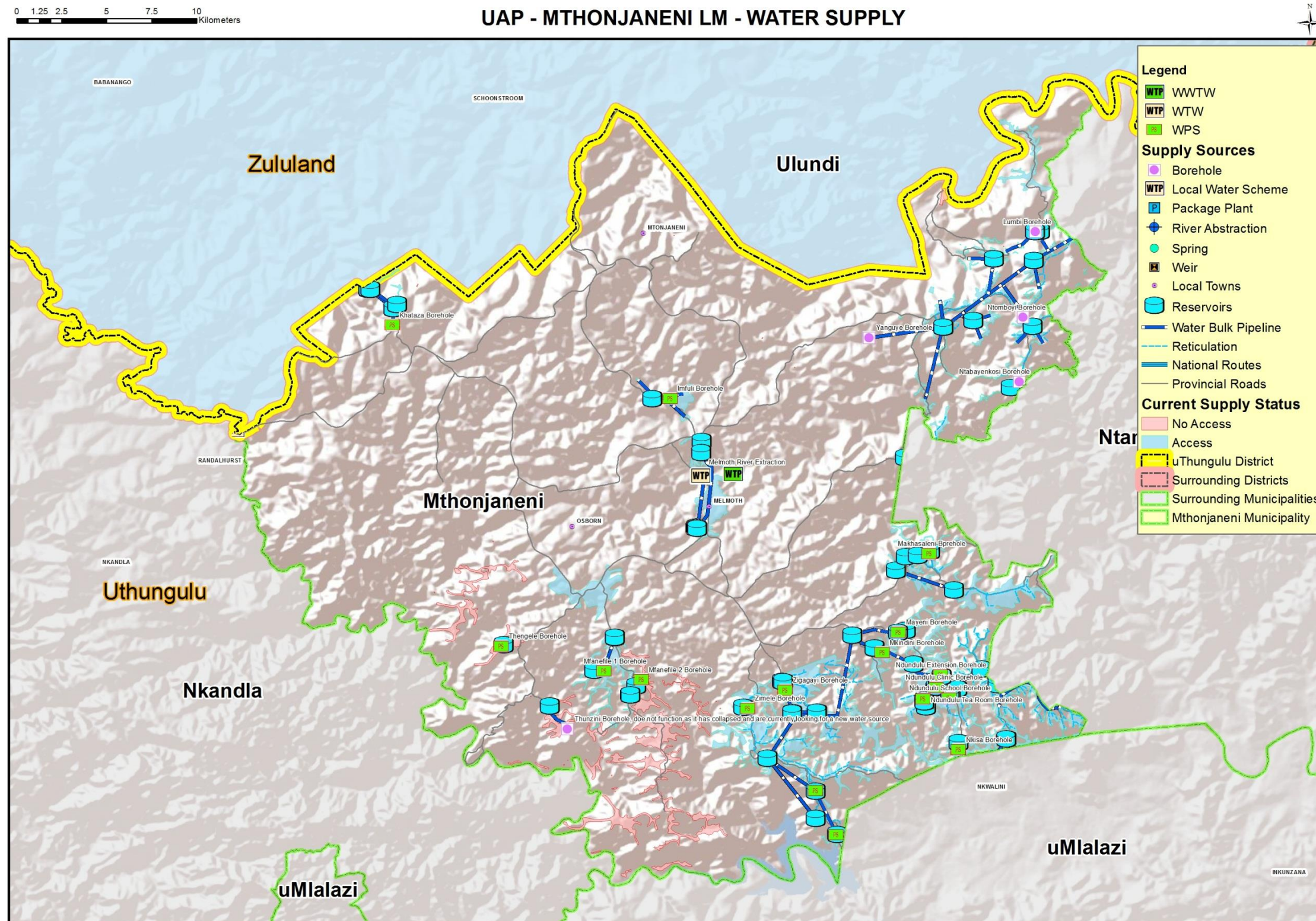
Map 12: Mfolozi / Mbonambi Proposed Alternate Schemes



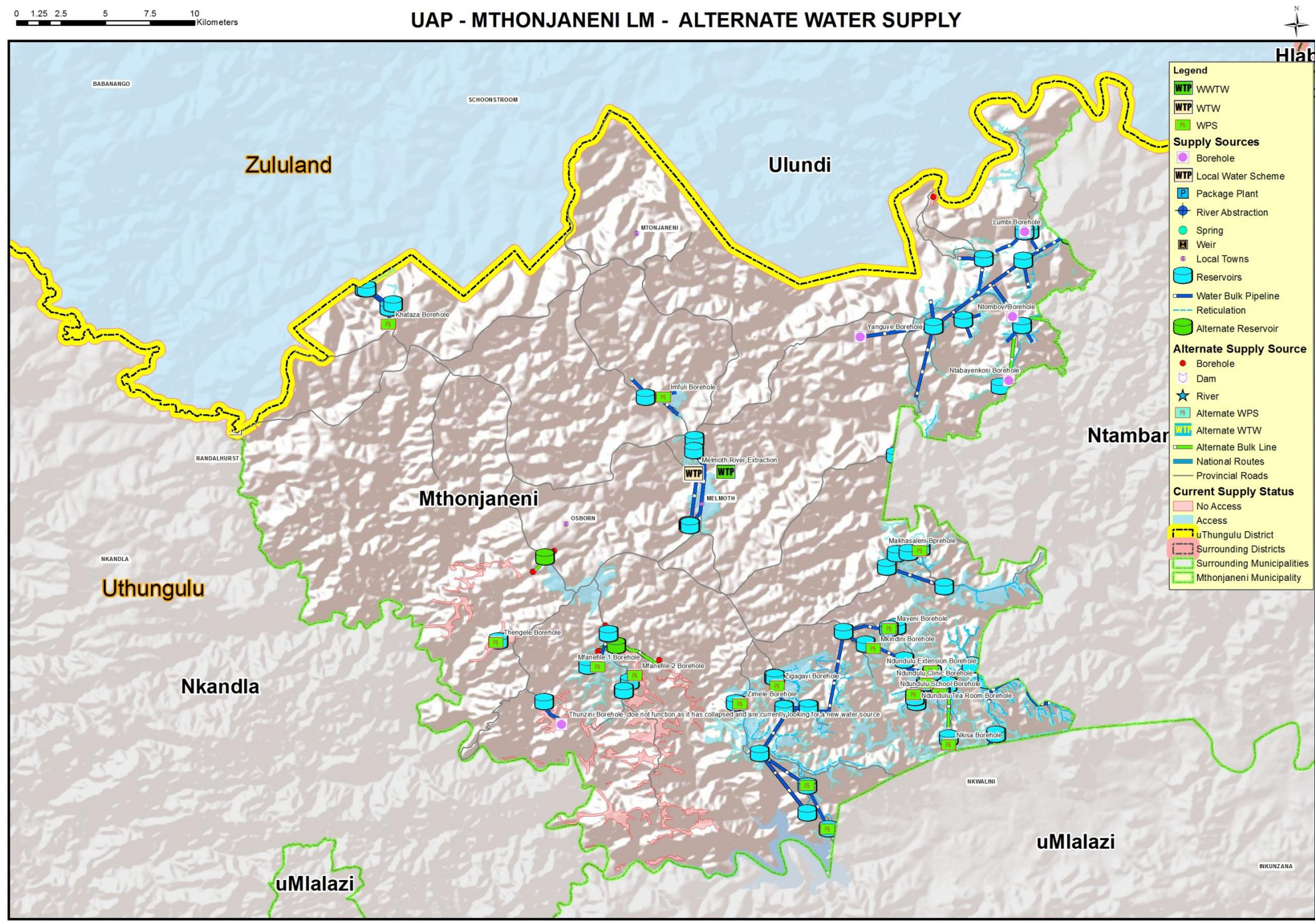
**Map 13: Mfolozi / Mbonambi Sanitation Supply**

## Mthonjaneni

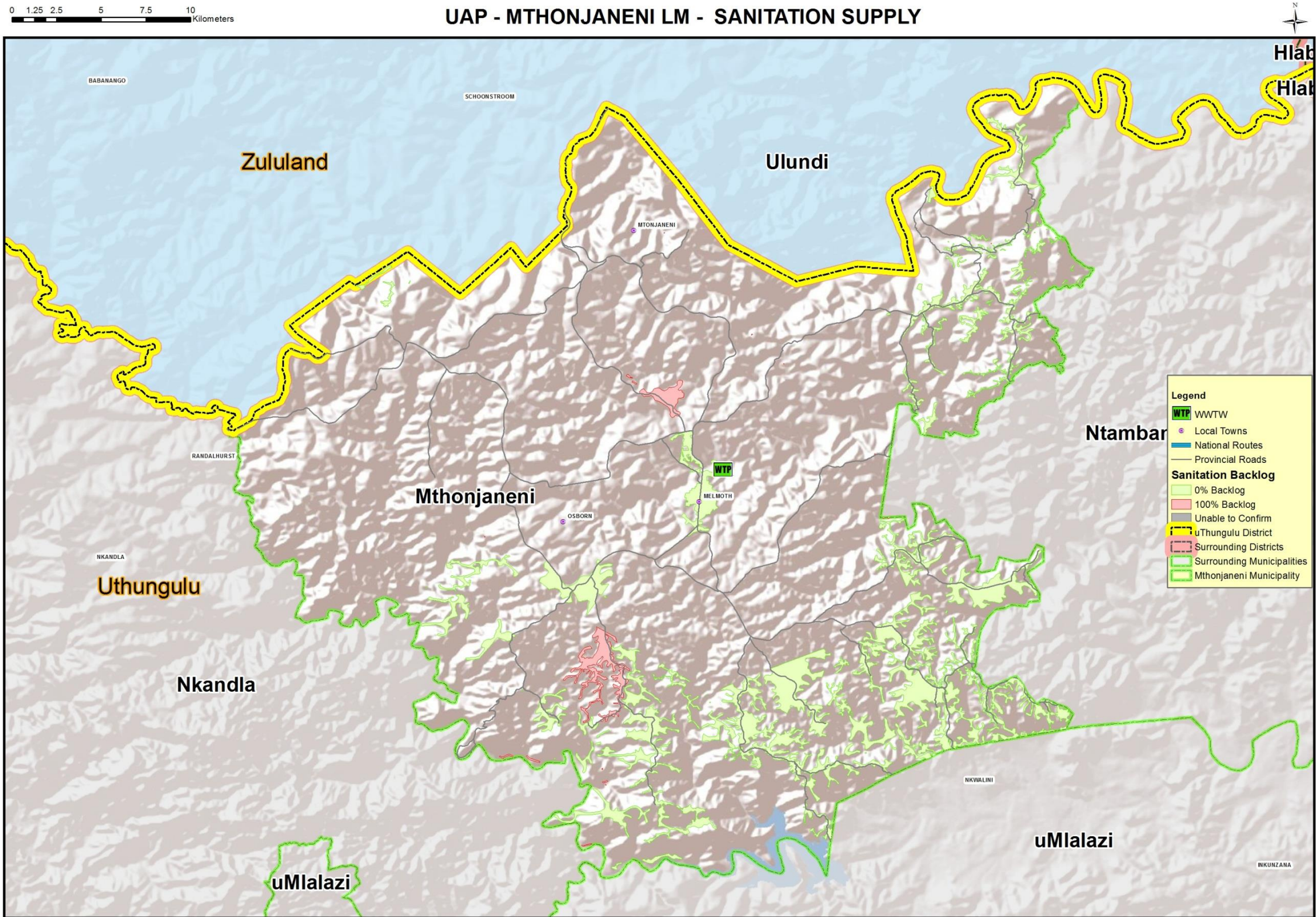
## Water & Sanitation Maps



Map 14: Mthonjaneni Water Supply



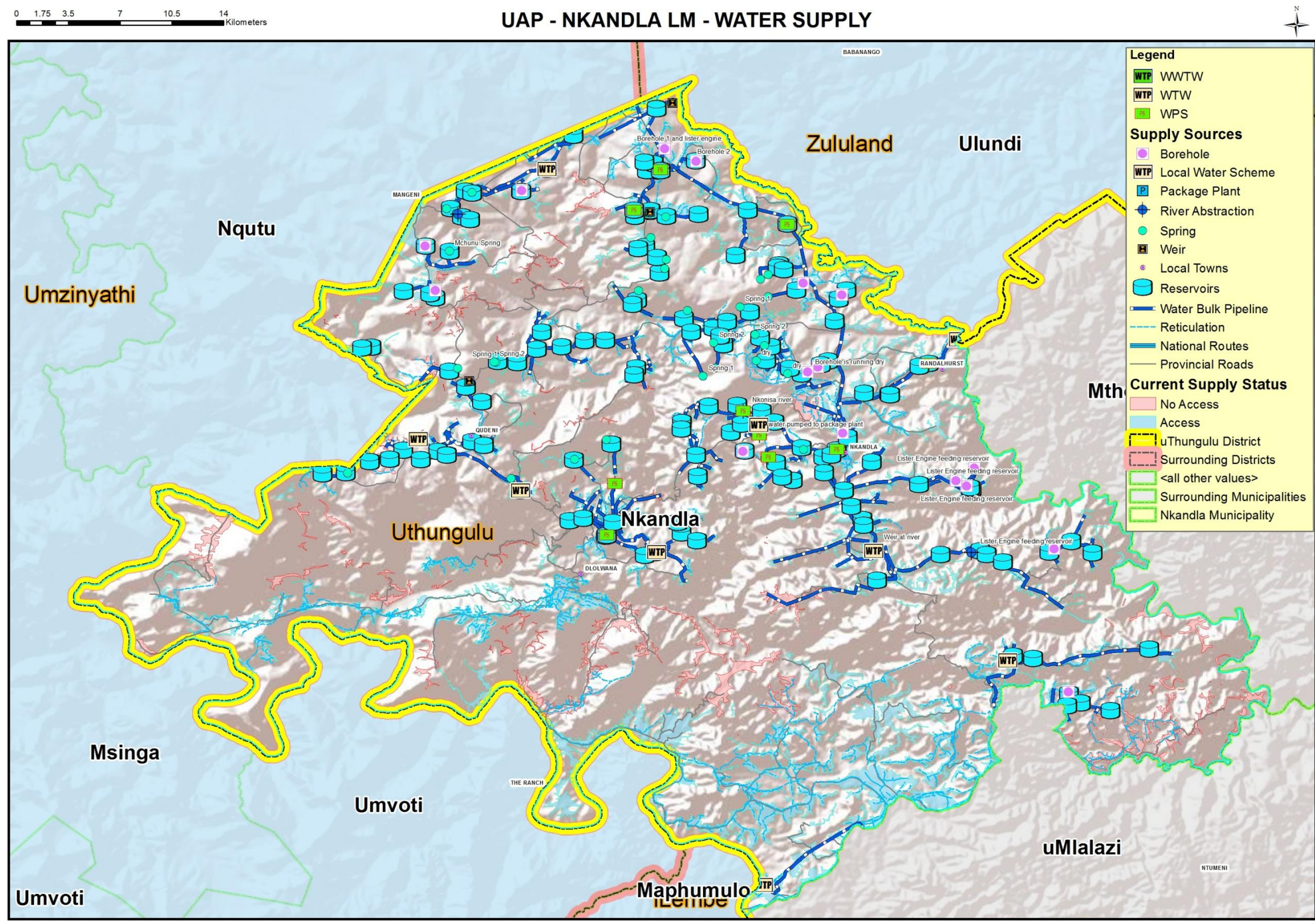
Map 15: Mthonjaneni Proposed Alternate Schemes



**Map 16: Mthonjaneni Sanitation Supply**

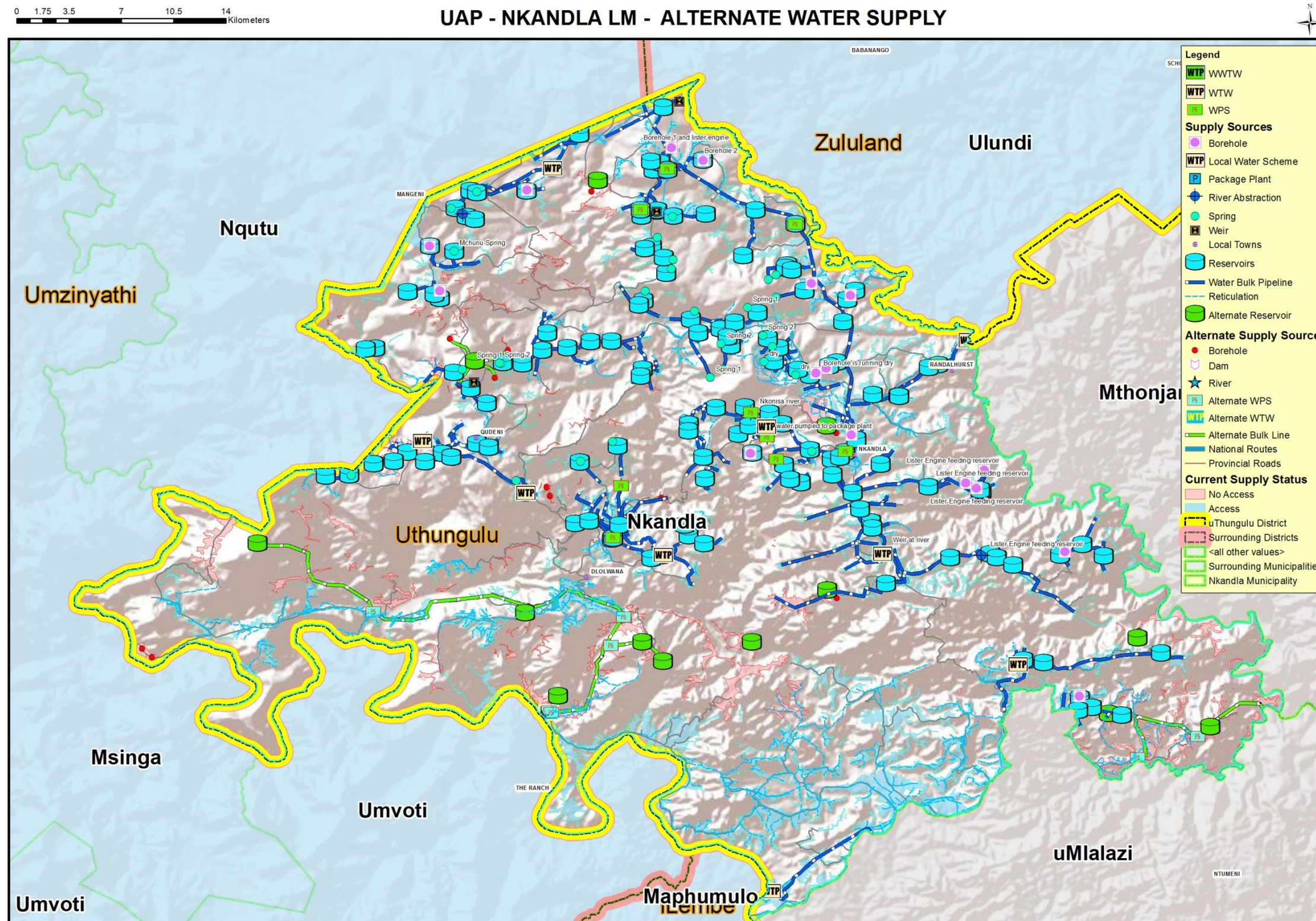
## Nkandla

## Water & Sanitation Maps

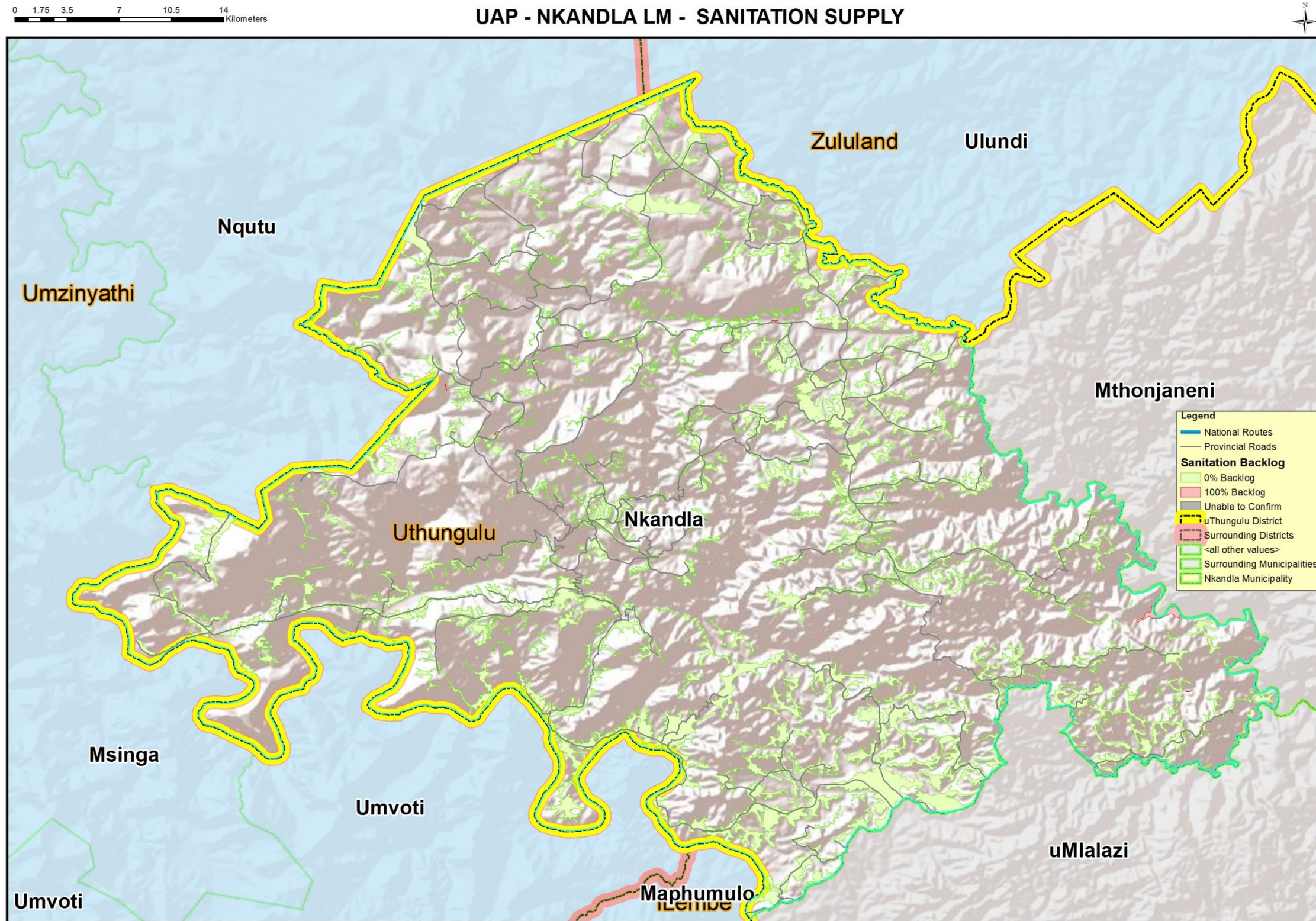


Map 17: Nkandla Water Supply





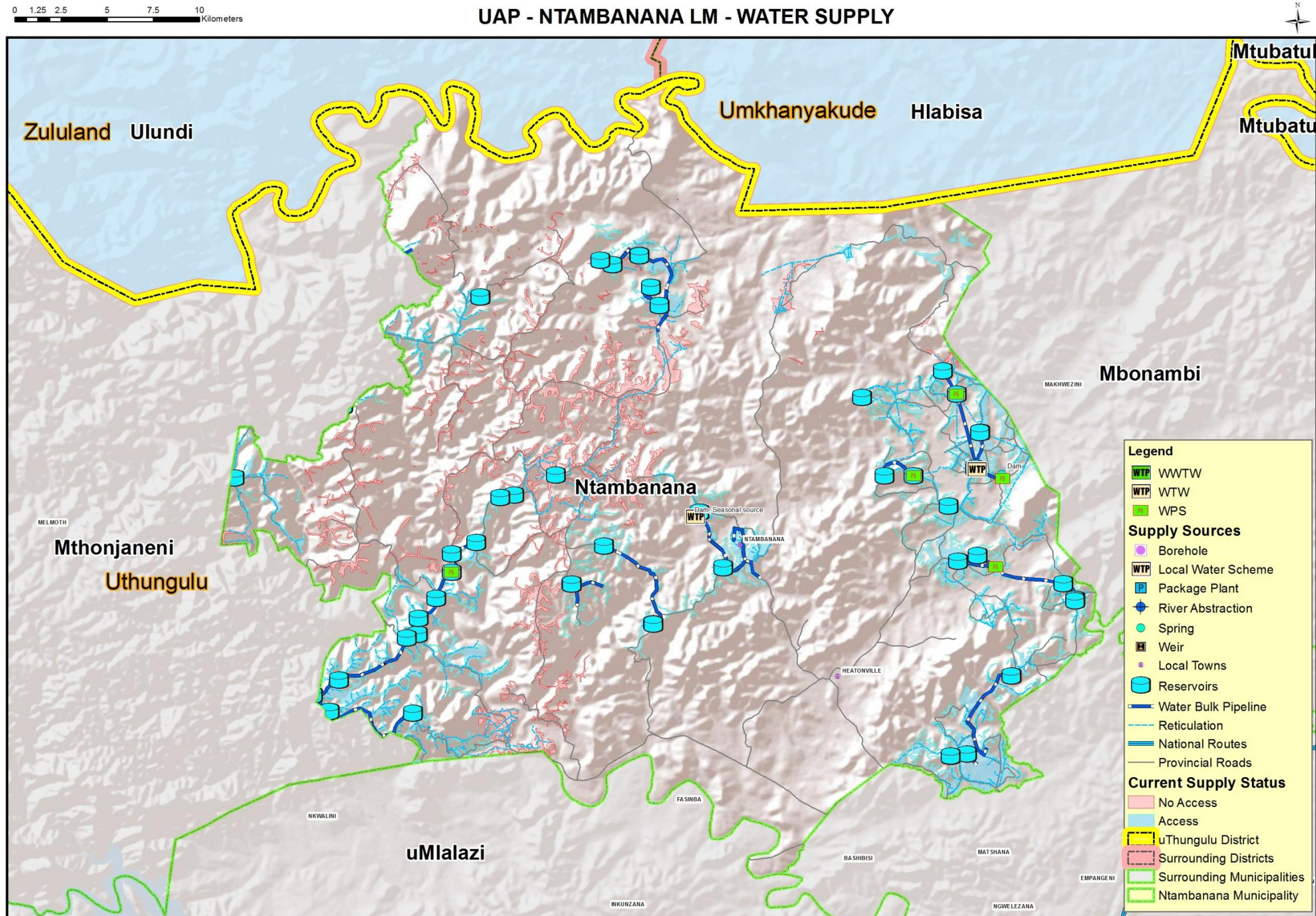
Map 18: Nkandla Proposed Alternate Schemes



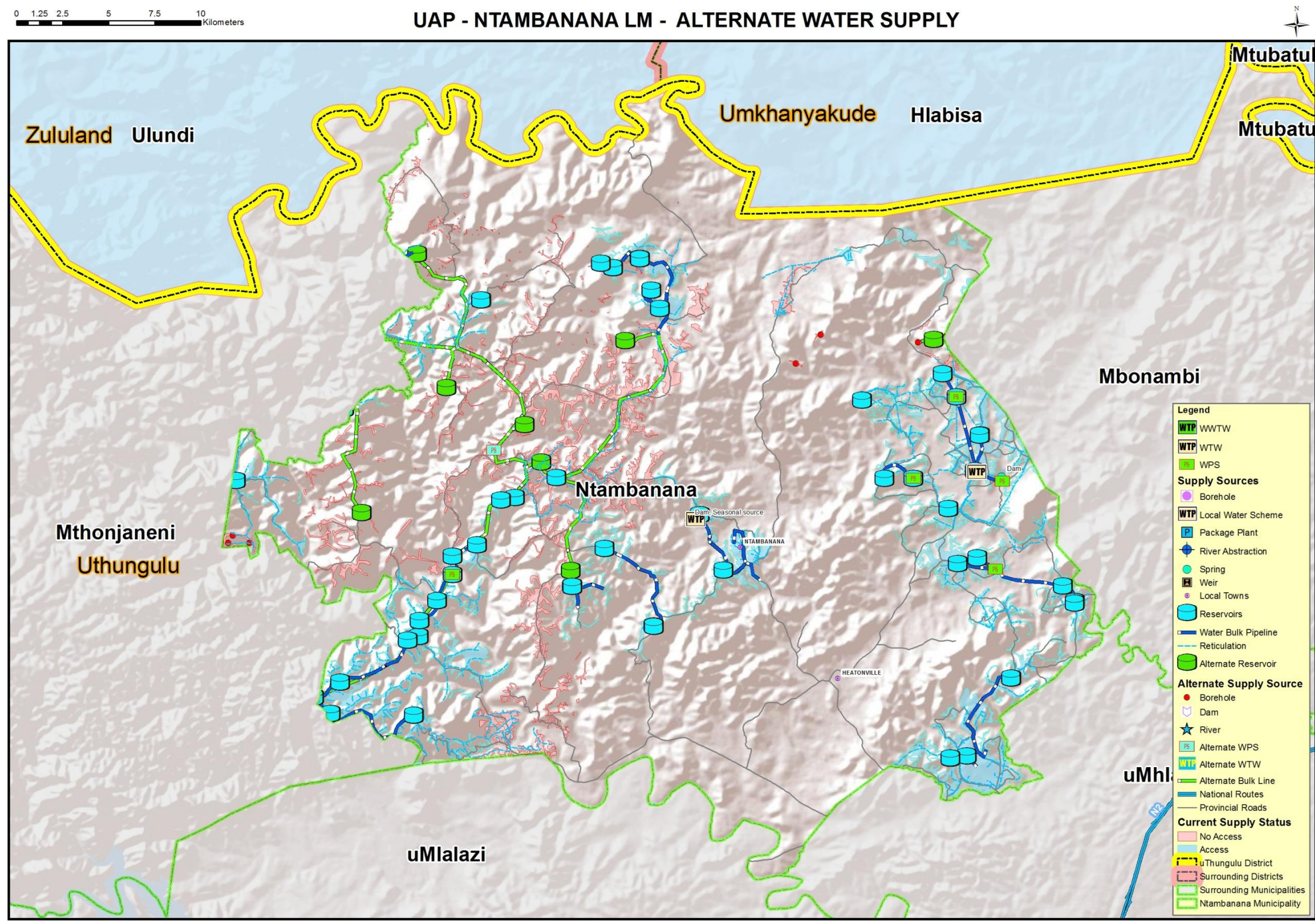
**Map 19: Nkandla Sanitation Supply**

## Ntambanana

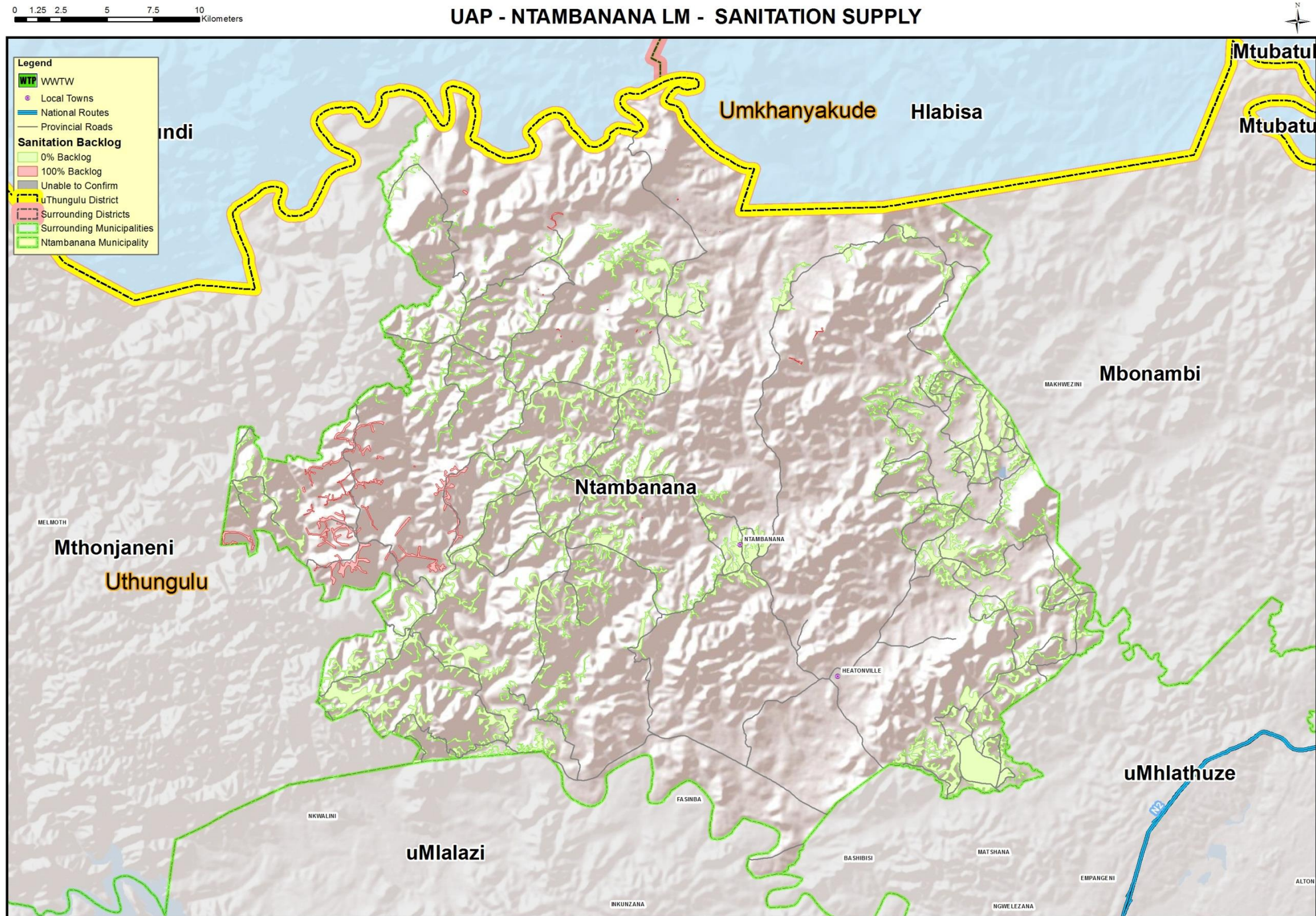
## Water & Sanitation Maps



**Map 20: Ntambanana Water Supply**



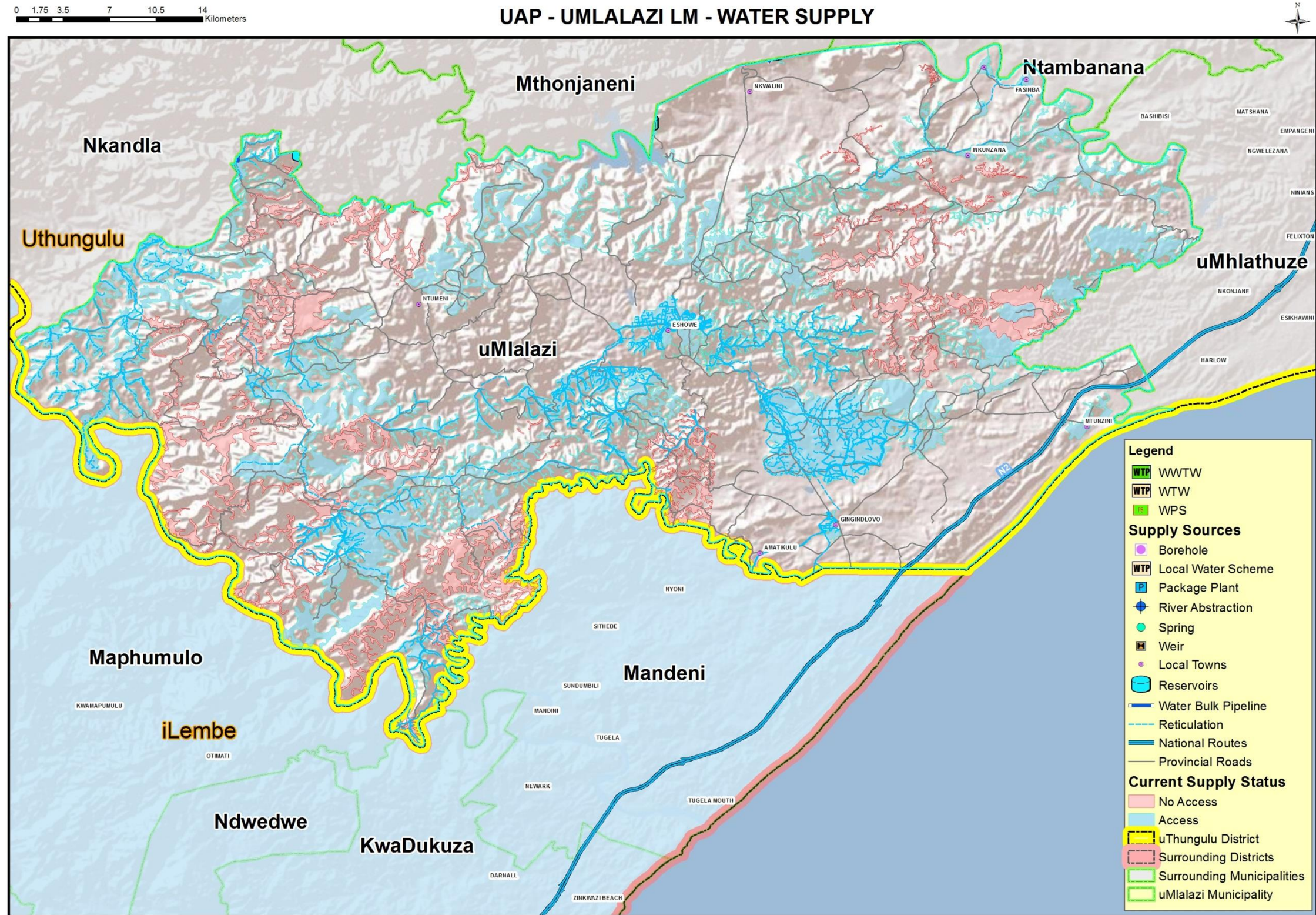
**Map 21: Ntambanana Proposed Alternate Schemes**



Map 22: Ntambanana Sanitation Supply

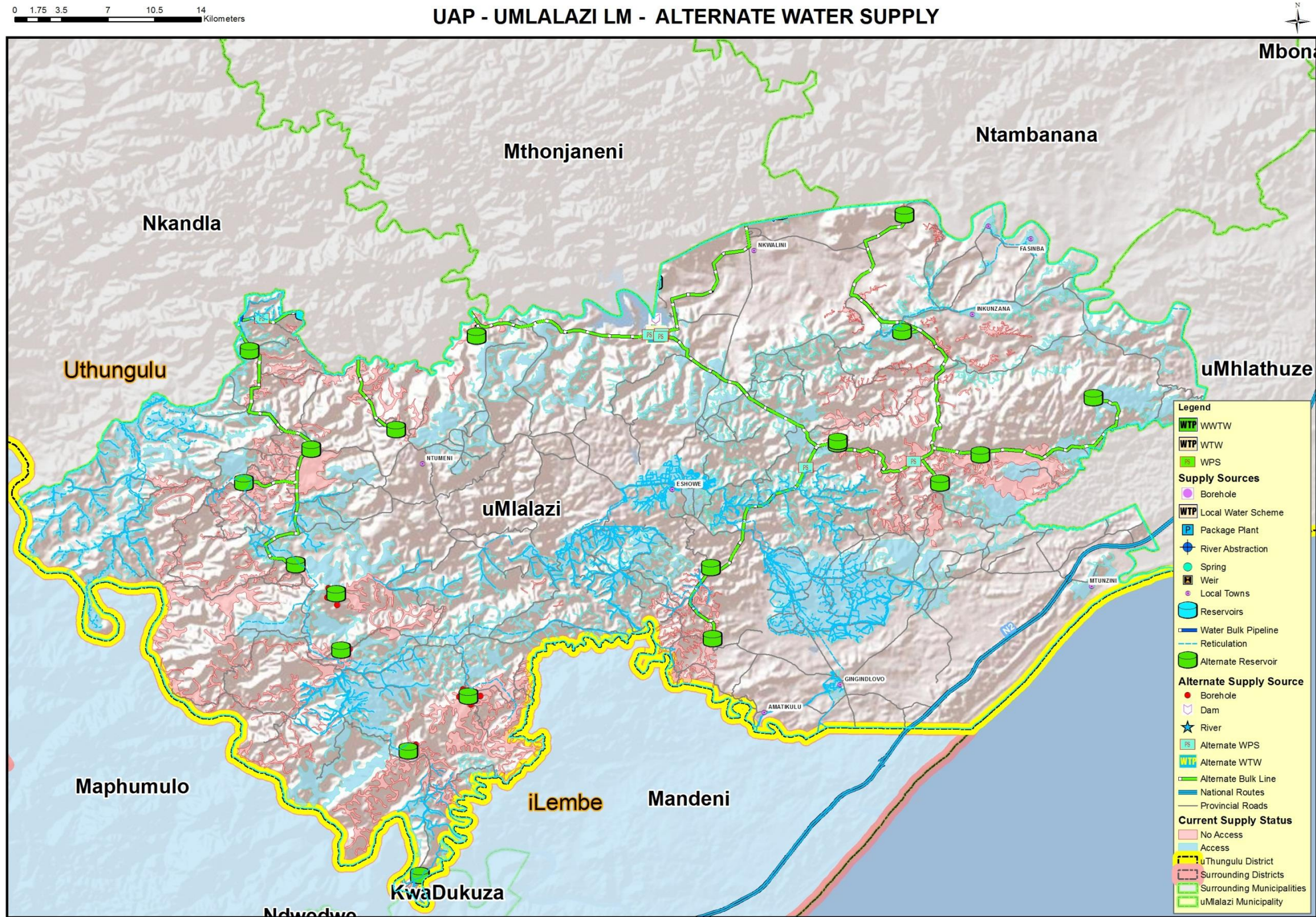
## uMlalazi

## Water & Sanitation Maps

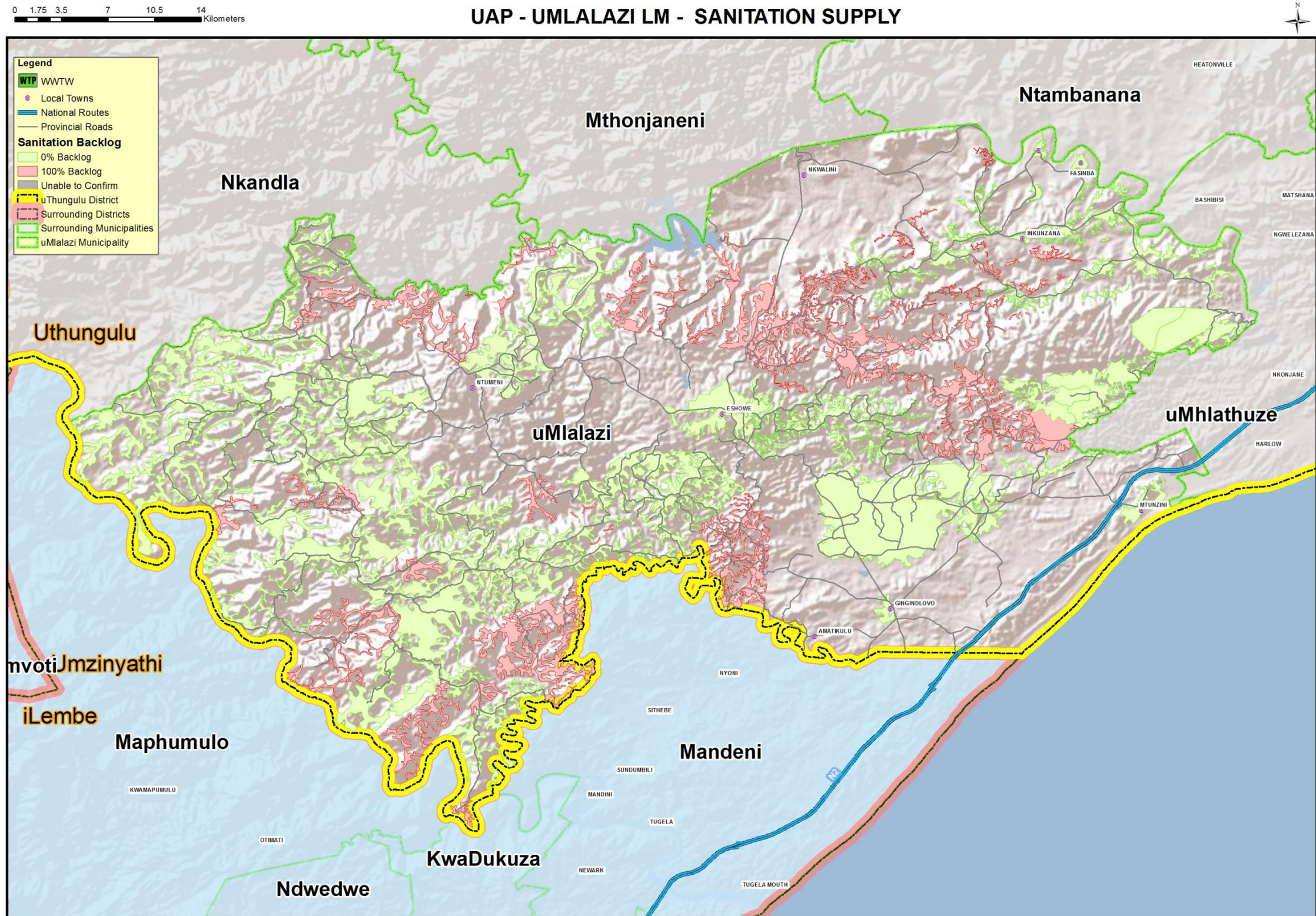


Map 23: uMlalazi Water Supply





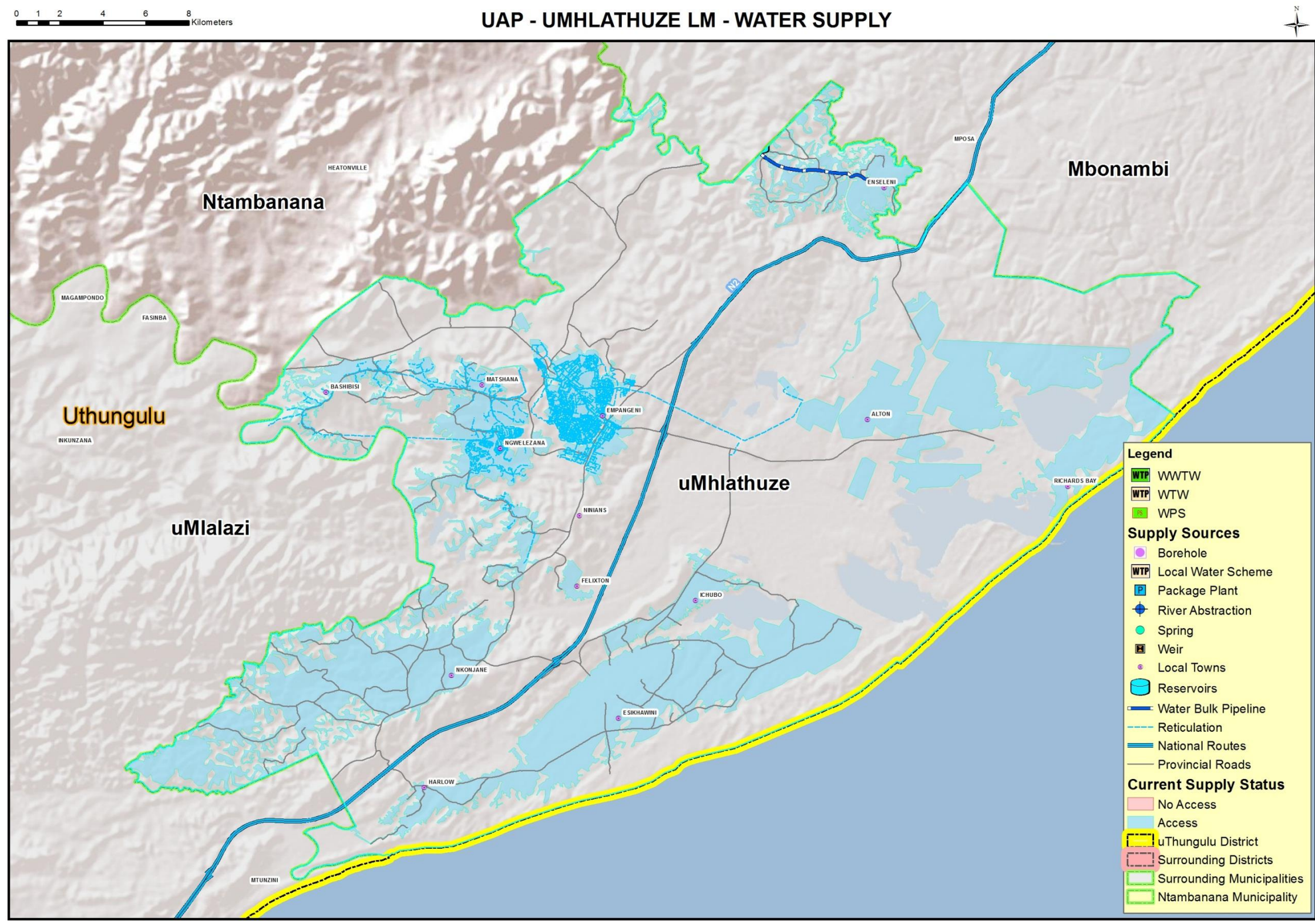
Map 24: uMlalazi Proposed Alternate Schemes



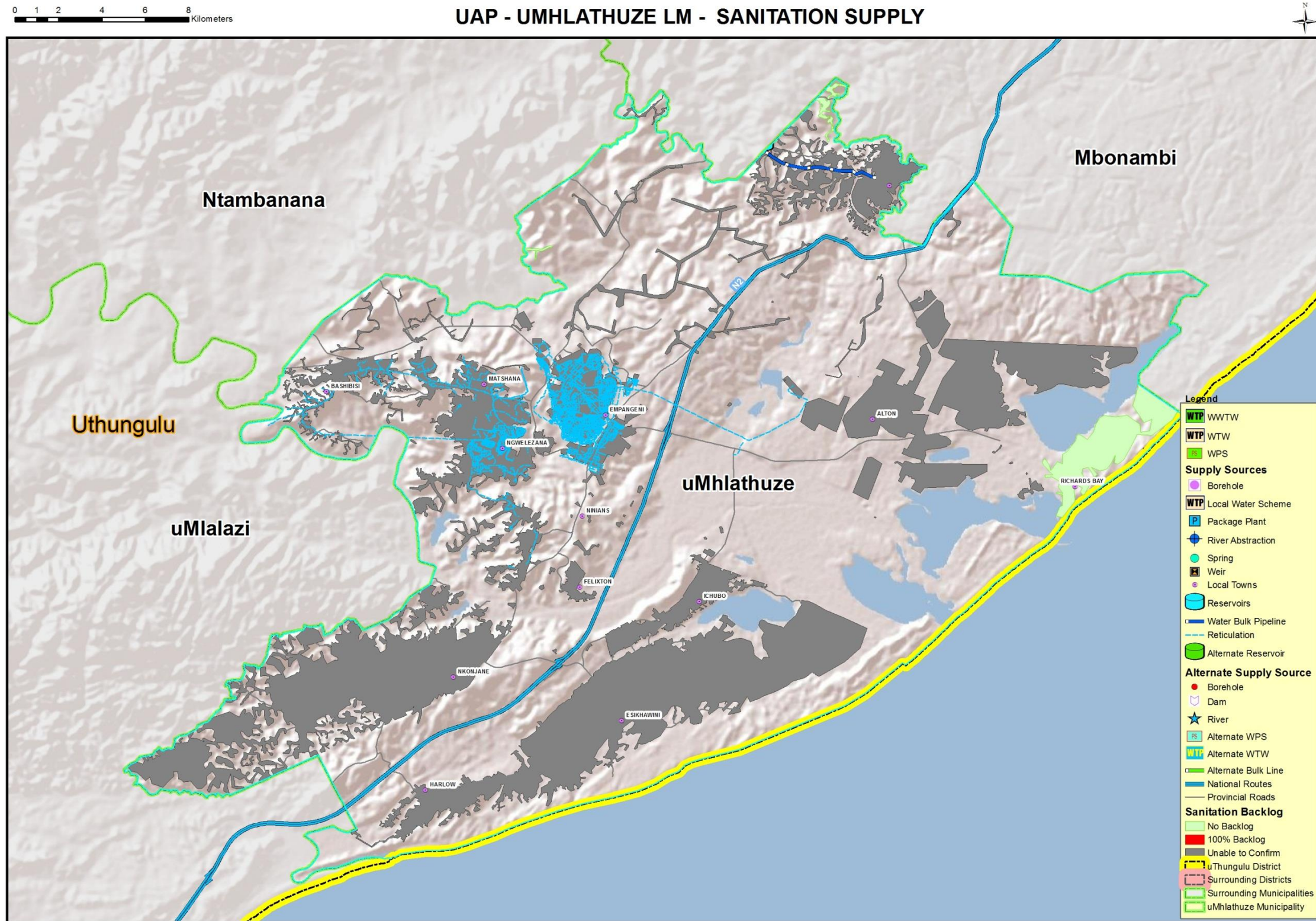
**Map 25: uMlalazi Sanitation Supply**

## uMhlathuze

# Water & Sanitation Map



**Map 26: uMhlathuze Water Supply**



**Map 27: uMhlathuze Sanitation Supply**

## Annexure C

### Attributes Data/Tables

### Water Supply Footprints

Field Name	SMEC Field	Alias	Description	Units	Source
District Municipality		District Municipality	Name of the municipality in which the area falls	Text Description	GIS (Pre Populated)
Area_m2		Area in square metres	GIS calculated	Number	GIS (Pre Populated)
Name		Name	Name of area if known	Text Description	GIS (Pre Populated)
Short_SS	Wat_Supp	Short term supply status	Defines existing supply status	Y/N	Delphi
	Sust_2016		Is existing supply sustainable to 2016?	Y/N	Delphi
	Sust_2016Need		If N, What needs to be done to ensure sustainable supply to 2016?	Text Description	Delphi
	Plan_Aft2016		Are there existing plans to ensure sustainably beyond 2016?	Y/N	Infrastructure Manager/ MIG/ WIG/IDP
	30Yr_Pln		If Y, are these plans for 30 year horizon?	Y/N	Infrastructure Manager/ MIG/ WIG/IDP
	30Yr_PlnDesc		If Y, what are these plans.	Text Description	Infrastructure Manager/ MIG/ WIG/IDP
			If N, What needs to be done to ensure sustainable supply to 2046?	Text Description	Infrastructure Manager/ MIG/ WIG/IDP
Schm_E		Existing scheme name	Name of any existing supply scheme	Text Description	Delphi
Schm_F		Future scheme name	Name of any future proposed scheme	Text Description	Delphi
Sou_E		Existing source	Existing water source from lookup table	Lookup Value	Delphi
Sou_F		Future source	Future water source from lookup table	Lookup Value	Delphi
WatNam_E		Existing source name	Name of existing source	Text Description	Delphi
WatNam_F		Future source name	Name of future source	Text Description	Delphi
Proj_Typ		Project type	Type of project from lookup table	Text Description	Delphi
SuppDate		Scheme supply date	Date of proposed intervention	Date	Delphi
Treat		Treatment type	Existing treatment type from lookup table	Lookup Value	Delphi
WTP_Nam		WTP name	Name of water treatment plant	Text Description	Delphi
Conn		Connection	Type of water connection from lookup table	Lookup Value	Delphi
Design_E		Existing design demand	Demand for which this scheme has been designed	Million m <sup>3</sup> p.a.	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
Dem_L		Demand Low	Low demand forecast	Million m <sup>3</sup> p.a.	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
Dem_H		Demand High	High demand forecast	Million m <sup>3</sup> p.a.	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
Dem_P		Probable demand	Probable demand forecast	Million m <sup>3</sup> p.a.	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
Supp_E		Existing supply	Current water supply capacity	Million m <sup>3</sup> p.a.	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
Supp_R		Water requirements	Current water requirements	Million m <sup>3</sup> p.a.	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
Supp_F		Future water requirements	Future water requirements	Million m <sup>3</sup> p.a.	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
Proj_ID		Project ID	ID of project if known	Text Description	Delphi
HH_Low		Households low	Lowest estimate of households served	Number	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
HH_High		Households high	Highest estimate of households served	Number	Infrastructure Manager/ MIG/ WIG/IDP/Housedold Data/Stats Data
Pop_Low		Population low	Lowest estimate of number of people	Number	Household Data/Stats Data
Pop_High		Population high	Highest estimate of number of people	Number	Household Data/Stats Data
Capturer		Capturer	Person who captured the area from lookup table	Text Description	Delphi
Sanitation		Type of sanitation scheme	Type of sanitation scheme from lookup table	Lookup Value	Delphi
Comments		Comments	General comments	Text Description	Delphi

### Water Supply Footprints - Delphi

Field Name	SMEC Field	Alias	Description	Units	Source
Short_SS	Wat_Supp	Short term supply status	Defines existing supply status	Y/N	Delphi
	Sust_2016		Is existing supply sustainable to 2016?	Y/N	Delphi
	Sust_2016Need		If N, What needs to be done to ensure sustainable supply to 2016?	Text Description	Delphi
Schm_E		Existing scheme name	Name of any existing supply scheme	Text Description	Delphi
Schm_F		Future scheme name	Name of any future proposed scheme	Text Description	Delphi
Sou_E		Existing source	Existing water source from lookup table	Lookup Value	Delphi
Sou_F		Future source	Future water source from lookup table	Lookup Value	Delphi
WatNam_E		Existing source name	Name of existing source	Text Description	Delphi
	W_Capacity	W_Capacity	Source Capacity	ML	Delphi
	HoldingRes	HoldingRes	Holding Reservoir / Feeding Reservoir	Text Description	Delphi
WatNam_F		Future source name	Name of future source	Text Description	Delphi
Proj_Typ		Project type	Type of project from lookup table	Text Description	Delphi
SuppDate		Scheme supply date	Date of proposed intervention	Date	Delphi
Treat		Treatment type	Existing treatment type from lookup table	Lookup Value	Delphi
WTP_Nam		WTP name	Name of water treatment plant	Text Description	Delphi
Conn		Connection	Type of water connection from lookup table	Lookup Value	Delphi
	W_Material	PipeType	Pipe Material	Text Description	Delphi
	W_Diameter	Diameter	Average Diameter	Text Description	Delphi
	AvgDist	AvgDist	Average Distance to Water Source	Text Description	Delphi
Proj_ID		Project ID	ID of project if known	Text Description	Delphi
Sanitation		Type of sanitation scheme	Type of sanitation scheme from lookup table	Lookup Value	Delphi
	WWTW_N	WWTW_N	WWTW Name	Text Description	Delphi
	S_Capacity		WWTW Capacity	Text Description	Delphi
	S_Material		Pipe Material	Text Description	Delphi
	S_Diameter		Average Diameter	Text Description	Delphi
Comments		Comments	General comments	Text Description	Delphi
	Confid	Confid	Level of Confidence	Text Description	Delphi
Capturer		Capturer	Person who captured the area from lookup table	Text Description	Delphi

### Bulk Pipelines

Field Name	Alias	Description	Units	Source
Schm_E	Scheme Name	Name of the supply scheme	Text Description	Delphi
Sou_E	Water source	Type of Water source from lookup table	Lookup Value	Delphi
WatNam_E	Name of Water Source	Name of Water Source	Text Description	Delphi
Diameter	Diameter	Diameter of Pipeline	Text Description	Delphi
Flow	Flow	Flow type - Gravity/ Pumped	Lookup Value	Delphi
Functionality	Functionality	Operational functionality of the pipeline	Lookup Value	Delphi
Age	Age	Age of the pipeline	Text Description	Delphi
Capturer	Capturer	Data capturer from lookup table	Text Description	Delphi
Comments	Comments	General comments	Text Description	Delphi



## Supply Source

Field Name	Alias	Description	Units	Source
Schm_E	Scheme Name	Name of the supply scheme	Text Description	Delphi
Type	Type	Type of Source	Lookup Value	Delphi
Elevation	Elevation	Elevation of Source	Text Description	Delphi
Functionality	Functionality	Operational functionality of the pipeline	Lookup Value	Delphi
Age	Age	Age of the pipeline	Text Description	Delphi
Capturer	Capturer	Data capturer from lookup table	Text Description	Delphi
Comments	Comments	General comments	Text Description	Delphi

## Meters

Field Name	Alias	Description	Units	Source
Schm_E	Scheme Name	Name of the supply scheme	Text Description	Delphi
Functionality	Functionality	Operational functionality of the pipeline	Lookup Value	Delphi
Age	Age	Age of the pipeline	Text Description	Delphi
Capturer	Capturer	Data capturer from lookup table	Text Description	Delphi
Comments	Comments	General comments	Text Description	Delphi

## Reservoirs

Field Name	Alias	Description	Units	Source
Schm_E	Scheme Name	Name of the supply scheme	Text Description	Delphi
Sou_E	Water source	Type of Water source from lookup table	Lookup Value	Delphi
WatNam_E	Name of Water Source	Name of Water Source	Text Description	Delphi
Capacity	Capacity	Capacity of the Reservoir	Text Description	Delphi
Diameter	Diameter	Diameter of Pipeline	Text Description	Delphi
Flow	Flow	Flow type - Gravity/ Pumped	Lookup Value	Delphi
Functionality	Functionality	Operational functionality of the pipeline	Lookup Value	Delphi
Age	Age	Age of the pipeline	Text Description	Delphi
Capturer	Capturer	Data capturer from lookup table	Text Description	Delphi
Comments	Comments	General comments	Text Description	Delphi

## Pumps

Field Name	Alias	Description	Units	Source
Schm_E	Scheme Name	Name of the supply scheme	Text Description	Delphi
Qty	Qty	Number of pumps	Text Description	Delphi
Capacity	Capacity	Capacity of the pump	Text Description	Delphi
Functionality	Functionality	Operational functionality of the pipeline	Lookup Value	Delphi
Age	Age	Age of the pipeline	Text Description	Delphi
Capturer	Capturer	Data capturer from lookup table	Text Description	Delphi
Comments	Comments	General comments	Text Description	Delphi

## Lookup Values

### Water Footprints

Field Description	Field Name	Lookup Description	Lookup Value
Existing Source	Sou_E	Local Water Scheme	1
		Borehole	2
		Water Tanker	3
		Regional Water Scheme	4
		Spring	5
		Reservoir	6
Future Source	Sou_F	Local Water Scheme	1
		Borehole	2
		Water Tanker	3
		Regional Water Scheme	4
		Spring	5
		Reservoir	6
Water Treatment Type	Treat	WTP	1
		Chlorination	2
		Sand Filter	3
		Package Plant	4
Type of Water Connection	Conn	House	1
		Jojo	2
		Standpipe	3
Type of Sanitation Scheme	Sanitation		
Flow	Flow	Gravity	1
		Pumped	2
Functionality	Functionality		
Project Type	Proj_Typ	MWIG	1
		UW	2

## Annexure D

# uThungulu District Municipality Water & Sanitation Project List

Water, Sanitation and Infrastructure Projects	Total Funded 2012/2013	Total Funded 2013/2014	Total Funded 2014/2015	Total Funded 2015/2016
Mfolozi Water Phase 2	R 20 060 421	R 7 507 911	R 15 000 000	R 30 000 000
Mhlana Somopho Phase 3C	R 20 000 000	R 17 819 140	R 20 095 446	R -
Middledrift SSA3	R 2 000 000	R 1 433 868	R 10 000 000	R -
Middledrift SSA 5	R 10 000 000	R 29 362 433	R 15 358 000	R -
Vutshini Phase 1	R 2 000 000	R 1 000 000	R 1 000 000	R -
Nkandla Vutshini S/A SSA5	R 20 000 000	R 26 302 512	R 15 000 000	R 40 000 000
Eshowe SSA 1	R 2 300 000	R 1 000 000	R -	R 25 000 000
Eshowe SSA 1 - DWAF	R -	R -	R 18 500 000	R 150 000 000
Eshowe SSA 2	R 2 300 000	R -	R 18 500 000	R 150 000 000
KwaHlokoHloko S/A SSA4	R 8 000 000	R -	R -	R -
KwaHlokoHloko S/A SSA5	R 20 000 000	R 30 000 000	R 20 000 000	R 10 000 000
Middledrift Phase 2	R 25 000 000	R 10 000 000	R 8 019 554	R -
KwakhlokoHloko SSA 1	R 18 000 000	R 5 500 000	R -	R 20 000 000
KwakhlokoHloko SSA 1 DWA	R 24 000 000	R 15 000 000	R 50 000 000	R 50 000 000
Hlwehlwe Water Treatment Works in Nkdandla	R -	R 1 200 000	R 1 250 000	R -
Sogedle Water Treatment Works	R -	R 1 200 000	R -	R -
Mpumdumani Water Treatment Works	R -	R 1 200 000	R -	R -
Greater Mthonjaneni SAA2 - MIG	R 1 000 000	R 1 357 497	R -	R -
Greater Mthonjaneni SSA2 - DWA	R 1 000 000	R -	R -	R -
Greater Mthonjaneni SSA 4 DWA	R 5 001 000	R 12 000 000	R 6 500 000	R -
Greater Mthonjaneni SSA 5 - MIG	R 5 384 607	R 1 000 000	R 10 000 000	R 19 375 087
Greater Mthonjaneni SSA 5 DWA	R -	R 8 000 000	R 30 000 000	R -
Gingindlovu Water Supply Intake Relocation	R -	R 5 000 000	R 5 000 000	R -
KDS & Eshowe Water Supply	R -	R 42 400 000	R 35 000 000	R -
Bongela River	R -	R -	R 1 250 000	R -
Madla Water	R -	R -	R 1 250 000	R -
Madla 1 Water	R -	R -	R 1 250 000	R -
Mbizwe Water	R -	R -	R 1 250 000	R -
Tshotswana Water	R -	R -	R -	R -
uMkhalazi Water	R -	R -	R -	R -
Mdlelanga Water	R -	R -	R -	R -
Mpaphala Water	R -	R -	R -	R -
Eyetheni Water	R -	R -	R -	R -
Kwa-Sabe 2 Water	R -	R -	R -	R -
Dolwane Water	R -	R -	R -	R -
Middledrift SSA 5 DWA	R 10 000 000	R -	R 50 000 000	R 100 000 000
Middledrift Water Treatment Works	R 5 000 000	R -	R -	R -
Mpungose Phase 1D (Reticulation)	R 8 000 000	R -	R 10 000 000	R 4 531 913
Water loss management Strategy - Implementation	R 1 000 000	R 750 000	R 800 000	R 800 000

Water, Sanitation and Infrastructure Projects	Total Funded 2012/2013	Total Funded 2013/2014	Total Funded 2014/2015	Total Funded 2015/2016
DWA Water Resource Compliance	R 200 000	R 150 000	R 180 000	R 200 000
Water Quality Improvement Interventions	R 605 000	R 300 000	R 350 000	R 350 000
Water Quality Evaluation (Blue/Green Drop)	R 126 580	R -	R -	R -
Indigent Water Leak Management	R 80 500	R -	R -	R -
Water Service Section 78	R 1 000 000	R -	R -	R -
Existing Projects Extensions	R 1 500 000	R -	R 1 650 000	R 1 650 000
Water Services Operating & Transfer Subsidy	R 300 000	R 1 624 000	R 3 874 000	R 3 500 000
Water meter installation	R 1 500 000	R 2 000 000	R 2 000 000	R 2 000 000
Indigent Water meter installation	R 1 800 000	R -	R 220 000	R -
Telemetric Meter Installation - Pilot	R -	R 89 000	R 93 400	R 96 700
Water meter installation (RBM)	R 2 000 000	R 2 000 000	R 2 000 000	R 2 000 000
MeLocal Municipality Water Services Network Upgrade	R 200 000	R 100 000	R 150 000	R 150 000
Mtunzini Water Services Network Upgrade	R 200 000	R 100 000	R 150 000	R 150 000
Mtuzini Waste Water Works	R -	R 4 000 000	R 4 000 000	R -
Gingindlovu Water Services Network Upgrade	R 500 000	R 100 000	R 150 000	R 150 000
Gingingdlovu Waste Water Works	R -	R 2 500 000	R -	R 4 000 000
Eshowe Water Services Network Upgrade	R 250 000	R 100 000	R 150 000	R 150 000
Kwambonambi Water Services Network Upgrade	R 200 000	R 100 000	R 1 500 000	R 150 000
Nkandla Water Services Network Upgrade	R 400 000	R 100 000	R 150 000	R 150 000
Water Service Authority	R 6 762 920	R 7 790 000	R 16 027 000	R 16 280 000
Water Conservation & Demand Strategy	R 250 000	R 2 525 000	R 9 012 000	R 10 865 000
WSOSG Boreholes	R -	R 1 500 000	R 1 500 000	R 1 500 000
Water Events	R 352 920	R 100 000	R 425 000	R 425 000
Raw Water Abstraction fee (DAAF)	R 550 000	R -	R -	R -
Mtunzini Sewer Plant	R -	R -	R 2 000 000	R 2 000 000
Water Treatment Works & Waste Water TW Registration	R 400 000	R 250 000	R 350 000	R 400 000
Water & Waste Water Treatment Refurbishment	R 5 000 000	R -	R -	R -
281-3 - VIP Sanitation Project	R 6 250 000	R 3 030 000	R -	R -
281-4 - VIP Sanitation Project	R -	R -	R -	R -
283-3 - VIP Sanitation Project	R 7 500 000	R 5 130 000	R -	R -
283-4 - VIP Sanitation Project	R -	R -	R -	R -
284-3 - VIP Sanitation Project	R 2 000 000	R -	R -	R -
284-4 - VIP Sanitation Project	R 2 922 350	R -	R -	R -
284-5 - ViP Sanitation Project	R 2 000 000	R -	R -	R 13 300 000
284-6 - VIP Sanitation Project	R 2 000 000	R 20 000 000	R 7 100 000	R -
285-3 - VIP Sanitation Project	R 2 605 622	R -	R -	R -
286-5 - VIP Sanitation Project	R 8 500 000	R 9 000 000	R 10 000 000	R -
286-6 - VIP Sanitation Project	R -	R -	R -	R -
<b>Total Project Breakdown</b>	<b>R 268 001 920</b>	<b>R 281 621 361</b>	<b>R 408 054 400</b>	<b>R 659 173 700</b>

Water, Sanitation and Infrastructure Projects	Total Funded 2012/2013	Total Funded 2013/2014	Total Funded 2014/2015	Total Funded 2015/2016
Water Projects	R 228 823 948	R 244 211 361	R 388 604 400	R 643 473 700
Sanitation Projects	R 39 177 972	R 37 410 000	R 19 450 000	R 15 700 000
<b>Water and Sanitation Projects</b>	<b>R 268 001 920</b>	<b>R 281 621 361</b>	<b>R 408 054 400</b>	<b>R 659 173 700</b>